Report IV

Revision of the International Standard Classification of Occupations

Part II: Draft definitions

Fourth item on the agenda
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Introduction

1. This second part of the report on the revision of the International Standard Classification of Occupations (ISCO) contains the draft descriptions of all the groups in the revised ISCO. The descriptions of each of the proposed minor and unit groups contain detailed references to the ISCO-68 groups included. ISCO-68 references are also given in brackets following each unit group title in the introductory list of each major group. The background to the present revision, classification criteria and the treatment of special groups are outlined in Part I.

2. The proposal for a revised ISCO classification structure presented in this report is summarised in the following table.

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¹ ISCO-68 has eight major groups for civilian occupations and "Armed forces" as a separate major group without a code and without further breakdown.

² See paragraphs 4 and 5 of Part I.

3. The codes given to groups in the draft revised ISCO are introduced with an asterisk to avoid confusion with the codes of ISCO-68. The unit group codes have the following structure: *x.y.z.q, where "x" indicates the major group, "y" indicates the sub-major group, "z" indicates the minor group and "q" indicates the unit group.

4. Some minor groups have not been further subdivided. In any of these minor groups the unit group equivalent to the minor group has a code "0" added to the minor group code (i.e. q = 0).

5. The system of codes used has been designed to present the structure of the revised ISCO clearly. Following the discussions at the Fourteenth ICLS, the necessary changes will be introduced to make it possible to deal with persons not classifiable by occupation and other technical problems arising when using ISCO directly to code responses in statistical surveys.
6. ISCO is a classification of occupations and workers are classified according to ISCO through their jobs. However, the proposed group titles often use words which are associated with persons rather than with jobs or occupations, e.g. "assemblers" (not "assembling occupations"), "legislators" (not "legislating occupations"), "managers" (not "managing occupations"). This was done to maintain continuity with ISCO-68, where appropriate, and also for reasons of style and readability. For consistency's sake, the term "worker" has been used in titles where "occupation" might have been more appropriate.
MAJOR GROUP *1
LEGISLATORS, ADMINISTRATORS AND MANAGERS

SUB-MAJOR GROUPS

*1.1 Legislators and administrators
*1.2 Company directors and managers
*1.3 Small business managers

SUB-MAJOR AND MINOR GROUPS

*1.1 Legislators and administrators
  *1.1.1 Legislators
  *1.1.2 Government administrators
  *1.1.3 Traditional chiefs and heads of villages
  *1.1.4 Politicians and administrators of special-interest organisations

*1.2 Company directors and managers
  *1.2.1 Company directors and general managers
  *1.2.2 Specialised managers

*1.3 Small business managers
  *1.3.1 Small business managers

SUB-MAJOR, MINOR AND UNIT GROUPS

*1.1 Legislators and administrators
  *1.1.1 Legislators
    *1.1.1.0 Legislators (2-01)

  *1.1.2 Government administrators
    *1.1.2.0 Government administrators (2-02)
*1.1.3 Traditional chiefs and heads of villages
  *1.1.3.0 Traditional chiefs and heads of villages (new)

*1.1.4 Politicians and administrators of special-interest organisations
  *1.1.4.1 Politicians and administrators of political party organisations (new)
  *1.1.4.2 Administrators of employers', workers' and other economic-interest organisations (new)
  *1.1.4.3 Administrators of humanitarian and other special-interest organisations (new)

*1.2 Company directors and managers

1.2.1 Company directors and general managers
  *1.2.1.0 Company directors and general managers (2-11, part + 4-00, part + 4-10, part, + 5-00, part, except .40 + 5-10, part + 6-00.20, part + 6-11, part + 6-12, part)

*1.2.2 Specialised managers
  *1.2.2.1 Production and operations managers (1-39.40 + 1-74 + 2.12 + 2-19.60 + .70 + 3-51 + 3-52 + 4-00, part + 4-21, part + 5-00, part, except .40 + 6-00.20, part)
  *1.2.2.2 Finance and administration managers (2-19.40, part + .50)
  *1.2.2.3 Personnel and industrial relations managers (2-19.80)
  *1.2.2.4 Sales and marketing managers (2-19.30)
  *1.2.2.5 Advertising and public relations managers (2-19.90, part)
  *1.2.2.6 Supply and distribution managers (2-19.90, part)
  *1.2.2.7 Computing services managers (2-19.40, part)
  *1.2.2.8 Research and development managers (2-19.20)
**1.3 Small business managers**

*1.3.1 Small business managers*

*1.3.1.1 Small farm managers (6-00.20, part + 6-11.10, part + 6-12, part)*

*1.3.1.2 Small manufacturing business managers (2-11, part)*

*1.3.1.3 Small construction business managers (2-11, part)*

*1.3.1.4 Small shop and trade managers (4-00, part + 4-10, part)*

*1.3.1.5 Small restaurant and hotel business managers (5-00, part, except .40 + 5-10, part)*

*1.3.1.6 Small transport and storage business managers (2-11, part)*

*1.3.1.7 Small business services firm managers (2-11, part)*

*1.3.1.8 Small personal care, cleaning, repairs and related business managers (2-11, part)*

*1.3.1.9 Managers of other small businesses (2-11, part)
MAJOR GROUP *1

LEGISLATORS, ADMINISTRATORS AND MANAGERS

LEGISLATORS, ADMINISTRATORS AND MANAGERS formulate and decide on policies, laws, rules and regulations of national, state, regional or local governments or legislative assemblies, or they formulate policies and plan, organise, co-ordinate control and direct the operations and resources of enterprises and organisations.

Tasks performed by legislators, administrators and managers include participating in formulating and deciding on government policy; making and amending laws and official regulations; advising on and preparing government policy decisions, laws, rules and regulations; advising on, preparing and deciding on policies of special-interest organisations; formulating policies and planning, organising, co-ordinating, controlling and directing operations and resources of enterprises and organisations as a whole; planning and directing work of particular units or fields of activity within an enterprise or organisation. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major groups:

*1.1 Legislators and administrators
*1.2 Company directors and managers
*1.3 Small business managers

COMMENTS

In some of the cases where specific professional, technical or operational skills and knowledge may be required of the workers in the legislative, administrative or managerial jobs, it may be difficult to decide whether a particular job should be classified under this or another major group. Information on the main tasks of the job in question would be decisive. If the main tasks require operational application of a specific professional or technical skill and knowledge, then the job should be classified under another major group as appropriate. If, however, legislative, administrative or managerial tasks themselves need a specific type of skill and knowledge in order to be performed successfully, then the job should be classified under this major group. For example, if the main tasks of a job consist of diagnosing and treating illnesses, the job should be classified under major group *2 Professionals. However, if one of the main tasks is to allocate, on the basis of medical knowledge on the research and development funds, the job should be classified under this major group.
LEGISLATORS AND ADMINISTRATORS formulate and decide on policies, laws, rules and regulations of national, state, regional or local governments or legislative assemblies, plan, direct and monitor their application, represent governments and act on their behalf, or carry out similar tasks on behalf of political parties or other special-interest organisations.

Tasks performed by Legislators and administrators include formulating and deciding on government policy; making and amending laws and official regulations; advising on, preparing and applying government policy decisions, laws, rules and regulations; planning, organising and directing government departments, sections and agencies charged with applying government policies and laws, rules and regulations at the national, state, regional or local level; or performing similar functions in intergovernmental organisations; negotiating on behalf of special-interest organisations and their members or clients; advising on, preparing and implementing organisational policy decisions, rules and regulations; planning, organising and directing sections charged with applying the organisation’s policies, rules and regulations. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*1.1.1 Legislators
*1.1.2 Government administrators
*1.1.3 Traditional chiefs and heads of villages
*1.1.4 Politicians and administrators of special-interest organisations

COMMENTS

In some of the cases where specific professional, technical or operational skills and knowledge may be required of the workers in legislative and administrative jobs, it may be difficult to decide whether a particular job should be classified under this sub-major group. Information on the main tasks of the job in question would be decisive. If the main tasks require operational application of a specific professional or technical skill and knowledge, then the job should be classified under another major and sub-major group as appropriate. If, however, legislative or administrative tasks themselves need a specific type of skill and knowledge in order to be performed successfully, then the job should be classified under this major and sub-major group. For example, if the main tasks of a job consist of diagnosing and treating illnesses, the job should be classified under major group *2 Professionals. However, a job should be classified under this sub-major group if, for instance, one of its main tasks is to allocate, on the basis of medical knowledge, research and development funds from a government budget.
MINOR GROUP *1.1.1
LEGISLATORS

LEGISLATORS preside over or participate in the proceedings of legislative bodies and administrative councils to decide on government policies, budgets, laws and regulations.

Tasks performed include presiding over or participating in the proceedings of legislative assemblies and administrative councils of national, state, regional or local governments; formulating and deciding on government policies, budgets, laws and regulations.

Occupations in this minor group are classified under the following unit group:

*1.1.1.0 Legislators

COMMENTS

This minor group contains the following ISCO-68 unit group: 2-01 Legislative officials.

*1.1.1.0 LEGISLATORS

LEGISLATORS preside over or participate in the proceedings of legislative bodies and administrative councils to decide on government policies, budgets, laws and regulations.

TASKS include -

(a) presiding over or participating in the proceedings of legislative bodies and administrative councils of national, state, regional or local governments or legislative assemblies;

(b) formulating and deciding on government budgets, laws, rules and regulations within the framework of a constitution determining their powers and fields of jurisdiction;

(c) serving on government administrative boards or official committees;

(d) promoting the interests of the constituencies which they represent;

(e) directing, as members of the government, administrators of departments assisting in the formulation of government policies, laws, rules and regulations and monitoring their implementation;

(f) performing other related tasks;

(g) supervising other workers.
ISCO-68 GROUPS included:

2-01 Legislative officials, consisting of -

2-01.10 Legislative official

MINOR GROUP *1.1.2
GOVERNMENT ADMINISTRATORS

GOVERNMENT ADMINISTRATORS advise governments on policy questions and plan, organise and direct government departments and agencies preparing and monitoring the implementation of government policy, laws, rules and regulations, at the national, state, regional or local level, represent their country abroad, or carry out similar tasks in intergovernmental organisations.

Tasks performed include participating in forming government policy and planning and directing government departments and agencies monitoring the implementation of policy, laws, rules and regulations by national, state, regional or local government departments and agencies; representing their country abroad or performing similar tasks in intergovernmental organisations.

Occupations in this minor group are classified under the following unit group:

*1.1.2.0 Government administrators

COMMENTS

Senior government officials who manage a government-owned or government-controlled industrial, public utility, transport or other such enterprise, or perform tasks and duties similar to those of Specialised managers, are classified under sub-major group *1.2 Company directors and managers or *1.3 Small business managers as appropriate.

Possible further subdivisions of the unit groups in this minor group should reflect the particular policy areas in which government administrators are working, as the latter may often need thorough knowledge and understanding of particular policy areas to carry out their tasks and duties. The different areas of government functions are defined and classified in the Classification of the functions of government (COFOG), issued by the United Nations Statistical Office in 1980 (Statistical papers, Series M, No. 70). One possible subdivision of policy areas would be the following:

1. General public services (COFOG major group 01)
2. Defense, public order and safety affairs (COFOG major groups 02 + 03)
3. Education, cultural and religious affairs (COFOG major groups 04 + 08)
4. Health, social security and welfare affairs (COFOG major groups 05 + 06)
5. Housing and community amenity affairs (COFOG major group 07)

6. Energy and economic affairs and services (COFOG major groups 09 + 10 + 11 + 12 + 13)

This minor group contains the following ISCO-68 unit group: 2-02 Government administrators.

*1.1.2.0 GOVERNMENT ADMINISTRATORS

GOVERNMENT ADMINISTRATORS advise governments on policy questions and plan, organise and direct government departments and agencies preparing and monitoring the implementation of government policy, laws, rules and regulations. They may perform similar tasks in intergovernmental organisations.

TASKS include -

(a) advising governments on policy questions;
(b) preparing government budgets, laws, rules and regulations or amendments;
(c) planning and directing activities of departments and agencies monitoring the implementation of government policy, laws, rules and regulations at the national, state, regional or local level;
(d) representing their country abroad;
(e) performing similar tasks in intergovernmental organisations;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

2-02 Government administrators, consisting of -

  2-02.10 Government administrator

MINOR GROUP *1.1.3
TRADITIONAL CHIEFS AND HEADS OF VILLAGES

TRADITIONAL CHIEFS AND HEADS OF VILLAGES perform a variety of administrative and ceremonial tasks and duties, depending on the traditions of their community and their relationship to local, regional and national authorities.
Tasks performed may include allocating rights to use of communal land and other resources among the households in the community; collecting and distributing surplus production of the community or village; settling disputes between members of the community or village; disciplining members of community or village for violation of rules and customs; performing ceremonial duties in connection with births, marriages, deaths, harvests and traditional feasts; representing their community or village on local or regional councils; being responsible for informing their community or village about government rules and regulations.

Occupations in this minor group are classified under the following unit group:

*1.1.3.0 Traditional chiefs and heads of villages

**COMMENTS**

Occupations in this minor group are not described in ISCO-68. They would have been classified under 2-0 Legislative officials and government administrators.

*1.1.3.0 TRADITIONAL CHIEFS AND HEADS OF VILLAGES

TRADITIONAL CHIEFS AND HEADS OF VILLAGES perform a variety of administrative and ceremonial tasks and duties, depending on the traditions of their community and their relationship to local, regional and national authorities.

**TASKS may include** -

(a) allocating rights to use of communal land and other resources among the households in the community;

(b) collecting and distributing surplus production of community or village;

(c) settling disputes between members of the community or village;

(d) disciplining members of community or village for violation of rules and customs;

(e) performing ceremonial duties in connection with births, marriages, deaths, harvests and traditional feasts;

(f) representing their community or village on local or regional councils;

(g) being responsible for informing their community or village about government rules and regulations;

(h) performing other related tasks;

(g) supervising other workers.
ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 2-0 Legislative officials and government administrators.

MINOR GROUP *1.1.4
POLITICIANS AND ADMINISTRATORS OF SPECIAL-INTEREST ORGANISATIONS

POLITICIANS AND ADMINISTRATORS OF SPECIAL-INTEREST ORGANISATIONS prepare, formulate, decide and monitor the application of policy decisions, rules and regulations of special-interest organisations such as political party organisations, trade unions, employers' organisations, industry associations, humanitarian or charity organisations, and sports associations, represent their organisations and act on their behalf.

Tasks performed include participating in formulating and deciding on the organisation's policies, rules and regulations; negotiating on behalf of the organisations, their members and clients; promoting the interests of the organisations, their members and clients before the legislature, government or general public; planning, organising and directing sections charged with implementing the organisation's policies, rules and regulations. Supervision of other workers may be involved.

Occupations in this minor group are classified under the following unit groups:

*1.1.4.1 Politicians and administrators of political party organisations

*1.1.4.2 Administrators of employers', workers' and other economic-interest organisations

*1.1.4.3 Administrators of humanitarian and other special-interest organisations

COMMENTS

Employees of special-interest organisations of the same rank as Administrators, who manage an industrial, commercial or other operational business, institution or activity owned or controlled by a special-interest organisation, are classified under sub-major group *1.2 Company directors and managers or *1.3 Small business managers as appropriate.

Occupations in this minor group are not described in ISCO-68. They would have been classified under 2-11 General managers.
*1.1.4.1 POLITICIANS AND ADMINISTRATORS OF POLITICAL PARTY ORGANISATIONS

POLITICIANS AND ADMINISTRATORS OF POLITICAL PARTY ORGANISATIONS plan, prepare, formulate, decide and supervise the implementation of policy decisions, rules and regulations of their organisations, represent their organisations and act on their behalf.

TASKS include -

(a) participating in formulating and deciding on the organisation's policies, rules and regulations;
(b) negotiating on behalf of the organisation and its members;
(c) planning and organising campaigns on behalf of the party and its candidates for election to political offices;
(d) planning and organising campaigns to recruit and educate members;
(e) planning and organising and directing sections charged with implementing the organisation's policies, rules and regulations;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 2-11 General managers.

*1.1.4.2 ADMINISTRATORS OF EMPLOYERS', WORKERS' AND OTHER ECONOMIC-INTEREST ORGANISATIONS

ADMINISTRATORS OF EMPLOYERS', WORKERS' AND OTHER ECONOMIC-INTEREST ORGANISATIONS prepare, formulate, decide and supervise the implementation of policy decisions, rules and regulations of their organisations, and act on their behalf.

TASKS include -

(a) participating in formulating and deciding on the organisation's policies, rules and regulations;
(b) negotiating on behalf of the organisation and its members;
(c) promoting the interests of the organisation and its members before the legislature, government or general public;
(d) planning and organising campaigns to recruit and educate members;
(e) planning and organising and directing sections charged with implementing the organisation's policies, rules and regulations;
(f) performing other related tasks;
(g) supervising other workers.

**ISCO-68 GROUPS included:**

Occupations in this unit group are not described in ISCO-68. They would have been classified under 2-11 General managers.

**1.1.4.3 ADMINISTRATORS OF HUMANITARIAN AND OTHER SPECIAL-INTEREST ORGANISATIONS**

ADMINISTRATORS OF HUMANITARIAN AND OTHER SPECIAL-INTEREST ORGANISATIONS plan, prepare, formulate, decide and supervise the implementation of policy decisions, rules and regulations of humanitarian organisations, sports associations or other special-interest organisations, and act on their behalf.

**TASKS include** -

(a) participating in formulating and deciding on the organisation's policies, rules and regulations;
(b) negotiating on behalf of the organisation, its members and its clients;
(c) promoting the interests of the organisation and its members before the legislature, government or general public;
(d) planning and organising campaigns to recruit and educate members;
(e) planning and organising and directing sections charged with implementing the organisation's policies, rules and regulations;
(f) performing other related tasks;
(g) supervising other workers.

**ISCO-68 GROUPS included:**

Occupations in this unit group are not described in ISCO-68. They would have been classified under 2-11 General managers.

**SUB-MAJOR GROUP *1.2**

**COMPANY DIRECTORS AND MANAGERS**

COMPANY DIRECTORS AND MANAGERS formulate policies, and plan, organise, co-ordinate, control and direct operations and resources of industrial, agricultural, trade, public utility, transport, communication and other enterprises and organisations, or of separate major units or fields of activity within such enterprises and organisations. They work through, or with the help of, at least two other managers.
Tasks performed by Company directors and managers include planning, formulating, reviewing and deciding on the policies of enterprises and organisations; planning, organising, co-ordinating, controlling and directing operations and resources of enterprises and organisations as a whole; planning and directing work of particular units or fields of activity within an enterprise or organisation. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*1.2.1 Company directors and general managers

*1.2.2 Specialised managers

COMMENTS

In some of the cases where specific professional, technical or operational skills and knowledge may be required of workers in managerial jobs, it may be difficult to know whether a particular job should be classified under this sub-major group. Information on the main tasks of the job in question would be decisive. If the main tasks require operational application of a specific professional or technical skill and knowledge, then the job should be classified under another major and sub-major group as appropriate. If, however, managerial tasks themselves need a specific type of skill and knowledge in order to be performed successfully, then the job should be classified under this major and sub-major group. For example, if the main tasks of a job consist of diagnosing and treating illnesses, the job should be classified under major group *2 Professionals. However, a job should be classified under this sub-major group if, for instance, one of its main tasks is to allocate, on the basis of medical knowledge, research and development funds for various projects within an enterprise or organisation.

Professionals and technicians who, as consultants, advise enterprises and organisations on general or specialised management, or on operational functions, should be classified under major group *2 Professionals or *3 Technicians and associate professionals as appropriate.

MINOR GROUP *1.2.1

COMPANY DIRECTORS AND GENERAL MANAGERS

COMPANY DIRECTORS AND GENERAL MANAGERS head industrial, agricultural, trade, public utility, transport, communication or other such enterprises and organisations, and through, or with the help of, at least two other managers formulate policies and plan, direct and co-ordinate operations of these enterprises and organisations, within the guidelines set up by a board of directors or governing bodies, to whom they are answerable for the results obtained and operations undertaken.

Tasks performed include formulating and implementing policy, through consultation with subordinates; reviewing the operations and results of the enterprise and reporting to governing bodies; representing the organisation at meetings with government authorities and other organisations; planning and controlling the allocation and use of resources and selection of senior staff.
Occupations in this minor group are classified under the following unit group:

*1.2.1.0 Company directors and general managers

**COMMENTS**

This minor group contains the following ISCO-68 unit groups and occupational categories: 2-11 General managers, part; 4-00 Managers, wholesale and retail trade (part); 4-10 Working proprietors, wholesale and retail trade (part); 5-00.20 Hotel and restaurant manager, part; 5-00.30 Restaurant manager, part; 5-00.90 Other managers, catering and lodging services (part); 5-10 Working proprietors, catering and lodging services (part); 6-00.20 Farm manager, part; 6-11 General farmers, part; 6-12 Specialised farmers, part.

**1.2.1.0 COMPANY DIRECTORS AND GENERAL MANAGERS**

COMPANY DIRECTORS AND GENERAL MANAGERS head various enterprises and organisations, and through, or with the help of, at least two other managers formulate policies and plan, direct and co-ordinate operations of these enterprises and organisations within the guidelines set up by a board of directors or governing bodies, to whom they are answerable for the results obtained and operations undertaken.

**TASKS include -**

(a) planning and directing the operations of a company, enterprise or organisation;

(b) formulating and implementing policy, through consultation with subordinates;

(c) reviewing the operations and results of the enterprise, preparing plans and budgets and reporting to governing bodies;

(d) representing the organisation at meetings with government authorities and other organisations;

(e) planning and controlling the allocation and use of resources and selection of senior staff;

(f) performing other related tasks;

(g) supervising and consulting other workers in this group and specialised managers.

**ISCO-68 GROUPS included:**

2-11 General managers, part, consisting of -

2-11.10 General manager, part
4-00 Managers, wholesale and retail trade (part), consisting of -

4-00.20 Manager, wholesale trade (part)
4-00.30 Manager, retail trade (part)

4-10 Working proprietors, wholesale and retail trade (part), consisting of -

4-10.20 Working proprietor, wholesale trade (part)
4-10.30 Working proprietor, retail trade (part)

5-00.20 Hotel and restaurant manager, part
5-00.30 Restaurant manager, part
5-00.90 Other managers, catering and lodging services (part)

5-10 Working proprietors, catering and lodging services (part), consisting of -

5-10.20 Working proprietor, hotel and restaurant (part)
5-10.30 Working proprietor, restaurant (part)
5-10.40 Working proprietor, guest house (part)
5-10.50 Working proprietor, café, bar and snack bar (part)
5-10.90 Other working proprietors, catering and lodging services (part)

6-00.20 Farm manager, part

6-11 General farmers, part, consisting of -

6-11.10 General farmer, part

6-12 Specialised farmers, part, consisting of -

6-12.20 Field crop farmer, part
6-12.30 Orchard, vineyard and related tree and shrub crop farmer (part)
6-12.40 Livestock farmer, part
6-12.50 Dairy farmer, part
6-12.60 Poultry farmer, part
6-12.70 Horticultural farmer, part
6-12.90 Other specialised farmers, part

MINOR GROUP *1.2.2
SPECIALISED MANAGERS

SPECIALISED MANAGERS plan, co-ordinate and carry out administrative and other specialised functions belonging to a particular field of activity within an enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their departments.

Tasks performed include formulating policy and plans for their area of control; establishing and directing operational and administrative procedures; planning and controlling expenditures; monitoring the performance of staff and controlling their selection and training; representing their department in contacts with other parts of the organisation or with outside bodies.
Occupations in this minor group are classified under the following unit groups:

*1.2.2.1 Production and operations managers
*1.2.2.2 Finance and administration managers
*1.2.2.3 Personnel and industrial relations managers
*1.2.2.4 Sales and marketing managers
*1.2.2.5 Advertising and public relations managers
*1.2.2.6 Supply and distribution managers
*1.2.2.7 Computing services managers
*1.2.2.8 Research and development managers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 1-39.40 Head teacher; 1-74 Producers, performing arts; 2-12 Production managers, except farm; 2-19 Managers not elsewhere classified; 3-51 Railway station masters; 3-52 Postmasters; 4-00 Managers, wholesale and retail trade (part); 4-21 Sales supervisors, part; 5-00.20 Hotel and restaurant manager, part; 5-00.30 Restaurant manager, part; 5-00.90 Other managers, catering and lodging services (part); 6-00.20 Farm manager, part.

*1.2.2.1 PRODUCTION AND OPERATIONS MANAGERS

PRODUCTION AND OPERATIONS MANAGERS plan, direct and co-ordinate the manufacturing and operational activities of the enterprise or organisation - i.e. the actual production of the goods and services produced or provided. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.

TASKS include -

(a) planning and managing the daily operations in the manufacturing of goods or provision of services to ensure efficient use of resources, safety in operations and the protection of workers' health;

(b) formulating policy and plans for their area of control;

(c) establishing and directing operational and administrative procedures;

(d) planning and controlling expenditures;

(e) monitoring the performance of staff and controlling their selection and training;
(f) representing the department in contacts with other parts of the organisation or with outside bodies;

(g) performing other related tasks;

(h) supervising other workers.

**ISCO-68 GROUPS included:**

1-39.40 Head teacher

1-74 Producers, performing arts, consisting of -
   - 1-74.20 Theatrical producer
   - 1-74.30 Motion picture producer
   - 1-74.40 Radio and television producer
   - 1-74.90 Other producers, performing arts

2-12 Production managers, except farm, consisting of -
   - 2-12.10 Production manager, except farm

2-19.60 Transport operations manager

2-19.70 Operations manager, postal or telecommunications services

3-51 Railway station masters, consisting of -
   - 3-51.10 Railway station master

3-52 Postmasters, consisting of -
   - 3-52.10 Postmaster

4-00 Managers, wholesale and retail trade (part), consisting of -
   - 4-00.20 Manager, wholesale trade (part)
   - 4-00.30 Manager, retail trade (part)

4-21 Sales supervisors, part, consisting of -
   - 4-21.20 Sales supervisor, wholesale trade (part)
   - 4-21.30 Sales supervisor, retail trade (part)
   - 4-21.90 Other sales supervisors, part

5-00.20 Hotel and restaurant manager, part

5-00.30 Restaurant manager, part

5-00.90 Other managers, catering and lodging services (part)

6-00.20 Farm manager, part
*1.2.2.2 FINANCE AND ADMINISTRATION MANAGERS

FINANCE AND ADMINISTRATION MANAGERS plan, direct and co-ordinate financial operations and internal administration of the enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.

TASKS include -

(a) planning and managing the daily accounting and financial operations and the internal administration of the enterprise or organisation;

(b) co-ordinating the preparation of budgets and assessing the financial situation of the enterprise or organisation;

(c) planning and organising the administrative and common services of the enterprise or organisation;

(d) formulating policy and plans for their area of control;

(e) monitoring the performance of staff and controlling their selection and training;

(f) representing the department in contacts with other parts of the organisation or with outside bodies;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

2-19.40 Administration manager, part
2-19.50 Budgeting and accounting manager

*1.2.2.3 PERSONNEL AND INDUSTRIAL RELATIONS MANAGERS

PERSONNEL AND INDUSTRIAL RELATIONS MANAGERS plan, direct and co-ordinate personnel and industrial relations activities of the enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.

TASKS include -

(a) managing daily personnel and industrial relations activities of the enterprise or organisation;
(b) planning and organising procedures for recruitment, training, promotion, determination of wage structure and negotiations about wages, communication and consultation with workers and other personnel matters of the enterprise or organisation;

(c) monitoring the safety and health and related programmes and activities as well as their implementation, with the participation of all concerned;

(d) formulating policy and plans for their area of control;

(e) monitoring the performance of staff in their department and controlling their selection and training;

(f) representing the department in contacts with other parts of the organisation or with outside bodies;

(g) performing other related tasks;

(h) supervising other workers.

ISC0-68 GROUPS included:
2-19.80 Industrial relations and personnel manager

*1.2.2.4 SALES AND MARKETING MANAGERS

SALES AND MARKETING MANAGERS plan, direct and co-ordinate sales and marketing activities of the enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.

TASKS include -

(a) planning and managing sales and marketing activities of the enterprise or organisation;

(b) planning and organising sales and marketing programmes based on sales records and market assessment;

(c) determining price schedules, discount and delivery terms, staff and sales promotion budgets, sales methods, special incentives and special campaigns;

(d) formulating policy and plans for their area of control;

(e) monitoring the performance of staff in their department and controlling their selection and training;

(f) representing the department in contacts with other parts of the organisation or with outside bodies;

(g) performing other related tasks;

(h) supervising other workers.
ISCO-68 GROUPS included:
2-19.30 Sales manager, except wholesale and retail trade

*1.2.2.5 ADVERTISING AND PUBLIC RELATIONS MANAGERS

ADVERTISING AND PUBLIC RELATIONS MANAGERS plan, direct and co-ordinate advertising, public relations and public information activities of the enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.

TASKS include -
(a) planning and managing advertising and public relations activities of the enterprise or organisation;
(b) negotiating advertising contracts with officials of newspapers, radio and television stations, sports and cultural organisations and advertising agencies;
(c) planning and managing information programmes to inform legislators, mass media and the general public about the plans, accomplishments and point of view of the enterprise or organisation;
(d) planning and managing fund-raising activities of educational, humanitarian and other non-profit organisations;
(e) formulating policy and plans for their area of control;
(f) monitoring the performance of staff in their department and controlling their selection and training;
(g) representing the department in contacts with other parts of the organisation or with outside bodies;
(h) performing other related tasks;
(i) supervising other workers.

ISCO-68 GROUPS included:
2-19.90 Other managers, part

*1.2.2.6 SUPPLY AND DISTRIBUTION MANAGERS

SUPPLY AND DISTRIBUTION MANAGERS plan, direct and co-ordinate supply and distribution activities of the enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.
TASKS include -

(a) planning and managing supply, storage and distribution activities of the enterprise or organisation;

(b) negotiating purchase contracts, communicating with suppliers and enforcing quality and cost requirements of purchased goods;

(c) planning purchasing, storage and distribution operations of the enterprise or organisation and co-ordinating the search for alternatives;

(d) planning and installing systems for inventory control;

(e) monitoring the performance of staff in their department and controlling their selection and training;

(f) representing the department in contacts with other parts of the organisation or with outside bodies;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

2-19.90 Other managers, part

*1.2.2.7 COMPUTING SERVICES MANAGERS

COMPUTING SERVICES MANAGERS plan, direct and co-ordinate computing services activities of the enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.

TASKS include -

(a) planning and managing daily operations of in-house or externally provided computing services for the enterprise or organisation;

(b) directing the selection, installation, use and maintenance of computing equipment and software and the purchase of externally provided computing services;

(c) planning the overall data processing policies of the enterprise or organisation and co-ordinating the search for alternatives;

(d) monitoring the performance of staff in their department and controlling their selection and training;

(e) representing the department in contacts with other parts of the organisation or with outside bodies;

(f) performing other related tasks;

(g) supervising other workers.
ISCO-68 GROUPS included:
2-19.40  Administration manager, part 1

*1.2.2.8  RESEARCH AND DEVELOPMENT MANAGERS

RESEARCH AND DEVELOPMENT MANAGERS plan, direct and co-ordinate research and development activities of the enterprise or organisation. Under the broad direction of the directors and general managers of their companies or organisations, and in consultation with managers of other departments, they plan, direct and accept responsibility for the operation of their department.

TASKS include -

(a) planning and managing research and development activities, in-house or commissioned from external research organisations, to develop new or improved technical processes, products or utilisation of materials for the enterprise or organisation;

(b) planning the overall research and development programme of the enterprise or organisation and preparing goals and budgets for projects;

(c) monitoring the performance of staff in their department and controlling their selection and training;

(d) representing the department in contacts with other parts of the organisation or with outside bodies;

(e) performing other related tasks;

(f) supervising other workers.

ISCO-68 GROUPS included:
2-19.20  Research and development manager

SUB-MAJOR GROUP *1.3
SMALL BUSINESS MANAGERS

SMALL BUSINESS MANAGERS head small commercial undertakings in agriculture, manufacturing, construction, wholesale and retail trade, restaurants and hotels, transport, or business and other services. They run their enterprises on their own behalf, or on behalf of the proprietors, with the assistance of no more than one other manager and some non-managerial help.

Tasks performed include planning, formulating and implementing the policy and activities of the enterprise and reviewing their results; managing daily operations; negotiating with suppliers and customers and with other enterprises; planning and controlling the use of resources and selection of staff; reporting to owners, if any; supervising other workers.
Occupations in this sub-major group are classified under the following minor group:

*1.3.1 Small business managers

MINOR GROUP *1.3.1
SMALL BUSINESS MANAGERS

SMALL BUSINESS MANAGERS head small commercial undertakings in agriculture, manufacturing, construction, wholesale and retail trade, restaurants and hotels, transport, or business and other services. They run their enterprises on their own behalf, or on behalf of the proprietors, with the assistance of no more than one other manager and some non-managerial help.

Tasks performed include planning, formulating and implementing policy; managing daily operations and reviewing their results; managing daily operations; negotiating with suppliers and customers and with other enterprises; planning and controlling the use of resources and selection of staff; reporting to owners, if any; supervising other workers.

Occupations in this minor group are classified under the following unit groups:

*1.3.1.1 Small farm managers
*1.3.1.2 Small manufacturing business managers
*1.3.1.3 Small construction business managers
*1.3.1.4 Small shop and trade managers
*1.3.1.5 Small restaurant and hotel business managers
*1.3.1.6 Small transport and storage business managers
*1.3.1.7 Small business services firm managers
*1.3.1.8 Small personal care, cleaning, repairs and related business managers
*1.3.1.9 Managers of other small businesses

COMMENTS

The unit groups defined in this minor group represent areas with large numbers of small businesses in many countries. The areas have been defined to reflect the types of goods produced or services provided because the knowledge of the craft in question and of the local markets is usually essential for the managers of small businesses. To define the areas in more detail, the following references can be made to the International standard classification of all economic activities (ISIC), issued by the United Nations Statistical Office in 1968 (Statistical papers, Series M, No. 4, rev. 2.):

- In *1.3.1.1 "farm" refers to businesses classified under ISIC major division 1 Agriculture, hunting, forestry and fishing.
In *1.3.1.2 "manufacturing business" refers to businesses classified under ISIC major divisions 2 Mining and quarrying or 3 Manufacturing.

- In *1.3.1.3 "construction business" refers to businesses classified under ISIC major division 5 Construction.

- In *1.3.1.4 "shop and trade" refers to businesses classified under ISIC divisions 61 Wholesale trade or 62 Retail trade.

- In *1.3.1.5 "restaurant and hotel" refers to businesses classified under ISIC division 63 Restaurants and hotels.

- In *1.3.1.6 "transport and storage business" refers to businesses classified under ISIC division 71 Transport and storage.

- In *1.3.1.7 "business services firms" refers to businesses classified under ISIC major division 8 Financing, insurance, real estate and business services.

- In *1.3.1.8 "personal care, cleaning, repairs and related businesses" refers to businesses classified under ISIC divisions 92 Sanitary and similar services and 95 Personal and household services.

- In *1.3.1.9 "other small businesses" refers to businesses classified under the following ISIC major division and divisions 4 Electricity, gas and water, 72 Communication, 93 Social and related community services, 94 Recreational and cultural services.

(Appropriate changes should be made when the current work to revise ISIC has been completed.)

This minor group contains the following ISCO-68 unit groups and occupational categories: 2-11 General managers, part; 4-00 Managers, wholesale and retail trade (part); 4-10 Working proprietors, wholesale and retail trade (part); 5-00.20 Hotel and restaurant manager, part; 5-00.30 Restaurant manager, part; 5-00.90 Other managers, catering and lodging services (part); 5-10 Working proprietors, catering and lodging services, part; 6-00.20 Farm manager, part; 6-11 General farmers, part; 6-12 Specialised farmers, part.

*1.3.1.1 SMALL FARM MANAGERS

SMALL FARM MANAGERS head small agricultural farms and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the farm;

(b) making plans and budgets for the operation of the farm and reviewing the results;

(c) reporting to owners, if any;
(d) negotiating with suppliers and customers and with other organisations;
(e) planning and controlling the use of resources and hiring of workers;
(f) performing other related tasks;
(g) supervising other workers.

**ISCO-68 GROUPS included:**

6-00.20 Farm manager, part

6-11 General farmers, part, consisting of -
   6-11.10 General farmer, part

6-12 Specialised farmers, part, consisting of -
   6-12.20 Field crop farmer, part
   6-12.30 Orchard, vineyard and related tree and shrub crop farmer (part)
   6-12.40 Livestock farmer, part
   6-12.50 Dairy farmer, part
   6-12.60 Poultry farmer, part
   6-12.70 Horticultural farmer, part
   6-12.90 Other specialised farmers, part

*1.3.1.2 SMALL MANUFACTURING BUSINESS MANAGERS*

SMALL MANUFACTURING BUSINESS MANAGERS head small enterprises in mining, quarrying or manufacturing and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

**TASKS include -**

(a) planning and managing the daily operations of the enterprise;
(b) making plans and budgets for the operation of the enterprise and reviewing the results;
(c) reporting to governing bodies, if any;
(d) negotiating with suppliers and customers and with other organisations;
(e) planning and controlling the use of resources and hiring of workers;
(f) performing other related tasks;
(g) supervising other workers.
ISCO-68 GROUPS included:

2-11 General managers, part, consisting of -
   2-11.10 General manager, part

*1.3.1.3 SMALL CONSTRUCTION BUSINESS MANAGERS

SMALL CONSTRUCTION BUSINESS MANAGERS head small enterprises and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the enterprise;
(b) making plans and budgets for the operation of the enterprise and reviewing the results;
(c) reporting to owners, if any;
(d) negotiating with suppliers and customers and with other organisations;
(e) planning and controlling the use of resources and hiring of workers;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

2-11 General managers, part, consisting of -
   2-11.10 General manager, part

*1.3.1.4 SMALL SHOP AND TRADE MANAGERS

SMALL SHOP AND TRADE MANAGERS head small enterprises and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the enterprise;
(b) making plans and budgets for the operation of the enterprise and reviewing the results;
(c) reporting to owners, if any;
(d) negotiating with suppliers and customers and with other organisations;

(e) planning and controlling the use of resources and hiring of workers;

(f) performing other related tasks;

(g) supervising other workers.

ISCO-68 GROUPS included:

4-00 Managers, wholesale and retail trade (part), consisting of -
  4-00.20 Manager, wholesale trade (part)
  4-00.30 Manager, retail trade (part)

4-10 Working proprietors, wholesale and retail trade (part), consisting of -
  4-10.20 Working proprietor, wholesale trade (part)
  4-10.30 Working proprietor, retail trade (part)

*1.3.1.5 SMALL RESTAURANT AND HOTEL BUSINESS MANAGERS

SMALL RESTAURANT AND HOTEL BUSINESS MANAGERS head small restaurant and hotel enterprises and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the enterprise;

(b) making plans and budgets for the operation of the enterprise and reviewing the results;

(c) reporting to owners, if any;

(d) negotiating with suppliers and customers and with other organisations;

(e) planning and controlling the use of resources and hiring of workers;

(f) performing other related tasks;

(g) supervising other workers.

ISCO-68 GROUPS included:

5-00.20 Hotel and restaurant manager, part
5-00.30 Restaurant manager, part
5-00.90 Other managers, catering and lodging services (part)
5-10 Working proprietors, catering and lodging services (part), consisting of -

5-10.20 Working proprietor, hotel and restaurant (part)
5-10.30 Working proprietor, restaurant (part)
5-10.40 Working proprietor, guest house (part)
5-10.50 Working proprietor, café, bar and snack bar (part)
5-10.90 Other working proprietors, catering and lodging services (part)

*1.3.1.6 SMALL TRANSPORT AND STORAGE BUSINESS MANAGERS

SMALL TRANSPORT AND STORAGE BUSINESS MANAGERS head small transport and storage enterprises and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the enterprise;
(b) making plans and budgets for the operation of the enterprise and reviewing the results;
(c) reporting to owners, if any;
(d) negotiating with suppliers and customers and with other organisations;
(e) planning and controlling the use of resources and hiring of workers;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

2-11 General managers, part, consisting of -

2-11.10 General manager, part

*1.3.1.7 SMALL BUSINESS SERVICES FIRM MANAGERS

SMALL BUSINESS SERVICES FIRM MANAGERS head small enterprises providing various business services and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the enterprise;
(b) making plans and budgets for the operation of the enterprise and reviewing the results;
(c) reporting to owners, if any;
(d) negotiating with suppliers and customers and with other organisations;
(e) planning and controlling the use of resources and hiring of workers;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

2-11 General managers, part, consisting of -

2-11.10 General manager, part

*1.3.1.8 SMALL PERSONAL CARE, CLEANING, REPAIRS AND RELATED BUSINESS MANAGERS

SMALL PERSONAL CARE, CLEANING, REPAIRS AND RELATED BUSINESS MANAGERS head small enterprises providing personal care, cleaning, repairs and related services and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the enterprise;
(b) making plans and budgets for the operation of the enterprise and reviewing the results;
(c) reporting to owners, if any;
(d) negotiating with suppliers and customers and with other organisations;
(e) planning and controlling the use of resources and hiring of workers;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

2-11 General managers, part, consisting of -

2-11.10 General manager, part
1.3.1.9 MANAGERS OF OTHER SMALL BUSINESSES

MANAGERS OF OTHER SMALL BUSINESSES head other types of small enterprises than those classified under other unit groups of this minor group and, on their own behalf or on behalf of the proprietor, plan, direct and co-ordinate the activities of the enterprise. They carry out these and related functions with the assistance of no more than one other manager and some non-managerial help.

TASKS include -

(a) planning and managing the daily operations of the enterprise;
(b) making plans and budgets for the operation of the enterprise and reviewing the results;
(c) reporting to owners, if any;
(d) negotiating with suppliers and customers and with other organisations;
(e) planning and controlling the use of resources and hiring of workers;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

2-11 General managers, part, consisting of -
   2-11.10 General manager, part
MAJOR GROUP *2
PROFESSIONALS

SUB-MAJOR GROUPS

*2.1 Physical, mathematical and engineering science professionals
*2.2 Life and medical science professionals
*2.3 Business and social science professionals

SUB-MAJOR AND MINOR GROUPS

*2.1 Physical, mathematical and engineering science professionals
   *2.1.1 Physicists and related professionals
   *2.1.2 Mathematicians and related professionals
   *2.1.3 Computing professionals
   *2.1.4 Building and engineering professionals

*2.2 Life and medical science professionals
   *2.2.1 Life science professionals
   *2.2.2 Medical professionals, except nurses
   *2.2.3 Professional nurses and midwives

*2.3 Business and social science professionals
   *2.3.1 Business professionals
   *2.3.2 Lawyers and jurists
   *2.3.3 Social science professionals
   *2.3.4 Post-primary and special education teachers
   *2.3.5 Writers, artists and related professionals
   *2.3.6 Religion professionals
SUB-MAJOR, MINOR AND UNIT GROUPS

*2.1 Physical, mathematical and engineering science professionals
  *2.1.1 Physicists and related professionals
    *2.1.1.1 Physicists and astronomers (0-12 + 0-13.50)
    *2.1.1.2 Meteorologists (0-13.40)
    *2.1.1.3 Chemists (0-11)
    *2.1.1.4 Geologists and geophysicists (0-13, except .40 and .50)
  *2.1.2 Mathematicians and related professionals
    *2.1.2.0 Mathematicians and related professionals (0-81 + 0-82)
  *2.1.3 Computing professionals
    *2.1.3.0 Computing professionals (0-83 + 0-84.20)
  *2.1.4 Building and engineering professionals
    *2.1.4.1 Architects, town and traffic planners (0-21 + 0-29.50 + 1-62.30, part)
    *2.1.4.2 Civil engineers and technologists (0-22)
    *2.1.4.3 Electrical engineers and technologists (0-23.05 + .20 + .30 + .90, part)
    *2.1.4.4 Electronics and telecommunications engineers and technologists (0-23.10 + .40 + .90, part)
    *2.1.4.5 Mechanical engineers and technologists (0-24 + 0-29.30)
    *2.1.4.6 Chemical engineers and technologists (0-25)
    *2.1.4.7 Mining engineers, metallurgists and related technologists (0-26 + 0-27 + 0-29.20)
    *2.1.4.8 Production and related engineers and technologists (0-28 + 0-29.40 + .90)
    *2.1.4.9 Cartographers and surveyors (0-31)
*2.2 Life and medical science professionals

*2.2.1 Life science professionals

*2.2.1.1 Biologists, zoologists and related professionals (0-51)

*2.2.1.2 Bacteriologists, pharmacologists and related professionals (0-52)

*2.2.1.3 Agronomists and related professionals (0-53, except .60)

*2.2.2 Medical professionals, except nurses

*2.2.2.1 Medical doctors (0-61)

*2.2.2.2 Dentists (0-63)

*2.2.2.3 Veterinarians (0-65)

*2.2.2.4 Pharmacists (0-67)

*2.2.2.5 Dietitians and nutritionists (0-69)

*2.2.3 Professional nurses and midwives

*2.2.3.1 Professional nurses (0-71)

*2.2.3.2 Professional midwives (0-73)

*2.3 Business and social science professionals

*2.3.1 Business professionals

*2.3.1.1 Library and information professionals (1-91.20 + .90, part)

*2.3.1.2 Accountants (1-10)

*2.3.1.3 Personnel and occupational professionals (1-94)

*2.3.1.4 Other business professionals (0-90.30 + 1-59.55 + 1-99.20 + .30 + .40)

*2.3.2 Lawyers and jurists

*2.3.2.1 Lawyers (1-21)

*2.3.2.2 Judges (1-22)

*2.3.2.3 Other jurists (1-29)
*2.3.3 Social science professionals

*2.3.3.1 Psychologists (1-92.30)
*2.3.3.2 Economists (0-90, except .30)
*2.3.3.3 Sociologists, anthropologists and related professionals (1-92.20 + .40 + .50 + .90)
*2.3.3.4 Historians and political scientists (1-92.60 + .70)
*2.3.3.5 Philologists, translators and interpreters (1-95)
*2.3.3.6 Archivists and curators (1-91, except .20 and .90, part)

*2.3.4 Post-primary and special education teachers

*2.3.4.1 College, university and higher education teachers (1-31)
*2.3.4.2 Secondary education teachers (1-32)
*2.3.4.3 Special education teachers (1-35 + 1-39.90)
*2.3.4.4 Education methods specialists (1-39.20 + .30)

*2.3.5 Writers, artists and related professionals

*2.3.5.1 Authors, journalists and other writers (1-51 + 1-59, except .55)
*2.3.5.2 Sculptors, painters and related artists (1-61)
*2.3.5.3 Decorators and commercial designers (1-62, except .30, part)
*2.3.5.4 Composers, musicians and singers (1-71)
*2.3.5.5 Choreographers and dancers (1-72)
*2.3.5.6 Film, stage and related actors and directors (1-73)
*2.3.5.7 Radio, television and other announcers (1-79, except .90)

*2.3.6 Religion professionals

*2.3.6.0 Religion professionals (1-41, except .40 + 1-49.90, part)
MAJOR GROUP *2
PROFESSIONALS

PROFESSIONALS, by means of research and creativeness, increase the
existing stock of knowledge, engage in the practical application of scientific
or artistic concepts and theories, and teach about the foregoing in a
systematic manner.

Most occupations in this major group require skills at the fourth skill
level, as defined by ISCO. When these skills are acquired through formal
education or vocational training, they normally demand courses classified by
ISCED as Educational Categories 6 and 7. In a system of continuous education
- where primary education begins at age 5, 6 or 7 - courses in Educational
Categories 6 and 7 begin at age 17 or 18, last for about three, four or more
years, and lead to a university or postgraduate university degree, or the
equivalent.

It should be stressed that in the case of some of the occupations in this
major group the needed skills, or a part of them, may be acquired through
innate abilities and appropriate work experience coupled with thorough
on-the-job training. For new entrants a period of on-the-job training may be
necessary.

Tasks performed by Professionals in various fields of theoretical and
applied sciences and arts usually include enlarging, advising on or applying
knowledge obtained through study of the following: physical matter, chemical
processes and other physical phenomena; various life forms and methods of
treating their disorders and illnesses; mathematical, statistical and
computing concepts; political, economic, juridical, educational, religious
and other social organisations, as well as individual and group behaviour and
language development. Tasks also include designing and constructing civil
engineering and industrial structures, industrial plants, and machines and
equipment; studying and advising on technological aspects of particular
materials, products and production processes; creating and performing works
of art; teaching the theory and practice of one or more disciplines;
preparing scientific papers and reports. Supervision of other workers may be
included.

Occupations in this major group are classified under the following
sub-major groups:

*2.1 Physical, mathematical and engineering science professionals
*2.2 Life and medical science professionals
*2.3 Business and social science professionals
SUB-MAJOR GROUP *2.1
PHYSICAL, MATHEMATICAL AND ENGINEERING
SCIENCE PROFESSIONALS

PHYSICAL, MATHEMATICAL AND ENGINEERING SCIENCE PROFESSIONALS conduct research on, improve or develop concepts, theories and operational methods, or engage in the practical application of scientific knowledge, relating to physics, astronomy, meteorology, chemistry, geophysics, geology, mathematics, statistics, computing, architecture, technology and engineering.

Most occupations in this sub-major group require skills at the fourth skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 6 and 7. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Categories 6 and 7 begin at age 17 or 18, last for about three, four or more years, and lead to a university or postgraduate university degree, or the equivalent.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through innate abilities and appropriate work experience coupled with thorough on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Physical, mathematical and engineering science professionals usually include enlarging, advising on or applying scientific knowledge obtained through the study of structures and properties of physical matter and phenomena, chemical characteristics and processes of various substances, materials and products, and of mathematical, statistical and computing concepts and methods. Tasks also include advising on, designing and directing construction of buildings, towns and traffic systems, civil engineering and industrial structures, industrial plants, machines and equipment, and ensuring their optimum use; studying and advising on technological aspects of particular materials, products and processes; surveying land and sea and making maps; preparing scientific papers and reports. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*2.1.1 Physicists and related professionals
*2.1.2 Mathematicians and related professionals
*2.1.3 Computing professionals
*2.1.4 Building and engineering professionals
MINOR GROUP *2.1.1
PHYSICISTS AND RELATED PROFESSIONALS

PHYSICISTS AND RELATED PROFESSIONALS conduct research on, improve or develop concepts and operational methods, or engage in the practical application of scientific knowledge relating to physics, astronomy, meteorology, chemistry, geophysics and geology.

Tasks performed usually include obtaining scientific knowledge through the study of mechanics, thermodynamics, optics, sonics, electricity, magnetism, electronics, nuclear physics, astronomy, various branches of chemistry, as well as atmospheric conditions or the earth’s crust, and advising on or applying this knowledge in such fields as manufacturing, agriculture, medicine, navigation, space exploration, mineral exploitation, radio communication or civil engineering. Tasks also include writing scientific papers and reports. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*2.1.1.1 Physicists and astronomers
*2.1.1.2 Meteorologists
*2.1.1.3 Chemists
*2.1.1.4 Geologists and geophysicists

COMMENTS

This minor group contains the following ISCO-68 unit groups: 0-11 Chemists; 0-12 Physicists; 0-13 Physical scientists not elsewhere classified.

*2.1.1.1 PHYSICISTS AND ASTRONOMERS

PHYSICISTS AND ASTRONOMERS conduct research on, improve or develop concepts and operational methods, or engage in the practical application of scientific knowledge relating to physics and astronomy.

TASKS include -

(a) conducting experiments, tests and analyses in fields such as mechanics, thermodynamics, optics, sonics, electricity, magnetism, electronics and nuclear physics;

(b) conducting experiments, tests and analyses of the structure and properties of matter in solid state and its behaviour under temperature, pressure, stress and other conditions;

(c) evaluating results of investigations and experiments and expressing conclusions, mainly using mathematical techniques and models;

(d) developing or improving industrial, medical, military and other practical applications of the principles and techniques of physics;
(e) observing, analysing and interpreting celestial phenomena and developing methods and techniques to be used in fields such as navigation or space exploration;

(f) developing quality control procedures for manufacturers or users;

(g) preparing scientific papers and reports;

(h) performing other related tasks;

(i) supervising other workers.

**ISCO-68 GROUPS included:**

0-12 Physicists, consisting of -

- 0-12.10 Physicist, general
- 0-12.20 Mechanics physicist
- 0-12.30 Heat physicist
- 0-12.40 Light physicist
- 0-12.50 Sound physicist
- 0-12.60 Electricity and magnetism physicist
- 0-12.70 Electronics physicist
- 0-12.80 Nuclear physicist
- 0-12.90 Other physicists

- 0-13.50 Astronomical scientist

**2.1.1.2 METEOROLOGISTS**

METEOROLOGISTS conduct research on, improve or develop concepts and operational methods, and prepare detailed or long-term weather forecasts used in aviation, shipping, agriculture and other branches, and for the information of the general public.

**TASKS include -**

(a) studying and interpreting composition, structure and dynamics of the atmosphere;

(b) investigating direction and speed of air movements, pressures, temperatures, humidity and other phenomena such as cloud formation and precipitation, electrical disturbances or solar radiation;

(c) studying data collected from weather stations, preparing weather maps and forecasts used in aviation, shipping, agriculture and other branches, and for the information of the general public;

(d) conducting experiments in fog dispersal, rainmaking and other types of weather control;

(e) preparing scientific papers and reports;

(f) performing other related tasks;

(g) supervising other workers.
ISCO-68 GROUPS included:
0-13.40 Meteorological scientist

*2.1.1.3 CHEMISTS

CHEMISTS conduct research on, improve or develop concepts and operational methods, or engage in the practical application of scientific knowledge relating to chemistry.

TASKS include -

(a) conducting experiments, tests and analyses to investigate chemical composition, energy, and chemical changes in various natural or artificial substances, materials and products;
(b) evaluating results of investigations and experiments and deriving conclusions;
(c) developing or improving industrial, medical, pharmaceutical and other practical applications of the principles and techniques of chemistry;
(d) developing quality control procedures for manufacturers or users;
(e) preparing scientific papers and reports;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:
0-11 Chemists, consisting of -
   0-11.10 Chemist, general
   0-11.20 Organic chemist
   0-11.30 Inorganic chemist
   0-11.40 Physical chemist
   0-11.50 Analytical chemist
   0-11.90 Other chemists

*2.1.1.4 GEOLOGISTS AND GEOPHYSICISTS

GEOLOGISTS AND GEOPHYSICISTS conduct research on, improve or develop concepts and operational methods, or engage in the practical application of scientific knowledge relating to geology and geophysics.

TASKS include -

(a) studying composition and structure of the earth’s crust, examining rocks, minerals, fossil remains, etc., to determine processes affecting development of the earth, trace evolution of past life and establish nature and chronology of geological formations;
(b) interpreting research data and preparing geological reports, maps, charts and diagrams;

(c) applying results of research to assess development potential of mineral, gas and oil deposits and underground water resources, and to find certain solutions for engineering projects such as construction of dams, bridges, tunnels and large buildings;

(d) investigating and measuring seismic, gravitational, electrical, thermal and magnetic forces affecting the earth;

(e) investigating and measuring optical and acoustic phenomena in the atmosphere;

(f) estimating weight, size and mass of the earth and composition and structure of its interior, and studying nature and activity of volcanoes, glaciers and earthquakes;

(g) charting the earth's magnetic field and applying this and other collected data for purposes of broadcasting and navigation;

(h) studying and measuring physical properties of seas and atmosphere and their relationship, such as the exchange of thermal energy;

(i) locating and determining nature and extent of oil, gas and mineral deposits and of ground water resources, utilising seismological, gravimetric, magnetic, electrical or radiometric methods;

(j) preparing scientific papers and reports;

(k) performing other related tasks;

(l) supervising other workers.

**ISCO-68 GROUPS included:**

0-13.20 Geophysical scientist
0-13.30 Geological scientist
0-13.90 Other physical scientists

**MINOR GROUP *2.1.2**

**MATHEMATICIANS AND RELATED PROFESSIONALS**

MATHEMATICIANS AND RELATED PROFESSIONALS conduct research on, improve or develop concepts and operational methods and techniques, and advise on or carry out their application to a wide range of tasks in such fields as engineering, natural, life, medical, social or business sciences.

Tasks performed usually include conducting research in fundamental mathematics and advising on or carrying out practical applications of mathematical principles and techniques; planning, designing and conducting statistical collections; evaluating, organising, processing and interpreting statistical data; dealing with, and advising on, actuarial matters, including design of insurance and pension schemes; preparing scientific papers and reports. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit group:

*2.1.2.0 Mathematicians and related professionals

COMMENTS

This minor group contains the following ISCO-68 unit groups: 0-81 Statisticians; 0-82 Mathematicians and actuaries.

*2.1.2.0 MATHEMATICIANS AND RELATED PROFESSIONALS

MATHEMATICIANS AND RELATED PROFESSIONALS conduct research on, improve or develop mathematical and statistical concepts and operational methods, and advise on or engage in their practical application.

TASKS include -

(a) studying, improving and developing mathematical, statistical and actuarial theories and techniques;

(b) advising on or carrying out the application of mathematical and statistical principles, models and techniques to a wide range of tasks in such fields as engineering, natural, life, medical, social or business sciences;

(c) specialising in the application of mathematical and statistical models and techniques in scientific research, or in areas such as financial policy and investment, engineering, product design, production and quality control, or management;

(d) planning and organising surveys and other statistical collections, and designing questionnaires;

(e) evaluating, analysing, processing and interpreting statistical data and preparing them for publishing;

(f) advising on various data collection methods and determining reliability of findings;

(g) designing and putting into operation pension schemes and life, health, social and casualty insurance systems;

(h) preparing scientific papers and reports;

(i) performing other related tasks;

(j) supervising other workers.
ISCO-68 GROUPS included:

0-81 Statisticians, consisting of -
   0-81.10 Statistician, general
   0-81.20 Mathematical statistician
   0-81.30 Statistician, applied statistics

0-82 Mathematicians and actuaries, consisting of -
   0-82.20 Mathematician, pure mathematics
   0-82.30 Mathematician, applied mathematics
   0-82.40 Operations research analyst
   0-82.50 Actuary

MINOR GROUP *2.1.3
COMPUTING PROFESSIONALS

COMPUTING PROFESSIONALS conduct research on, improve or develop computing concepts and operational methods, and advise on or engage in their practical application.

Tasks performed usually include conducting research into theoretical aspects of computing, advising on, planning and controlling computer installations, establishing and developing computer systems, writing and maintaining software programmes and ensuring links between computer software and hardware.

Occupations in this minor group are classified under the following unit group:

*2.1.3.0 Computing professionals

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational category: 0-83 Systems analysts; 0-84.20 Computer programmer.

*2.1.3.0 COMPUTING PROFESSIONALS

COMPUTING PROFESSIONALS conduct research on, improve or develop computing concepts and operational methods, and advise on or engage in their practical application.

TASKS include -

(a) researching into theory of computers and computer-based systems and developing techniques for their application;

(b) keeping up with or contributing to technical development of computers, peripherals, software, and their potentials and limitations;
(c) analysing computer users' requirements, determining hardware and software configurations in consultation with users, and preparing cost-benefit analyses;

(d) writing programming specifications and preparing technical reports and instruction manuals specifying methods of operation and maintenance of the systems;

(e) designing and modifying the operating environment software which links computer software and hardware;

(f) designing and implementing communication networks between different computer installations;

(g) writing, maintaining and updating software which controls the overall functioning of computers;

(h) writing, testing and maintaining computer programmes to meet the application needs of end-users of computer systems;

(i) maintaining data dictionary and data management system of database to ensure validity and safety of data;

(j) analysing computerised information processing systems to assess their validity and efficiency and reviewing organisation's computing environments and usage of computer facilities;

(k) preparing scientific papers and reports;

(l) performing other related tasks;

(m) supervising other workers.

ISCO-68 GROUPS included:

0-83 Systems analysts, consisting of -

  0-83.10 Systems analyst

0-84.20 Computer programmer

MINOR GROUP *2.1.4
BUILDING AND ENGINEERING PROFESSIONALS

BUILDING AND ENGINEERING PROFESSIONALS conduct research on, improve or develop concepts and operational methods, and engage in the practical application of existing knowledge in such fields as architecture, engineering, and technological or economic efficiency aspects of production processes.
Tasks performed usually include conducting research on, advising on, designing, constructing, maintaining and repairing buildings, town, traffic and landscape systems, civil and other engineering structures, electrical and electronic products and systems, as well as machines, machinery and industrial plants; developing and applying chemical processes in particular productions; developing and maintaining commercial-scale methods to extract minerals, oil and gas from the earth, or metals from their ores, or to develop new materials; studying and advising on technological aspects of particular materials, products and processes; surveying land, sea and other areas and producing graphic and pictorial representations; preparing scientific papers and reports. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

* 2.1.4.1 Architects, town and traffic planners
* 2.1.4.2 Civil engineers and technologists
* 2.1.4.3 Electrical engineers and technologists
* 2.1.4.4 Electronics and telecommunications engineers and technologists
* 2.1.4.5 Mechanical engineers and technologists
* 2.1.4.6 Chemical engineers and technologists
* 2.1.4.7 Mining engineers, metallurgists and related technologists
* 2.1.4.8 Production and related engineers and technologists
* 2.1.4.9 Cartographers and surveyors

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational category: 0-21 Architects and town planners; 0-22 Civil engineers; 0-23 Electrical and electronics engineers; 0-24 Mechanical engineers; 0-25 Chemical engineers; 0-26 Metallurgists; 0-27 Mining engineers; 0-28 Industrial engineers; 0-29 Engineers not elsewhere classified; 0-31 Surveyors; 1-62.30 Interior decoration designer, part.

* 2.1.4.1 ARCHITECTS, TOWN AND TRAFFIC PLANNERS

ARCHITECTS, TOWN AND TRAFFIC PLANNERS conduct research on, advise on and design residential, commercial and industrial buildings, layout of towns, landscapes and traffic routing and monitor their construction and maintenance.

TASKS include -

(a) inspecting sites, consulting with client and making recommendations regarding style and other aspects of constructions in question;
(b) designing buildings, preparing detailed drawings and plans, and making necessary contacts to ensure feasibility of projects regarding style, cost, timing, compliance with regulations, etc.;

(c) identifying and finding best solutions for problems regarding function and quality of interior environments of buildings, and making necessary designs and drawings and plans;

(d) monitoring construction to ensure compliance with specifications;

(e) planning layout and co-ordinating development of urban areas;

(f) planning and designing development of land areas for projects such as parks, schools, institutions, airports, roadways, and commercial, industrial and residential sites;

(g) planning and advising on routing and control of road and other traffic with a view to promoting its efficiency and safety;

(h) maintaining technical liaison and consultancy with other relevant specialists;

(i) preparing scientific papers and reports;

(j) performing other related tasks;

(k) supervising other workers.

ISCO-68 GROUPS included:

0-21 Architects and town planners, consisting of -
   0-21.20 Building architect
   0-21.30 Town planner
   0-21.40 Landscape architect

0-29.50 Traffic planner

1-62.30 Interior decoration designer, part

*2.1.4.2 CIVIL ENGINEERS AND TECHNOLOGISTS

CIVIL ENGINEERS AND TECHNOLOGISTS conduct research on, design and direct construction and manage the operation and maintenance of civil engineering structures, or study and advise on technological aspects of particular materials.

TASKS include -

(a) conducting research on, advising on, and designing structures such as bridges, dams, docks, roads, airports, railways, waste disposal and flood control systems, and industrial and other large buildings;
(b) determining and specifying construction methods, materials and quality standards, and directing construction work;

(c) maintaining technical liaison and consultancy with other relevant specialists;

(d) establishing control systems to ensure efficient functioning of structures as well as safety, and environmental protection;

(e) locating and correcting malfunctions;

(f) organising and directing maintenance and repair of existing structures;

(g) studying and advising on technological aspects of particular materials;

(h) preparing scientific papers and reports;

(i) performing other related tasks;

(j) supervising other workers.

**ISCO-68 GROUPS included:**

0-22 Civil engineers, consisting of -

  0-22.10 Civil engineer, general
  0-22.20 Building construction engineer
  0-22.30 Highway and street construction engineer
  0-22.35 Aerodrome construction engineer
  0-22.40 Railway construction engineer
  0-22.45 Bridge construction engineer
  0-22.50 Sanitary engineer
  0-22.55 Hydraulics engineer
  0-22.60 Soil mechanics engineer
  0-22.90 Other civil engineers

**2.1.4.3 ELECTRICAL ENGINEERS AND TECHNOLOGISTS**

ELECTRICAL ENGINEERS AND TECHNOLOGISTS conduct research on, advise on, design, and direct construction, functioning, maintenance and repairs of electrical systems, motors and equipment, or study and advise on technological aspects of particular materials, products or processes.

**TASKS include** -

(a) advising on and designing systems for electrical power generation, transmission and distribution;

(b) advising on and designing electrical systems for electrical motors, electrical traction and other equipment, or electrical domestic appliances;

(c) specifying installation or production methods, materials and quality standards and directing installation and production work;
(d) maintaining technical liaison and consultancy with other relevant specialists;
(e) establishing control standards and procedures to ensure efficient functioning and safety of electrical systems, motors and equipment;
(f) locating and correcting malfunctions;
(g) organising and directing maintenance and repair of existing electrical systems, motors and equipment;
(h) studying and advising on technological aspects of particular materials, products or processes;
(i) preparing scientific papers and reports;
(j) performing other related tasks;
(k) supervising other workers.

ISCO-68 GROUPS included:

0-23.05 Electrical engineer, general
0-23.20 Power generation engineer
0-23.30 Power distribution and transmission engineer
0-23.90 Other electrical and electronics engineers, part

*2.1.4.4 ELECTRONICS AND TELECOMMUNICATIONS ENGINEERS AND TECHNOLOGISTS

ELECTRONICS AND TELECOMMUNICATIONS ENGINEERS AND TECHNOLOGISTS conduct research on, advise on, design, and direct construction, functioning, maintenance and repairs of electronic systems and equipment or study and advise on technological aspects of particular materials, products or processes.

TASKS include -

(a) advising on and designing electronic devices, systems, motors and equipment such as computers or telecommunications equipment;
(b) specifying production or installation methods, materials and quality standards and directing production or installation work;
(c) maintaining technical liaison and consultancy with other relevant specialists;
(d) establishing control standards and procedures to ensure efficient functioning and safety of electronic systems, motors and equipment;
(e) locating and correcting malfunctions;
(f) organising and directing maintenance and repair of existing electronic systems, motors and equipment;
(g) studying and advising on technological aspects of particular materials, products or processes;

(h) preparing scientific papers and reports;

(i) performing other related tasks;

(j) supervising other workers.

ISCO-68 GROUPS included:

0-23.10 Electronics engineer, general
0-23.40 Telecommunications engineer
0-23.90 Other electrical and electronics engineers, part

*2.1.4.5 MECHANICAL ENGINEERS AND TECHNOLOGISTS*

MECHANICAL ENGINEERS AND TECHNOLOGISTS conduct research on, advise on, design and direct production, functioning, maintenance and repairs of machines, machinery and mechanically functioning plant, equipment and systems, or study and advise on technological aspects of particular materials, products or processes.

TASKS include -

(a) advising on and designing machinery and tools for manufacturing, mining, construction, agricultural work and other industrial purposes;

(b) advising on and designing steam, internal combustion and other non-electric motors and engines used for propulsion of railway locomotives, road vehicles or aeroplanes, or for driving industrial or other machinery;

(c) advising on and designing ship’s propulsion systems, power plants, heating and ventilating systems, steering gear, pumps and other mechanical equipment;

(d) advising on and designing hulls and super-structures of ships and other vessels;

(e) advising on and designing airframes, undercarriages and other equipment for aircraft;

(f) advising on and designing road vehicle bodies, suspension systems, brakes and other components;

(g) advising on and designing heating, ventilation and refrigeration systems and equipment;

(h) advising on and designing mechanical plant and equipment for the release, control and utilisation of nuclear energy;

(i) advising on and designing particular apparatus or products such as word processors, computers, precision instruments, cameras and projectors, etc.;
(j) specifying and checking production or installation methods and work of agricultural and other machines, machinery, tools, motors, engines, plant, equipment or systems;

(k) maintaining technical liaison and consultancy with other relevant specialists;

(l) establishing control standards and procedures to ensure efficient functioning and safety of machines, machinery, tools, motors, engines, plant, equipment or systems;

(m) locating and correcting malfunctions;

(n) organising and directing maintenance and repair of existing machines, machinery, tools, motors, engines, plant, equipment or systems;

(o) studying and advising on technological aspects of particular materials, products or processes;

(p) preparing scientific papers and reports;

(q) performing other related tasks;

(r) supervising other workers.

ISCO-68 GROUPS included:

0-24  Mechanical engineers, consisting of -

- 24.10 Mechanical engineer, general
- 24.20 Industrial machinery and tools engineer
- 24.30 Mechanical engineer, motors and engines (except marine)
- 24.40 Marine engineer
- 24.50 Ship construction engineer
- 24.60 Aeronautical engineer
- 24.70 Automotive engineer
- 24.80 Heating, ventilation and refrigeration engineer
- 24.85 Nuclear power engineer
- 24.90 Other mechanical engineers

0-29.30 Agricultural engineer

*2.1.4.6 CHEMICAL ENGINEERS AND TECHNOLOGISTS

CHEMICAL ENGINEERS AND TECHNOLOGISTS conduct research on, develop, advise on, and direct commercial-scale chemical processes and production of various substances and items, direct maintenance and repair of plants, or study and advise on technological aspects of particular materials, products or processes.

TASKS include -

(a) conducting research on, advising on, and developing commercial-scale chemical processes to refine crude oil and other liquids or gases, and to produce substances and items such as petroleum derivatives, explosives, food products, medicaments or synthetic materials;
(b) designing and preparing specifications for the construction of appropriate commercial-scale manufacturing plants;

(c) specifying production methods, materials and quality standards and ensuring that they conform to specifications;

(d) maintaining technical liaison and consultancy with other relevant specialists;

(e) establishing control standards and procedures to ensure safety and efficiency of production operations;

(f) locating and correcting malfunctions;

(g) organising and directing maintenance and repair of existing equipment;

(h) studying and advising on technological aspects of particular materials, products or processes;

(i) preparing scientific papers and reports;

(j) performing other related tasks;

(k) supervising other workers.

ISCO-68 GROUPS included:

0-25 Chemical engineers, consisting of -

0-25.10 Chemical engineer, general
0-25.20 Chemical engineer, petroleum
0-25.90 Other chemical engineers

**2.1.4.7 MINING ENGINEERS, METALLURGISTS AND RELATED TECHNOLOGISTS**

MINING ENGINEERS, METALLURGISTS AND RELATED TECHNOLOGISTS conduct research on, develop and maintain commercial-scale methods of extracting minerals, oil and gas from the earth, metals from their ores, and of developing new alloys, ceramic and other materials, or study and advise on technological aspects of particular materials, products or processes.

TASKS include -

(a) conducting research on, advising on, and developing new or improved methods to deal with engineering aspects of mining and oil or gas extraction;

(b) determining most suitable methods of efficient extraction, type of machinery to be used, and planning layout and directing construction of shafts and tunnels;

(c) determining drilling site and devising methods of controlling the flow of oil or gas from wells;
(d) planning and directing storage, initial treatment and transportation of oil or gas;

(e) establishing safety procedures and first-aid facilities, especially underground;

(f) conducting research, developing methods of extracting metals from their ores and advising on their application;

(g) investigating properties of metals and alloys, developing new alloys and advising on and supervising technical aspects of metal and alloy manufacture and processing;

(h) developing and testing new ceramic, polymeric and other materials;

(i) studying and advising on technological aspects of particular materials, products or processes;

(j) maintaining technical liaison and consultancy with relevant specialists, in particular with geologists and geophysicists;

(k) preparing scientific papers and reports;

(l) performing other related tasks;

(m) supervising other workers.

ISCO-68 GROUPS included:

0-26 Metallurgists, consisting of -
   0-26.20 Extractive metallurgist
   0-26.30 Physical metallurgist
   0-26.90 Other metallurgists

0-27 Mining engineers, consisting of -
   0-27.10 Mining engineer, general
   0-27.20 Coal-mining engineer
   0-27.30 Metal-mining engineer
   0-27.40 Petroleum and natural gas engineer
   0-27.90 Other mining engineers

0-29.20 Ceramics and glass technologist

*2.1.4.8 PRODUCTION AND RELATED ENGINEERS AND TECHNOLOGISTS

PRODUCTION AND RELATED ENGINEERS AND TECHNOLOGISTS conduct research on, advise on and develop procedures concerning efficiency of production and work organisation, or study and advise on technological aspects of particular materials, products and manufacturing processes.
TASKS include -

(a) consulting with management and supervisory personnel and advising on methods to promote the efficient, safe and economic utilisation of personnel, material and equipment;

(b) making recommendations regarding methods of work and sequence of operations and supervising their implementation;

(c) making recommendations and supervising time and motion aspects of work organisation;

(d) advising on most efficient layout of plant or establishment;

(e) identifying potential hazards and and introducing safety procedures and devices;

(f) studying and advising on technological aspects of particular manufacturing processes, such as processing of food and beverages, textiles, leather products, wood or paper;

(g) preparing scientific papers and reports;

(h) performing other related tasks;

(i) supervising other workers.

ISCO-68 GROUPS included:

0-28 Industrial engineers, consisting of -

  0-28.10 Industrial efficiency engineer, general
  0-28.20 Methods engineer
  0-28.30 Time and motion study engineer
  0-28.90 Other industrial engineers

0-29.40 Food and drink technologist
0-29.90 Other engineers

*2.1.4.9 CARTOGRAPHERS AND SURVEYORS

CARTOGRAPHERS AND SURVEYORS apply surveying methods and techniques to determine exact position of natural and constructed features and boundaries of land, seas, underground areas and celestial bodies, and prepare or revise graphic, digital and pictorial representations.

TASKS include -

(a) surveying, measuring and describing land surfaces for various purposes, including mapmaking, construction work or establishment of property boundaries;

(b) surveying mines, delineating underground surfaces, noting exact position of various features and making charts and maps with a view to controlling direction and extent of mining;
(c) surveying sea, river and lake beds, delineating underwater surfaces, noting exact position of various features and making charts and maps to be used in particular in determining navigable waters and channels, and in planning construction of marine structures;

(d) planning and conducting aerial photographic surveys;

(e) analysing aerial and other photographs, remote sensing and surveying data to prepare and revise topographic maps and charts, utility maps and other thematic maps;

(f) studying and advising on technical, aesthetic and economic aspects of map production;

(g) maintaining technical liaison and consultancy with other relevant specialists;

(h) preparing scientific papers and reports;

(i) performing other related tasks;

(j) supervising other workers.

ISCO-68 GROUPS included:

0-31 Surveyors, consisting of -
  0-31.10 Surveyor, general
  0-31.20 Land surveyor
  0-31.30 Mine surveyor
  0-31.40 Hydrographic surveyor
  0-31.50 Photogrammetrist
  0-31.90 Other surveyors

SUB-MAJOR GROUP *2.2
LIFE AND MEDICAL SCIENCE PROFESSIONALS

LIFE AND MEDICAL SCIENCE PROFESSIONALS conduct research on, improve or develop concepts, theories and operational methods, or engage in the practical application of scientific knowledge, relating to biology, zoology, botany, ecology, physiology, biochemistry, microbiology, pharmacology, agronomy and medicine.

Most occupations in this sub-major group require skills at the fourth skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 6 and 7. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Categories 6 and 7 begin at age 17 or 18, last for about three, four or more years, and lead to a university or postgraduate university degree, or the equivalent.
It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through innate abilities and appropriate work experience coupled with thorough on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by life and medical science professionals usually include enlarging, advising on or applying scientific knowledge obtained through the study of all forms of human, animal and plant life, including specific organs, tissues, cells and micro-organisms and the effect of environmental factors, or drugs and other substances, on them. Tasks also include studying human, animal and plant illnesses, advising on and carrying out practical applications of preventive, curative and nursing measures, or promoting health; preparing scientific papers and reports. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*2.2.1 Life science professionals
*2.2.2 Medical professionals, except nurses
*2.2.3 Professional nurses and midwives

MINOR GROUP *2.2.1
LIFE SCIENCE PROFESSIONALS

LIFE SCIENCE PROFESSIONALS conduct research on, improve or develop concepts and operational methods, and engage in the practical application of scientific knowledge, relating to biology, zoology, botany, ecology, anatomy, biochemistry, physiology, bacteriology, cytology, genetics, pathology or pharmacology.

Tasks performed usually include obtaining scientific knowledge through the study of all forms of human, animal and plant life, including specific organs, tissues, cells and micro-organisms and the effect of environmental factors, or drugs and other substances, on them, and advising on or applying this knowledge in such fields as agriculture, forestry, pharmaceutical and other industries, or medicine; preparing scientific papers and reports. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*2.2.1.1 Biologists, zoologists and related professionals
*2.2.1.2 Bacteriologists, pharmacologists and related professionals
*2.2.1.3 Agronomists and related professionals
COMMENTS

This minor group contains the following ISCO-68 unit groups: 0-51 Biologists, zoologists and related scientists; 0-52 Bacteriologists, pharmacologists and related scientists; 0-53 Agronomists and related scientists, except .60 Farming adviser.

*2.2.1.1 BIOLOGISTS, ZOOLOGISTS AND RELATED PROFESSIONALS

BIOLOGISTS, ZOOLOGISTS AND RELATED PROFESSIONALS conduct research on, improve or develop concepts and operational methods, and engage in the practical application of scientific knowledge relating to biology, zoology, botany and ecology.

TASKS include -

(a) conducting field and laboratory experiments concerning all forms of life by identifying and classifying human, animal or plant specimens, and studying their origin, development, chemical and physical form, structure, composition and life and reproductive processes;

(b) studying all forms of plant life and developing practical applications in fields such as agriculture, forestry and medicine;

(c) studying all forms of animal life and developing practical applications in fields such as agriculture and medicine;

(d) studying relationships of animal and plant life and the environmental factors involved, and giving professional advice to related disciplines;

(e) developing industrial, medical and other applications of knowledge in their field;

(f) preparing scientific papers and reports;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

0-51 Biologists, zoologists and related scientists, consisting of -

0-51.10 Biologist, general
0-51.20 Botanist
0-51.30 Zoologist
0-51.90 Other biologists, zoologists and related scientists

*2.2.1.2 BACTERIOLOGISTS, PHARMACOLOGISTS AND RELATED PROFESSIONALS

BACTERIOLOGISTS, PHARMACOLOGISTS AND RELATED PROFESSIONALS conduct research on, improve or conceive new theories and operational methods, or engage in the practical application of scientific knowledge relating to anatomy, biochemistry, physiology, bacteriology, cytology, genetics, pathology, or pharmacology.
TASKS include -

(a) conducting research on the form, structure and other anatomical characteristics of living organisms;

(b) conducting research on the chemical composition and processes of living organisms;

(c) conducting research on the life processes and functions of human, animal or plant organs, tissues, cells and systems under normal and abnormal or exceptional conditions;

(d) conducting research on the structure, development and characteristics of micro-organisms such as bacteria, protozoa or viruses;

(e) conducting research on the structure and functions of living cells, and influence of physical and chemical factors upon normal and abnormal cells;

(f) conducting research on the factors involved in the origin, development and transmission of hereditary characteristics in human beings, animals or plants;

(g) conducting research on the nature, causes and development of human, animal or plant diseases and disorders;

(h) conducting research on the effects of drugs and other substances on the tissues, organs and physiological processes of human beings and animals, and improving existing or developing new drugs;

(i) developing industrial, medical and other applications of the knowledge in question;

(j) preparing scientific papers and reports;

(k) performing other related tasks;

(l) supervising other workers.

ISCO-68 GROUPS included:

0-52 Bacteriologists, pharmacologists and related scientists, consisting of -

0-52.20 Anatomist
0-52.30 Biochemist
0-52.40 Physiologist
0-52.50 Bacteriologist
0-52.60 Medical pathologist
0-52.65 Veterinary pathologist
0-52.70 Pharmacologist
0-52.80 Animal scientist
0-52.90 Other bacteriologists, pharmacologists and related scientists
*2.2.1.3 AGRONOMISTS AND RELATED PROFESSIONALS

AGRONOMISTS AND RELATED PROFESSIONALS conduct research on, improve or develop concepts and operational methods, and engage in the practical application of scientific knowledge concerning crop and animal husbandry.

TASKS include -

(a) researching into field crops and grasses and developing new or improved cultivation methods;

(b) researching into horticultural crops and developing new or improved cultivation methods;

(c) researching into animal husbandry and developing new or improving breeding methods;

(d) researching into, and developing or improving methods of, tree propagation and culture and planning and directing afforestation and care and exploitation of forest stands;

(e) researching into characteristics, use capability and productivity of soils and applying findings to development of improved agricultural, horticultural and forestry practices;

(f) researching into, and developing new or improved methods for wildlife conservation;

(g) researching into, and developing new or improved methods for economic exploitation of grazing lands;

(h) preparing scientific papers and reports;

(i) performing other related tasks;

(j) supervising other workers.

ISCO-68 GROUPS included:

0-53.20 Agronomist
0-53.30 Horticulturist
0-53.40 Silviculturist
0-53.50 Soil scientist
0-53.90 Other agronomists and related scientists

MINOR GROUP *2.2.2
MEDICAL PROFESSIONALS, EXCEPT NURSES

MEDICAL PROFESSIONALS, EXCEPT NURSES conduct research on, improve or develop concepts and operational methods, and engage in the practical application of scientific knowledge relating to medicine, dentistry, veterinary, pharmaceutics, and promotion of health.
Tasks performed usually include obtaining scientific knowledge through the study of human and animal disorders and illnesses and ways of treating them, and advising on or carrying out practical applications of preventive and curative measures, or promoting health; preparing scientific papers and reports. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

* 2.2.2.1 Medical doctors
* 2.2.2.2 Dentists
* 2.2.2.3 Veterinarians
* 2.2.2.4 Pharmacists
* 2.2.2.5 Dietitians and nutritionists

COMMENTS

This minor group contains the following ISCO-68 unit groups: 0-61 Medical doctors; 0-63 Dentists; 0-65 Veterinarians; 0-67 Pharmacists; 0-69 Dietitians and public health nutritionists.

*2.2.2.1 MEDICAL DOCTORS

MEDICAL DOCTORS conduct research on, improve or develop concepts and operational methods, and engage in the practical application of preventive or curative medical knowledge.

TASKS include -

(a) conducting research into human or animal disorders and illnesses and preventive or curative methods;

(b) conducting medical examinations and making diagnoses;

(c) prescribing and giving treatment for diagnosed illnesses, disorders or injuries;

(d) performing surgical operations;

(e) giving specialised medical or surgical treatment for particular types of illnesses, disorders or injuries;

(f) giving advice on and applying preventive medicine methods and treatments;

(g) participating in the development and implementation of public health laws and regulations for safeguarding and promoting the health of a community;

(h) preparing scientific papers and reports;
(i) performing other related tasks;
(j) supervising other workers.

ISCO-68 GROUPS included:

0-61 Medical doctors, consisting of -
  0-61.05 General physician
  0-61.10 General surgeon
  0-61.20 Specialised physician
  0-61.30 Specialised surgeon
  0-61.40 Public health physician
  0-61.90 Other medical doctors

*2.2.2.2 DENTISTS

DENTISTS conduct research on, improve or develop concepts and operational methods, and engage in the practical application of medical knowledge in the field of dentistry.

TASKS include -

(a) conducting research into dental and related disorders and illnesses and preventive or curative methods;
(b) making diagnoses, advising on and giving necessary dental treatment;
(c) giving surgical, medical and other forms of treatment for particular types of dental and oral diseases and disorders;
(d) participating in public action to maintain or improve standards of oral health and dental care;
(e) preparing scientific papers and reports;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

0-63 Dentists, consisting of -
  0-63.10 Dentist, general
  0-63.20 Specialised dentist
  0-63.30 Public health dentist

*2.2.2.3 VETERINARIANS

VETERINARIANS conduct research on, improve or develop concepts and operational methods, and engage in the practical application of medical knowledge in the veterinary field.
TASKS include -

(a) conducting research on, improving or conceiving theories and operational methods;
(b) conducting examinations and diagnosing diseases or injuries of animals;
(c) administering surgical or medical veterinary treatment;
(d) testing dairy and other herds and inoculating animals against diseases;
(e) advising on care and breeding of animals;
(f) inspecting quality, purity and safety of food of animal origin intended for human consumption;
(g) assisting in epidemiological, radiological and other surveillance of animal health;
(h) preparing scientific papers and reports;
(i) performing other related tasks;
(j) supervising other workers.

ISCO-68 GROUPS included:

0-65 Veterinarians, consisting of -

0-65.10 Veterinarian, general
0-65.20 Public health veterinarian
0-65.90 Other veterinarians

*2.2.2.4 PHARMACISTS

PHARMACISTS engage in the practical application of pharmacological concepts and theories by preparing and dispensing or selling medicaments and drugs.

TASKS include -

(a) preparing or directing the preparation of medicaments according to prescriptions of medical, dental and veterinary practitioners, or established formulae;
(b) checking prescriptions to ensure that recommended dosages are not exceeded, and that instructions are understood by patient, and advising on possible drug incompatibility;
(c) dispensing medicaments and drugs in hospitals or selling them in pharmacies;
(d) maintaining records, especially of narcotics, poisons and habit-forming drugs issued;
(e) testing drugs to determine identity, purity and strength;

(f) co-operating with chemists, engineers and other professionals as regards manufacturing techniques and ingredients, and participating in testing of newly developed drugs;

(g) participating in the development of controls and regulations;

(h) preparing scientific papers and reports;

(i) performing other related tasks;

(j) supervising other workers.

ISCO-68 GROUPS included:

0-67 Pharmacists, consisting of -

0-67.10 Pharmacist

*2.2.2.5 DIETITIANS AND NUTRITIONISTS*

DIETITIANS AND NUTRITIONISTS conduct research on, improve or develop concepts and operational methods concerning preparation and application of diets for general and therapeutic purposes.

TASKS INCLUDE -

(a) developing nutritional methods and diets and testing them;

(b) planning and directing the preparation of therapeutic and other diets for individuals, groups in hospitals or workers in particular sectors;

(c) participating in programmes for nutrition education and nutrition rehabilitation activities;

(d) advising on nutrition aspects of community food issues and health programmes;

(e) keeping up with knowledge in related fields and maintaining contacts with appropriate professionals;

(f) giving talks and lectures on diet and nutrition;

(g) preparing scientific papers and reports;

(h) performing other related tasks;

(i) supervising other workers.
ISCO-68 GROUPS included:

0-69 Dietitians and public health nutritionists, consisting of -
  0-69.10 Dietitian, general
  0-69.20 Public health nutritionist
  0-69.90 Other dietitians and public health nutritionists

MINOR GROUP *2.2.3
PROFESSIONAL NURSES AND MIDWIVES

PROFESSIONAL NURSES AND MIDWIVES engage in the practical application of medical concepts and principles relating to the delivery of babies and to nursing of the ill, injured or disabled, and of mothers and their newborn babies.

Tasks performed usually include helping medical doctors in the practical application of preventive and curative medical knowledge and dealing with emergencies in their absence; providing professional nursing services, care and advice, and directing auxiliary nursing staff; delivering or assisting in the delivery of babies, and instructing mothers in baby care. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*2.2.3.1 Professional nurses
*2.2.3.2 Professional midwives

COMMENTS

This minor group contains the following ISCO-68 unit groups: 0-71 Professional nurses; 0-73 Professional midwives.

*2.2.3.1 PROFESSIONAL NURSES

PROFESSIONAL NURSES assist medical doctors in their tasks, and deal with emergencies in their absence, and provide professional nursing care for the sick, injured and others in need of such care.

TASKS include -

(a) assisting medical doctors in their tasks, and dealing with emergencies and giving first aid treatment in their absence;

(b) supervising and co-ordinating the work of nursing and other non-medical staff in operating theatre and assisting surgeons during operation;

(c) administering medicine and drugs, applying surgical dressings and giving other forms of treatment prescribed by physicians;
(d) giving professional nursing care, treatment, and curative or preventive medical advice to ill, injured, disabled and other patients and newborn babies and their mothers, in hospitals, clinics or other establishments;

(e) participating in preparations for physical and psychological treatment of mentally ill patients;

(f) participating in preparations for social adjustment, development and education of mentally or physically handicapped patients;

(g) giving professional nursing care to patients in their homes;

(h) providing professional nursing services, care and advice within a community or at a workplace;

(i) specialising in consultant services to industrial and other organisations;

(j) performing other related tasks;

(k) supervising other workers.

ISCO-68 GROUPS included:

0-71 Professional nurses, consisting of -

0-71.10 Professional nurse, general
0-71.20 Specialised nurse
0-71.30 Public health nurse
0-71.40 Occupational health nurse
0-71.90 Other professional nurses

*2.2.3.2 PROFESSIONAL MIDWIVES

PROFESSIONAL MIDWIVES deliver or assist in the delivery of babies, provide prenatal and postnatal care and instruct parents in baby care.

TASKS include -

(a) checking on general health and progress of expectant mothers during pregnancy, and giving them professional advice and care;

(b) delivering babies in normal birth and assisting doctors with difficult deliveries;

(c) attending mothers in the postnatal period to supervise their recovery, to check on babies' progress, and to instruct parents in baby care;

(d) advising on birth control methods and participating in their application;

(e) performing other related tasks;

(f) supervising other workers.
ISCO-68 GROUPS included:

0-73  Professional midwives, consisting of -

0-73.10  Professional midwife

**SUB-MAJOR *2.3**

**BUSINESS AND SOCIAL SCIENCE PROFESSIONALS**

BUSINESS AND SOCIAL SCIENCE PROFESSIONALS conduct research on, improve or develop concepts, theories and operational methods, or engage in the practical application of knowledge relating to information dissemination, organisation and conduct of business, law, psychology, economy, history, sociology and other social and language sciences, as well as arts and entertainment.

Most occupations in this sub-major group require skills at the fourth skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 6 and 7. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Categories 6 and 7 begin at age 17 or 18, last for about three, four or more years, and lead to a university or postgraduate university degree, or the equivalent.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through innate abilities and appropriate work experience coupled with thorough on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Business and social science professionals usually include dealing with information dissemination, operational methods relating to organisation and conduct of business, or application of the law. Tasks also include enlarging, advising on or applying knowledge obtained through the study of individual or group behaviour, language development, and political, economic, juridical, educational, social and religious concepts, systems and organisations, from their current and historical perspective; teaching the theory and practice of one or more disciplines; conceiving and creating or performing works of art, including design; transmitting information or entertainment through the media; preparing scientific papers and reports. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*2.3.1  Business professionals

*2.3.2  Lawyers and jurists

*2.3.3  Social science professionals

*2.3.4  Post-primary and special education teachers
*2.3.5 Writers, artists and related professionals

*2.3.6 Religion professionals

**MINOR GROUP *2.3.1**  
**BUSINESS PROFESSIONALS**

BUSINESS PROFESSIONALS improve, advise on or apply operational methods relating to information dissemination and organisation and conduct of business.

Tasks performed usually include collecting and storing information in libraries and similar premises and retrieving it as requested; studying, planning, advising on and executing accounting services, or those related to personnel policies and vocational guidance, and other business matters such as marketing, advertising, public relations, application of rules concerning patents, or steps to be taken in setting up a business, and how to apply home economics principles. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*2.3.1.1 Library and information professionals

*2.3.1.2 Accountants

*2.3.1.3 Personnel and occupational professionals

*2.3.1.4 Other business professionals

**COMMENTS**

This minor group contains the following ISCO-68 unit group and occupational categories: 0-90.30 Market research analyst; 1-10 Accountants; 1-59.55 Public relations officer; 1-91.20 Librarian; 1-91.90 Other librarians, archivists and curators (part); 1-94 Personnel and occupational specialists; 1-99.20 Patent agent; 1-99.30 Home economist; 1-99.40 Advertising account executive.

*2.3.1.1 LIBRARY AND INFORMATION PROFESSIONALS

LIBRARY AND INFORMATION PROFESSIONALS collect and store published and recorded material, and retrieve and provide information as requested.

**TASKS include** -

(a) organising, developing and maintaining a systematic collection of books, periodicals and other printed and recorded material;

(b) selecting and recommending acquisitions of books and other printed material, and of audio-visual and other recorded material;

(c) organising, classifying and cataloguing library material;
(d) organising and administering loan systems and information networks;
(e) retrieving and providing information to business and other users based on the collection itself or on library and information network systems;
(f) conducting research on, analysing and modifying library and information services in accordance with changes in users' needs;
(g) performing other related tasks;
(h) supervising other workers.

ISCO-68 GROUPS included:
1-91.20 Librarian
1-91.90 Other librarians, archivists and curators (part)

*2.3.1.2 ACCOUNTANTS

ACCOUNTANTS advise on accounting matters and perform accountancy services or audits.

TASKS include -
(a) advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems;
(b) preparing and certifying financial statements for presentation to management, shareholders, statutory or other bodies;
(c) preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials;
(d) preparing or reporting on profit forecasts and budgets;
(e) conducting financial investigations in matters such as suspected fraud, insolvency and bankruptcy;
(f) auditing accounts and bookkeeping records;
(g) performing other related tasks;
(h) supervising other workers.

ISCO-68 GROUPS included:
1-10 Accountants, consisting of -
1-10.10 Accountant, general
1-10.20 Auditor
1-10.90 Other accountants
*2.3.1.3 PERSONNEL AND OCCUPATIONAL PROFESSIONALS*

PERSONNEL AND OCCUPATIONAL PROFESSIONALS provide business services related to personnel policies such as employee recruitment or development, occupational analyses and vocational guidance.

TASKS include-

(a) advising on and performing personnel functions relating to employee recruitment, placement, training, promotion, compensation, employee-management relations or other areas of personnel policy;

(b) studying and analysing jobs performed in an establishment by various means, including interviews with workers, supervisors and management, and writing detailed job descriptions and specialisations from data obtained;

(c) preparing occupational information booklets or working on occupational classification systems;

(d) advising and working on the foregoing and other aspects of job and occupation analyses in such fields as personnel administration, manpower research and planning, training, occupational information and vocational guidance;

(e) studying and advising individuals on employment opportunities, career choices and further education or training that may be desirable;

(f) performing other related tasks;

(g) supervising other workers.

ISCO-68 GROUPS included:

1-94 Personnel and occupational specialists, consisting of -

1-94.20 Personnel specialist
1-94.30 Vocational guidance counsellor
1-94.40 Occupational analyst
1-94.90 Other personnel and occupational specialists

*2.3.1.4 OTHER BUSINESS PROFESSIONALS*

OTHER BUSINESS PROFESSIONALS study, advise on and apply operational methods relating to various aspects of business undertakings, such as marketing, advertising, public relations, application of rules concerning patents, or steps to be taken in setting up and running a business, and how to apply home economics principles.

TASKS include -

(a) conducting research on, determining and advising on existing level of sales for particular products or services, and assessing potential markets and future trends;
(b) planning, advising on or directing and co-ordinating production of advertising campaigns for particular clients of an advertising agency;

(c) studying, advising on and conducting public relations programmes with a view to improving performance of the enterprise or establishment in question;

(d) giving advice concerning patents and assisting in preparing applications or examining applications submitted for registration, and writing reports setting out reasons for or against grant of patent;

(e) studying and advising on financial, legal, organisational, marketing and other aspects connected with setting up and running a business;

(f) studying, interpreting and, through lectures and radio or television programmes, informing about and advising on principles of home economics and management with a view to promoting welfare of families as well as consumption of household goods, or production of new ones;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

0-90.30 Market research analyst
1-59.55 Public relations officer
1-99.20 Patent agent
1-99.30 Home economist
1-99.40 Advertising account executive

MINOR GROUP *2.3.2
LAWYERS AND JURISTS

LAWYERS AND JURISTS conduct research on and advise on legal problems and practice law, or preside over judicial proceedings in courts of justice.

Tasks performed usually include giving clients legal advice, undertaking legal business on clients' behalf, and conducting litigation when necessary, or presiding over judicial proceedings and pronouncing judgements in courts of justice. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*2.3.2.1 Lawyers
*2.3.2.2 Judges
*2.3.2.3 Other jurists
COMMENTS

This minor group contains the following ISCO-68 unit groups: 1-21 Lawyers; 1-22 Judges; 1-29 Jurists not elsewhere classified.

*2.3.2.1 LAWYERS

LAWYERS give clients legal advice on a wide variety of subjects and plead cases or conduct prosecutions in courts of justice.

TASKS include -

(a) giving clients legal advice on a wide variety of subjects and undertaking legal business on clients’ behalf;
(b) where possible, negotiating settlements in matters which involve disputes;
(c) examining the circumstances of disputes or reported crimes to ascertain facts;
(d) studying relevant law and precedents in detail;
(e) preparing pleadings or cases for prosecution and conducting them in court;
(f) drawing up legal documents;
(g) performing other related tasks;
(h) supervising other workers.

ISCO-68 GROUPS included:
1-21 Lawyers, consisting of -
   1-21.10 Lawyer

*2.3.2.2 JUDGES

JUDGES hear and judge cases in courts of justice.

TASKS include -

(a) hearing and weighing arguments and evidence;
(b) ruling on questions of procedure;
(c) determining the rights and obligations of the parties involved, and, in cases tried by jury, instructing them on points of law;
(d) pronouncing judgement;
(e) performing other related tasks;
(f) supervising other workers.
ISCO-68 GROUPS included:

1-22 Judges, consisting of -

1-22.10 Judge

*2.3.2.3 OTHER JURISTS

OTHER JURISTS perform legal functions other than pleading or prosecuting cases or presiding over judicial proceedings.

TASKS include -

(a) giving advice on legal aspects of personal, business and administrative problems;

(b) representing clients in minor lawsuits and briefing lawyers on their behalf in major lawsuits;

(c) drawing up legal documents;

(d) arranging property transfers;

(e) performing other related tasks;

(f) supervising other workers.

ISCO-68 GROUPS included:

1-29 Jurists not elsewhere classified, consisting of -

1-29.10 Jurists, except lawyer or judge

MINOR GROUP *2.3.3
SOCIAL SCIENCE PROFESSIONALS

SOCIAL SCIENCE PROFESSIONALS conduct research on, improve or develop concepts and operational methods, or engage in the practical application of knowledge relating to psychology, economy, history, archeology, sociology, philology and other social and language sciences.

Tasks performed usually include studying mental processes and behaviour of individuals and groups; formulating and applying solutions to present or foreseen economic, political or social problems; piecing together past events and activities and tracing the origin and evolution of the human race; studying language development and making communication between different languages possible; collecting and ensuring safekeeping of objects and material of historical, scientific or artistic interest; preparing scientific papers and reports. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

* 2.3.3.1 Psychologists
* 2.3.3.2 Economists
* 2.3.3.3 Sociologists, anthropologists and related professionals
* 2.3.3.4 Historians and political scientists
* 2.3.3.5 Philologists, translators and interpreters
* 2.3.3.6 Archivists and curators

**COMMENTS**

This minor group contains the following ISCO-68 unit groups and occupational categories: 0-90 Economists, except .30 Market research analyst; 1-91.30 Archivist; 1-91.40 Art gallery and museum curator; 1-91.90 Other librarians, archivists and curators, part; 1-92 Sociologists, anthropologists and related scientists; 1-95 Philologists, translators and interpreters.

**2.3.3.1 PSYCHOLOGISTS**

PSYCHOLOGISTS research into and study mental processes and behaviour of human beings and advise on or apply this knowledge to promote personal, social, educational or occupational adjustment and development.

**TASKS include -**

(a) planning and carrying out tests to measure mental, physical and other characteristics such as intelligence, abilities, aptitudes, potentialities, etc., interpreting and evaluating results, and providing advice;

(b) analysing the effect of heredity, social, occupational and other factors on individual thought and behaviour;

(c) conducting counselling or therapeutic interviews, and providing follow-up services;

(d) maintaining required contacts, such as those with family members, educational authorities or employers, and recommending possible solutions to and treatment of problems;

(e) studying psychological factors in the diagnosis, treatment and prevention of mental illnesses and emotional and personality disorders, and conferring about it with related professions;

(f) preparing scientific papers and reports;

(g) performing other related tasks;

(h) supervising other workers.
ISCO-68 GROUPS included:
1-92.30 Psychologist

*2.3.3.2 ECONOMISTS

ECONOMISTS conduct research to improve or develop economic concepts and operational methods, and advise on or apply the knowledge to draw up economic policies and to formulate solutions to present or foreseen economic problems.

TASKS include:

(a) studying, advising on or dealing with various economic aspects, such as production and marketing methods, national and international trade trends, monetary, fiscal and pricing policies, employment, income, productivity and consumption;

(b) compiling, analysing and interpreting economic data using a variety of statistical and other techniques;

(c) advising on economic policy and course of action to be followed in the light of analyses of present and foreseen economic factors;

(d) preparing scientific papers and reports;

(e) performing other related tasks;

(f) supervising other workers.

ISCO-68 GROUPS included:
0-90.10 Economist, general
0-90.20 Economist, specialised

*2.3.3.3 SOCIOLOGISTS, ANTHROPOLOGISTS AND RELATED PROFESSIONALS

SOCIOLOGISTS, ANTHROPOLOGISTS AND RELATED PROFESSIONALS investigate societies, the origin and evolution of humanity, and the apparent interdependence between environmental conditions and human activities, and make the knowledge obtained available as a basis for present social or economic policy decisions.

TASKS include -

(a) conducting research on the origin, development, structure, social patterns, organisations and inter-relationships of human society;

(b) tracing the origin and evolution of humanity through the study of changing physical characteristics and cultural and social institutions;
(c) tracing the development of humanity through the material remains of its past, such as habitations, temples, pottery, coins, weapons, tools or sculpture;

(d) studying physical and climatic aspects of areas and regions, and correlating these findings with economic, social and cultural activities of the same parts;

(e) advising on the practical application of these findings in the determination of physical and ethnic boundaries between States, economic exploitation of specific regions, potential markets or optimum trade routes;

(f) preparing scientific papers and reports;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

1-92.20 Sociologist
1-92.40 Anthropologist
1-92.50 Geographer
1-92.90 Other sociologists, anthropologists and related scientists

*2.3.3.4 HISTORIANS AND POLITICAL SCIENTISTS

HISTORIANS AND POLITICAL SCIENTISTS conduct research on past events and activities, including the development of political institutions, movements and behaviour, and make the knowledge obtained available as a basis for political, diplomatic and related policies.

TASKS include -

(a) consulting primary sources, such as original or contemporary records of past events, and secondary sources such as archaeological or anthropological findings;

(b) extracting relevant material, checking its authenticity, and piecing together the history of a particular period or country, or a particular facet (for example economic, social or political) of its history;

(c) conducting research in such fields as political philosophy and past and present theory and practice of political systems, institutions and behaviour;

(d) observing contemporary political institutions and collecting data on them from various sources, including interviews with government and political party officials and other relevant persons;

(e) presenting findings and conclusions in a form suitable for publication or use by government, political parties or other organisations and interested persons;
(f) preparing scientific papers and reports;
(g) performing other related tasks;
(h) supervising other workers.

ISCO-68 GROUPS included:
1-92.60 Historian
1-92.70 Political scientist

*2.3.3.5 PHILOLOGISTS, TRANSLATORS AND INTERPRETERS*

PHILOLOGISTS, TRANSLATORS AND INTERPRETERS study the origin, development and structure of languages, and translate or interpret from one language into another.

TASKS include -

(a) studying relationships between ancient parent languages and modern language groups, tracing the origin and evolution of words, grammar and language forms, and presenting findings;

(b) advising on or preparing language classification systems, grammars, dictionaries and similar materials;

(c) translating from one language into another and ensuring that the correct meaning of the original is retained, that legal, technical or scientific works are correctly rendered, and that the phraseology and terminology of the spirit and style of literary works are conveyed as far as possible;

(d) interpreting from one language into another, in particular at conferences, meetings and similar occasions, and ensuring that the correct meaning, and as far as possible the spirit, of the original are transmitted;

(e) preparing scientific papers and reports;

(f) performing other related tasks;

(g) supervising other workers.

ISCO-68 GROUPS included:
1-95 Philologists, translators and interpreters, consisting of -

1-95.20 Philologist
1-95.30 Translator
1-95.40 Interpreter
ARCHIVISTS AND CURATORS

ARCHIVISTS AND CURATORS conduct research on, collect, appraise and ensure the safekeeping and preservation of recorded material of historical and other interest, and of art and other objects in museums and art galleries.

TASKS include -

(a) researching into, collecting, appraising, organising and preserving historically significant and valuable documents such as government papers, private papers, or sound recordings and films;

(b) directing or carrying out the preparation of indexes, bibliographies, microfilm copies and other reference aids to the collected material and making them available to users;

(c) researching into the origin and use of materials and objects of historical interest;

(d) organising, developing and maintaining collections of artistic, scientific or historically significant items in museums or art galleries;

(e) directing or undertaking classification and cataloguing of museum and art galleries' collections and organising exhibitions;

(f) preparing scientific papers and reports;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

1-91.30 Archivist
1-91.40 Art gallery and museum curator
1-91.90 Other librarians, archivists and curators (part)

MINOR GROUP *2.3.4
POST-PRIMARY AND SPECIAL EDUCATION TEACHERS

POST-PRIMARY AND SPECIAL EDUCATION TEACHERS conduct research on, improve or develop concepts and operational methods, and, by teaching at some of the levels after the termination of primary education, engage in the practical application of knowledge pertaining to their particular discipline.

Tasks performed usually include designing and modifying curricula; giving lessons, courses and lectures, or conducting tutorials and seminars; applying special teaching techniques in the case of physically or mentally handicapped children and young persons; studying and advising on educational methods and teaching aids; conducting research in their particular discipline; writing scholarly books, papers or articles. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*2.3.4.1 College, university and higher education teachers
*2.3.4.2 Secondary education teachers
*2.3.4.3 Special education teachers
*2.3.4.4 Education methods specialists

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 1-31 University and higher education teachers; 1-32 Secondary education teachers; 1-35 Special education teachers; 1-39.20 Education methods adviser; 1-39.30 Audio-visual and other teaching aid specialist; 1-39.90 Other teachers.

*2.3.4.1 COLLEGE, UNIVERSITY AND HIGHER EDUCATION TEACHERS

COLLEGE, UNIVERSITY AND HIGHER EDUCATION TEACHERS teach their subjects at some or all levels after the termination of secondary education, conduct research on, improve or develop concepts and operational methods, and write scholarly papers and books.

TASKS INCLUDE -

(a) designing or modifying curricula and preparing courses of study in accordance with requirements;
(b) delivering lectures and conducting tutorials, seminars and laboratory experiments;
(c) stimulating discussion and independent thought among students;
(d) supervising, where appropriate, experimental and practical work undertaken by students;
(e) administering, evaluating and marking examination papers and tests;
(f) directing research of post-graduate students or other members of department;
(g) researching into and developing theories and operational methods for application in industrial and other fields;
(h) writing scholarly books, papers or articles;
(i) attending conferences and seminars;
(j) participating in decision making processes concerning college or university departmental, budgetary and other policy matters;
(k) assisting with extracurricular activities, such as debating societies;
(l) performing other related tasks;
(m) supervising other workers.

ISCO-68 GROUPS included:

1-31 University and higher education teachers, consisting of -

1-31.20 Teacher in physical sciences, third level
1-31.25 Teacher in engineering and architecture, third level
1-31.30 Teacher in life and medical sciences, third level
1-31.40 Teacher in mathematics, third level
1-31.45 Teacher in economics and commerce, third level
1-31.50 Teacher in law, third level
1-31.55 Teacher in education, third level
1-31.60 Teacher in agricultural science, third level
1-31.65 Teacher in history, philosophy, sociology and related social sciences, third level
1-31.70 Teacher in languages and literature, third level
1-31.75 Teacher in medical therapy, advanced nursing and related arts
1-31.80 Teacher in industrial arts, third level
1-31.90 Other university and higher education teachers

*2.3.4.2 SECONDARY EDUCATION TEACHERS

SECONDARY EDUCATION TEACHERS teach one or more subjects, for educational or vocational purposes, at some or all levels between the termination of primary education and the beginning of studies at colleges or universities.

TASKS include -

(a) designing or modifying curricula and preparing educational or vocational courses of study in accordance with requirements;
(b) giving lessons in their subjects and supervising pupils' class work and discipline;
(c) preparing, assigning and correcting exercises;
(d) administering tests and examinations to evaluate pupils' progress, and marking them;
(e) writing reports about pupils' work and conferring with other teachers and parents;
(f) participating at meetings concerning school's educational or organisational policies;
(g) organising or assisting with extracurricular activities such as debating societies or hobby clubs;
(h) giving private lessons;
(i) performing other related tasks;
(j) supervising other workers.

**ISCO-68 GROUPS included:**

1-32 Secondary education teachers, consisting of -

- 1-32.15 Languages and literature teacher, second level
- 1-32.20 Mathematics teacher, second level
- 1-32.30 Natural science teacher, second level
- 1-32.40 Social studies teacher, second level
- 1-32.50 Fine arts teacher, second level
- 1-32.60 Commercial and secretarial teacher, second level
- 1-32.70 Agricultural science teacher, second level
- 1-32.75 Domestic science and general nursing teacher, second level
- 1-32.80 Technical education teacher, second level
- 1-32.90 Other secondary education teachers

*2.3.4.3 SPECIAL EDUCATION TEACHERS*

**SPECIAL EDUCATION TEACHERS** teach physically or mentally handicapped children and young persons.

**TASKS include -**

(a) designing or modifying curricula and preparing lessons and activities in accordance with requirements;

(b) giving instruction using techniques appropriate to pupil's handicap and supervising work in class;

(c) encouraging pupils to have confidence, helping them to discover and adopt methods which would decrease limitations imposed by their handicap, and giving them a feeling of achievement;

(d) administering tests, evaluating and noting progress of each pupil and discussing it with head teacher, therapists, social workers, parents, etc.;

(e) giving private instruction;

(f) preparing reports;

(g) performing other related tasks;

(h) supervising other workers.
ISCO-68 GROUPS included:

1-35 Special education teachers, consisting of -
   1-35.20 Teacher of the blind
   1-35.30 Teacher of the deaf
   1-35.40 Teacher of the mentally handicapped
   1-35.90 Other special education teachers

1-39.90 Other teachers

*2.3.4.4 EDUCATION METHODS SPECIALISTS

EDUCATION METHODS SPECIALISTS conduct research on, develop and advise on education methods and teaching aids.

TASKS include -

(a) researching into current developments in curricula, teaching methods and other educational practices, and advising on possible improvements;
(b) researching into audio-visual and other teaching aids and advising on, planning and organising their introduction in educational establishments;
(c) writing papers and reports;
(d) performing other related tasks;
(e) supervising other workers.

ISCO-68 GROUPS included:

1-39.20 Education methods adviser
1-39.30 Audio-visual and other teaching aid specialist

MINOR GROUP *2.3.5
WRITERS, ARTISTS AND RELATED PROFESSIONALS

WRITERS, ARTISTS AND RELATED PROFESSIONALS conceive and create or perform various works of art, and transmit information or entertainment through the media.

Tasks performed usually include writing literary works; appraising merits of literary and other works of art; collecting news and writing about them; sculpting, painting and executing product design or interior decorations; composing music; dancing or acting in dramatic productions or directing such productions; reading news bulletins and making other announcements on radio and television. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*2.3.5.1 Authors, journalists and other writers
*2.3.5.2 Sculptors, painters and related artists
*2.3.5.3 Decorators and commercial designers
*2.3.5.4 Composers, musicians and singers
*2.3.5.5 Choreographers and dancers
*2.3.5.6 Film, stage and related actors and directors
*2.3.5.7 Radio, television and other announcers

COMMENTS

This minor group contains the following ISCO-68 unit groups: 1-51 Authors and critics; 1-59 Authors, journalists and related writers not elsewhere classified, except .55 Public relations officer; 1-61 Sculptors, painters and related artists; 1-62 Commercial artists and designers, except .30 Interior decoration designer, part; 1-71 Composers, musicians and singers; 1-72 Choreographers and dancers; 1-73 Actors and stage directors; 1-79 Performing artists not elsewhere classified, except .90 Other performing artists.

*2.3.5.1 AUTHORS, JOURNALISTS AND OTHER WRITERS

AUTHORS, JOURNALISTS AND OTHER WRITERS write literary works for publication or presentation in dramatic form, appraise merits of literary and other works of art and of artistic productions, and write and edit news and commentaries.

TASKS include -

(a) conceiving and writing literary works for publication or presentation in dramatic form;

(b) writing scripts and continuities and preparing programmes for stage, film, radio and television production;

(c) appraising and writing about merits of literary, musical and other works of art, and about artistic performances;

(d) collecting, commenting and reporting on news and current affairs for publication in newspapers and periodicals, or broadcasting by radio or television;

(e) interviewing politicians and other public figures at press conferences and on other occasions, including individual interviews recorded for radio or television;
(f) writing editorials and selecting, revising, arranging and editing submitted articles and other material for publication in newspapers and periodicals;

(g) appraising manuscripts submitted for publication in book form, making recommendations thereon and editing or supervising editing of the material;

(h) writing advertising copy praising merits of particular products or services;

(i) selecting, assembling and preparing publicity material about business or other organisations for issue through press, radio, television and other media;

(j) designing and writing brochures, handbooks and similar technical publications;

(k) performing other related tasks;

(l) supervising other workers.

ISCO-68 GROUPS included:

1-51 Authors and critics, consisting of -
   1-51.20 Author
   1-51.30 Critic

1-59 Journalist
1-59.15 Editor, newspapers and periodicals
1-59.20 Sub-editor, newspapers and periodicals
1-59.25 Reporter
1-59.30 Radio and television journalist
1-59.35 Continuity and script editor
1-59.40 Book editor
1-59.45 Advertising copywriter
1-59.50 Publicity writer
1-59.60 Technical writer
1-59.90 Other authors, journalists and related writers

*2.3.5.2 SCULPTORS, PAINTERS AND RELATED ARTISTS

SCULPTORS, PAINTERS AND RELATED ARTISTS create and execute works of art by sculpturing, painting, drawing, engraving and other techniques, or apply artistic media for illustrative, decorative or design creation purposes.

TASKS include -

(a) creating decorative and representational three-dimensional or relief forms by shaping materials such as wood, stone, clay or metal;

(b) creating representational or abstract drawings and paintings using pencils, ink, chalk, oil paints, water colours or through the application of other techniques;
(c) creating drawings and engraving or etching them on metal, wood, or other materials;

(d) creating cartoons to depict persons and events, often in caricature;

(e) restoring damaged, soiled and faded paintings and other art objects;

(f) painting miniatures from portraits;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:
1-61 Sculptors, painters and related artists, consisting of -
   1-61.20 Sculptor
   1-61.30 Painter, artist
   1-61.40 Cartoonist
   1-61.50 Engraver and etcher, artistic
   1-61.60 Painting restorer
   1-61.90 Other sculptors, painters and related artists

*2.3.5.3 DECORATORS AND COMMERCIAL DESIGNERS

DECORATORS AND COMMERCIAL DESIGNERS apply artistic techniques to product design, interior decoration and sales promotion purposes.

TASKS include -

(a) creating and executing illustrations and designs for books, magazines, advertising and similar purposes;

(b) creating design for industrial and commercial products, including new types and styles of clothing and accessories, and endeavoring to harmonise aesthetic considerations with technical and other requirements;

(c) designing interior decorations and planning furnishing of homes, public buildings, ships and other places;

(d) designing and painting stage scenery;

(e) tattooing decorative designs on client’s skin;

(f) creating and executing artistic effects for use in show windows and other places of display;

(g) performing other related tasks;

(h) supervising other workers.
ISCO-68 GROUPS included:

1-62 Commercial artists and designers, part, consisting of:
   1-62.20 Commercial artist
   1-62.30 Interior decoration designer, part
   1-62.40 Industrial and commercial products designer
   1-62.50 Display artist
   1-62.90 Other commercial artists and designers

*2.3.5.4 COMPOSERS, MUSICIANS AND SINGERS

COMPOSERS, MUSICIANS AND SINGERS compose and adapt musical works and conduct or participate in performances of them.

TASKS include -

(a) conceiving and writing musical compositions;
(b) adapting or arranging music for particular instrumental groups, instruments or occasions;
(c) conducting instrumental or vocal groups;
(d) playing one or more musical instruments as a soloist or as a member of an orchestra;
(e) singing as soloists or members of vocal groups;
(f) performing other related tasks;
(g) supervising other workers.

ISCO-68 GROUPS included:

1-71 Composers, musicians and singers, consisting of -
   1-71.20 Composer
   1-71.30 Orchestrator
   1-71.35 Orchestra and band conductor
   1-71.40 Instrumentalist
   1-71.45 Singer
   1-71.50 Vocal group conductor
   1-71.90 Other composers, musicians and singers

*2.3.5.5 CHOREOGRAPHERS AND DANCERS

CHOREOGRAPHERS AND DANCERS conceive and create or perform dances.

TASKS include -

(a) conceiving and creating dances, which often convey a story, theme, idea or mood, by a pattern of steps, movements and gestures;
(b) performing dances as a soloist, with a partner or as a member of a dancing group;
(c) performing other related tasks;
(d) supervising other workers.

ISCO-68 GROUPS included:

1-72 Choreographers and dancers, consisting of -
   1-72.20 Choreographer
   1-72.30 Dancer

*2.3.5.6 FILM, STAGE AND RELATED ACTORS AND DIRECTORS

FILM, STAGE AND RELATED ACTORS AND DIRECTORS act in or direct motion pictures, television or radio productions and stage shows.

TASKS include -

(a) learning lines and cues and playing parts in dramatic productions on stage, television, radio or in motion pictures;
(b) telling stories or reading literary works aloud to educate or entertain listeners;
(c) studying script to determine artistic interpretation, instructing actors on acting methods, and directing all aspects of dramatic productions on stage, television, radio or in motion pictures, including choice of actors, and final decisions concerning costumes, set designs, sound or lighting effects;
(d) performing other related tasks;
(e) supervising other workers.

ISCO-68 GROUPS included:

1-73 Actors and stage directors, consisting of -
   1-73.20 Actor
   1-73.30 Stage director
   1-73.40 Motion picture, radio and television director
   1-73.50 Story-teller
   1-73.90 Other actors and stage directors

*2.3.5.7 RADIO, TELEVISION AND OTHER ANNOUNCERS

RADIO, TELEVISION AND OTHER ANNOUNCERS read news bulletins and make other announcements or introductions over radio, television or in theatres and other establishments.
TASKS include -

(a) reading news bulletins and making other announcements over radio or television;

(b) introducing performing artists or persons being interviewed, and making related announcements over radio, television, or in theatres, music halls, night clubs and other establishments;

(c) interviewing persons in public, especially over radio and television;

(d) performing other related tasks;

(e) supervising other workers.

ISCO-68 GROUPS included:

1-79.20 Radio and television announcer
1-79.30 Compère

MINOR GROUP *2.3.6
RELIGION PROFESSIONALS

RELIGION PROFESSIONALS conduct research on, develop and interpret religious concepts and advise on or participate in their application.

Tasks performed usually include formulating and deciding on religious policies and practices; conducting religious services; undertaking various administrative and social duties within the framework of a particular religious organisation; providing spiritual and moral guidance in accordance with the religion professed; writing religious papers and reports. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit group:

*2.3.6.0 Religion professionals

COMMENTS

This minor group consists of the following ISCO-68 occupational categories: 1-41.20 Minister of religion; 1-41.30 Missionary; 1-41.90 Other ministers of religion and related members of religious orders; 1-49.90 Other workers in religion, part.

*2.3.6.0 RELIGION PROFESSIONALS

RELIGION PROFESSIONALS conduct research on, develop and interpret religious concepts and advise on or participate in their application.
TASKS include -
(a) conducting research on, studying and interpreting or developing religious concepts and theories;
(b) assisting in formulating and deciding on religious policies and practices;
(c) undertaking various administrative and social duties, including attending committees and meetings of church organisations;
(d) conducting religious services;
(e) providing spiritual and moral guidance in accordance with religion professed;
(f) propagating religious doctrines in own country or abroad;
(g) writing religious papers and reports;
(h) performing other related tasks;
(i) supervising other workers.

ISCO-68 GROUPS included:
1-41.20 Minister of religion
1-41.30 Missionary
1-41.90 Other ministers of religion and related members of religious orders
1-49.90 Other workers in religion, part
MAJOR GROUP *3
TECHNICIANS AND ASSOCIATE PROFESSIONALS

SUB-MAJOR GROUPS

*3.1 Physical science and engineering technicians and equipment controllers
*3.2 Life and medical science associate professionals
*3.3 Business, government and social services associate professionals

SUB-MAJOR AND MINOR GROUPS

*3.1 Physical science and engineering technicians and equipment controllers
  *3.1.1 Physical science and engineering technicians
  *3.1.2 Computing assistants and equipment controllers
  *3.1.3 Optical and electronic equipment controllers
  *3.1.4 Ship and aircraft controllers
  *3.1.5 Safety inspectors

*3.2 Life and medical science associate professionals
  *3.2.1 Life sciences technicians and related workers
  *3.2.2 Modern medicine associate professionals
  *3.2.3 Traditional medicine practitioners and faith healers

*3.3 Business, government and social services associate professionals
  *3.3.1 Finance and sales associate professionals
  *3.3.2 Detectives and government associate professionals
  *3.3.3 Administration associate professionals
  *3.3.4 Primary and pre-primary education teachers
  *3.3.5 Social advisers and helpers
3.3.6 Religion associate professionals
3.3.7 Entertainment and sports associate professionals

SUB-MAJOR, MINOR AND UNIT GROUPS

3.1 Physical science and engineering technicians and equipment controllers

3.1.1 Physical science and engineering technicians

3.1.1.1 Chemical and physical science technicians (0-14)
3.1.1.2 Civil engineering technicians (0-33)
3.1.1.3 Electrical engineering technicians (0-34.05 + .20 + .90, part)
3.1.1.4 Electronics and telecommunications engineering technicians (0-34.10 + .30 + .90, part)
3.1.1.5 Mechanical engineering technicians (0-35 + 9-89.20)
3.1.1.6 Chemical engineering technicians (0-36)
3.1.1.7 Mining and metallurgical technicians (0-37 + 0-38 + 7-13.70 + .90, part)
3.1.1.8 Other natural science and engineering technicians (0-39)
3.1.1.9 Technical draughtsmen/women (0-32)

3.1.2 Computing assistants and equipment controllers

3.1.2.1 Computing assistants (new)
3.1.2.2 Computing equipment controllers (3-42)

3.1.3 Optical and electronic equipment controllers

3.1.3.1 Photographers and other image and sound recording equipment controllers (1-63 + 8-61.30, part + 8-62.20, part + .90, part)
3.1.3.2 Broadcasting and telecommunications equipment controllers (3-59.75 + 3-80, except .20 and .90 + 8-61.20 + .30, part + .90 + 8-62.20, part + .30 + .40 + .90, part)
3.1.3.3 Medical equipment controllers (0-77)
*3.1.4 Ship and aircraft controllers
   *3.1.4.1 Ships' engineers (0-43)
   *3.1.4.2 Ships' deck officers and pilots (0-42)
   *3.1.4.3 Aircraft pilots and related workers (0-41)
   *3.1.4.4 Air traffic controllers (3-59.60)

*3.1.5 Safety inspectors
   *3.1.5.1 Fire and building inspectors (3-10, part + 5-81.20 + .90, part)
   *3.1.5.2 Safety inspectors (vehicles, processes and products) (3-10, part)

*3.2 Life and medical science associate professionals
*3.2.1 Life sciences technicians and related workers
   *3.2.1.1 Life sciences technicians (0-54, except .90 + 9-49.20)
   *3.2.1.2 Agronomy and forestry technicians (0-54.90)
   *3.2.1.3 Farming and forestry advisers (0-53.60)

*3.2.2 Modern medicine associate professionals
   *3.2.2.1 Auxiliary nurses (0-72)
   *3.2.2.2 Auxiliary midwives (0-74)
   *3.2.2.3 Medical assistants (0-62)
   *3.2.2.4 Sanitarians (0-79.40)
   *3.2.2.5 Optometrists and opticians (0-75)
   *3.2.2.6 Dental assistants (0-64 + 5-99.40, part)
   *3.2.2.7 Physiotherapists and related associate professionals (0-76 + 0-79, except .40 and .90)
   *3.2.2.8 Veterinary assistants (0-66 + 5-99.60, part)
   *3.2.2.9 Pharmaceutical assistants (0-68 + 5-99.50, part)

*3.2.3 Traditional medicine practitioners and faith healers
   *3.2.3.1 Traditional medicine practitioners (0-79.90, part)
   *3.2.3.2 Faith healers (1-49.20)
*3.3 Business, government and social services associate professionals

*3.3.1 Finance and sales associate professionals

*3.3.1.1 Securities and finance dealers (4-41.40 + .90)
*3.3.1.2 Insurance brokers and agents (1-99.50 + 4-41.20)
*3.3.1.3 Real estate agents (4.41.30)
*3.3.1.4 Travel agents (new)
*3.3.1.5 Business services agents (1-99.90 + 4-42)
*3.3.1.6 Sales representatives (4-31 + 4-32)
*3.3.1.7 Buyers (4-22)
*3.3.1.8 Appraisers (4-43.30)
*3.3.1.9 Auctioneers (4-43.20)

*3.3.2 Detectives and government associate professionals

*3.3.2.1 Police investigators and detectives (5-82.30 + 5-89.20)
*3.3.2.2 Customs and border inspectors (3-10, part)
*3.3.2.3 Government tax and excise officials (3-10, part)
*3.3.2.4 Government welfare and pension officials (3-10, part)
*3.3.2.5 Government licensing officials (3-10, part)
*3.3.2.6 Other government associate professionals (3-10, part)

*3.3.3 Administration associate professionals

*3.3.3.1 Administrative and related assistants (3-21.20 + .30 + 3-93.10 + .20)
*3.3.3.2 Legal and related business assistants (3-93.40 + .50)
*3.3.3.3 Bookkeepers (3-31.10)
*3.3.3.4 Statistical and mathematical assistants (0-84.90)

*3.3.4 Primary and pre-primary education teachers

*3.3.4.1 Primary education teachers (1-33)
*3.3.4.2 Pre-primary education teachers (1-34)
*3.3.5 Social advisers and helpers
  *3.3.5.0 Social advisers and helpers (1-93)

*3.3.6 Religion associate professionals
  *3.3.6.1 Non-ordained religion assistants (1-41.40 + 1-49.90, part)
  *3.3.6.2 Astrologers and related workers (1-99.60, part)

*3.3.7 Entertainment and sports associate professionals
  *3.3.7.1 Clowns, magicians, acrobats and related workers (1-75 + 1-79.90)
  *3.3.7.2 Athletes and related workers (1-80)
MAJOR GROUP *3  
TECHNICIANS AND ASSOCIATE PROFESSIONALS

TECHNICIANS AND ASSOCIATE PROFESSIONALS perform technical or administrative tasks usually requiring theoretical and practical understanding of principles and practices in their area of specialisation.

Most occupations in this major group require skills at the third skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 5. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 5 begin at age 17 or 18, last for about three years and lead to an award not equivalent to a first university degree.

It should be stressed that in the case of some of the occupations in this major group the needed skills, or a part of them, may be acquired through innate abilities and appropriate work experience combined with thorough on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Technicians and associate professionals usually include assisting in research and applying the principles and practices of their area of specialisation in technical, medical, business, social and other fields. In particular, their tasks include designing and operating structures, machinery and equipment; controlling the operation of complex and advanced equipment and machinery; inspecting the safety of buildings, vehicles, processes and products; advising on agricultural practices, health and sanitation and providing nursing and related care to persons and animals; performing specialised government, business or administrative tasks; investigating crimes and controlling the movement of persons and goods across national borders; teaching at primary and pre-primary levels of education; giving social advice to clients and providing spiritual guidance; and providing entertainment or performing athletic feats. They may receive guidance from Government administrators, Managers or Professionals. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major groups:

*3.1 Physical science and engineering technicians and equipment controllers

*3.2 Life and medical science associate professionals

*3.3 Business, government and social services associate professionals
SUB-MAJOR GROUP *3.1
PHYSICAL SCIENCE AND ENGINEERING TECHNICIANS
AND EQUIPMENT CONTROLLERS

PHYSICAL SCIENCE AND ENGINEERING TECHNICIANS AND EQUIPMENT CONTROLLERS perform technical tasks in physical and engineering science research activities and in the application of physical science and engineering principles and practices in planning, building and controlling the operation of complex structures, machinery and equipment and in inspecting the safety of structures, equipment, processes and products.

Most occupations in this sub-major group require skills at the third skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 5. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 5 begin at age 17 or 18, last for about three years and lead to an award not equivalent to a first university degree.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through innate abilities and appropriate work experience combined with thorough on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Physical science and engineering technicians and equipment controllers typically include assisting in research in natural, engineering and medical sciences and in applying research results, principles and practices in these fields in the design and operation of structures, machinery and equipment; controlling the operation of ships, aircraft and complex and advanced equipment and machinery; and inspecting the safety of buildings, vehicles and food. They may receive guidance from Government administrators, Managers or Professionals. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*3.1.1 Physical science and engineering technicians
*3.1.2 Computing assistants and equipment controllers
*3.1.3 Optical and electronic equipment controllers
*3.1.4 Ship and aircraft controllers
*3.1.5 Safety inspectors
PHYSICAL SCIENCE AND ENGINEERING TECHNICIANS perform technical tasks in physical science and engineering research and apply physical science and engineering principles and practices in planning, building and operating structures, machinery and equipment and in preparing technical calculations and drawings.

Tasks performed usually include performing and directing field and laboratory tests and data collection; preparing detailed estimates of quantities and costs of projects and operations; assisting in technical supervision of manufacture, utilisation, maintenance and repair of structures, machinery and equipment; applying knowledge of principles and practices in order to identify and solve problems arising in the course of their work; and preparing maps and detailed technical drawings. They may receive guidance from Managers or Professionals. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.1.1.1 Chemical and physical science technicians
*3.1.1.2 Civil engineering technicians
*3.1.1.3 Electrical engineering technicians
*3.1.1.4 Electronics and telecommunications engineering technicians
*3.1.1.5 Mechanical engineering technicians
*3.1.1.6 Chemical engineering technicians
*3.1.1.7 Mining and metallurgical technicians
*3.1.1.8 Other natural science and engineering technicians
*3.1.1.9 Technical draughtsmen/women

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational category: 0-14 Physical science technicians; 0-32 Draughtsmen; 0-33 Civil engineering technicians; 0-34 Electrical and electronics engineering technicians; 0-35 Mechanical engineering technicians; 0-36 Chemical engineering technicians; 0-37 Metallurgical technicians; 0-38 Mining technicians; 0-39 Engineering technicians not elsewhere classified; 7-13.70 Acidiser, oil and gas wells; 7-13.90 Other well drillers, borers and related workers, part; 9-89.20 Dockmaster, dry-dock.

*3.1.1.1 CHEMICAL AND PHYSICAL SCIENCE TECHNICIANS

CHEMICAL AND PHYSICAL SCIENCE TECHNICIANS perform technical tasks in research in chemistry, physics, geology, geophysics, meteorology and astronomy and in the development of industrial, medical, military and other practical applications of research results,
TASKS include -

(a) preparing materials and equipment for experiments, tests and analyses;

(b) assisting with and performing experiments, tests and analyses in their field of specialisation;

(c) collecting data and estimating quantities and costs of materials and labour required for projects;

(d) applying knowledge of scientific principles and practices in order to identify and solve problems arising in the course of their work;

(e) organising maintenance and repairs of research equipment;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

0-14 Physical science technicians, consisting of -

0-14.20 Chemistry technician
0-14.30 Physics technician
0-14.90 Other physical science technicians

*3.1.1.2 CIVIL ENGINEERING TECHNICIANS

CIVIL ENGINEERING TECHNICIANS perform technical tasks in civil engineering research and in the design, construction, operation, maintenance and repair of buildings and other structures, such as water supply and sewage systems, bridges, roads, dams and airports.

TASKS include -

(a) performing and directing field and laboratory tests of soils and construction materials;

(b) collecting data and estimating quantities and costs of building materials and labour required for execution of construction projects and preparing bills of quantities;

(c) performing technical tasks contributory to execution of surveys and preparation of survey reports;

(d) representing building architects and civil engineers on construction sites to ensure compliance with design specifications and maintenance of desired standards of materials and work;

(e) applying knowledge of building and civil engineering principles and practices in order to identify and solve problems arising in the course of their work;

(f) organising maintenance and repairs;
(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

0-33 Civil engineering technicians, consisting of -
   0-33.10 Civil engineering technician, general
   0-33.20 Quantity surveyor
   0-33.30 Surveyor's technician
   0-33.40 Clerk of works
   0-33.90 Other civil engineering technicians

*3.1.1.3 ELECTRICAL ENGINEERING TECHNICIANS

ELECTRICAL ENGINEERING TECHNICIANS perform technical tasks in electrical engineering research and in the design, manufacture, assembly, construction, operation, maintenance and repair of electrical equipment, facilities and distribution systems.

TASKS include -

(a) assisting in research and development work concerning electrical equipment and facilities and testing prototypes;

(b) assisting in design and layout of electrical installations and circuitry;

(c) preparing detailed estimates of quantities and costs of materials and labour required for manufacture and installation;

(d) assisting with technical supervision of manufacture, installation, utilisation, maintenance and repair of electrical systems and equipment to ensure satisfactory performance and compliance with specifications and regulations;

(e) applying knowledge of electrical engineering principles and practices in order to identify and solve problems arising in the course of their work;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

0-34.05 Electrical engineering technician, general
0-34.20 Electrical engineering technician, high voltage
0-34.90 Other electrical and electronics engineering technicians, part
3.1.1.4 ELECTRONICS AND TELECOMMUNICATIONS ENGINEERING TECHNICIANS

ELECTRONICS AND TELECOMMUNICATIONS ENGINEERING TECHNICIANS perform technical tasks in electronic and telecommunications engineering research and in the design, manufacture, assembly, construction, operation, maintenance and repair of electronic equipment and electronic and electromechanical telecommunications systems.

TASKS include -

(a) assisting in research and development work concerning electronic and telecommunications equipment and testing prototypes;

(b) assisting in design and layout of electronic circuitry;

(c) preparing detailed estimates of quantities and costs of materials and labour required for manufacture;

(d) assisting with technical supervision of manufacture, utilisation, maintenance and repair of electronic equipment and telecommunications systems to ensure satisfactory performance and compliance with specifications and regulations;

(e) applying knowledge of electronic and telecommunications engineering principles and practices in order to identify and solve problems arising in the course of their work;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

0-34.10 Electronics engineering technician, general
0-34.30 Telecommunications technician
0-34.90 Other electrical and electronics engineering technicians, part

3.1.1.5 MECHANICAL ENGINEERING TECHNICIANS

MECHANICAL ENGINEERING TECHNICIANS perform technical tasks in mechanical engineering research and in the design, manufacture, construction, operation, maintenance and repair of machines and mechanical installations and facilities.

TASKS include -

(a) assisting in research and development work concerning machines and mechanical installations, facilities and components, and testing prototypes;

(b) assisting in design and layout of machines and mechanical installations, facilities and components;

(c) preparing detailed estimates of quantities and costs of materials and labour required for manufacture;
(d) assisting with technical supervision of manufacture, utilisation, maintenance and repair of machines and mechanical installations, facilities and components to ensure satisfactory performance and compliance with specifications and regulations;

(e) applying knowledge of machinery and mechanical engineering principles and practices in order to identify and solve problems arising in the course of their work,

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:
0-35 Mechanical engineering technicians, consisting of -
  0-35.10 Mechanical engineering technician, general
  0-35.20 Mechanical engineering technician, motors and engines
  0-35.30 Aeronautical engineering technician
  0-35.40 Automotive engineering technician
  0-35.50 Heating, ventilation and refrigeration engineering technician
  0-35.90 Other mechanical engineering technicians

9-89.20 Dockmaster, dry-dock

*3.1.1.6 CHEMICAL ENGINEERING TECHNICIANS

CHEMICAL ENGINEERING TECHNICIANS perform technical tasks in chemical engineering research and in the design, manufacture, construction, operation, maintenance and repair of chemical plant.

TASKS include -
(a) assisting in research and development work concerning industrial chemical processes, plant and equipment, and testing prototypes;

(b) assisting in design and layout of chemical plant;

(c) preparing detailed estimates of quantities and costs of materials and labour required for manufacture and installation of plant;

(d) assisting with technical supervision of construction, installation, operation, maintenance and repair of chemical plant to ensure satisfactory performance and compliance with specifications and regulations;

(e) applying knowledge of chemical engineering principles and practices in order to identify and solve problems arising in the course of their work;

(f) performing other related tasks;

(g) supervising other workers in this group.
ISCO-68 GROUPS included:

0-36  Chemical engineering technicians, consisting of -
   0-36.10  Chemical engineering technician, general
   0-36.20  Chemical engineering technician, petroleum
   0-36.90  Other chemical engineering technicians

*3.1.1.7 MINING AND METALLURGICAL TECHNICIANS

MINING AND METALLURGICAL TECHNICIANS perform technical tasks in metallurgical research and research to develop improved methods of extracting solid minerals, oil and gas, as well as in the design, construction, operation, maintenance and repair of mines and mine installations, systems for transporting and storing oil and natural gas, and plants extracting metals from their ores and refining metal.

TASKS include -

(a) assisting in research and development work concerning properties of metal and new alloys, for improved methods of extraction of solid minerals, oil and natural gas, and of transporting and storing oil and natural gas, and testing prototypes;

(b) assisting in geological and topographical surveys, and in design and layout of oil, natural gas and mineral ore extracting and transporting systems, and processing and refining plants for minerals and metals;

(c) preparing detailed estimates of quantities and costs of materials and labour required for mineral, oil and natural gas exploration, extraction and transporting projects and plants, and for plants processing and refining minerals;

(d) assisting with technical supervision of construction, installation, operation, maintenance and repair of mineral ore, oil and natural gas exploration, extraction, transport and storage installations and mineral processing plants to ensure satisfactory performance and compliance with specifications and regulations;

(e) applying knowledge of mining, of oil and natural gas extraction, transport and storage and of metallurgical principles and practices in order to identify and solve problems arising in the course of their work;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

0-37  Metallurgical technicians, consisting of -
   0-37.20  Extractive metallurgy technician
   0-37.30  Physical metallurgy technician
   0-37.90  Other metallurgical technicians
0-38 Mining technicians, consisting of -

- 0-38.10 Mining technician, general
- 0-38.20 Petroleum and natural gas extraction technician
- 0-38.90 Other mining technicians

7-13.70 Acidiser, oil and gas wells
7-13.90 Other well drillers, borers and related workers, part

*3.1.1.8 OTHER PHYSICAL SCIENCE AND ENGINEERING TECHNICIANS

OTHER PHYSICAL SCIENCE AND ENGINEERING TECHNICIANS perform technical tasks in research to develop improved methods of production and improved products, generally in areas not covered by engineering technicians classified under other groups, such as the production of ceramics and glass, textiles, leather or wood products, and in the design, construction, operation, maintenance and repair of installations, processes and machinery used in the production of such goods.

TASKS include -

(a) assisting in research and development work for improved methods of production, generally in areas such as the production of ceramics and glass, textiles, leather or wood products, and testing prototypes;

(b) assisting in the development of new products in such areas;

(c) preparing detailed estimates of quantities and costs of materials and labour required for installation and operation of new production processes;

(d) assisting with technical supervision of construction, installation, operation, maintenance and repair of new plant and machinery to ensure satisfactory performance and compliance with specifications and regulations;

(e) applying knowledge of principles and practices in their area of specialisation in order to identify and solve problems arising in the course of their work;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

0-39 Engineering technicians not elsewhere classified, consisting of -

- 0-39.20 Production engineering technician
- 0-39.30 Time and motion study technician
- 0-39.90 Other engineering technicians
*3.1.1.9 TECHNICAL DRAUGHTSMEN/WOMEN

TECHNICAL DRAUGHTSMEN/WOMEN prepare technical drawings, maps and illustrations from sketches, measurements and other data, and copy drawings and paintings onto printing plates.

TASKS include -

(a) preparing and revising working drawings from sketches and specifications prepared by engineers and designers for manufacture, installation and erection of machinery and equipment or for construction, modification, maintenance and repair of buildings, dams, bridges, roads and other architectural and civil engineering projects;

(b) operating computer-assisted drawing equipment to create, modify and generate hard-copy and digital representations of working drawings;

(c) operating digitising table or similar equipment to transfer hard-copy representation of working drawings, maps and other curves to digital form;

(d) using stereo instruments to capture topographical data in analog or digital form, and using these and other data to prepare and revise topographical, hydrographic, utility and other thematic maps;

(e) preparing and revising illustrations for reference works, brochures and technical manuals dealing with assembly, installation, operation, maintenance and repair of machinery and other equipment and goods;

(f) copying drawings and paintings onto stone or metal plates for printing;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

0-32 Draughtsmen, consisting of -

0-32.10 Draughtsman, general
0-32.20 Mechanical draughtsman
0-32.30 Electrical draughtsman
0-32.40 Civil engineering draughtsman
0-32.50 Architectural draughtsman
0-32.60 Cartographical draughtsman
0-32.70 Technical illustrator
0-32.80 Lithographic artist
0-32.90 Other draughtsmen
MINOR GROUP *3.1.2
COMPUTING ASSISTANTS AND EQUIPMENT CONTROLLERS

COMPUTING ASSISTANTS AND EQUIPMENT CONTROLLERS provide assistance to users of micro-computers and standard software packages, control and operate computers and peripheral equipment and carry out limited programming tasks in connection with installation and maintenance of computer programmes.

Tasks performed usually include assisting users of micro-computers and standard software systems at installation and when problems occur; installing standard computer programmes on particular hardware and operating systems configurations and installing new peripheral units; making minor changes and adjustments to application programmes to update and maintain them; controlling and operating computers and peripheral equipment; organising computing jobs; keeping log of computing operations; and performing back-up operations. They may receive guidance from Managers or Professionals. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.1.2.1 Computing assistants
*3.1.2.2 Computing equipment controllers

COMMENTS

This minor group contains the following ISCO-68 unit group: 3-42 Automatic data-processing machine operators.

*3.1.2.1 COMPUTING ASSISTANTS

COMPUTING ASSISTANTS provide assistance to users of micro-computers and standard software packages at installation or as problems occur, install new computer programmes on particular hardware and operating system configurations and maintain and update existing programmes by making minor changes in them under the guidance of Professionals.

TASKS include -

(a) assisting users of micro-computers and standard software systems at installation and when problems occur;
(b) installing new computer programmes on particular hardware and operating systems configurations;
(c) installing new peripheral units and making necessary parameter adjustments in operating systems and drives;
(d) maintaining and updating computer programmes by making minor changes and adjustments in them, under the guidance of Professionals;
(e) maintaining and updating documentation of computer programmes and installations;
(f) applying knowledge of principles and practices in area of programming and computing in order to identify and solve problems arising in the course of their work;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 0-84.20 Computer programmer.

*3.1.2.2 COMPUTING EQUIPMENT CONTROLLERS

COMPUTING EQUIPMENT CONTROLLERS operate and control computers and peripheral equipment used for recording, storing, transmitting and processing digital data and displaying them as letters, numbers or graphs on screen, paper or film.

TASKS include -

(a) operating and controlling computers and peripheral equipment to record, store, transmit and process digital data and to display data as letters, numbers or graphs on screen, paper or film;

(b) organising computing jobs to ensure safe and efficient execution;

(c) mounting magnetic tapes and disks as needed for processing or recording digital data and keeping library of disks and tapes;

(d) keeping log of computing operations;

(e) performing back-up operations according to regular procedures;

(f) applying knowledge of principles and practices of computers and peripheral equipment in order to identify and solve problems arising in the course of their work and making minor repairs and adjustments;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

3-42 Automatic data-processing machine operators, consisting of -

3-42.20 Electronic computer operator
3-42.30 Punched-card machine operator
3-42.90 Other automatic data-processing machine operators
MINOR GROUP *3.1.3
OPTICAL AND ELECTRONIC EQUIPMENT CONTROLLERS

OPTICAL AND ELECTRONIC EQUIPMENT CONTROLLERS take photographs and operate and control motion picture and video cameras and other equipment to record and edit images or sound, or they control equipment sending broadcasting signals, sending or receiving telecommunications signals or used in medical diagnosis or treatment.

Tasks performed usually include taking photographs; controlling and operating motion picture and video cameras and other equipment to record and edit images and sound; controlling the technical functioning of equipment recording images and sound and systems transmitting broadcasting and various types of telecommunications signals; controlling and operating technical equipment used to diagnose and treat illnesses and disorders.

Occupations in this minor group are classified under the following unit groups:

*3.1.3.1 Photographers and other image and sound recording equipment controllers

*3.1.3.2 Broadcasting and telecommunications equipment controllers

*3.1.3.3 Medical equipment controllers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 0-77 Medical X-ray technicians; 1-63 Photographers and cameramen; 3-59.75 Telecommunications service supervisor; 3-80 Telephone and telegraph operators, except .20 Telephone switchboard operator and .90 Other telephone and telegraph operators; 8-61 Broadcasting station operators; 8-62 Sound-equipment operators and cinema projectionists.

*3.1.3.1 PHOTOGRAPHERS AND OTHER IMAGE AND SOUND RECORDING EQUIPMENT CONTROLLERS

PHOTOGRAPHERS AND OTHER IMAGE AND SOUND RECORDING EQUIPMENT CONTROLLERS take photographs and control and operate motion picture and video cameras and other equipment to record and edit images and sound.

TASKS include -

(a) taking photographs for advertising, for other commercial and industrial purposes and to illustrate stories and articles in newspapers, magazines and other publications;

(b) taking portrait photographs of persons and groups of persons;

(c) setting and operating motion picture, video, microscopic, aerial photography and other specialised cameras to record images;
(d) operating equipment to record sound for motion pictures, video tapes, gramophone records, audio tapes, digital discs, direct broadcasting or other purposes;

(e) operating equipment to edit and mix image and sound recordings and to create special image and sound effects;

(f) applying knowledge of principles and practices of image and sound recording and editing in order to identify and solve problems arising in the course of their work;

(g) performing other related tasks;

(h) supervising other workers.

**ISCO-68 GROUPS included:**

1-63 Photographers and cameramen, consisting of -

- 1-63.10 Photographer, general
- 1-63.20 Portrait photographer
- 1-63.30 Photographer, commercial illustrator
- 1-63.40 News photographer
- 1-63.50 Director of photography, motion picture
- 1-63.60 Motion picture camera operator
- 1-63.70 Television camera operator
- 1-63.90 Other photographers and cameramen

8-61.30 Radio and television studio equipment operator, part

8-62.20 Sound-recording equipment operator, part

8-62.90 Other sound-equipment operators and cinema projectionists, part

**3.1.3.2 BROADCASTING AND TELECOMMUNICATIONS EQUIPMENT CONTROLLERS**

**BROADCASTING AND TELECOMMUNICATIONS EQUIPMENT CONTROLLERS** control the technical functioning of equipment recording images and sound and control systems transmitting radio and television broadcasts and other types of telecommunications signals on land and on board ships and aircraft.

**TASKS include -**

(a) controlling and operating transmitting systems and satellite systems for radio and television programmes;

(b) controlling and operating radio communications systems, satellite services and multiplex systems;

(c) controlling the technical operation of image and sound recording and editing systems to ensure satisfactory performance;

(d) controlling and operating cinema projection equipment;
(e) applying knowledge of principles and practices of telecommunications terminals and transmission systems, image and sound recording systems or cinema projection equipment in order to identify and solve problems arising in the course of their work and maintain equipment;

(f) keeping logs of operations;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

3-59.75 Telecommunications service supervisor
3-80.30 Radio-telephone operator, land-based
3-80.40 Telegrapher
3-80.50 Ship's radio officer
3-80.60 Flight radio operator
8-61.20 Radio and television transmitting equipment operator
8-61.30 Radio and television studio equipment operator, part
8-61.90 Other broadcasting station operators
8-62 Sound-equipment operators and cinema projectionists, part, consisting of -
  8-62.20 Sound-recording equipment operator, part
  8-62.30 Public address equipment operator
  8-62.40 Cinema projectionist
  8-62.90 Other sound-equipment operators and cinema projectionists, part

*3.1.3.3 MEDICAL EQUIPMENT CONTROLLERS*

MEDICAL EQUIPMENT CONTROLLERS operate and control technical equipment used to diagnose and treat illnesses and disorders.

TASKS include -

(a) operating and controlling equipment used to diagnose illnesses and disorders of hearing, heart, kidneys, nervous systems or in radiography or anaesthetics;

(b) applying knowledge of equipment and principles and practices of medicine in order to identify and solve problems arising in the course of their work and maintain equipment;

(c) performing other related tasks;

(d) supervising other workers.

ISCO-68 GROUPS included:

0-77 Medical X-ray technicians, consisting of -
  0-77.10 Medical X-ray technician
MINOR GROUP *3.1.4
SHIP AND AIRCRAFT CONTROLLERS

SHIP AND AIRCRAFT CONTROLLERS command and navigate ships and aircraft and perform technical functions to ensure safe and efficient movement and operations.

Tasks performed usually include controlling the operation of mechanical equipment on board ship, commanding and navigating ships or aircraft or directing the movements of ships or aircraft.

Occupations in this minor group are classified under the following unit groups:

*3.1.4.1 Ships' engineers
*3.1.4.2 Ships' deck officers and pilots
*3.1.4.3 Aircraft pilots and related workers
*3.1.4.4 Air traffic controllers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational category: 0-41 Aircraft pilots, navigators and flight engineers; 0-42 Ships' deck officers and pilots; 0-43 Ships' engineers; 3-59.60 Air traffic controller.

*3.1.4.1 SHIPS' ENGINEERS

SHIPS' ENGINEERS control and participate in the operation, maintenance and repair of mechanical equipment and machinery on board ship, or perform related functions on shore.

TASKS include -

(a) controlling and participating in the operation, maintenance and repair of mechanical and electrical equipment and machinery on board ship;

(b) ordering fuel and other engine-room department stores and maintaining record of operations;

(c) performing technical supervision of installation, maintenance and repair of ship's machinery and equipment to ensure compliance with specifications and regulations;

(d) applying knowledge of principles and practices relating to ship's machinery and equipment in order to identify and solve problems arising in the course of their work;

(e) performing other related tasks;

(f) supervising other workers.
ISCO-68 GROUPS included:

0-43 Ships' engineers, consisting of -
   0-43.15 Ship's chief engineer
   0-43.20 Marine engineer officer
   0-43.30 Marine superintendent, technical

*3.1.4.2 SHIPS' DECK OFFICERS AND PILOTS

SHIPS' DECK OFFICERS AND PILOTS command and navigate ships and similar vessels, and perform related functions on shore.

TASKS include -

(a) commanding and navigating ship or similar vessel at sea or on inland waterways;

(b) controlling and participating in deck and bridge-watch activities;

(c) navigating vessels into and out of ports and through channels, straits and other waters where special knowledge is required;

(d) ensuring safe loading and discharging of cargo and observance of safety regulations and procedures by crew and passengers;

(e) performing technical supervision of construction, maintenance and repair of ship to ensure compliance with specifications and regulations;

(f) applying knowledge of principles and practices relating to ship's operation and navigation in order to identify and solve problems arising in the course of their work;

(g) ordering ship's stores, recruiting crew and maintaining record of operations;

(h) performing other related tasks;

(i) supervising other workers.

ISCO-68 GROUPS included:

0-42 Ships' deck officers and pilots, consisting of -
   0-42.15 Ship's master, sea
   0-42.20 Ship's master, inland waterways
   0-42.30 Ship's navigating officer
   0-42.40 Ship pilot
   0-42.50 Marine superintendent, deck
   0-42.90 Other ship's deck officers and pilots
**3.1.4.3 AIRCRAFT PILOTS AND RELATED WORKERS**

AIRCRAFT PILOTS AND RELATED WORKERS control and navigate aircraft to transport passengers, mail and freight and perform related in-flight tasks.

**TASKS include -**

(a) flying and navigating aircraft in accordance with established control and operating procedures;

(b) preparing and submitting flight plan or examining standard flight plan;

(c) ensuring that aircraft is properly loaded, mechanically sound and provided with adequate fuel and navigating aids;

(d) ensuring that all instruments and controls work properly;

(e) applying knowledge of principles and practices of flying in order to identify and solve problems arising in the course of their work;

(f) performing other related tasks;

(g) supervising other workers.

**ISCO-68 GROUPS included:**

0-41 Aircraft pilots, navigators and flight engineers, consisting of -

- 0-41.20 Air transport pilot
- 0-41.30 Aircraft pilot, except transport
- 0-41.40 Flight navigator
- 0-41.50 Flight engineer
- 0-42.60 Flying instructor

**3.1.4.4 AIR TRAFFIC CONTROLLERS**

AIR TRAFFIC CONTROLLERS direct aircraft movements in airspace and on the ground, using radio, radar and lighting systems, and provide information relevant to the operation of aircraft.

**TASKS include -**

(a) directing and controlling aircraft approaching and leaving airport and their movement on ground;

(b) directing and controlling aircraft operating in designated airspace sector;

(c) examining and approving flight plans;

(d) informing flight crew and operations staff about weather conditions, operational facilities, flight plans and air traffic;
(e) applying knowledge of principles and practices of air traffic control in order to identify and solve problems arising in the course of their work;

(f) initiating and organising emergency, search and rescue services and procedures;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:
3-59.60 Air traffic controller

MINOR GROUP *3.1.5
SAFETY INSPECTORS

SAFETY INSPECTORS inspect places of work, production processes and vehicles, structures, goods and services produced, used or sold in the country to ensure that government rules and regulations to protect humans and environment are followed.

Tasks performed include advising enterprises and the general public on the proper understanding and implementation of government rules and regulations concerning emission and disposal of residuals from production processes, safety of work operation, conditions of work and the quality of goods and services produced, sold or used; checking whether such rules are correctly understood and applied. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.1.5.1 Fire and building inspectors

*3.1.5.2 Safety inspectors (vehicles, processes and products)

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 3-10 Government executive officials, part; 5-81.20 Fire-prevention specialist; 5-81.90 Other fire-fighters, part.

*3.1.5.1 FIRE AND BUILDING INSPECTORS

FIRE AND BUILDING INSPECTORS inspect new and existing industrial plants, hotels and other buildings and structures to ensure compliance with fire regulations and other building, grading and zoning laws and with approved plans, specifications and standards, and investigate fire sites to determine cause of fire.
TASKS include -

(a) advising those erecting buildings and other structures on the understanding and implementation of government rules and regulations concerning quality and safety of buildings and other structures and building, grading and zoning laws;

(b) inspecting buildings and structures during and after construction to ensure that they meet provisions of building, grading, zoning and safety laws and approved plans, specifications and standards;

(c) inspecting existing buildings and structures to determine lack of proper maintenance, housing violations or hazardous conditions;

(d) inspecting industrial plants, hotels, cinemas and other buildings and establishments to detect fire hazards and advise on how they can be abolished;

(e) advising on installation of fire detectors and sprinkler systems and the use of materials in construction of buildings and means of transportation to reduce risk of fire and extent of damage and danger if fire occurs;

(f) investigating fire sites to determine cause of fire;

(g) performing other related tasks;

(h) supervising other workers.

ISCO-68 GROUPS included:

3-10 Government executive officials, part, consisting of -

3-10.10 Government executive official, part

5-81.20 Fire-prevention specialist
5-81.90 Other fire-fighters, part

*3.1.5.2 SAFETY INSPECTORS (VEHICLES, PROCESSES AND PRODUCTS)

SAFETY INSPECTORS (VEHICLES, PROCESSES AND PRODUCTS) inspect vehicles and places of production, sale or other employment to identify unsafe vehicles or products, unsafe or unhealthy working conditions and other violations of government rules and regulations concerning the working environment, operation of vehicles, machinery and equipment, such as regulations designed to limit pollution and ensure safe disposal of dangerous wastes.

TASKS include -

(a) advising producers, operators and those maintaining and repairing cars, aircraft and other vehicles on the understanding and implementation of government rules and regulations concerning technical standards and conditions of vehicles and procedures for their operation;
(b) inspecting vehicles being operated to ensure that their technical standards and operation conform to government rules and regulations;

(c) inspecting places authorised to maintain and repair vehicles to ensure that they conform to government rules and regulations;

(d) advising employers' and workers' representatives on the understanding and implementation of government rules and regulations concerning work safety and the working environment;

(e) inspecting places of employment to ensure that the working environment, machinery and equipment conform to government rules, regulations and standards;

(f) inspecting places of employment and interviewing supervisors and workers to obtain facts about work practices and accidents;

(g) observing workers and safety equipment used to determine compliance with safety precautions;

(h) advising enterprises and the general public on the understanding and application of government rules and regulations concerning hygiene, sanitation, purity and grading of primary products, food, drugs, cosmetics and similar goods;

(i) inspecting places of production, processing, transportation, handling, storage and sale of products to assure conformity with government rules, regulations and standards concerning safety, sanitation, purity and grading;

(j) inspecting establishments to ensure that they conform to government rules and regulations concerning emission of pollutants and disposal of dangerous wastes;

(k) performing other related tasks;

(l) supervising other workers in this group.

ISCO-68 GROUPS included:

3-10 Government executive officials, part, consisting of -

3-10.10 Government executive official, part

SUB-MAJOR GROUP *3.2
LIFE AND MEDICAL SCIENCE ASSOCIATE PROFESSIONALS

LIFE AND MEDICAL SCIENCE ASSOCIATE PROFESSIONALS perform technical tasks in connection with life science research and apply life science and medical principles and practices in advising on appropriate farming and sanitary practices, and providing a limited range of medical or nursing care.
Most occupations in this sub-major group require skills at the third skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 5. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 5 begin at age 17 or 18, last for about three years and lead to an award not equivalent to a first university degree.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through innate abilities and appropriate work experience combined with thorough on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Life and medical science associate professionals typically include assisting in research in life and medical sciences and in applying life science and medical principles and practices in advising on agricultural practices, health and sanitation and providing nursing and related care to persons and animals. They may receive guidance from Life and medical science professionals. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*3.2.1 Life sciences technicians and related workers
*3.2.2 Modern medicine associate professionals
*3.2.3 Traditional medicine practitioners and faith healers

MINOR GROUP *3.2.1
LIFE SCIENCES TECHNICIANS AND RELATED WORKERS

LIFE SCIENCES TECHNICIANS AND RELATED WORKERS provide technical assistance in research in biology, agronomy and medicine and in the development of practical applications of research results, and advise on how to apply the principles and practices of farming and forestry effectively.

Tasks performed usually include preparing materials for experiments and collecting specimens and samples of plants and animals; assisting with and performing experiments and tests; collecting data and estimating quantities and costs required for projects; advising on ways to improve quantity and quality of yields and efficiency of operation in farming and forestry.

Occupations in this minor group are classified under the following unit groups:

*3.2.1.1 Life sciences technicians
*3.2.1.2 Agronomy and forestry technicians
*3.2.1.3 Farming and forestry advisers
COMMENTS

This minor group contains the following ISCO-68 unit group and occupational category: 0-53.60 Farming adviser; 0-54 Life sciences technicians; 9-49.20 Taxidermist.

*3.2.1.1 LIFE SCIENCES TECHNICIANS

LIFE SCIENCES TECHNICIANS provide technical assistance in research in biology and medicine and in the development of industrial, medical, public health and other practical applications of research results.

TASKS include -

(a) preparing materials and equipment for experiments, tests and analyses;
(b) collecting and preparing specimens such as plant, animal or human cells, tissues, parts or organs for experiments, tests and analyses;
(c) assisting with and performing experiments, tests and analyses in their field of specialisation;
(d) collecting data and estimating quantities and costs of materials and labour required for projects;
(e) applying knowledge of scientific principles and practices in order to identify and solve problems arising in the course of their work;
(f) organising maintenance and repairs of research equipment;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

0-54.20 Biological technician
0-54.30 Medical science technician
9-49.20 Taxidermist

*3.2.1.2 AGRONOMY AND FORESTRY TECHNICIANS

AGRONOMY AND FORESTRY TECHNICIANS provide technical assistance in research in agronomy and forestry and in the development of agricultural and forestry applications of research results.

TASKS include -

(a) preparing materials and equipment for experiments, tests and analyses;
(b) collecting and preparing specimens such as plant or animal cells, tissues, parts or organs for experiments, tests and analyses;
(c) assisting with and performing experiments, tests and analyses in their field of specialisation;

(d) collecting, treating, storing and distributing semen for artificial breeding of farm animals;

(e) analysing samples of seeds for quality, purity and germination rating;

(f) collecting data and estimating quantities and costs of materials and labour required for projects;

(g) applying knowledge of scientific principles and practices in order to identify and solve problems arising in the course of their work;

(h) organising maintenance and repairs of research equipment;

(i) performing other related tasks;

(j) supervising other workers in this group.

ISCO-68 GROUPS included:

0-54.90 Other life sciences technicians

**3.2.1.3 FARMING AND FORESTRY ADVISERS**

FARMING AND FORESTRY ADVISERS provide technical assistance and advice on farming and forestry methods and problems.

**TASKS include** -

(a) keeping abreast of relevant farming or forestry methods and techniques;

(b) advising on ways of raising quality of output, increasing yield and on measures to increase efficiency of operations and conserve assets and the environment;

(c) advising on measures to deal with problems such as erosion or pest infection;

(d) collecting data and estimating quantities and costs of materials and labour required for projects;

(e) organising demonstrations, giving lectures and distributing material to promote adoption of improved practices and techniques;

(f) applying knowledge of scientific principles and practices in order to identify and solve problems arising in the course of their work;

(g) performing other related tasks;

(h) supervising other workers in this group.
ISCO-68 GROUPS included:

0-53.60 Farming adviser

MINOR GROUP *3.2.2
MODERN MEDICINE ASSOCIATE PROFESSIONALS

MODERN MEDICINE ASSOCIATE PROFESSIONALS provide nursing and other medical care to persons or animals and advise on how to improve hygienic practices and sanitary conditions.

Tasks performed usually include providing nursing care for persons in need of such care; delivering babies in normal births; advising communities and individuals on birth control; carrying out other limited medical tasks; advising on action to improve hygienic and sanitary conditions; examining eyes and prescribing glasses or contact lenses to improve vision; carrying out limited dental tasks; advising on the prevention of disorders of bones and muscular systems and treating such disorders; carrying out limited advisory, diagnostic and curative veterinary tasks and dispensing and preparing medicaments and other pharmaceutical products. They may work under the guidance of Medical professionals. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.2.2.1 Auxiliary nurses
*3.2.2.2 Auxiliary midwives
*3.2.2.3 Medical assistants
*3.2.2.4 Sanitarians
*3.2.2.5 Optometrists and opticians
*3.2.2.6 Dental assistants
*3.2.2.7 Physiotherapists and related associate professionals
*3.2.2.8 Veterinary assistants
*3.2.2.9 Pharmaceutical assistants

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 0-62 Medical assistants; 0-64 Dental assistants; 0-66 Veterinary assistants; 0-68 Pharmaceutical assistants; 0-72 Nursing personnel not elsewhere classified; 0-74 Midwifery personnel not elsewhere classified; 0-75 Optometrists and opticians; 0-76 Physiotherapists and occupational therapists; 0-79 Medical, dental, veterinary and related workers not elsewhere classified, except .90 Other medical, dental, veterinary and related workers; 5-99.40 Nursing aid, part; 5-99.50 Practical aid, pharmacy (part); 5-99.60 Practical aid, veterinary (part).
*3.2.2.1 AUXILIARY NURSES

AUXILIARY NURSES provide nursing care for the sick and injured and others in need of such care.

TASKS include -

(a) providing nursing care, treatment and advice to the ill, injured and disabled, and to new-born babies and their mothers;

(b) assisting medical doctors and professional nurses in their tasks, administering medicine and drugs, applying surgical dressings and giving other forms of treatment under instructions from physicians or professional nurses;

(c) assisting in giving first-aid treatment in emergencies;

(d) assisting in preparations for physical and psychological treatment of mentally ill patients;

(e) assisting in preparations for social adjustment, development and education of mentally or physically handicapped patients;

(f) providing nursing care to patients in their homes;

(g) providing nursing services, care and advice within a community or at a workplace;

(h) performing other related tasks;

(i) supervising other workers in this group.

ISCO-68 GROUPS included:
0-72 Nursing personnel not elsewhere classified, consisting of -
   0-72.10 Auxiliary nurse

*3.2.2.2 AUXILIARY MIDWIVES

AUXILIARY MIDWIVES assist in the delivery of babies and in providing prenatal and postnatal care and instruct parents in baby care.

TASKS include -

(a) advising expectant mothers on appropriate diet, exercises and behaviour to ease pregnancy and childbirth, and noting their general health and progress;

(b) assisting Medical doctors or Professional midwives in normal or difficult deliveries;

(c) attending mothers in the postnatal period to supervise their recovery, to check on babies’ progress, and to instruct parents in baby care;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

0-74 Midwifery personnel not elsewhere classified, consisting of -
   0-74.10 Auxiliary midwife

*3.2.2.3 MEDICAL ASSISTANTS

MEDICAL ASSISTANTS carry out advisory, diagnostic, preventive and curative medical tasks, more limited in scope and complexity than those carried out by Medical doctors. They work independently or with the guidance and supervision of Medical doctors in institutions or in the field as part of the general public health service, and may work mainly with diseases and disorders common in their region, or mainly apply specific types of treatment such as homeopathy or acupuncture.

TASKS include -

(a) advising communities and individuals on birth control, hygiene, diet and other preventive medical measures;
(b) conducting medical examinations to make diagnoses or refer more difficult cases to Medical doctors if possible;
(c) prescribing medicine and giving treatment for diagnosed illnesses, disorders or injuries;
(d) performing simple surgical operations;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:

0-62 Medical assistants, consisting of -
   0-62.10 Medical assistant

*3.2.2.4 SANITARIANS

SANITARIANS provide technical assistance and advice on measures to restore or improve sanitary conditions and supervise their implementation.

TASKS include -

(a) inspecting and giving advice on environmental sanitary problems and techniques;
(b) initiating action to maintain or improve hygienic quality and prevent pollution of water, air, food or soil;

(c) promoting preventive and corrective measures such as control of disease-carrying organisms and of harmful substances in the air, hygienic food handling, proper disposal of waste and cleaning of public places;

(d) organising demonstrations, giving lectures and distributing material to promote adoption of improved practices and techniques;

(e) collecting data and estimating quantities and costs of materials and labour required for projects;

(f) applying knowledge of hygiene and sanitation principles and practices in order to identify and solve problems arising in the course of their work;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

0-79.40 Sanitarian

*3.2.2.5 OPTOMETRISTS AND OPTICIANS

OPTOMETRISTS AND OPTICIANS prescribe and fit glasses and contact lenses and advise on their use, on proper lighting for work and reading and other visual aids.

TASKS include -

(a) examining eyes and prescribing glasses, contact lenses or other treatment to improve vision, referring cases which may require medication or surgery to Medical doctor;

(b) advising on the proper use of glasses and contact lenses, appropriate lighting for work or reading and other visual aids;

(c) fitting prescribed lenses into frames and fitting frames or contact lenses to customers;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

0-75 Optometrists and opticians, consisting of -

0-75.20 Optometrist
0-75.30 Dispensing optician
3.2.2.6 DENTAL ASSISTANTS

DENTAL ASSISTANTS carry out advisory, diagnostic, preventive and curative dental tasks, more limited in scope and complexity than those carried out by Dentists, and they assist Dentists by preparing and taking care of instruments and other equipment, preparing materials and helping patients to get ready for examination and treatment.

TASKS include -

(a) advising communities and individuals on dental hygiene, diet and other preventive dental measures;
(b) conducting dental examinations to make diagnoses or refer more difficult cases to Dentists when needed;
(c) cleaning teeth, preparing cavities and placing fillings;
(d) performing certain types of prosthetic work and some surgical procedures;
(e) preparing and taking care of dental instruments and equipment;
(f) preparing dental materials;
(g) helping patients to get ready for examination or treatment;
(h) performing other related tasks;
(i) supervising other workers in this group.

ISCO-68 GROUPS included:

0-64 Dental assistants, consisting of -
   0-64.20 Dental assistant
   0-64.30 School dental assistant
   0-64.40 Dental hygienist

5-99.40 Nursing aid, part

3.2.2.7 PHYSIOTHERAPISTS AND RELATED ASSOCIATE PROFESSIONALS

PHYSIOTHERAPISTS AND RELATED ASSOCIATE PROFESSIONALS treat disorders of bones, muscles and parts of the circulatory or the nervous system by manipulative methods, ultrasound, heating, laser or other similar techniques, or plan and carry out activities designed to rehabilitate physically or mentally disabled persons.

TASKS include -

(a) advising communities and individuals on proper work postures and other use of body to avoid injuries and strain and to strengthen muscles;
(b) conducting examinations to make diagnoses of disorders of bones, muscles and parts of the circulatory or the nervous system to determine proper treatment or refer to Medical doctor if necessary;

(c) treating disorders of bones, muscles and parts of the circulatory or the nervous system by manipulative methods, ultrasound, heating, laser or other similar techniques;

(d) massaging client or patients to improve circulation, soothe or stimulate nerves, facilitate elimination of waste matter, stretch contracted tendons and produce other therapeutic effects;

(e) examining body deformities and disorders to determine and write specifications for artificial limbs and other appliances;

(f) planning and executing medically oriented vocational, educational or recreational activities designed to rehabilitate physically or mentally disabled persons;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

0-76 Physiotherapists and occupational therapists, consisting of -

  0-76.20 Physiotherapist
  0-76.30 Occupational therapist
  0-76.40 Masseur

0-79.20 Osteopath
0-79.30 Chiropractor
0-79.50 Orthopaedic technician

*3.2.2.8 VETERINARY ASSISTANTS

VETERINARY ASSISTANTS carry out advisory, diagnostic, preventive and curative veterinary tasks, more limited in scope and complexity than those carried out by Veterinarians, and they assist Veterinarians by preparing and taking care of instruments and other equipment, preparing materials and getting animals ready for examination and treatment.

TASKS include -

(a) advising communities and individuals on treatment of animals and their diseases and injuries;

(b) conducting examinations of animals to make diagnoses or refer more difficult cases to Veterinarians when needed;

(c) treating ill or injured animals, especially for common diseases and disorders;
(d) preparing and taking care of instruments and materials used in the treatment of animals;
(e) getting animals ready for examination or treatment and holding them during treatment, when necessary;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:
0-66 Veterinary assistants, consisting of -
   0-66.10 Veterinary assistant
5-99.60 Practical aid, veterinary (part)

*3.2.2.9 PHARMACEUTICAL ASSISTANTS

PHARMACEUTICAL ASSISTANTS dispense and prepare medicaments, lotions and mixtures under the guidance of Pharmacists, in pharmacies, hospitals and dispensaries.

TASKS include -
(a) preparing medicaments and other pharmaceutical compounds under guidance of Pharmacists;
(b) dispensing medicines and drugs and giving written and oral instructions on their use, as prescribed by Medical doctors, Veterinarians or other authorised workers;
(c) cleaning and preparing equipment and containers used to prepare and dispense medicine and pharmaceutical compounds;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:
0-68 Pharmaceutical assistants, consisting of -
   0-68.10 Pharmaceutical assistant
5-99.50 Practical aid, pharmacy (part)
MINOR GROUP *3.2.3
TRADITIONAL MEDICINE PRACTITIONERS AND FAITH HEALERS

TRADITIONAL MEDICINE PRACTITIONERS AND FAITH HEALERS treat human mental and physical illness by techniques traditionally used in the community or by power of faith and spiritual advice.

Tasks performed usually consist of advising clients on proper behaviour and diet to preserve or regain mental and physical health and strength, and giving patients treatment and advice to relieve ailments. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.2.3.1 Traditional medicine practitioners
*3.2.3.2 Faith healers

COMMENTS

This minor group contains the following ISCO-68 occupational categories: 0-79.90 Other medical, dental, veterinary and related workers (part); 1-49.20 Faith healer.

*3.2.3.1 TRADITIONAL MEDICAL PRACTITIONERS

TRADITIONAL MEDICAL PRACTITIONERS treat human mental and physical sickness by herbs, medicinal plants, mental influence and suggestion and other techniques traditionally used in the community.

TASKS include -

(a) advising community and individuals on proper diet and behaviour to preserve or improve health and well-being;

(b) treating sickness and injuries using herbs, medicinal plants, insects, mental influence and suggestion and other techniques traditional in their communities;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

0-79.90 Other medical, dental, veterinary and related workers (part)

*3.2.3.2 FAITH HEALERS

FAITH HEALERS endeavour to cure human mental and physical sickness by mental influence and suggestion and power of faith and spiritual advice.
TASKS include -

(a) advising community and individuals on proper behaviour and faith to achieve improved health and well-being;

(b) endeavouring to cure human mental and physical ailments by power of faith;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

1-49.20 Faith healer

SUB-MAJOR GROUP *3.3
BUSINESS, GOVERNMENT AND SOCIAL SERVICES
ASSOCIATE PROFESSIONALS

BUSINESS, GOVERNMENT AND SOCIAL SERVICES ASSOCIATE PROFESSIONALS perform tasks relating to finance and sales, investigation of crimes, customs and border control, collection of taxes, payment of welfare and other government subsidies, granting of government permissions and licences, administration, primary and pre-primary education teaching, social advice and help, religious affairs and entertainment.

Most occupations in this sub-major group require skills at the third skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 5. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 5 begin at age 17 or 18, last for about three years and lead to an award not equivalent to a first university degree.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through innate abilities and appropriate work experience combined with thorough on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Business, government and social services associate professionals typically include performing specialised business, government or administrative tasks; investigating crimes and controlling the movement of persons and goods across national borders; teaching at primary and pre-primary levels of education; giving social advice to clients and providing spiritual guidance; and providing entertainment or performing athletic feats. They may receive guidance from Government administrators, Managers or Professionals. Supervision of other workers may be included.
Occupations in this sub-major group are classified under the following minor groups:

*3.3.1 Finance and sales associate professionals
*3.3.2 Detectives and government associate professionals
*3.3.3 Administration associate professionals
*3.3.4 Primary and pre-primary education teachers
*3.3.5 Social advisers and helpers
*3.3.6 Religion associate professionals
*3.3.7 Entertainment and sports associate professionals

MINOR GROUP *3.3.1
FINANCE AND SALES ASSOCIATE PROFESSIONALS

FINANCE AND SALES ASSOCIATE PROFESSIONALS buy and sell financial instruments, foreign exchange or commodities, different types of insurance, real estate, travel and other business services, act as agents or sales representatives for producers of installations, equipment and goods or as buyers on behalf of organisations, or they appraise the value of commodities, real estate and other properties and sell these by auction.

Tasks performed usually include analysing market trends for financial instruments, foreign exchange, commodities and real estate and buying or selling on behalf of clients or on their own behalf; advising on and selling insurance coverage; ensuring proper recording of transfers of financial instruments and ownership of real estate; organising, advising on and selling travel arrangements; negotiating business contracts on behalf of artists and other sellers or buyers of goods or services; selling goods on wholesale basis on behalf of producer or importer or selling technical installations and equipment; buying goods or services on behalf of organisations; appraising the value of commodities, real estate or other property and selling in auctions. They may receive guidance from Managers or Professionals. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.3.1.1 Securities and finance dealers
*3.3.1.2 Insurance brokers and agents
*3.3.1.3 Real estate agents
*3.3.1.4 Travel agents
*3.3.1.5 Business services agents
*3.3.1.6 Sales representatives

*3.3.1.7 Buyers

*3.3.1.8 Appraisers

*3.3.1.9 Auctioneers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 1-99.50 Underwriter; 1-99.90 Other professional, technical and related workers not elsewhere classified; 4-22 Buyers; 4-31 Technical salesmen and service advisers; 4-32 Commercial travellers and manufacturers' agents; 4-41 Insurance, real estate and securities salesmen; 4-42 Business services salesmen; 4-43 Auctioneers.

*3.3.1.1 SECURITIES AND FINANCE DEALERS

SECURITIES AND FINANCE DEALERS buy and sell securities, stocks, bonds and other financial instruments, and buy and sell foreign exchange or commodities in spot and futures markets, on behalf of their own company or for customers on a commission basis and recommend transactions to clients or senior management.

TASKS include -

(a) obtaining information about financial circumstances of customers;

(b) analysing market trends for securities, bonds, stocks and other financial instruments, foreign exchange or commodities;

(c) informing prospective customers about market conditions and prospects;

(d) advising on and participating in the negotiation of terms for and organisation of loans and placement of stocks and bonds in the financial market to raise capital for customers;

(e) recording and transmitting buy and sell orders for securities, stocks, bonds or other financial instruments and for foreign exchange or commodities for future or immediate delivery;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

4-41.40 Securities salesman
4-41.90 Other insurance, real estate and securities salesmen
*3.3.1.2 INSURANCE BROKERS AND AGENTS

INSURANCE BROKERS AND AGENTS advise on and sell life, accident, automobile, liability, endowment, fire, marine and other types of insurance to new and existing clients.

TASKS include -

(a) obtaining information about circumstances of customers necessary to determine type of insurance and conditions;
(b) negotiating with customers to determine type and degree of risk, extent of coverage and terms of payment;
(c) negotiating and placing reinsurance contracts;
(d) advising on, negotiating terms for and placing insurance contracts for large or special type projects, installations or risks;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:
1-99.50 Underwriter
4-41.20 Insurance salesman

*3.3.1.3 REAL ESTATE AGENTS

REAL ESTATE AGENTS arrange sale, purchase, rental and lease of real property, usually on behalf of clients and on a commission basis.

TASKS include -

(a) obtaining information about properties to be sold or leased and needs of prospective buyers or tenants;
(b) showing properties to be sold or leased to prospective buyers or tenants and explaining terms of sale or conditions of rent or lease;
(c) arranging signing of lease agreements and transfer of property rights;
(d) collecting rent and bond monies on behalf of owner and inspecting properties before, during and after tenancies;
(e) performing other related tasks;
(f) supervising other workers in this group.
ISCO-68 GROUPS included:

4-41.30 Real estate salesman

*3.3.1.4 TRAVEL AGENTS

TRAVEL AGENTS plan itinerary and schedule travel accommodation for customers, and organise or sell complete group travel tours for business or vacation.

TASKS include -

(a) obtaining information about availability, cost and convenience of different types of transport and accommodation, ascertaining customers' requirements and advising on travel arrangements;

(b) making and confirming travel and hotel reservations, giving customer tickets and vouchers and receiving payments;

(c) organising complete group tours for business or vacation travel and selling them to groups or individuals;

(d) helping customers in obtaining necessary certificates and travel documents;

(e) performing other related tasks;

(f) supervising other workers.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 4-42 Business services salesmen or 3-94.40 Travel agency clerk.

*3.3.1.5 BUSINESS SERVICES AGENTS

BUSINESS SERVICES AGENTS sell business services or organise, on a commission basis, the contact between buyers and sellers of business services such as advertising space in printed and broadcasting media, transport services, credit and other business information, performances of entertainers and artists, contracts for the publication of books, production of plays, recording and sale of music.

TASKS include -

(a) obtaining information about services to be sold and needs of prospective buyers;

(b) negotiating contracts on behalf of seller or buyer and explaining terms of sale and payment to client;
(c) signing agreements on behalf of seller or buyer and ensuring that contract is honoured;

(d) making sure that the information purchased is made available to the buyer in the agreed form at the agreed time;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

1-99.90 Other professional, technical and related workers not elsewhere classified

4-42 Business services salesmen, consisting of -

   4-42.20 Business services salesman, except advertising
   4-42.30 Advertising salesman

*3.3.1.6 SALES REPRESENTATIVES

SALES REPRESENTATIVES sell goods on a wholesale basis or technical products and related services, and provide specialised information as required.

TASKS include -

(a) soliciting orders and selling goods to retail, industrial, wholesale and other establishments;

(b) selling technical equipment, supplies and related services to business establishments or individuals;

(c) providing prospective customers with general and specialised information about the characteristics and functioning of the equipment, and demonstrating its use;

(d) reporting customers’ reactions and requirements to manufacturers;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

4-31 Technical salesmen and service advisers, consisting of -

   4-31.20 Technical salesman
   4-31.30 Technical service adviser

4-32 Commercial travellers and manufacturers’ agents, consisting of -

   4-32.20 Commercial traveller
   4-32.30 Manufacturers’ agent
*3.3.1.7 BUYERS

BUYERS buy goods and services on behalf of an industrial, commercial or other organisation.

TASKS include -

(a) negotiating and contracting for the purchase of equipment, raw materials, products and supplies for industrial plants, utilities, government units or other establishments and the purchasing of merchandise for resale;

(b) obtaining information about requirements and stock, and determining quantity and quality to be purchased, costs, delivery dates and other contract conditions;

(c) performing other related tasks;

(d) supervising other workers.

ISCO-68 GROUPS included:

4-22 Buyers, consisting of -
   4-22.20 Buyer
   4-22.30 Purchasing agent

*3.3.1.8 APPRAISERS

APPRAISERS value property and goods and assess losses covered by insurance policies.

TASKS include -

(a) determining the quality or value of raw materials, real estate, industrial equipment, personal and household effects, works of art, gems and other objects offered for sale or to be insured;

(b) assessing the liabilities of insurance companies and underwriters for losses covered by insurance policies;

(c) performing other related tasks;

(d) supervising other workers.

ISCO-68 GROUPS included:

4-43.30 Appraiser

*3.3.1.9 AUCTIONEERS

AUCTIONEERS sell commodities, properties and goods by auction.
TASKS include -

(a) selling by auction various kinds of property, cars, commodities, livestock, art, jewellery and other objects;
(b) performing other related tasks;
(c) supervising other workers.

ISCO-68 GROUPS included:
4-43.20 Auctioneer

MINOR GROUP *3.3.2
DETECTIVES AND GOVERNMENT ASSOCIATE PROFESSIONALS

DETECTIVES AND GOVERNMENT ASSOCIATE PROFESSIONALS investigate facts and circumstances relating to the prevention and solution of crimes, check persons and vehicles crossing national borders to enforce relevant government rules and regulations, examine tax returns to determine taxable income of persons and businesses, examine applications for welfare and other types of government support in money or kind, examine applications from individuals and businesses for licences or authorisations in connection with travel, exports and imports of goods, foreign currency, erection of buildings and other activities subject to government regulation.

Tasks performed usually include establishing sources of information concerning crimes, whether planned or already committed; investigating circumstances suspected of being criminal in nature; patrolling national borders and checking persons and vehicles, travel and transport documents and goods transported across the border to ensure enforcement of government rules and regulations; witnessing in court of law or reporting to superiors about circumstances and results of investigations and checks carried out; examining tax returns to determine taxes payable by persons and businesses; examining applications for welfare payments and support in kind; examining applications for government authorisations and licenses necessary to travel, import or export goods, erect buildings, establish a business or undertake other activities subject to government regulation. They may receive guidance from Government administrators or Managers. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.3.2.1 Police investigators and detectives
*3.3.2.2 Customs and border inspectors
*3.3.2.3 Government tax and excise officials
*3.3.2.4 Government welfare and pension officials
*3.3.2.5 Government licensing officials
*3.3.2.6 Other government associate professionals
COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 3-10 Government executive officials, part; 5-82.30 Detective; 5-89.20 Private inquiry agent.

*3.3.2.1 POLICE INVESTIGATORS AND DETECTIVES

POLICE INVESTIGATORS AND DETECTIVES investigate facts and circumstances related to the prevention and solution of suspected crimes or to obtain information not readily available or apparent concerning the circumstances and behaviour of establishments or persons.

TASKS include -

(a) establishing contacts and sources for information about crimes planned or being committed, or for information relevant to the identification of possible culprits of crimes already committed;

(b) establishing contacts and sources for information not easily available or apparent about facts and circumstances concerning establishments or persons;

(c) investigating events and circumstances suspected of being criminal in nature to obtain evidence and identify the perpetrators;

(d) investigating possible cases of shoplifting or theft from business establishments or other possible cases of unlawful behaviour of customers or employees;

(e) investigating other types of circumstances and behaviour of establishments or persons on behalf of legal authorities or clients;

(f) making arrests or assisting in making arrests, if authorised;

(g) witnessing in court of law or reporting to superiors or clients about circumstances and results of investigations;

(h) performing other related tasks;

(i) supervising other workers.

ISCO-68 GROUPS included:

5-82.30 Detective

5-89.20 Private inquiry agent

*3.3.2.2 CUSTOMS AND BORDER INSPECTORS

CUSTOMS AND BORDER INSPECTORS check persons and vehicles crossing national borders to enforce relevant government rules and regulations.
TASKS include -

(a) patrolling national borders and coastal waters to stop persons from illegally entering or leaving the country and from illegally importing or exporting currency or goods;

(b) checking travel documents of persons crossing national borders to ensure that they have the necessary authorisations and certifications;

(c) inspecting the luggage of persons crossing national borders to ensure that it conforms to government rules and regulations concerning import or export of goods and currencies;

(d) checking transport documents and freight of vehicles crossing national borders to ensure conformity with government rules and regulations concerning import and export of goods and concerning goods in transit, and to verify that necessary payments have been made;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

3-10 Government executive officials, part, consisting of -

3-10.10 Government executive official, part

*3.3.2.3 GOVERNMENT TAX AND EXCISE OFFICIALS

GOVERNMENT TAX AND EXCISE OFFICIALS examine tax returns, bills of sale and other documents to determine the type and amount of taxes, duties and other types of fees to be paid by individuals or businesses, referring exceptional or important cases to Government administrators or Managers for determination at a higher level.

TASKS include -

(a) advising organisations, enterprises and the general public on the proper understanding of government laws, rules and regulations concerning the determination and payment of taxes, duties and other government fees, and on the public’s rights and obligations;

(b) examining tax returns, bills of sale and other relevant documents to determine type and amount of taxes, duties and other types of fees to be paid;

(c) performing other related tasks;

(d) supervising other workers.
ISCO-68 GROUPS included:

3-10 Government executive officials, part, consisting of -

   3-10.10 Government executive official, part

*3.3.2.4 GOVERNMENT WELFARE AND PENSION OFFICIALS

GOVERNMENT WELFARE AND PENSION OFFICIALS examine applications for welfare support in cash or in kind and applications for government pensions to determine eligibility and size of support or pension, referring exceptional or important cases to Government administrators or Managers for determination at higher level.

TASKS include -

(a) advising individuals on the proper understanding of government laws, rules and regulations concerning government welfare and pension schemes and the determination and disbursement of payments, and on the public’s rights and obligations;

(b) examining applications and other relevant documents to determine type and amount of pension or welfare payment or support which individuals should receive;

(c) performing other related tasks;

(d) supervising other workers.

ISCO-68 GROUPS included:

3-10 Government executive officials, part, consisting of -

   3-10.10 Government executive official, part

*3.3.2.5 GOVERNMENT LICENSING OFFICIALS

GOVERNMENT LICENSING OFFICIALS examine applications for licences to export or import goods, set up a business, build a house or other structures, visit the country or obtain a passport and determine the specific conditions to be attached to the licence, referring exceptional or important cases to Government administrators or Managers for determination at a higher level.

TASKS include -

(a) advising individuals on the proper understanding of government laws, rules and regulations concerning the type of licence required by and the conditions attached to such licences, and on the public’s rights and obligations;

(b) examining applications and other relevant documents to determine whether licence can be granted and the type of conditions which should be attached;
(c) performing other related tasks;
(d) supervising other workers.

ISCO-68 GROUPS included:
3-10 Government executive officials, part, consisting of -
   3-10.10 Government executive official, part

*3.3.2.6 OTHER GOVERNMENT ASSOCIATE PROFESSIONALS

OTHER GOVERNMENT ASSOCIATE PROFESSIONALS examine places of business to ensure the use of correct weights and measures in trade, control price and wage regulations, assist jobseekers and prospective employers in job placement and carry out other tasks specific to government, referring exceptional or important cases to Government administrators or Managers for determination at a higher level.

TASKS include -
(a) examining places of business to ensure the use of correct weights and measures in trade;
(b) controlling price and wage regulations;
(c) assisting jobseekers and prospective employers in job placement;
(d) performing other related tasks specific to government;
(e) supervising other workers.

ISCO-68 GROUPS included:
3-10 Government executive officials, part, consisting of -
   3-10.10 Government executive official, part

MINOR GROUP *3.3.3
ADMINISTRATION ASSOCIATE PROFESSIONALS

ADMINISTRATION ASSOCIATE PROFESSIONALS implement and support the communication, documentation and internal managerial co-ordination activities of an organisational unit and organise information to be used by the organisation.
Tasks performed usually include implementing and supporting the communication, documentation and managerial co-ordination activities of an organisational unit to assist head of unit and other staff; making verbatim records of meetings; examining and summarising legal records and documents; maintaining complete records of financial transactions; collecting, processing and presenting mathematical, statistical and actuarial data. They may receive guidance from Managers or Professionals. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.3.3.1 Administrative and related assistants
*3.3.3.2 Legal and related business assistants
*3.3.3.3 Bookkeepers
*3.3.3.4 Statistical and mathematical assistants

COMMENTS

This minor group contains the following ISCO-68 occupational categories: 0-84.90 Other statistical and mathematical technicians; 3-21.20 Stenographic secretary; 3-21.30 Verbatim reporter; 3-31.10 Bookkeeper, general; 3-93.10 Office clerk, general; 3-93.20 Correspondence clerk; 3-93.40 Legal clerk; 3-93.50 Insurance clerk.

*3.3.3.1 ADMINISTRATIVE AND RELATED ASSISTANTS

ADMINISTRATIVE AND RELATED ASSISTANTS implement and support the communication, documentation and internal managerial co-ordination activities of an organisational unit to assist the head of unit and other staff, and make verbatim reports of proceedings.

TASKS include -

(a) scanning, recording and distributing mail, correspondence and documents;
(b) obtaining, proposing and monitoring deadlines and follow-up dates;
(c) organising and supervising filing systems;
(d) drafting administrative correspondence and minutes;
(e) making verbatim reports of proceedings in legislative assemblies, courts of law or other places in shorthand or by other means;
(f) editing and transcribing correspondence, minutes and reports from dictation or written drafts to conform to office standards, using typewriter or word-processing equipment;
(g) screening requests for meetings, scheduling and organising meetings and travel arrangements for head of unit and other members of staff;
(h) assisting in the preparation of budgets, monitoring of expenditures, drafting of contracts and purchasing or acquisition orders;

(i) monitoring staff movements, leave and entitlements usage within the unit;

(j) assisting head of unit and other staff with inquiries of an administrative or organisational nature;

(k) assisting head of unit in organising and hosting hospitality functions for outside visitors or members of staff;

(l) performing other related tasks;

(m) supervising other workers.

ISCO-68 GROUPS included -

3-21.20 Stenographic secretary
3-21.30 Verbatim reporter
3-93.10 Office clerk, general
3-93.20 Correspondence clerk

*3.3.3.2 LEGAL AND RELATED BUSINESS ASSISTANTS

LEGAL AND RELATED BUSINESS ASSISTANTS assist General managers, Specialised managers, Lawyers and Business professionals in connection with legal and related matters, such as insurance contracts, granting of loans and carrying out of financial transactions.

TASKS include -

(a) examining, or making arrangements for examining, legal records and other relevant documents;

(b) preparing papers summarising legal positions, or setting out conditions of loans or insurance;

(c) keeping track of and dispatching notices concerning deadlines and premiums and other payments due;

(d) advising clients and agents on legal or technical matters relating to individual cases;

(e) recording documents relating to transfer of real estate, stocks or other matters requiring formal registration;

(f) checking validity of documents and forwarding documents to company's share register;

(g) performing other related tasks;

(h) supervise other workers.
ISCO-68 GROUPS included -

3-93.40 Legal clerk
3-93.50 Insurance clerk

*3.3.3.3 BOOKKEEPERS

BOOKKEEPERS maintain complete records of financial transactions of an undertaking and verify accuracy of documents and records relating to such transactions.

TASKS include -

(a) maintaining complete records of all financial transactions of an undertaking according to general bookkeeping principles, with guidance from Accountants;

(b) verifying accuracy of documents and records relating to payments, receipts and other financial transactions;

(c) preparing financial statements and reports for specified periods;

(d) applying knowledge of bookkeeping principles and practices in order to identify and solve problems arising in the course of their work;

(e) performing other related tasks;

(f) supervising other workers.

ISCO-68 GROUPS included:

3-31.10 Bookkeeper, general

*3.3.3.4 STATISTICAL AND MATHEMATICAL ASSISTANTS

STATISTICAL AND MATHEMATICAL ASSISTANTS assist in planning the collection, processing and presentation of mathematical, statistical or actuarial data and in carrying out these operations, usually working under the guidance of Mathematicians, statisticians and actuaries.

TASKS include -

(a) assisting in planning and performing mathematical, statistical and actuarial calculations;

(b) preparing detailed estimates of quantities and costs of materials and labour required for statistical census and survey operations;

(c) assisting with technical supervision of establishing, maintaining and using registers and sampling frames for census and survey operations;

(d) assisting with technical supervision of data collection and quality control operations in censuses and surveys;
(e) using standard computer software packages to perform mathematical, statistical and actuarial calculations;

(f) preparing mathematical, statistical or actuarial results for presentation in graphical or tabular form;

(g) applying knowledge of mathematical, statistical or actuarial principles and practices in order to identify and solve problems arising in the course of their work;

(h) performing other related tasks;

(i) supervising other workers in this group.

ISCO-68 GROUPS included:
0-84.90 Other statistical and mathematical technicians

MINOR GROUP *3.3.4
PRIMARY AND PRE-PRIMARY EDUCATION TEACHERS

PRIMARY AND PRE-PRIMARY EDUCATION TEACHERS teach a range of subjects in primary education and organise educational activities for children below primary-school age.

Tasks performed usually include preparing programme of learning and giving instruction in a range of subjects at the primary education level; planning and organising activities designed to facilitate children's development of language, physical and social skills. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.3.4.1 Primary education teachers
*3.3.4.2 Pre-primary education teachers

COMMENTS

This minor group contains the following ISCO-68 unit groups: 1-33 Primary education teachers; 1-34 Pre-primary education teachers.

*3.3.4.1 PRIMARY EDUCATION TEACHERS

PRIMARY EDUCATION TEACHERS teach a range of subjects to pupils at primary education level.
TASKS include -

(a) preparing programme of learning and giving instruction in areas such as reading, writing and mathematics and other subjects, within prescribed or recommended curriculum;

(b) preparing, administering and marking tests, projects and assignments to train pupils and to evaluate their progress, and giving remedial instruction if necessary;

(c) encouraging personal development of pupils and discussing their progress with parents and head teacher;

(d) supervising pupils in classroom and other areas of school;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

1-33 Primary education teachers, consisting of -

   1-33.20 First-level education teacher
   1-33.90 Other primary education teachers

*3.3.4.2 PRE-PRIMARY EDUCATION TEACHERS

PRE-PRIMARY EDUCATION TEACHERS organise group and individual play and educational activities to support and promote physical, mental and social development of children below primary-school age.

TASKS include -

(a) planning and organising activities designed to facilitate the children's development of physical and social skills;

(b) promoting language development through storytelling, role play, songs, rhymes and informal conversations and discussions;

(c) observing children in order to evaluate progress and discuss progress and possible problems with parents;

(d) supervising children's activities to ensure safety and resolve conflicts;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

1-34 Pre-primary education teachers, consisting of -

   1-34.20 Kindergarten teacher
   1-33.90 Other pre-primary education teachers
MINOR GROUP *3.3.5
SOCIAL ADVISERS AND HELPERS

SOCIAL ADVISERS AND HELPERS provide guidance to clients in social and related matters to enable them to find and use resources to overcome difficulties and achieve particular goals.

Tasks performed usually include helping individuals and families with personal and social problems; working to prevent development of delinquency or to achieve rehabilitation by organising and supervising social activities of individuals and groups; helping physically or mentally handicapped persons to obtain adequate treatment and improve their ability to function in society.

Occupations in this minor group are classified under the following unit group:

*3.3.5.0 Social advisers and helpers

COMMENTS

This minor group contains the following ISCO-68 unit group: 1-93 Social workers.

*3.3.5.0 SOCIAL ADVISERS AND HELPERS

SOCIAL ADVISERS AND HELPERS provide guidance to clients in social and related matters to enable them to find and use resources to overcome difficulties and achieve particular goals.

TASKS include -

(a) helping individuals and families with personal and social problems;
(b) collecting information relevant to clients' needs and advising them on their rights and obligations;
(c) analysing the client's situation and presenting alternative approaches to resolving problems;
(d) compiling case records or reports for courts and other legal proceedings;
(e) planning, evaluating, improving and developing welfare services;
(f) working to prevent development of delinquency or to achieve rehabilitation by organising and supervising social, recreational and educational activities in youth clubs, community centres and similar organisations, or by other means;
(g) helping physically or mentally handicapped persons to obtain adequate treatment and improve their ability to function in society;
(h) planning and organising home-help services;
(i) performing other related tasks;

(j) supervising other workers.

**ISCO-68 GROUPS included:**

1-93 Social workers, consisting of -

1-93.10 Social worker, general
1-93.20 Social welfare worker
1-93.30 Culture centre worker
1-93.40 Social worker, delinquency
1-93.50 Psychiatric social worker
1-93.90 Other social workers

**MINOR GROUP *3.3.6**

**RELIGION ASSOCIATE PROFESSIONALS**

RELIGION ASSOCIATE PROFESSIONALS perform or assist in performing religious rites, participate in religious ceremonies and meetings or predict future events by practising astrology or by other means.

Tasks performed usually include preaching the religious faith at meetings, before a congregation or to non-believers; casting horoscopes of persons and determining auspicious times for various human activities. They may receive guidance from Religion professionals. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.3.6.1 Non-ordained religion assistants

*3.3.6.2 Astrologers and related workers

**COMMENTS**

This minor group contains the following ISCO-68 occupational categories: 1-41.40 Religious worker (member of religious order); 1-49.90 Other workers in religion, part; 1-99.60 Astrologer and fortune teller, part.

*3.3.6.1 NON-ORDAINED RELIGION ASSISTANTS

NON-ORDAINED RELIGION ASSISTANTS perform or assist in performing religious rites, ceremonies, preach or assist at meetings and instruct children and candidates for admittance into the faith.

**TASKS include -**

(a) preaching the religious faith at meetings, before congregation and to individuals;
(b) assisting Religion professionals in performing religious rites, ceremonies, and at meetings and in religious studies;

(c) propagating doctrine to non-believers;

(d) instructing children and candidates for admittance into the faith;

(e) performing other related tasks;

(f) supervising other workers.

ISCO-68 GROUPS included:

1-41.40 Religious worker (member of religious order)

1-49.90 Other workers in religion, part

*3.3.6.2 ASTROLOGERS AND RELATED WORKERS

ASTROLOGERS AND RELATED WORKERS predict future events in persons' lives by practising astrology or by other techniques.

TASKS include -

(a) casting horoscope of persons at birth or later to relate past and forecast future events and conditions of their lives;

(b) determining auspicious times for various human activities such as marriages, journeys and religious and other ceremonies;

(c) studying the influence of the constellation of stars and of other phenomena on a person's life and situation;

(d) advising individuals on precautions to be taken to avoid evil influences;

(e) performing other related tasks;

(f) supervising other workers.

ISCO-68 GROUPS included:

1-99.60 Astrologer and fortune teller, part

MINOR GROUP *3.3.7

ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS

ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS entertain audiences by performing amusing, spectacular or exciting acts in circuses, in stadiums, on stage or on film or television, or train or direct those who perform such activities.
Tasks performed usually include performing amusing antics, tricks of illusion, difficult and spectacular acrobatics or participating in athletic competitions to entertain an audience; training and directing those performing such tasks. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*3.3.7.1 Clowns, magicians, acrobats and related workers

*3.3.7.2 Athletes and related workers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational category: 1-75 Circus performers; 1-79.90 Other performing artists; 1-80 Athletes, sportsmen and related workers.

*3.3.7.1 CLOWNS, MAGICIANS, ACROBATS AND RELATED WORKERS

CLOWNS, MAGICIANS, ACROBATS AND RELATED WORKERS entertain audiences in circuses and other places by performing a variety of acts.

TASKS include -

(a) performing amusing antics and telling funny stories;
(b) performing tricks of illusion and sleight of hand, and feats of hypnotism;
(c) performing difficult and spectacular acrobatics, gymnastic or juggling feats;
(d) training and performing with animals;
(e) performing other related tasks;
(f) training or supervising other workers in this group.

ISCO-68 GROUPS included:

1-75 Circus performers, consisting of -

1-75.20 Clown
1-75.30 Magician
1-75.40 Acrobat
1-75.50 Aerialist
1-75.90 Other circus performers

1-79.90 Other performing artists
ATHLETES AND RELATED WORKERS participate in competitive sporting events, train athletes and regulate sporting events.

TASKS include -

(a) participating in competitive sporting events;
(b) coaching athletes to develop their knowledge of and ability in their sport;
(c) participating in the regulation of the conduct of sporting competitions;
(d) instructing persons in development and maintenance of their physical fitness by means of gymnastics and other exercises;
(e) performing other related tasks;
(f) training or supervising other workers in this group.

ISCO-68 GROUPS included:

1-80 Athletes, sportsmen and related workers, consisting of -
   1-80.20 Professional sportsman
   1-80.30 Sports coach
   1-80.40 Sports official
   1-80.50 Physical trainer
   1-80.90 Other athletes, sportsmen and related workers
MAJOR GROUP *4
CLERKS

SUB-MAJOR GROUPS

*4.1 Office clerks

*4.2 Client-oriented clerks

SUB-MAJOR AND MINOR GROUPS

*4.1 Office clerks
*4.1.1 Keyboard operating clerks
*4.1.2 Numerical clerks
*4.1.3 Material recording and transport clerks
*4.1.4 Library, mail and related clerks

*4.2 Client-oriented clerks
*4.2.1 Cashiers, tellers and related clerks
*4.2.2 Client information clerks

SUB-MAJOR, MINOR AND UNIT GROUPS

*4.1 Office clerks
*4.1.1 Keyboard operating clerks
  *4.1.1.1 Stenographers and typists (3-21.10 + .40 + .90, part)
  *4.1.1.2 Word processing and related operators (3-21.50 + .90, part)
*4.1.3 Data entry operators (3-22)
*4.1.4 Calculating machine operators (3-41)
*4.1.2 Numerical clerks
  *4.1.2.1 Accounting and bookkeeping clerks (3-31.20 + .90, part + 3-39, except .40 + 3-93.30)
  *4.1.2.2 Statistical and finance clerks (3-39.40 + 3-99.20)

*4.1.3 Material recording and transport clerks
  *4.1.3.1 Stock clerks (3-91)
  *4.1.3.2 Production clerks (3-92)
  *4.1.3.3 Transport clerks (3-59.20 + .25 + .35 + .40 + .50 + .70 + .90)

*4.1.4 Library, mail and related clerks
  *4.1.4.1 Library and filing clerks (3-95)
  *4.1.4.2 Mail clerks (3-59.80 + 3-70, except .40 and .90, part)
  *4.1.4.3 Coding, proofreading and related clerks (3-93.90, part + 3-99, except .20 and .50)
  *4.1.4.4 Scribes (3-93.90, part)

*4.2 Client-oriented clerks
  *4.2.1 Cashiers, tellers and related clerks
    *4.2.1.1 Cashiers and ticket issuers (3-31.30 + .60 + .90, part)
    *4.2.1.2 Tellers and other counter clerks (3-31.40 + .50 + .70)
    *4.2.1.3 Bet bookmakers and croupiers (5-99.20 + .30)
    *4.2.1.4 Pawnbrokers and moneylenders (4-90.20)

  *4.2.2 Client information clerks
    *4.2.2.1 Travel agency clerks (3-94.40)
    *4.2.2.2 Receptionists and information clerks (3-94.10 + .20 + .30 + .90, part)
    *4.2.2.3 Telephone switchboard operators (3-80.20 + .90)
MAJOR GROUP *4
CLERKS

CLERKS record, organise, store and retrieve information related to the work in question, compute numerical, financial and statistical data, and perform a number of client-oriented clerical duties especially in connection with money-handling operations, travel arrangements, and business information and appointments.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that in the case of some of the occupations in this major group the needed skills, or a part of them, may be acquired through appropriate work experience or on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Clerks usually include stenography, typing, and operating various office machines; recording and computing numerical, financial and statistical data; keeping records and reporting on operational aspects of passenger and freight transport; performing clerical duties in libraries and post offices; filing documents; preparing data for processing; checking material prepared for printing; writing on behalf of illiterate persons; performing money-handling operations; dealing with travel arrangements; supplying information to clients of establishments and making appointments; operating a telephone switchboard. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major groups:

*4.1 Office clerks

*4.2 Client-oriented clerks

SUB-MAJOR GROUP *4.1
OFFICE CLERKS

OFFICE CLERKS record, organise, store and retrieve information related to the work in question and compute numerical, financial and statistical data.
Most occupations in this sub-major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through appropriate work experience or on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Office clerks usually include stenography, typing, and operating data entry, word processing, calculating, copying and similar office machines; recording and computing numerical, financial and statistical data, including that related to production materials; keeping records and reporting on operational aspects of passenger and freight transport; performing clerical duties in libraries and post offices; filing documents; preparing data for processing; checking material prepared for printing; writing on behalf of illiterate persons. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*4.1.1 Keyboard operating clerks
*4.1.2 Numerical clerks
*4.1.3 Material recording and transport clerks
*4.1.4 Library, mail and related clerks

MINOR GROUP *4.1.1
KEYBOARD OPERATING CLERKS

Keyboard operating clerks record oral or written information on paper or in machine readable form, and operate bookkeeping and calculating machines.

Tasks performed usually consist of recording dictated and other matter in shorthand; typing it on paper or using word processors or teleprinters; entering various data into electronic equipment or in the form of punched holes on cards or special tapes; operating bookkeeping and calculating machines. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*4.1.1.1 Stenographers and typists
*4.1.1.2 Word processing and related operators
*4.1.1.3 Data entry operators
*4.1.1.4 Calculating machine operators
COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 3-21.10 Stenographer-typist, general; 3-21.40 Typist; 3-21.50 Teletypist; 3-21.90 Other stenographers, typists and teletypists; 3-22 Card- and tape-punching machine operators; 3-41 Bookkeeping and calculating machine operators.

*4.1.1.1 STENOGRAPHERS AND TYPISTS

STENOGRAPHERS AND TYPISTS record oral or written matter in shorthand and, using typewriters, produce documents on paper.

TASKS include -

(a) taking dictation and other matter in shorthand;
(b) making transcriptions in typewritten form;
(c) performing limited clerical duties, such as filing or using photocopying machines;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

3-21.10 Stenographer-typist, general
3-21.40 Typist
3-21.90 Other stenographers, typists and teletypists (part)

*4.1.1.2 WORD PROCESSING AND RELATED OPERATORS

WORD PROCESSING AND RELATED OPERATORS type, edit, and print various documents using word processing equipment, or send and receive messages and facsimiles by means of a teleprinter, telefax or similar machines.

TASKS include -

(a) typing correspondence, business forms and other documents into word processing machines;
(b) planning and executing layout and format, if not preset;
(c) altering, rearranging and editing typed text;
(d) operating printer, usually linked to the word processor;
(e) sending and receiving messages or facsimiles by means of a teleprinter;
(f) performing limited clerical duties;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

3-21.50 Teletypist
3-21.90 Other stenographers, typists and teletypists (part)

*4.1.1.3 DATA ENTRY OPERATORS

DATA ENTRY OPERATORS enter numerical and other data into electronic equipment for data entry, processing and transmission, or enter data on cards and tapes, using punching machines.

TASKS include -

(a) entering and transcribing numerical and other data from source material into computer-compatible storage and processing devices;
(b) correcting entered and transcribed data, if needed;
(c) recording data from source material in the form of perforations on cards or tapes;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

3-22 Card- and tape-punching machine operators, consisting of -

3-22.20 Card- and tape-punching machine operator
3-22.90 Other card- and tape-punching machine operators

*4.1.1.4 CALCULATING MACHINE OPERATORS

CALCULATING MACHINE OPERATORS operate bookkeeping and calculating machines.

TASKS include:

(a) operating bookkeeping machines to make records of business transactions;
(b) operating electrical or manual machines to make arithmetical calculations;
(c) performing other related tasks;
(d) supervising other workers in this group.
ISCO-68 GROUPS included:

3-41 Bookkeeping and calculating machine operators, consisting of -

3-41.20 Bookkeeping machine operator
3-41.30 Calculating machine operator

MINOR GROUP *4.1.2
NUMERICAL CLERKS

NUMERICAL CLERKS obtain, compile and compute financial and statistical data, and information concerning production materials, goods produced, and establishment's personnel.

Tasks performed usually consist of helping with accounting and bookkeeping records; taking charge of cash transactions incidental to the business; calculating production costs; calculating wages; keeping records of and collecting purchase and other payments; obtaining, compiling and computing statistical data; performing clerical tasks relating to transactions of financial establishments. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*4.1.2.1 Accounting and bookkeeping clerks

*4.1.2.2 Statistical and finance clerks

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 3-31.20 Bookkeeping clerk; 3-31.90 Other bookkeepers and cashiers, part; 3-39 Bookkeepers, cashiers and related workers not elsewhere classified; 3-93.30 Personnel clerk; 3-99.20 Statistical clerk.

*4.1.2.1 ACCOUNTING AND BOOKKEEPING CLERKS

ACCOUNTING AND BOOKKEEPING CLERKS help with accounting and bookkeeping records, production costs computations and cash payments.

TASKS include -

(a) making entries in accounting and bookkeeping records;

(b) performing other limited bookkeeping functions;

(c) calculating from existing records unit costs of various production operations and products;

(d) keeping records and presenting in tabular or other form information concerning establishment's personnel;
(e) calculating wages due from records of hours worked or work performed by individual employees;

(f) collecting payments and performing clerical duties relating to debt collection;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

3-31.20 Bookkeeping clerk
3-31.90 Other bookkeepers and cashiers, part
3-39.20 Cost computing clerk
3-39.30 Wages clerk
3-39.90 Other bookkeepers, cashiers and related workers
3-93.30 Personnel clerk

*4.1.2.2 STATISTICAL AND FINANCE CLERKS

STATISTICAL AND FINANCE CLERKS obtain, compile and compute statistical data or perform clerical tasks relating to transactions of financial establishments.

TASKS include -

(a) obtaining and compiling statistical data based on routine or special sources of information;

(b) calculating totals, averages, percentages and other details and presenting them in the required tabular form;

(c) preparing financial documents, calculating interest or brokerage charges and stamp duties;

(d) maintaining records of bonds shares and other securities bought or sold on behalf of clients or employer;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

3-39.40 Finance clerk
3-99.20 Statistical clerk
MINOR GROUP *4.1.3
MATERIAL RECORDING AND TRANSPORT CLERKS

MATERIAL RECORDING AND TRANSPORT CLERKS keep records of goods produced, purchased, stored, dispatched, and of materials needed at specified production dates, to ensure that production quotas are met and orders fulfilled. As transport clerks they co-ordinate, keep records and prepare reports on operational aspects of passenger and freight transport.

Tasks performed usually consist of recording produced and stocked goods, and those ordered and dispatched; recording production materials received, put into stock or issued; computing quantities of the production materials required at specified dates and helping with preparation and checking of production operation schedules; co-ordinating, keeping records and preparing reports on operational aspects of passenger and freight transport. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*4.1.3.1 Stock clerks
*4.1.3.2 Production clerks
*4.1.3.3 Transport clerks

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 3-59.20 Railway service supervisor; 3-59.25 Train dispatcher; 3-59.35 Railway goods agent; 3-59.40 Road transport service supervisor; 3-59.50 Air transport service supervisor; 3-59.70 Flight operations officer; 3-59.90 Other transport and communications supervisors; 3-91 Stock clerks; 3-92 Material and production planning clerks.

*4.1.3.1 STOCK CLERKS

STOCK CLERKS maintain records of goods and material received, weighed, issued, dispatched or put into stock.

TASKS include -

(a) arranging and controlling the receipt and dispatch of goods and keeping appropriate records;

(b) maintaining stock records of an enterprise, verifying issues, estimating needs and making requisitions of new stocks;

(c) receiving, storing and issuing tools, merchandise, equipment or other goods and maintaining relevant records;

(d) weighing goods received, issued, produced, or dispatched and maintaining relevant records;

(e) compiling inventories of furniture and other items received for storage;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:

3-91 Stock clerks, consisting of -

3-91.20 Dispatching and receiving clerk
3-91.30 Stock records clerk
3-91.40 Storeroom clerk
3-91.50 Weighing clerk
3-91.90 Other stock clerks

*4.1.3.2 PRODUCTION CLERKS

PRODUCTION CLERKS compute quantities of materials required at specified dates for the production programme or prepare and check production operation schedules.

TASKS include -

(a) computing quantities, qualities and types of materials required by production programme;
(b) preparing requirements schedules;
(c) verifying stocks, arranging deliveries and investigating delays;
(d) analysing orders from customers and preparing or assisting in preparation of the required production operations schedules;
(e) keeping records to ascertain whether production schedules were met;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:

3-92 Material and production planning clerks, consisting of -

3-92.20 Material planning clerk
3-92.30 Production planning clerk

*4.1.3.3 TRANSPORT CLERKS

TRANSPORT CLERKS co-ordinate, keep records and prepare reports on operational aspects of passenger and freight transport.
TASKS include -

(a) co-ordinating, supervising and keeping records of operational activities concerning railway transport of passengers and freight, and making reports for management;

(b) directing the movements of trains within a division or zone of a railway system and keeping related records;

(c) directing, controlling and keeping records of freight handling at a railway yard;

(d) planning, co-ordinating and keeping records of operational activities concerning road transport, such as allocation and scheduling of vehicles and drivers, loading and unloading of vehicles and storage of goods in transit, and making reports for management;

(e) co-ordinating, supervising and keeping records of operational activities concerning air transport of passengers and of freight, such as seat reservations, passenger lists and freight manifests, and making reports for management;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

3-59.20 Railway service supervisor
3-59.25 Train dispatcher
3-59.35 Railway goods agent
3-59.40 Road transport service supervisor
3-59.50 Air transport service supervisor
3-59.70 Flight operations officer
3-59.90 Other transport and communications supervisors

MINOR GROUP *4.1.4
LIBRARY, MAIL AND RELATED CLERKS

LIBRARY, MAIL AND RELATED CLERKS perform clerical duties in libraries and post offices, file documents, prepare data for processing, check material for printing and write on behalf of illiterate persons.

Tasks performed usually consist of recording information regarding acquisition, issue and return of books; classifying and filing various documents; sorting, recording and delivering mail; coding; correcting proofs; performing a number of miscellaneous clerical duties; writing on behalf of illiterate persons. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*4.1.4.1 Library and filing clerks
*4.1.4.2 Mail clerks
*4.1.4.3 Coding, proofreading, and related clerks
*4.1.4.4 Scribes

**COMMENTS**

This minor group contains the following ISCO-68 unit group and occupational categories: 3-59.80 Postal services supervisor; 3-70.20 Mail sorting clerk; 3-70.30 Postman; 3-70.90 Other mail distribution clerks, part; 3-93.90 Other correspondence and reporting clerks; 3-95 Library and filing clerks; 3-99.30 Coding clerk, data-processing; 3-99.40 Proof reader; 3-99.90 Other clerks.

*4.1.4.1 LIBRARY AND FILING CLERKS

LIBRARY AND FILING CLERKS maintain library services or perform filing services.

**TASKS include** -

(a) maintaining library records relating to the acquisition, issue and return of books and other publications and performing related duties;

(b) photocopying or in other ways copying documents and other records;

(c) classifying and systematically filing papers, documents and other records;

(d) performing other related tasks;

(e) supervising other workers in this group.

**ISCO-68 GROUPS included:**

3-95 Library and filing clerks, consisting of -

3-95.20 Library clerk
3-95.30 Filing clerk

*4.1.4.2 MAIL CLERKS

MAIL CLERKS perform sorting, recording, delivery and other duties in connection with mail services.
TASKS include -

(a) performing mail handling duties in public postal services;
(b) sorting and delivering mail to private houses and elsewhere;
(c) sorting and keeping simple records of incoming and outgoing letters and dispatching outgoing mail in various establishments;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

3-59.80 Postal services supervisor
3-70.20 Mail sorting clerk
3-70.30 Postman
3-70.90 Other mail distribution clerks, part

*4.1.4.3 CODING, PROOFREADING AND RELATED CLERKS

CODING, PROOFREADING AND RELATED CLERKS convert information into codes, verify and correct proofs, and perform a number of miscellaneous clerical duties.

TASKS include -

(a) converting information into codes and classifying information by codes for purposes of data processing;
(b) comparing proofs of texts and related material prepared for reproduction with original material and marking errors for correction according to the established rules;
(c) sorting forms and marking them with identification numbers;
(d) sorting documents for filing or to collate sets of pages;
(e) addressing circulars and envelopes by hand;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:

3-93.90 Other correspondence and reporting clerks, part
3-99.30 Coding clerk, data-processing
3-99.40 Proof reader
3-99.90 Other clerks
*4.1.4.4 SCRIBES

SCRIBES write letters and complete forms on behalf of illiterate persons.

TASKS include -

(a) reading letters and other written matter to illiterate persons and providing necessary interpretation and information;
(b) writing letters and completing forms on behalf of illiterate persons.
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:
3-93.90 Other correspondence and reporting clerks, part

SUB-MAJOR GROUP *4.2
CLIENT-ORIENTED CLERKS

CLIENT-ORIENTED CLERKS deal directly with clients in connection with money-handling operations, travel arrangements, business information and appointments, and by operating telephone switchboards.

Most occupations in this sub-major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through appropriate work experience or on-the-job training. For new entrants a period of on-the-job training may be necessary.

Tasks performed by Client-oriented clerks usually consist of performing money-handling operations in banks, post-offices, or as payments for goods and services bought; making and recording travel arrangements; supplying information to establishments of clients and making appointments; operating a telephone switchboard. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*4.2.1 Cashiers, tellers and related clerks
*4.2.2 Client information clerks
CASHIERS, TELLERS AND RELATED CLERKS perform a number of operations in connection with receiving and paying out or lending money.

Tasks performed usually consist of receiving from clients payments for goods and services bought; dealing with clients of banks or post offices in connection with money operations or postal services; receiving and paying off bets on results of sporting events; conducting gambling games; lending money against articles deposited or other securities. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*4.2.1.1 Cashiers and ticket issuers
*4.2.1.2 Tellers and other counter clerks
*4.2.1.3 Bet bookmakers and croupiers
*4.2.1.4 Pawnbrokers and moneylenders

COMMENTS

This minor group contains the following ISCO-68 occupational categories: 3-31.30 Office cashier; 3-31.40 Bank teller; 3-31.50 Money changer; 3-31.60 Cash desk cashier; 3-31.70 Post office counter clerk; 3-31.90 Other bookkeepers and cashiers, part; 4-90.20 Pawnbroker; 5-99.20 Bookmaker, sport; 5-99.30 Croupier.

*4.2.1.1 CASHIERS AND TICKET ISSUERS

CASHIERS AND TICKET ISSUERS receive directly from clients payments for goods or services in establishments such as retail stores or ticket-issuing offices, or perform simple cash-handling operations in a bank or within an establishment.

TASKS include -

(a) receiving and verifying cash, cheque or credit card payments;
(b) giving change and issuing receipts;
(c) issuing tickets at ticket-issuing offices, and taking corresponding payments;
(d) paying out cash, mostly in banks, against written orders or credit notes and obtaining receipts;
(e) keeping records and reconciling them with cash balance;
(f) receiving incoming cash of an establishment, checking it against sales slips and other documents, and preparing it for deposit at bank;
(g) paying out wages to establishments' personnel;
(h) operating cash register;
(i) performing other related tasks;
(j) supervising other workers in this group.

ISCO-68 GROUPS included:
3-31.30 Office cashier
3-31.60 Cash desk cashier
3-31.90 Other bookkeepers and cashiers, part

*4.2.1.2 TELLERS AND OTHER COUNTER CLERKS

TELLERS AND OTHER COUNTER CLERKS deal directly with clients of banks or post offices in connection with receiving, changing and paying out money or providing mail services.

TASKS include -
(a) receiving money or cheques from clients;
(b) paying out money to clients;
(c) paying bills and making money transfers on clients' behalf;
(d) crediting and debiting clients' accounts;
(e) changing money from one currency to another, as requested by clients;
(f) making records of all transactions and reconciling them with cash balance;
(g) receiving mail, selling postage stamps and conducting other post office counter business such as bill payments, money transfers and related;
(h) performing other related tasks;
(i) supervising other workers in this group.

ISCO-68 GROUPS included:
3-31.40 Bank teller
3-31.50 Money changer
3-31.70 Post office counter clerk

*4.2.1.3 BET BOOKMAKERS AND CROUPIERS

BET BOOKMAKERS AND CROUPIERS determine odds and receive and pay off bets on results of sporting or other competitive events, or conduct games of chance in gambling establishments.
TASKS include -

(a) determining risks to decide odds and to hedge or refuse bets;
(b) preparing and issuing lists of approximate odds;
(c) distributing cards, rolling dice or spinning a roulette wheel;
(d) explaining and interpreting operating rules of a gambling establishment;
(e) announcing winning numbers, paying winners and collecting payments from losers;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:
5-99.20 Bookmaker, sport
5-99.30 Croupier

*4.2.1.4 PAWNBROKERS AND MONEYLENDERS

PAWNBROKERS AND MONEYLENDERS lend money against articles deposited as pledges or or against property or other security.

TASKS include -

(a) evaluating articles offered as pledges, calculating interest, and lending money;
(b) returning articles when the loan is paid or, in the event of non-payment, selling pledged articles;
(c) lending money on personal or collateral security or on security of property and charging interest on loans advanced;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:
4-90.20 Pawnbroker
MINOR GROUP *4.2.2
CLIENT INFORMATION CLERKS

CLIENT INFORMATION CLERKS deal directly with clients in connection with travel arrangements, or regarding information provided and appointments made on behalf of various establishments, including medical and dental surgeries, and by operating telephone switchboards.

Tasks performed usually consist of preparing itineraries and making travel and hotel reservations for clients; receiving clients, providing relevant information and making appointments on behalf of the establishment or surgery in question; operating a telephone switchboard. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*4.2.2.1 Travel agency clerks
*4.2.2.2 Receptionists and information clerks
*4.2.2.3 Telephone switchboard operators

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 3-80.20 Telephone switchboard operator; 3-80.90 Other telephone and telegraph operators; 3-94 Receptionists and travel agency clerks, except .90 Other receptionists and travel agency clerks, part.

*4.2.2.1 TRAVEL AGENCY CLERKS

TRAVEL AGENCY CLERKS supply information, arrange travel itineraries and obtain necessary reservations.

TASKS include -
(a) advising customer on itineraries and method of travel;
(b) preparing itineraries;
(c) making necessary reservations;
(d) issuing tickets, vouchers and other documents;
(e) obtaining visas if necessary;
(f) preparing bills and receiving payments;
(g) performing other related tasks;
(h) supervising other workers in this group.
ISCO-68 GROUPS included:

3-94.40 Travel agency clerk

*4.2.2.2 RECEIPTIONISTS AND INFORMATION CLERKS

RECEPTIONISTS AND INFORMATION CLERKS receive clients, provide information and make appointments on behalf of various establishments or surgeries.

TASKS include -

(a) dealing with telephone calls requesting information or appointments;
(b) making appointments for clients or patients;
(c) receiving clients, answering inquiries and providing relevant information;
(d) directing clients to appropriate location or person;
(e) supplying information pamphlets, brochures or forms;
(f) making reservations and arranging registration for hotel guests, keeping records, and presenting departing guests with bills;
(g) receiving dental, hospital and other patients, making appointments, keeping necessary records, and in some cases preparing and dispatching bills;
(h) performing other related tasks;
(i) supervising other workers in this group.

ISCO-68 GROUPS included:

3-94.10 Receptionist, general
3-94.20 Hotel receptionist
3-94.30 Doctor's or dentist's receptionist
3-94.90 Other receptionists and travel agency clerks, part

*4.2.2.3 TELEPHONE SWITCHBOARD OPERATORS

TELEPHONE SWITCHBOARD OPERATORS operate a telephone switchboard or a section thereof, dealing with local or long-distance calls, and various telephone inquiries.

TASKS include -

(a) making contact between caller and person called;
(b) making connections for outgoing calls, and routing long-distance calls;
(c) recording charges;
(d) dealing with telephonic information inquiries and recording messages;
(e) performing other related tasks;
(f) supervising other workers in this group.

**ISCO-68 GROUPS included:**

3-80.20 Telephone switchboard operator
3-80.90 Other telephone and telegraph operators
MAJOR GROUP *5
SERVICE WORKERS AND SHOP SALES WORKERS

SUB-MAJOR GROUPS

*5.1 Personal and protective services workers
*5.2 Shop assistants, demonstrators and models

SUB-MAJOR AND MINOR GROUPS

*5.1 Personal and protective services workers
   *5.1.1 Travel attendants and guides
   *5.1.2 Housekeeping and restaurant services workers
   *5.1.3 Personal care workers
   *5.1.4 Protective services workers

*5.2 Shop assistants, demonstrators and models
   *5.2.1 Shop assistants, demonstrators and models

SUB-MAJOR, MINOR AND UNIT GROUPS

*5.1 Personal and protective services workers
   *5.1.1 Travel attendants and guides
      *5.1.1.1 Flight attendants and travel stewards (5-00.40 + 5-20.50 + 5-40.60 + .90, part + 5-99.70)
      *5.1.1.2 Transport conductors (3-60)
      *5.1.1.3 Travel guides and ground attendants (3-94.90, part + 5-91)
*5.1.2 Houskeeping and restaurant services workers
  *5.1.2.1 House stewards and housekeepers (5-20, except .50)
  *5.1.2.2 Cooks (5-31)
  *5.1.2.3 Waiters and bartenders (5-32)

*5.1.3 Personal care workers
  *5.1.3.1 Hairdressers, barbers, beauticians and related workers (0-79.90, part + 5-70)
  *5.1.3.2 Nursing and related aids (5-99.40, part + .50, part + .60, part)
  *5.1.3.3 Nursemaids, companions and valets (5-40.30 + .35 + .40 + .90, part + 5-99.90, part)
  *5.1.3.4 Fortune-tellers (1-99.60, part)
  *5.1.3.5 Undertakers and embalmers (5-92)

*5.1.4 Protective services workers
  *5.1.4.1 Fire-fighters (5-81, except .20 and .90, part)
  *5.1.4.2 Police (5-82, except .30)
  *5.1.4.3 Prison guards (5-89.30)

*5.2 Shop assistants, demonstrators and models
  *5.2.1 Shop assistants, demonstrators and models
    *5.2.1.1 Shop assistants and demonstrators (4-21, part + 4-51, except .40)
    *5.2.1.2 Fashion and other models (4-51.40 + 5-99.90, part)
MAJOR GROUP *5
SERVICE WORKERS AND SHOP SALES WORKERS

SERVICE WORKERS AND SHOP SALES WORKERS provide personal and protective services related to travel, housekeeping, catering, personal care, and protection against fire and unlawful acts, or they sell and demonstrate goods in wholesale or retail shops and similar establishments, and pose as models for artistic creation and display.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6, or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that in the case of some of the occupations in this major group the needed skills, or a part of them, may be acquired through appropriate work experience or on-the-job training. For new entrants a period of on-the-job training, in certain cases taking the form of a formalised apprenticeship, may be necessary.

Tasks performed by Service workers and shop sales workers usually include providing personal services connected with the following: organisation and undertaking of travel; housekeeping; preparation and serving of food and beverages; personal care, such as hairdressing or beauty treatment; companionship; helping with nursing; fortune telling; embalming; arranging funerals; protecting individuals and property against fire and unlawful acts, and enforcing law and order; selling goods in wholesale or retail establishments; demonstrating goods to possible customers; posing as models for artistic creation and display. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major groups:

*5.1 Personal and protective services workers

*5.2 Shop assistants, demonstrators and models

SUB-MAJOR GROUP *5.1
PERSONAL AND PROTECTIVE SERVICES WORKERS

PERSONAL AND PROTECTIVE SERVICES WORKERS provide personal and protective services related to travelling, housekeeping, catering, personal care, and protection against fire and unlawful acts.
Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6, or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through appropriate work experience or on-the-job training. For new entrants a period of on-the-job training, in some cases taking the form of a formalised apprenticeship, may be necessary.

Tasks performed by Personal and protective services workers usually include providing personal services connected with the following: organisation and undertaking of travel; housekeeping; preparation and serving of food and beverages; personal care, such as hairdressing or beauty treatment; companionship; helping with nursing; fortune telling; embalming; arranging funerals; protecting individuals and property against fire and unlawful acts, and enforcing law and order. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*5.1.1 Travel attendants and guides
*5.1.2 Housekeeping and restaurant services workers
*5.1.3 Personal care workers
*5.1.4 Protective services workers

MINOR GROUP *5.1.1
TRAVEL ATTENDANTS AND GUIDES

Travel Attendants and Guides provide various personal services in connection with travelling by airplane, ship, bus or other vehicles, and escorting individuals and groups on travel tours, sightseeing visits and excursions.

Tasks performed usually consist of ensuring comfort and safety of passengers; serving food and refreshments; providing necessary or requested information and answering various questions in connection with the journey; accompanying individuals or groups on sightseeing tours or excursions, and describing points of interest; providing other guide services. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*5.1.1.1 Flight attendants and travel stewards
*5.1.1.2 Transport conductors
*5.1.1.3 Travel guides and ground attendants

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 3-60 Transport conductors; 3-94.90 Other receptionists and travel agency clerks, part (i.e. Ground hostesses); 5-00.40 Ship's purser; 5-20.50 Chief steward, ship; 5-40.60 Ship's steward; 5-40.90 Other maids and related housekeeping service workers, part; 5-91 Guides; 5-99.70 Aircraft cabin attendant.

*5.1.1.1 FLIGHT ATTENDANTS AND TRAVEL STEWARDS

FLIGHT ATTENDANTS AND TRAVEL STEWARDS render personal services to ensure comfort and safety of passengers, serve meals and beverages, or plan and co-ordinate housekeeping activities on board ships and other vehicles.

TASKS include -

(a) greeting passengers entering aircraft, conducting them to their seats, ensuring that seat belts are fastened, and "no smoking" and similar signs obeyed;

(b) explaining use of safety equipment such as life belts and oxygen masks;

(c) distributing reading material, headphones, blankets and similar items;

(d) serving pre-prepared meals as well as beverages;

(e) selling duty-free goods;

(f) administering minor medical aid to passengers in need of it;

(g) taking appropriate action in case of emergencies or accidents;

(h) providing information especially in connection with destination, stops and timetables;

(i) planning, co-ordinating and supervising activities of crew engaged in housekeeping, meal serving and various social and other activities on board passenger or cargo vessels;

(j) taking care of general needs and comfort of ship's passengers, including keeping cabins tidy and serving meals in them, on request;
(k) performing other related tasks;
(l) supervising other workers in this group.

**ISCO-68 GROUPS included:**

- 5-00.40 Ship's purser
- 5-20.50 Chief steward, ship
- 5-40.60 Ship's steward
- 5-40.90 Other maids and related housekeeping service workers, part
- 5-99.70 Aircraft cabin attendant

*5.1.1.2 TRANSPORT CONDUCTORS*

TRANSPORT CONDUCTORS take charge of passenger trains, buses and other public transport vehicles during journeys and safeguard passengers.

**TASKS include** -

(a) collecting or issuing tickets, passes or fares;
(b) checking validity of the tickets issued;
(c) checking the listing for the entry of passengers to sleeping or pullman car;
(d) ensuring that safety regulations are respected and supervising safety and comfort of passengers;
(e) giving information to passengers, especially about stops, connections and timetables;
(f) co-operating with the driver in maintaining time schedule;
(g) taking appropriate action in case of emergencies or accidents;
(h) performing other related tasks;
(i) supervising other workers in this group.

**ISCO-68 GROUPS included:**

- 3-60 Transport conductors, consisting of -
  - 3-60.20 Railway passenger train guard
  - 3-60.30 Sleeping- or pullman-car attendant
  - 3-60.40 Bus conductor
  - 3-60.90 Other transport conductors
*5.1.1.3 TRAVEL GUIDES AND GROUND ATTENDANTS

TRAVEL GUIDES AND GROUND ATTENDANTS accompany individuals or groups on sightseeing tours or excursions, describe points of interest and provide other guide services, including taking care of passengers at airports.

TASKS include -

(a) escorting tourists and looking after their comfort;
(b) accompanying tourists on sightseeing tours and describing points of interest;
(c) accompanying tourists to museums and exhibitions and giving information on exhibits;
(d) guiding groups through factories and similar establishments and giving information about them;
(e) organising and conducting excursions such as mountain climbing, hunting or fishing;
(f) taking care of passengers at airports;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

3-94.90 Other receptionists and travel agency clerks, part (i.e. Ground hostesses)

5-91 Guides, consisting of -

  5-91.20 Travel guide
  5-91.30 Sightseeing guide
  5-91.90 Other guides

MINOR GROUP *5.1.2

HOUSEKEEPING AND RESTAURANT SERVICES WORKERS

HOUSEKEEPING AND RESTAURANT SERVICES WORKERS organise, supervise and carry out housekeeping functions in commercial establishments, institutions, or private households, or supervise and perform various kinds of work related to preparation and cooking of meals and the serving of food and beverages, in various commercial establishments, institutions, private households, ships or railway trains.
Tasks performed usually consist of engaging, training and discharging domestic staff; organising and supervising the work of domestic staff; supervising general welfare and conduct of individuals in residential institutions; controlling the purchase, storage and issue of supplies; preparing and cooking foodstuffs; serving food and beverages. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*5.1.2.1 House stewards and housekeepers
*5.1.2.2 Cooks
*5.1.2.3 Waiters and bartenders

**COMMENTS**

This minor group contains the following ISCO-68 unit groups: 5-20 Housekeeping and related service supervisors, except 50 Chief steward, ship; 5-31 Cooks; 5-32 Waiters, bartenders and related workers.

*5.1.2.1 HOUSE STEWARDS AND HOUSEKEEPERS

HOUSE STEWARDS AND HOUSEKEEPERS organise, supervise and carry out housekeeping functions in hotels, clubs, boarding schools and other enterprises and institutions, and in private households.

**TASKS include** -

(a) engaging, training, discharging, organising and supervising workers employed as domestic staff;

(b) purchasing or controlling the purchase of supplies;

(c) controlling storage and issue of supplies;

(d) supervising general welfare and conduct of individuals in residential institutions;

(e) assisting in cases of minor injury or illness by performing tasks such as taking temperature, giving medicine, putting on bandages;

(f) performing other related tasks.

**ISCO-68 GROUPS included:**

5-20.20 Housekeeper, except private service
5-20.30 Housekeeper, private service
5-20.40 House steward
5-20.60 Housekeeping matron
5-20.90 Other housekeeping and related service supervisors
5.1.2.2 COOKS

COOKS plan, organise, prepare and cook foodstuffs in hotels, restaurants and other public eating places, on board ships, on railway trains and in private households.

TASKS include -

(a) planning meals, preparing and cooking foodstuffs;
(b) planning, supervising and co-ordinating work in the kitchen;
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:

5-31 Cooks, consisting of -
  5-31.20 Head cook
  5-31.30 Cook, except private service
  5-31.40 Cook, private service
  5-31.50 Ship's cook
  5-31.90 Other cooks

5.1.2.3 WAITERS AND BARTENDERS

WAITERS AND BARTENDERS serve food and beverages in commercially operated dining and drinking places, clubs, institutions and canteens, on board ships and on railway trains.

TASKS include -

(a) serving food and beverages;
(b) advising on the choice of wines and serving them;
(c) serving alcoholic and non-alcoholic drinks at a bar;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

5-32 Waiters, bartenders and related workers, consisting of -
  5-32.10 Waiter, general
  5-32.20 Head waiter
  5-32.30 Waiter, formal service
  5-32.40 Wine waiter
  5-32.50 Bartender
  5-32.90 Other waiters, bartenders and related workers
MINOR GROUP *5.1.3
PERSONAL CARE WORKERS

PERSONAL CARE WORKERS perform various tasks in order to improve the appearance of individuals, assist medical and nursing personnel in their duties, provide companionship and perform various personal services for employers, including supervision of children, forecast future events for clients, and provide embalming and funeral services.

Tasks performed usually consist of cutting and dressing hair; applying cosmetics and make-up; shaping and polishing finger- and toenails and treating minor ailments of the human foot; attending clients taking baths and administering elementary massage; helping nursing, pharmaceutical and veterinarian personnel in their duties; supervising employer’s children; providing companionship and performing various personal services for the employer; forecasting future events for clients; providing embalming and funeral services. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*5.1.3.1 Hairdressers, barbers, beauticians and related workers
*5.1.3.2 Nursing and related aids
*5.1.3.3 Nursemaids, companions and valets
*5.1.3.4 Fortune-tellers
*5.1.3.5 Undertakers and embalmers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 0-79.90 Other medical, dental, veterinary and related workers (part) (i.e. Chiropodists); 1-99.60 Astrologer and fortune-teller, part; 5-40.30 Personal maid, valet; 5-40.35 Nursemaid; 5-40.40 Companion; 5-40.90 Other maids and related housekeeping service workers, part; 5-70 Hairdressers, barbers, beauticians and related workers; 5-92 Undertakers and embalmers; 5-99.40 Nursing aid, part; 5-99.50 Practical aid, pharmacy (part); 5-99.60 Practical aid, veterinary (part); 5-99.90 Other service workers not elsewhere classified, part.

*5.1.3.1 HAIRDRESSERS, BARBERS, BEAUTICIANS AND RELATED WORKERS

HAIRDRESSERS, BARBERS, BEAUTICIANS AND RELATED WORKERS cut and dress hair, apply cosmetics and make-up, and give other kinds of treatment to individuals in order to improve their appearance.

TASKS include -

(a) cutting, washing, tinting and waving hair;
(b) cutting and washing hair and shaving or trimming beards;
(c) giving scalp treatment;
(d) fitting wigs according to customers’ requirements;
(e) cleaning and applying creams, lotions and related items to face and parts of body;
(f) giving facial and body massage;
(g) applying make-up to clients of a beauty parlour;
(h) applying make-up to actors and other performers;
(i) cleaning, shaping and polishing finger- and toenails and treating minor ailments of the human foot such as corns, calluses or deformed toenails;
(j) attending to clients taking baths and giving elementary massage;
(k) performing other related tasks;
(l) supervising other workers in this group.

ISCO-68 GROUPS included:

0-79.90 Other Medical, dental, veterinary and related workers (part) (i.e. Chiropodists)
5-70 Hairdressers, barbers, beauticians and related workers, consisting of -
   5-70.20 Women’s hairdresser
   5-70.30 Barber-hairdresser
   5-70.40 Beautician
   5-70.50 Manicurist
   5-70.60 Make-up man, stage and studio
   5-70.70 Bath attendant
   5-70.90 Other barbers, hairdressers, beauticians, and related workers

*5.1.3.2 NURSING AND RELATED AIDS

NURSING AND RELATED AIDS perform simple tasks to assist medical, dental, pharmaceutical and veterinary personnel.

TASKS include -
(a) preparing patients for examination or treatment;
(b) changing bed linen and helping patients with their toilet;
(c) providing hot-water bottles and other comforts for patients;
(d) serving and collecting food trays and feeding patients needing help;
(e) sterilising instruments;
(f) assisting dentist by adjusting lights and passing tools and materials as requested;
(g) labeling drugs, chemicals and other pharmaceutical preparations, and replenishing stock on shelves;

(h) sterilising bottles, beakers and other equipment;

(i) bathing and feeding animals;

(j) leading or carrying animals to treatment room and holding them during treatment;

(k) cleaning and sterilising veterinary surgical instruments;

(l) performing other related tasks;

(m) supervising other workers in this group.

ISCO-68 GROUPS included:

5-99.40 Nursing aid, part
5-99.50 Practical aid, pharmacy (part)
5-99.60 Practical aid, veterinary (part)

*5.1.3.3 NURSEMAIDS, COMPANIONS AND VALETS

NURSEMAIDS, COMPANIONS, AND VALETS take care of employers' children, provide companionship and attend to various personal needs of the employer.

TASKS include -

(a) taking care of children and overseeing their daily activities;

(b) providing companionship to employer by accompanying to various places, reading and participating in conversation or sports;

(c) assisting in entertaining visitors in employer's home;

(d) keeping wardrobe and personal effects of the employer in good order;

(e) performing other related tasks;

(f) may supervise other workers in this group or give instructions to other domestic workers.

ISCO-68 GROUPS included:

5-40.30 Personal maid, valet
5-40.35 Nursemaid
5-40.40 Companion
5-40.90 Other maids and related housekeeping service workers, part

5-99.90 Other service workers not elsewhere classified, part (i.e. Social escorts)
*5.1.3.4 FORTUNE-TELLERS

FORTUNE-TELLERS make forecasts of future events and give warnings and advice on possible course of action.

TASKS include -

(a) interpreting characteristics of clients' palms, samples of playing cards, position of tea leaves in client's cup, shapes and patterns of bones of dead animals, etc.;
(b) forecasting future events on the basis of these interpretations;
(c) giving warnings and advice on possible course of action;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:
1-99.60 Astrologer and fortune-teller, part

*5.1.3.5 UNDERTAKERS AND EMBALMERS

UNDERTAKERS AND EMBALMERS perform various tasks in the disposal of dead human bodies.

TASKS include -

(a) making arrangements for and conducting funerals, cremations and burials;
(b) embalming human bodies to retard or arrest the process of decay;
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:
5-92 Undertakers and embalmers, consisting of -
   5-92.20 Undertaker
   5-92.30 Embalmer
   5-92.90 Other undertakers and embalmers
MINOR GROUP *5.1.4
PROTECTIVE SERVICES WORKERS

PROTECTIVE SERVICES WORKERS protect individuals and property against fire and other hazards, maintain law and order and enforce laws and regulations.

Tasks performed usually consist of preventing, fighting and extinguishing fires and saving persons and salvaging property and goods during and after fire; maintaining law and order, protecting persons and property from hazards and unlawful acts and arresting persons for contraventions of the law; directing traffic and assuming authority in the event of accidents; watching and maintaining discipline among inmates of prisons, reformatories or penitentiaries. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*5.1.4.1 Fire-fighters
*5.1.4.2 Police
*5.1.4.3 Prison guards

COMMENTS

This minor group contains of the following ISCO-68 occupational categories: 5-81 Fire-fighters, except .20 Fire-prevention specialist and .90 Other fire-fighters, part; 5-82 Policemen and detectives, except .30 Detective; 5-89.30 Prison guard.

*5.1.4.1 FIRE-FIGHTERS

FIRE-FIGHTERS prevent, fight and try to extinguish fires and save persons and salvage property from fires.

TASKS include -

(a) preventing, fighting and extinguishing fires;
(b) in industrial establishments, fighting special types of fires and using special equipment;
(c) preventing and extinguishing fires in crashed or damaged aircrafts and rescuing crew and passengers;
(d) rescuing persons and salvaging property and goods during and after fire;
(e) performing other related tasks;
(f) supervising other workers in this group.
ISCO-68 GROUPS included:
5-81.10 Fire-fighter, general
5-81.30 Fire-salvage specialists
5-81.40 Aircraft accident fire-fighter
5-81.90 Other fire-fighters, part

*5.1.4.2 POLICE

POLICE maintain law and order and enforce laws and regulations.

TASKS include -
(a) maintaining law and order;
(b) protecting persons and property from hazards and unlawful acts;
(c) policing property or parts of establishments, such as industrial plants, banks or museums, and taking action to prevent violence or disturbances;
(d) arresting persons for contraventions of the law;
(e) directing traffic and assuming authority in case of accident;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:
5-82.20 Policeman
5-82.40 Private police guard

*5.1.4.3 PRISON GUARDS

PRISON GUARDS watch and maintain discipline among inmates of prisons, reformatories or penitentiaries.

TASKS include -
(a) searching arriving prisoners, putting their valuables in safekeeping, escorting prisoners to cells and locking them in;
(b) making periodic inspection tours of cells;
(c) supervising prisoners at work, meals, during walks and patrolling prison areas to prevent escape;
(d) performing other related tasks;
(e) supervising other workers in this group.
ISCO-68 GROUPS included:

5-89.30 Prison guard

SUB-MAJOR GROUP *5.2
SHOP ASSISTANTS, DEMONSTRATORS AND MODELS

SHOP ASSISTANTS, DEMONSTRATORS AND MODELS demonstrate and sell goods in wholesale or retail shops and similar establishments, and pose as models for artistic creation and display.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6, or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that in the case of some of the occupations in this sub-major group the needed skills, or a part of them, may be acquired through appropriate work experience or on-the-job training. For new entrants a period of on-the-job training, in certain cases taking the form of a formalised apprenticeship, may be necessary.

Tasks performed by Shop assistants, demonstrators and models usually include selling goods in wholesale or retail establishments; demonstrating goods to possible customers; posing as models for artistic creation and display of goods. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor group:

*5.2.1 Shop assistants, demonstrators and models

MINOR GROUP *5.2.1
SHOP ASSISTANTS, DEMONSTRATORS AND MODELS

SHOP ASSISTANTS, DEMONSTRATORS AND MODELS demonstrate and sell goods in wholesale or retail establishments, and pose as models for artistic creation and display of goods and works of art. Supervision of other workers may be included.

Tasks performed usually consist of selling goods in wholesale establishments to retailers or large-scale consumers; selling goods to customers of retail establishments; demonstrating and explaining qualities and functions of goods; wearing and displaying clothing and other items for sale; posing as models for artistic creation. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*5.2.1.1 Shop assistants and demonstrators

*5.2.1.2 Fashion and other models

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational category: 4-21 Sales supervisors, part; 4-51 Salesmen, shop assistants and demonstrators; 5-99.90 Other service workers not elsewhere classified, part (i.e. Artist’s model).

*5.2.1.1 SHOP ASSISTANTS AND DEMONSTRATORS

SHOP ASSISTANTS AND DEMONSTRATORS demonstrate and sell goods in wholesale establishments to retailers and large-scale consumers or to customers in retail establishments.

TASKS include -

(a) ascertaining nature and quality of the product desired by the customer;
(b) assisting customer in making a choice;
(c) quoting prices, credit terms and discounts;
(d) packing and arranging delivery of goods, if necessary;
(e) writing bill, invoice, docket or receipt;
(f) verifying cashier’s receipt, if necessary;
(g) giving demonstration of articles on sale with a view to stimulating buying interest;
(h) performing other related tasks;
(i) supervising other workers in this group.

ISCO-68 GROUPS included:

4-21 Sales supervisors, consisting of -

4-21.20 Sales supervisor, wholesale trade (part)
4-21.30 Sales supervisor, retail trade (part)
4-21.90 Other sales supervisors, part

4-51.20 Wholesale trade salesman
4-51.30 Retail trade salesman
4-51.50 Demonstrator
4-51.90 Other salesmen, shop assistants and demonstrators
*5.2.1.2 FASHION AND OTHER MODELS

FASHION AND OTHER MODELS wear and display clothing and other items for sale or pose as models for artistic creation.

TASKS include -

(a) dressing in sample apparel of new or current style or of type wanted by customer;

(b) walking, turning and otherwise demonstrating style and other characteristics to best advantage;

(c) posing as model for artistic photography, sculpture or painting;

(d) posing as model for photography or films in the field of advertising;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

4-51.40 Fashion model

5-99.90 Other service workers not elsewhere classified, part (i.e. Artist's model)
MAJOR GROUP *6
FARM, FISHERY AND RELATED WORKERS

SUB-MAJOR GROUPS

*6.1 Market-oriented farm, fishery and related workers
*6.2 Subsistence farm, fishery and related workers

SUB-MAJOR AND MINOR GROUPS

*6.1 Market-oriented farm, fishery and related workers
  *6.1.1 Mixed farming workers
  *6.1.2 Specialised farming workers
  *6.1.3 Forestry and related workers
  *6.1.4 Fishery and hunting workers

*6.2 Subsistence farm, fishery and related workers
  *6.2.1 Subsistence farm, fishery and related workers

SUB-MAJOR, MINOR AND UNIT GROUPS

*6.1 Market-oriented farm, fishery and related workers
  *6.1.1 Mixed farming workers
    *6.1.1.0 Mixed farming workers (6-00.30, part + 6-11, part + 6-21.05)

  *6.1.2 Specialised farming workers
    *6.1.2.1 Field crop and vegetable farm workers (6-00.30, part + 6-12.20, part + 6-22, part + 6-29.50, part)
    *6.1.2.2 Tree and shrub crop farm workers (6-00.30, part + 6-12.30, part + 6-23, part + 6-29.40, part)
    *6.1.2.3 Gardeners, horticultural and nursery farm workers (6-00.30, part + 6-12.70, part + 6-27, part + 6-29.60, part + .90, part)
*6.1.2.4 Poultry farm workers (6-00.30, part + 6-12.60, part + 6-26, part)

*6.1.2.5 Dairy and livestock farm workers (6-00.30, part + 6-12.40, part + .50, part + 6-24, part + 6-25, part + 6-29.90, part)

*6.1.2.6 Apiary and sericulture farm workers (6-00.30, part + 6-12.90, part + 6-29.20, part + .30, part)

*6.1.3 Forestry and related workers

*6.1.3.1 forestry workers and loggers (6-31, except .90, part + 6-32)

*6.1.3.2 Charcoal burners and related workers (7-44.60 + 7-49.30)

*6.1.4 Fishery and hunting workers

*6.1.4.1 Deep-sea fishery workers (6-41.20)

*6.1.4.2 Inland and coastal waters fishery workers (6-41.30 + 6-49.90, part)

*6.1.4.3 Aquatic life cultivation workers (6-49.20 + .30)

*6.1.4.4 Hunters (6-49.40 + .50 + .60 + .90, part)

*6.2 Subsistence farm, fishery and related workers

*6.2.1 Subsistence farm, fishery and related workers

*6.2.1.0 Subsistence farm, fishery and related workers (new)
FARM, FISHERY AND RELATED WORKERS grow and harvest crops, breed, tend or hunt animals, gather wild fruits and plants, breed or catch fish and cultivate or gather other forms of aquatic life to provide food, shelter and income for themselves and their households.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. It should be noted that the needed skills - consisting of an understanding of the natural environment and the crops and animals worked with, as well as manual strength and dexterity - are often acquired through informal on-the-job training and through experience as helpers or labourers on a farm, in fishing or in other relevant activities, supplementing or replacing partly or wholly formal training.

When these skills are obtained through formal education or vocational training, they normally demand courses classified by ISCED as Education Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses at Educational Category 3 begin at about age 14 or 15 and last for about three years.

Tasks performed by Farm, fishery and related workers include preparing the soil; planting, spraying, fertilising and harvesting field crops; growing fruit and other tree and shrub crops; breeding, tending, feeding or hunting animals to obtain meat, milk, hair, skin or other products; gathering plants; breeding or catching fish; cultivating or gathering other forms of aquatic life; selling their products to purchasers, marketing organisations or at markets. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major groups:

*6.1 Market-oriented farm, fishery and related workers

*6.2 Subsistence farm, fishery and related workers

COMMENTS

The division between the two sub-major groups in this major group should reflect differences in the degree of market orientation which are correlated with differences in organisation of work, quality control, use of commercial or high yield seeds and fodder, use of traditional or modern techniques and irrigation, formal credit arrangements and degree and type of marketing arrangements for the products.
Farm, fishery and related workers with mainly administrative and managerial tasks should be classified under major group *1 Legislators, administrators and managers. Workers who mainly operate agricultural and forestry machinery should be classified under minor group *8.3.3 Agricultural and materials-handling machinery operators. Workers with simple and routine tasks as helpers and labourers, which mainly entail the use of hand-held tools and some physical effort, and which require little or no previous experience and understanding of the work, and only limited initiative or judgement, should be classified under sub-major group *9.2 Farm and forestry labourers.

**SUB-MAJOR GROUP **6.1
**MARKET-ORIENTED FARM, FISHERY AND RELATED WORKERS**

MARKET-ORIENTED FARM, FISHERY AND RELATED WORKERS plan and carry out the necessary operations to grow and harvest crops, breed, feed or hunt animals, breed or catch fish and cultivate or gather other forms of aquatic life, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

Most occupations in this sub-major group require skills at the second skill level, as defined by ISCO. It should be noted that the needed skills - consisting of an understanding of the natural environment and the crops and animals worked with, as well as manual strength and dexterity - are often acquired through informal on-the-job training and through experience as helpers or labourers on a farm, in fishing or in other relevant activities, supplementing or replacing partly or wholly formal training.

When these skills are obtained through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses at Educational Category 3 begin at about age 14 or 15 and last for about three years.

Tasks performed by Market-oriented farm, fishery and related workers include preparing the soil; planting, spraying, fertilising and harvesting field crops; growing fruit and other tree and shrub crops; breeding, tending, feeding or hunting animals to obtain meat, milk, hair, skin or other products; gathering plants; breeding and raising fish or catching them; cultivating or gathering other forms of aquatic life; selling their products to purchasers, marketing organisations or at markets. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

* *6.1.1 Mixed farming workers
* *6.1.2 Specialised farming workers
* *6.1.3 Forestry and related workers
* *6.1.4 Fishery and hunting workers
COMMENS

Farm, fishery and related workers with mainly administrative and managerial tasks should be classified under major group *1 Legislators, administrators and managers. Workers who mainly operate agricultural and forestry machinery should be classified under minor group *8.3.3 Agricultural and materials-handling machinery operators. Workers with simple and routine tasks as helpers and labourers, which mainly entail the use of hand-held tools and some physical effort, and which require little or no previous experience and understanding of the work and limited initiative or judgement, should be classified under sub-major group *9.2 Farm and forestry labourers.

MINOR GROUP *6.1.1
MIXED FARMING WORKERS

MIXED FARMING WORKERS plan and carry out the necessary operations to grow and harvest different crops and produce a variety of animal husbandry products, depending upon the nature of the soil, climate, irrigation and marketing facilities, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

Tasks performed include determining kind and amounts of crops to be grown and livestock to be raised; purchasing seed, fertiliser, fodder and other supplies; renting or investing in land and land improvements, buildings, machinery and livestock; performing and supervising farm operations such as land preparation, sowing, cultivating and harvesting crops, breeding and raising livestock and maintaining farm buildings, machinery and equipment; delivering or marketing farm products. Hiring and supervising other workers may be included.

Occupations in this minor group are classified under the following unit group:

*6.1.1.0 Mixed farming workers

Possible further subdivisions of this minor group that may be found necessary should reflect differences in required skills due to factors such as differences in climate and other natural conditions.

COMMENS

This minor group contains the following ISCO-68 unit group and occupational category: 6-00.30 Farm supervisor, part; 6-11 General farmers, part; 6-21.05 Farm worker, general.

*6.1.1.0 MIXED FARMING WORKERS

MIXED FARMING WORKERS plan and carry out the necessary operations to grow and harvest different crops and produce a variety of animal husbandry products, depending upon the nature of the soil, climate, irrigation and marketing facilities, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.
TASKS include -

(a) determining kind and amounts of crops to be grown and livestock to be raised;

(b) purchasing seed, fertiliser, fodder and other supplies;

(c) renting or investing in land and land improvements, buildings, machinery and livestock;

(d) performing and supervising farm operations such as land preparation, sowing, cultivating and harvesting crops, breeding and raising livestock and maintaining farm buildings, machinery and equipment;

(e) delivering or marketing farm products;

(f) performing other related tasks;

(g) hiring and supervising other workers.

ISCO-68 GROUPS included:

6-00.30 Farm supervisor, part

6-11 General farmers, part, consisting of -

6-11.10 General farmer, part

6-21.05 Farm worker, general

MINOR GROUP *6.1.2
SPECIALISED FARMING WORKERS

SPECIALISED FARMING WORKERS plan and carry out the necessary operations to grow and harvest mainly one or a few special types of crops or animal husbandry products, depending upon the nature of the soil, climate, irrigation and marketing facilities, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

Tasks performed include determining kind and amounts of crops to be grown and livestock to be raised; purchasing seed, fertiliser, fodder and other supplies; renting or investing in land and land improvements, buildings, machinery and livestock; performing and supervising farm operations such as land preparation, sowing, cultivating and harvesting crops, breeding and raising livestock and maintaining farm buildings, machinery and equipment; delivering or marketing farm products. Hiring and supervising other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*6.1.2.1 Field crop and vegetable farm workers
*6.1.2.2 Tree and shrub crop farm workers
*6.1.2.3 Gardeners, horticultural and nursery farm workers
*6.1.2.4 Poultry farm workers
*6.1.2.5 Dairy and livestock farm workers
*6.1.2.6 Apiary and sericulture farm workers

**COMMENTS**

This minor group contains the following ISCO-68 unit groups: 6-00.30 Farm supervisor, part; 6-12 Specialised farmers, part; 6-22 Field crop and vegetable farm workers, part; 6-23 Orchard, vineyard and related tree and shrub crop workers, part; 6-24 Livestock workers, part; 6-25 Dairy farm workers, part; 6-26 Poultry farm workers, part; 6-27 Nursery workers and gardeners, part; 6-29 Agricultural and animal husbandry workers not elsewhere classified, part.

**6.1.2.1 FIELD CROP AND VEGETABLE FARM WORKERS**

FIELD CROP AND VEGETABLE FARM WORKERS plan and carry out the necessary operations mainly to grow and harvest one or a few special types of field crops such as wheat and other cereals, rice, potatoes, cabbages or other field vegetables, beet, sugar-cane, ground nuts, tobacco or other field crops, depending upon the nature of the soil, climate, irrigation and marketing facilities, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

**TASKS include** -

(a) determining kind and amounts of crops to be grown;
(b) purchasing seed, fertiliser and other supplies;
(c) renting or investing in land and land improvements, buildings, working animals, equipment and machinery;
(d) performing and supervising farm operations such as land preparation, sowing, cultivating and harvesting crops, tending working animals and maintaining farm buildings, machinery and equipment;
(e) delivering or marketing products;
(f) performing other related tasks;
(g) hiring and supervising other workers.
ISCO-68 GROUPS included:

6-00.30 Farm supervisor, part

6-12.20 Field crop farmer, part

6-22 Field crop and vegetable farm workers, part, consisting of -

6-22.10 Field crop farm worker, general (part)
6-22.20 Vegetable farm worker, part
6-22.30 Wheat farm worker, part
6-22.40 Cotton farm worker, part
6-22.50 Rice farm worker, part,
6-22.60 Sugar-cane farm worker, part
6-22.90 Other field crop and vegetable farm workers, part

6-29.50 Irrigator, part

*6.1.2.2 TREE AND SHRUB CROP FARM WORKERS*

TREE AND SHRUB CROP FARM WORKERS plan and carry out the necessary operations mainly to grow trees and shrubs and harvest their fruit, leaves or sap, such as fruit and nut trees, tea and coffee bushes, grape vines, berry-bearing bushes, cocoa trees and rubber trees, depending upon the nature of the soil, climate, irrigation and marketing facilities, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

TASKS include -

(a) determining kind and amounts of crops to be grown;
(b) purchasing seed, fertiliser and other supplies;
(c) renting or investing in land and land improvements, buildings, working animals, equipment and machinery;
(d) performing and supervising farm operations such as land preparation, planting and tending trees or bushes, harvesting crops, tending working animals and maintaining farm buildings, machinery and equipment;
(e) delivering or marketing products;
(f) performing other related tasks;
(g) hiring and supervising other workers.

ISCO-68 GROUPS included:

6-00.30 Farm supervisor, part

6-12.30 Orchard, vineyard and related tree and shrub crop farmer, part
6-23 Orchard, vineyard and related tree and shrub crop workers, part, consisting of:

- 6-23.20 Orchard worker, part
- 6-23.30 Vineyard worker, part
- 6-23.40 Tea plantation worker, part
- 6-23.50 Rubber plantation worker, part
- 6-23.90 Other orchard, vineyard and related tree and shrub crop workers (part)

6-29.40 Tree tapper, except rubber (part)

*6.1.2.3 GARDENERS, HORTICULTURAL AND NURSERY FARM WORKERS*

GARDENERS, HORTICULTURAL AND NURSERY FARM WORKERS plan and carry out the necessary operations mainly to grow vegetables by intensive cultivation techniques and cultivate trees, shrubs, flowers and other plants, and to produce bulbs and seed, depending upon the nature of the soil, climate, irrigation and marketing facilities, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

**TASKS include** -

(a) determining kind and amounts of crops to be grown;

(b) purchasing seed, fertiliser and other supplies;

(c) renting or investing in land and land improvements, buildings, working animals, equipment and machinery;

(d) performing and supervising farm operations such as land preparation, cultivating flowers, trees or bushes, harvesting crops, tending working animals and maintaining farm buildings, machinery and equipment;

(e) cultivating flowers, trees, shrubs and other plants in parks or public or private gardens;

(f) growing exotic and other plants for exhibition or medicinal purposes;

(g) delivering or marketing products;

(h) performing other related tasks;

(i) hiring and supervising other workers.

**ISCO-68 GROUPS included:**

- 6-00.30 Farm supervisor, part
- 6-12.70 Horticultural farmer, part
6-27 Nursery workers and gardeners, part, consisting of -
   6-27.20 Market garden worker, part
   6-27.30 Nursery worker, part
   6-27.40 Gardener, part
   6-27.90 Other nursery workers and gardeners, part

6-29.60 Groundsman, part
6-29.90 Other agricultural and animal husbandry workers, part

*6.1.2.4 POUlTRY FARM WORKERS

POULTRY FARM WORKERS plan and carry out the necessary operations to breed, raise and tend poultry for sale or delivery of eggs, meat or feathers on a regular basis to wholesale buyers, marketing organisations or at markets.

TASKS include -

(a) determining kind and amount of poultry and poultry products to be produced;
(b) growing and purchasing fodder and other supplies;
(c) renting or investing in buildings, equipment and machinery;
(d) performing and supervising operations such as growing fodder, breeding, raising and tending poultry, collecting eggs, killing, dressing and packing poultry for shipment, and maintaining buildings, machinery and equipment;
(e) delivering or marketing products;
(f) performing other related tasks;
(g) hiring and supervising other workers.

ISCO-68 GROUPS included:

6-00.30 Farm supervisor, part
6-12.60 Poultry farmer, part
6-26 Poultry farm workers, part, consisting of -
   6-26.10 Poultry farm worker, general (part)
   6-26.20 Poultry hatchery worker, part
   6-26.90 Other poultry farm workers, part
DAIRY AND LIVESTOCK FARM WORKERS plan and carry out the necessary operations to breed, raise and tend livestock such as cattle, sheep, pigs, horses, goats, or other species to be used as working animals or for meat, milk, hair, fur and other products, and deliver or sell these on a regular basis to wholesale buyers, marketing organisations or at markets.

TASKS include -

(a) determining kind and amount of livestock and livestock products to be produced;
(b) growing and purchasing fodder and other supplies;
(c) renting or investing in buildings, equipment and machinery;
(d) performing and supervising operations such as growing fodder, breeding, raising and tending livestock, milking, shearing sheep, killing, skinning and preparing animals for market, and maintaining buildings, machinery and equipment;
(e) delivering or marketing products;
(f) performing other related tasks;
(g) hiring and supervising other workers.

ISCO-68 GROUPS included:

6-00.30 Farm supervisor, part
6-12.40 Livestock farmer, part
6-12.50 Dairy farmer, part
6-24 Livestock workers, part, consisting of -
   6-24.10 Livestock worker, general (part)
   6-24.20 Beef cattle farm worker, part
   6-24.30 Sheep farm worker, part
   6-24.40 Pig farm worker, part
   6-24.50 Fur-bearing animal farm worker, part
   6-24.90 Other livestock workers, part
6-25 Dairy farm workers, part, consisting of -
   6-25.10 Dairy farm worker, general (part)
   6-25.20 Milker, machine (part)
   6-25.90 Other dairy farm workers, part
6-29.90 Other agricultural and animal husbandry workers, part
*6.1.2.6 APIARY AND SERICULTURE FARM WORKERS

APIARY AND SERICULTURE FARM WORKERS plan and carry out the necessary operations mainly to breed, raise and tend insects such as honey bees, silk worms or other species for delivery or sale of honey, bees wax, silk cocoons etc. on a regular basis to wholesale buyers, marketing organisations or at markets.

TASKS include -

(a) determining kind and amount of insect products to be produced;
(b) growing and purchasing fodder and other supplies;
(c) renting or investing in buildings, equipment and machinery;
(d) performing and supervising operations such as feeding, breeding, raising and tending insects and collecting their products, and maintaining buildings, machinery and equipment;
(e) delivering or marketing products;
(f) performing other related tasks;
(g) hiring and supervising other workers.

ISCO-68 GROUPS included:
6-00.30 Farm supervisor, part
6-12.90 Other specialised farmers, part
6-29.20 Apiary worker, part
6-29.30 Sericulture worker, part

MINOR GROUP *6.1.3
FORESTRY AND RELATED WORKERS

FORESTRY AND RELATED WORKERS carry out the necessary operations to cultivate, conserve and exploit forests, for sale or delivery of forest products on a regular basis to wholesale buyers, marketing organisations or at markets.

Tasks performed include establishing and caring for forest stands; locating trees to be felled and estimating volume of timber; felling trees and sawing them into logs; trimming and topping trees; shaping rough wooden products from logs at felling site; stacking logs, loading them in chutes or floating them down rivers; operating simple kiln or digester to convert wood into charcoal or extract crude turpentine from wood; patrolling and keeping watch to detect forest fires and participating in fire-fighting operations. Hiring and supervising other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*6.1.3.1 Forestry workers and loggers

*6.1.3.2 Charcoal burners and related workers

Workers operating wood-harvesting machines and other forest machinery should be classified under minor group *8.3.3 Agricultural and materials-handling machinery operators.

**COMMENTS**

This minor group contains the following ISCO-68 unit groups and occupational categories: 6-31 Loggers, except .90 Other loggers, part; 6-32 Forestry workers, except logging; 7-44.60 Extractor operator, wood distillation; 7-49.30 Charcoal burner.

**6.1.3.1 FORESTRY WORKERS AND LOGGERS**

FORESTRY WORKERS AND LOGGERS carry out the necessary operations to cultivate, conserve and exploit forests, for sale or delivery of forest products on a regular basis to wholesale buyers, marketing organisations or at markets.

**TASKS include -**

(a) establishing and caring for forest stands;
(b) locating trees to be felled and estimating volume of timber;
(c) trimming, topping and felling trees and sawing them into logs;
(d) shaping rough wooden products from logs at felling site;
(e) stacking logs, loading them in chutes or floating them down rivers;
(f) patrolling and keeping watch to detect forest fires and participating in fire-fighting operations;
(g) performing other related tasks;
(h) supervising other workers.

**ISCO-68 GROUPS included:**

6-31 Loggers, part, consisting of -

6-31.10 Logger, general
6-31.20 Tree feller and bucker
6-31.30 High climber, logging
6-31.40 River driver
6-31.90 Other loggers, part
6-32 Forestry workers, except logging, consisting of -

- 6-32.20 Forest supervisor
- 6-32.30 Forestry worker
- 6-32.40 Timber cruiser
- 6-32.50 Forest fire-fighter
- 6-32.90 Other forestry workers

*6.1.3.2 CHARCOAL BURNERS AND RELATED WORKERS

CHARCOAL BURNERS AND RELATED WORKERS carry out the necessary operations to convert wood into charcoal or to obtain crude turpentine from wood, using traditional techniques.

TASKS include -

(a) operating simple kiln to convert wood into charcoal by slow burning process;

(b) operating simple digester or still to obtain or distill crude wood turpentine;

(c) performing other related tasks;

(d) supervising other workers.

ISCO-68 GROUPS included:

- 7-44.60 Extractor operator, wood distillation
- 7-49.30 Charcoal burner

MINOR GROUP *6.1.4
FISHERY AND HUNTING WORKERS

FISHERY AND HUNTING WORKERS catch, breed and cultivate fish and other aquatic life, and catch animals, for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

Tasks performed include preparing nets and other fishing gear and equipment; operating fishing vessels to, from and at fishing grounds; baiting, setting and hauling fishing gear; cleaning, freezing, icing or salting catch; breeding, raising and cultivating fish, oysters, mussels, or other water animals and plants; hunting or trapping animals. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*6.1.4.1 Deep-sea fishery workers
*6.1.4.2 Inland and coastal waters fishery workers
*6.1.4.3 Aquatic life cultivation workers
*6.1.4.4 Hunters

COMMENTS
This minor group contains the following ISCO-68 unit groups: 6-41 Fishermen; 6-49 Fishermen, hunters and related workers not elsewhere classified.

*6.1.4.1 DEEP-SEA FISHERY WORKERS

DEEP-SEA FISHERY WORKERS, as members of fishing vessel crews, catch deep-sea fish for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

TASKS include -
(a) preparing nets and other fishing gear and equipment;
(b) operating fishing vessels to, from and at fishing grounds;
(c) baiting, setting and hauling fishing gear;
(d) cleaning, freezing, icing or salting catch;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:
6-41.20 Deep-sea fisherman

*6.1.4.2 INLAND AND COASTAL WATERS FISHERY WORKERS

INLAND AND COASTAL WATERS FISHERY WORKERS, alone or as members of fishing vessel crews, catch fish in inland or coastal waters for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.
TASKS include -

(a) preparing nets and other fishing gear and equipment;
(b) operating fishing vessels to, from and at fishing grounds;
(c) baiting, setting and hauling fishing gear;
(d) gathering different forms of aquatic life from shores and shallow waters;
(e) cleaning, freezing, icing or salting catch;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:
6-41.30 Inland and coastal waters fisherman
6-49.90 Other fishermen, hunters and related workers (part)

*6.1.4.3 AQUATIC LIFE CULTIVATION WORKERS

AQUATIC LIFE CULTIVATION WORKERS breed and raise fish and cultivate mussels, oysters and other forms of aquatic life for sale or delivery on a regular basis to wholesale buyers, marketing organisations or at markets.

TASKS include -

(a) purchasing food and other supplies;
(b) renting or investing in buildings, equipment and machinery;
(c) performing and supervising operations such as breeding, raising and cultivating fish, mussels, oysters and other forms of aquatic life, killing and preparing fish and other products for shipment, and maintaining buildings, machinery and equipment;
(d) delivering or marketing products;
(e) performing other related tasks;
(f) supervising other workers.

ISCO-68 GROUPS included:
6-49.20 Fish farm worker
6-49.30 Oyster farm worker
*6.1.4.4 HUNTERS

HUNTERS catch and kill mammals and birds for meat, skin, feathers and other products, which they sell or deliver on a regular basis to wholesale buyers, marketing organisations or at markets.

TASKS include -

(a) setting traps to catch mammals or birds;

(b) killing trapped or free mammals or birds with fire-arms or other weapons;

(c) skinning and otherwise treating killed animals to obtain desired products for sale or delivery;

(d) delivering or selling trapped live mammals or birds;

(e) repairing and maintaining equipment;

(f) performing other related tasks;

(g) supervising other workers.

ISCO-68 GROUPS included:

6-49.40 Whale hunter
6-49.50 Seal hunter
6-49.60 Trapper and hunter
6-49.90 Other fishermen, hunters and related workers (part)

SUB-MAJOR GROUP *6.2

SUBSISTENCE FARM, FISHERY AND RELATED WORKERS

SUBSISTENCE FARM, FISHERY AND RELATED WORKERS grow and harvest crops, tend animals, gather wild fruits and plants, hunt animals, catch fish and gather other aquatic life to provide food, shelter and a minimum of cash income for themselves and their households.

Most occupations in this sub-major group require skills at the second skill level, as defined by ISCO. It should be noted that the needed skills - consisting of an understanding of the natural environment and the crops and animals worked with, as well as manual strength and dexterity - are often acquired through informal on-the-job training and through experience as helpers or labourers on a farm, in fishing or in other relevant activities, supplementing or replacing partly or wholly formal training.
Tasks performed by Subsistence farm, fishery and related workers include preparing the soil; planting, tending and harvesting field crops; growing and gathering fruit and other tree and shrub crops; tending, feeding or hunting animals to obtain meat, milk, hair, skin or other products; gathering wood and other plants; fetching water; catching fish and gathering other forms of aquatic life; building shelters and making simple tools, clothes and utensils for use by household; selling some products at local markets. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor group:

*6.2.1 Subsistence farm, fishery and related workers

MINOR GROUP *6.2.1
SUBSISTENCE FARM, FISHERY AND RELATED WORKERS

SUBSISTENCE FARM, FISHERY AND RELATED WORKERS grow and harvest crops, tend animals, gather wild fruits and plants, hunt animals, catch fish and other seafood or gather sea plants to provide food, shelter and a minimum of cash income for themselves and their households.

Tasks performed include preparing the soil; planting, tending and harvesting field crops; growing and gathering fruit and other tree and shrub crops; tending, feeding or hunting animals to obtain meat, milk, hair, skin or other products; fetching water; gathering wood and other plants; catching fish and gathering other forms of aquatic life; building shelters and making simple tools, clothes and utensils for use by household; selling some products at local markets. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit group:

*6.2.1.0 Subsistence farm, fishery and related workers

Further subdivision of this minor group should reflect differences in required skills due to factors such as differences in climate and other natural conditions.

COMMENTS

Occupations in this minor group are not described in ISCO-68. They would have been classified under 6 Agricultural, animal husbandry and forestry workers, fishermen and hunters.

*6.2.1.0 SUBSISTENCE FARM, FISHERY AND RELATED WORKERS

SUBSISTENCE FARM, FISHERY AND RELATED WORKERS grow and harvest crops, tend animals, gather wild fruits and plants, hunt animals, catch fish and other seafood or gather sea plants to provide food, shelter and a minimum of cash income for themselves and their households.
TASKS include -

(a) preparing the soil and planting, tending and harvesting field crops;
(b) growing and gathering fruit and other tree and shrub crops;
(c) tending, feeding or hunting animals to obtain meat, milk, hair, skin or other products;
(d) fetching water and gathering wood and other plants;
(e) catching fish and gathering other forms of aquatic life;
(f) building shelters and making simple tools, clothes and utensils for use by household;
(g) selling some products at local markets;
(h) performing other related tasks;
(i) supervising other workers in this group.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 6 Agricultural, animal husbandry and forestry workers, fishermen and hunters.
MAJOR GROUP *7
CRAFT AND RELATED WORKERS

SUB-MAJOR GROUPS

*7.1 Extraction and building trades workers
*7.2 Metal and machinery trades workers
*7.3 Food-processing, woodworking, textile, leather and related trades workers

SUB-MAJOR AND MINOR GROUPS

*7.1 Extraction and building trades workers
*7.1.1 Miners and blasting, stone cutting and carving workers
*7.1.2 Building trades workers

*7.2 Metal and machinery trades workers
*7.2.1 Metal moulders, plumbers, welders, sheet-metal workers and structural metal preparers, and related workers
*7.2.2 Blacksmiths, toolmakers and related workers
*7.2.3 Machinery mechanics and fitters
*7.2.4 Precision and handicraft workers
*7.2.5 Electrical and electronic instrument fitters and installers
*7.2.6 Printing and related trades workers

*7.3 Food-processing, woodworking, textile, leather and related trades workers
*7.3.1 Food-processing trades workers
*7.3.2 Woodworking trades workers
*7.3.3 Textile and garment trades workers
*7.3.4 Pelt, leather and shoemaking trades workers
SUB-MAJOR, MINOR AND UNIT GROUPS

*7.1 Extraction and building trades workers

*7.1.1 Miners and blasting, stone cutting and carving workers

*7.1.1.1 Miners and quarry workers (7-11.05 + .10 + .60 + .70 + .90, part)

*7.1.1.2 Shotfirers (7-11.50)

*7.1.1.3 Stone splitters, cutters and carvers (7-12.20 + 8-20)

*7.1.2 Building trades workers

*7.1.2.1 Builders, traditional materials (new)

*7.1.2.2 Bricklayers, stonemasons and tile setters (9-51 + 9-59.70)

*7.1.2.3 Reinforced concreters, cement finishers and terrazzo workers (7-13.50 + 9-52)

*7.1.2.4 Roofers (9-53)

*7.1.2.5 Carpenters, joiners and parquetry workers (9-54)

*7.1.2.6 Plasterers (9-55)

*7.1.2.7 Insulators (9-56)

*7.1.2.8 Glaziers (9-57)

*7.1.2.9 Painters and paperhangers (9-31 + 9-39.30 + .60 + 9-59.25)

*7.2 Metal and machinery trades workers

*7.2.1 Metal moulders, plumbers, welders, sheet-metal workers and structural metal preparers, and related workers

*7.2.1.1 Metal moulders and coremakers (7-25)

*7.2.1.2 Plumbers and pipe fitters (8-71)

*7.2.1.3 Welders and flame-cutters (8-72)

*7.2.1.4 Sheet-metal workers (8-73)

*7.2.1.5 Structural metal preparers and erectors (8-74)

*7.2.1.6 Riggers and cable splicers (9-72)

*7.2.1.7 Underwater workers (5-89.90, part + 9-59.60)
*7.2.2 Blacksmiths, toolmakers and related workers
*7.2.2.1 Blacksmiths, hammersmiths and forging-press workers
(7-27.20 + 8-31 + 8-39.50)
*7.2.2.2 Toolmakers, metal pattern makers and metal markers
(8-32 + 8.39.20 + .30)
*7.2.2.3 Machine-tool setter-operators (8-33 + 8-39.40)
*7.2.2.4 Metal grinders, polishers and tool sharpeners (8-35)

*7.2.3 Machinery mechanics and fitters
*7.2.3.1 Motor vehicle mechanics and fitters (8.41.05, part + .10, part + .15, part + 8-43)
*7.2.3.2 Aircraft mechanics and fitters (8.41.05, part + .10, part + .20, part + .85 + 8-44)
*7.2.3.3 Other machinery mechanics and fitters (8-41.05, part + .10, part + .25, part + .30, part + .35, part + .40, part + .45, part + .50, part + .55, part + .60, part + .65, part + .70, part + .75 + .80 + .90, part + 8-49, except .65, part and .90, part)

*7.2.4 Precision and handicraft workers
*7.2.4.1 Precision instrument makers and repairers (8-42)
*7.2.4.2 Acoustic musical instrument makers and tuners (9-41)
*7.2.4.3 Jewellery and precious metal workers (7-24.90 + 8-80)
*7.2.4.4 Glass formers, cutters, grinders and finishers
(8-91.20 + .24 + .32 + .56 + .60 + .64 + .68 + .72 + .80 + .90)
*7.2.4.5 Potters and related clay and abrasive formers (8-92)
*7.2.4.6 Glass engravers and etchers (8-94)
*7.2.4.7 Decorations painters (8-95 + 9-39.20 + .40 + .50)

*7.2.5 Electrical and electronic instrument fitters and installers
*7.2.5.1 Electrical fitters and electricians (8-51 + 8-55 + 8-59, part)
*7.2.5.2 Electronics fitters and servicers (8-49.65, part + 8-52 + 8-59, part)
*7.2.5.3 Radio and television servicers (8-54)
*7.2.5.4 Telegraph and telephone installers (8-56)
*7.2.5.5 Electrical linemen and cable jointers (8-57)

*7.2.6 Printing and related trades workers
*7.2.6.1 Compositors and type-setters (9-21)
*7.2.6.2 Stereotypers and electrotypers (9-23)
*7.2.6.3 Printing engravers (9-24 + 9-25)
*7.2.6.4 Bookbinders and related workers (9-26, except .30 and .50)
*7.2.6.5 Silk-screen, block and textile printers (9-29)

*7.3 Food-processing, woodworking, textile, leather and related trades workers

*7.3.1 Food-processing trades workers
*7.3.1.1 Meat and fish butchers and preparers (7-73 + 7-74.50 + .60 + .90, part + 7-79.40)
*7.3.1.2 Bakers, pastrycooks and confectionery makers (7-76)
*7.3.1.3 Food and beverage tasters and graders (7-77.20 + 7-78.60)
*7.3.1.4 Tobacco preparers and tobacco products makers (7-81 + 7-82 + 7-83.90 + 7-89)

*7.3.2 Woodworking trades workers
*7.3.2.1 Wood treaters (7-31)
*7.3.2.2 Cabinetmakers and related workers (8-11 + 8-19)
*7.3.2.3 Woodworking machine setter-operators (8-12, except .08)

*7.3.3 Textile and garment trades workers
*7.3.3.1 Fibre preparers (7-51)
*7.3.3.2 Hand weavers, knitters and other hand textile products makers (7-54.20 + .30 + .35 + .55 + .70 + .75 + .90 + 7-55.40 + .50 + 7-59.20 + .30 + .40)
*7.3.3.3 Tailors, dressmakers and hatters (5-40.70 + 7-91 + 7-93.20 + .90, part)
*7.3.3.4 Fur tailors and related workers (7-92)
*7.3.3.5 Patternmakers and cutters (7-94)
*7.3.3.6 Hand sewers, embroiderers and related workers (7-95, except .50 and .70 + 7-99 + 9-49.40, part)
*7.3.3.7 Upholsterers and related workers (7-96)

*7.3.4 Pelt, leather and shoemaking trades workers
*7.3.4.1 Pelt dressers, tanners and fellmongers (7-61 + 7-62)
*7.3.4.2 Shoemakers and related goods makers (8-01 + 8-02 + 8-03, except .60)
CRAFT AND RELATED WORKERS extract and treat raw materials, manufacture and repair goods and construct, maintain and repair roads, structures, machinery and other products. The work is carried out by hand and by hand-powered and other tools which are used to reduce the amount of physical effort and/or time required for specific tasks, or to increase the quality of the products.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this major group require experience with and understanding of the work situation, the materials worked with and the requirements of the structures, machinery and other products produced. The required skills, including manual strength and dexterity, are often acquired through informal or formal on-the-job training and through experience as helper or labourer in similar types of production, supplementing or replacing partly or wholly formal vocational training.

Tasks performed by Craft and related workers include extracting and processing raw materials; building, maintaining and repairing houses and other structures; shaping metal; fitting, installing and repairing machinery and other metal products; fitting, installing and repairing electrical and electronic machinery and instruments; making and repairing goods made of wood, textile, skin or leather. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major groups:

*7.1 Extraction and building trades workers

*7.2 Metal and machinery trades workers

*7.3 Food-processing, woodworking, textile, leather and related trades workers

COMMENTS

Occupations calling mainly for sufficient experience with and understanding of the machinery operated, controlled or monitored to ensure that they operates properly, to identify malfunctions and to take simple measures when something is about to go wrong or actually fails, are classified under major group *8 Plant and machine operators and assemblers. These occupations involve operating vehicles and other equipment, controlling and monitoring the operation of industrial plants and machinery, on the spot or by remote control, or assembling products from component parts according to strict rules and procedures.
Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools, some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

SUB-MAJOR GROUP *7.1
EXTRACTION AND BUILDING TRADES WORKERS

EXTRACTION AND BUILDING TRADES WORKERS extract solid minerals from underground or surface mines or quarries, or erect and repair buildings and other structures. The work is carried out by hand and by hand-powered and other tools which are used to reduce the amount of physical effort and/or time required for specific tasks, or to increase the quality of the products.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this sub-major group require experience with and understanding of the work situation, the materials worked with and the requirements of the buildings and other structures erected, maintained or repaired. The required skills, including manual strength and dexterity, are often acquired through informal or formal on-the-job training and through experience as helper or labourer in similar types of production, supplementing or replacing partly or wholly formal vocational training.

Tasks performed by Extraction and building trades workers include extracting solid minerals from underground or surface mines and quarries; cutting and shaping stone for building and related purposes; building, maintaining and repairing houses and other structures. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*7.1.1 Miners and blasting, stone cutting and carving workers

*7.1.2 Building trades workers

COMMENTS

Occupations calling mainly for sufficient experience with and understanding of the machinery operated, controlled or monitored to ensure that they operate properly, to identify malfunctions and to take simple measures when something is about to go wrong or actually fails, are classified under major group *8 Plant and machine operators and assemblers. These
occupations involve operating vehicles and other equipment, controlling and monitoring the operation of industrial plants and machinery, on the spot or by remote control.

Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools, some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

MINOR GROUP *7.1.1
MINERS AND BLASTING, STONE CUTTING AND CARVING WORKERS

MINERS AND BLASTING, STONE CUTTING AND CARVING WORKERS extract solid minerals from underground or surface mines and quarries, charge and set off explosives, or cut and shape stone for building and related purposes.

Tasks performed include extracting of solid minerals from underground or surface mines and quarries; charging and setting off explosives; building, maintaining and repairing houses and other structures.

Occupations in this minor group are classified under the following unit groups:

*7.1.1.1 Miners and quarry workers
*7.1.1.2 Shotfirers
*7.1.1.3 Stone splitters, cutters and carvers

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 7-11.05 Miner, general; 7-11.10 Quarryman, general; 7-11.50 Shot-firer, mine and quarry; 7-11.60 Underground timberman; 7-11.70 Sampler, mine; 7-11.90 Other miners and quarrymen, part; 7-12.20 Stone splitter; 8-20 Stone cutters and carvers.

*7.1.1.1 MINERS AND QUARRY WORKERS

MINERS AND QUARRY WORKERS extract solid minerals from underground or surface mines and quarries.

TASKS include -

(a) extracting coal, ores and other solid minerals from underground or surface mines;

(b) extracting granite, limestone, slate, flint or other kinds of stones from quarries;
(c) setting and operating machines which cut channels in mine workface, drill holes into mine or quarry workface for blasting;

(d) cutting, fitting and installing wood or steel props, pillars and arches to support walls and roofs of underground workings;

(e) collecting samples of coal or ore for laboratory analysis;

(f) extracting chalk, clay, gravel or sand from open pits;

(g) performing other related tasks;

(h) supervising other workers in this group.

**ISCO-68 GROUPS included:**

7-11.05 Miner, general
7-11.10 Quarryman, general
7-11.60 Underground timberman
7-11.70 Sampler, mine
7-11.90 Other miners and quarrymen, part

*7.1.1.2 SHOTFIRERS*

SHOTFIRERS determine positions and force of explosions required, and charge and set off explosives to break or dislodge coal, ore, rock or other solid mineral from mine or quarry workface, building sites, etc.

**TASKS include** -

(a) ensuring observance of safety regulations;

(b) determining positions of explosions required and giving instructions on holes to be drilled;

(c) deciding and placing required quantity of explosives, and preparing blasting site;

(d) firing explosives;

(e) performing other related tasks;

(f) supervising other workers in this group.

**ISCO-68 GROUPS included:**

7-11.50 Shotfirer, mine and quarry

*7.1.1.3 STONE SPLITTERS, CUTTERS AND CARVERS*

STONE SPLITTERS, CUTTERS AND CARVERS break quarried stones into slabs or blocks, or cut, shape and finish stones for building, ornamental, monumental and other purposes.
TASKS include -

(a) drilling holes and driving wedges into quarried stone to break it into slabs or blocks;
(b) selecting and grading blocks of stone;
(c) making patterns and marking shapes on stone or subsequent sawing, planing, drilling and other dressing and cutting operations;
(d) setting and operating machines which cut, saw, plane, grind and polish building and monumental stone;
(e) setting and operating lathes to cut and polish stone columns, pillars, etc. in cylindrical and other shapes;
(f) cutting and carving characters, figures or designs on stone blocks;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:
7-12.20 Stone splitter
8-20 Stone cutters and carvers, consisting of -
  8-20.20 Stone cutter and finisher
  8-20.30 Stone grader
  8-20.40 Stonework layout man
  8-20.50 Stone lathe operator
  8-20.60 Stone letter cutter, hand
  8-20.70 Stone carver, hand
  8-20.80 Monument carver-setter
  8-20.90 Other stone cutters and carvers

MINOR GROUP *7.1.2
BUILDING TRADES WORKERS

BUILDING TRADES WORKERS construct, install, finish, maintain and repair internal and external structures of domestic, commercial and industrial buildings and civil constructions.

Tasks performed include erecting and repairing foundations, walls and complete structures of brick, stone and other materials; erecting reinforced concrete frameworks and structures; covering roof frameworks with one or more kinds of materials; erecting and maintaining various types of wooden structures; applying plaster to walls and ceilings of buildings; applying insulating materials to buildings and installations; cutting, fitting and setting glass in windows and similar openings; applying protective and decorative coats of paint to surfaces of buildings and other structures. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

* 7.1.2.1 Builders, traditional materials
* 7.1.2.2 Bricklayers, stonemasons and tile setters
* 7.1.2.3 Reinforced concreters, cement finishers and terrazzo workers
* 7.1.2.4 Roofers
* 7.1.2.5 Carpenters, joiners and parquetry workers
* 7.1.2.6 Plasterers
* 7.1.2.7 Insulators
* 7.1.2.8 Glaziers
* 7.1.2.9 Painters and paperhangers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-13.50 Cementer, oil and gas wells; 9-31 Painters, construction; 9-39.30 Spray-painter, except construction; 9-39.60 Automobile painter; 9-51 Bricklayers, Stonemasons and tile setters; 9-52 Reinforced concreters, cement finishers and terrazzo workers; 9-53 Roofers; 9-54 Carpenters, joiners and parquetry workers; 9-55 Plasterers; 9-56 Insulators; 9-57 Glaziers; 9-59.25 Paperhanger; 9-59.70 Composition tile layer.

* 7.1.2.1 BUILDERS, TRADITIONAL MATERIALS

BUILDERS, TRADITIONAL MATERIALS erect, maintain and repair small and larger buildings and other structures using traditional techniques and materials such as bamboo, hay, straw, reeds, mud, planks, poles, leaves, etc.

TASKS include -

(a) preparing ground for erecting building or other structure;
(b) collecting necessary materials;
(c) erecting structures to support roof, building and covering walls with mud, straw and other materials;
(d) fixing rafters to roof and covering with roofing material;
(e) levelling floor to make it smooth and habitable;
(f) performing other related tasks;
(g) supervising other workers in this group.
ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 9-59.10 Housebuilder, general.

*7.1.2.2 BRICKLAYERS, STONEMASONS AND TILE SETTERS

BRICKLAYERS, STONEMASONS AND TILE SETTERS erect and repair foundations, walls and complete structures of brick, stone and similar materials and cover and decorate walls, ceilings and floors of buildings with tiles and mosaic panels.

TASKS include -

(a) laying stone, brick, hollow tile and similar building blocks to construct or repair walls, partitions, fireplaces and other structures such as smokestacks, furnaces, converters, kilns and ovens, piers and abutments;

(b) laying walks, curbs and pavements of stone;

(c) setting tiles and constructing and laying mosaic panels to surface walls, floors and other surfaces;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

9-51 Bricklayers, stonemasons and tile setters, consisting of -

9-51.20 Bricklayer, construction
9-51.25 Bricklayer, chimney building
9-51.30 Firebrick layer
9-51.40 Stonemason, construction
9-51.45 Marble setter
9-51.50 Tile setter
9-51.55 Mosaic cutter and setter
9-51.60 Paviour
9-51.90 Other bricklayers, stonemasons and tile setters

9-59.70 Composition tile layer

*7.1.2.3 REINFORCED CONCRETE WORKERS, CEMENT FINISHERS AND TERRAZZO WORKERS

REINFORCED CONCRETE WORKERS, CEMENT FINISHERS AND TERRAZZO WORKERS erect reinforced concrete frameworks and structures, make forms for moulding concrete, reinforce concrete surfaces, cement openings in walls or casings of wells, finish and repair cement surfaces and carry out terrazzo work.
TASKS include -

(a) constructing and repairing reinforced concrete floors, walls, tanks, silos and other concrete structures;  
(b) making shuttering or assembling prefabricated forms for moulding concrete;  
(c) cutting, bending and fixing metal reinforcing rods in concrete moulding forms;  
(d) cementing openings in walls or casings of wells;  
(e) finishing and smoothing surfaces of concrete structures;  
(f) applying a durable, smooth surfacing composed of cement, sand pigment and marble particles to floors, terrazzo;  
(g) performing other related tasks;  
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-13.50 Cementer, oil and gas wells

9-52 Reinforced concreters, cement finishers and terrazzo workers, consisting of -

9-52.10 Reinforced concreter, general  
9-52.20 Concrete shutterer  
9-52.30 Reinforcing iron worker  
9-52.40 Cement finisher  
9-52.50 Terrazzo worker  
9-52.90 Other reinforced concreters, cement finishers and terrazzo workers

*7.1.2.4 ROOFERS

ROOFERS cover roof frameworks with one or more kinds of material.

TASKS include -

(a) covering roof frameworks with slates and tiles, synthetic materials, asphalt, metal sheets and thatching materials;  
(b) performing other related tasks;  
(c) supervising other workers in this group.
ISCO-68 GROUPS included:

9-53 Roofers, consisting of -

- 9-53.20 Slate and tile roofer
- 9-53.30 Composition roofer
- 9-53.40 Asphalt roofer
- 9-53.50 Metal roofer
- 9-53.60 Roof thatcher
- 9-53.90 Other roofers

*7.1.2.5 CARPENTERS, JOINERS AND PARQUETRY WORKERS

CARPENTERS, JOINERS AND PARQUETRY WORKERS cut, shape, assemble, erect and maintain various types of wooden structures and fittings, using hand and power tools.

TASKS include -

(a) making, altering and repairing structural and other woodwork at workbench and on construction site;

(b) constructing, erecting and installing heavy framed wooden structures on building sites;

(c) fitting, assembling and altering internal and external fixtures of buildings, such as walls, doors, door and window frames, facings and panelling;

(d) laying parquet and other wooden floors;

(e) making, repairing and fixing scenic equipment for theatrical performances, motion picture or television productions;

(f) constructing, assembling, altering and repairing wooden structures and parts in train coaches, aircraft, ships, boats, floats, pontoons and other vehicles;

(g) cutting, shaping, fitting and assembling wooden parts, mainly at workbench;

(h) performing other related tasks;

(i) supervising other workers in this group.

ISCO-68 GROUPS included:

9-54 Carpenters, joiners and parquetry workers, consisting of -

- 9-54.10 Carpenter, general
- 9-54.15 Construction carpenter
- 9-54.20 Construction joiner
- 9-54.30 Stage and studio carpenter
- 9-54.40 Wood shipwright
9-54.45 Ship joiner
9-54.50 Wooden boatbuilder
9-54.55 Ship's carpenter
9-54.60 Aircraft joiner
9-54.70 Bench carpenter
9-54.75 Parquetry worker
9-54.90 Other carpenters, joiners and parquetry workers

*7.1.2.6 PLASTERERS

PLASTERERS install laths and apply plaster to walls and ceilings of buildings.

TASKS include -

(a) applying one or more coats of plaster to interior walls and ceilings of buildings to produce finished surface;

(b) moulding and installing ornamental plaster panels and trimming and casting ornamental plaster cornices;

(c) applying protective and decorative covering of cement, plaster and similar materials to outside building surfaces;

(d) making and installing decorative plaster fixtures of fibrous plaster;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

9-55 Plasterers, consisting of -

9-55.10 Plasterer, general
9-55.20 Ornamental plasterer
9-55.30 Stucco plasterer
9-55.40 Fibrous plasterer
9-55.90 Other plasterers

*7.1.2.7 INSULATORS

INSULATORS apply insulating materials to buildings, boilers, pipes and refrigeration and air-conditioning equipment.

TASKS include -

(a) applying slabs and sheets of insulating and/or sound-absorbing materials to walls, floors and ceilings of buildings;

(b) blowing and packing insulating and/or sound-absorbing materials into cavities between walls, floors and ceilings of buildings with power-driven machines;
(c) applying insulating materials to exposed surfaces of equipment such as boilers, pipes and tanks;

(d) insulating refrigeration and air-conditioning equipment;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

9-56 Insulators, consisting of -

9-56.20 Building insulator, hand
9-56.30 Building insulator, machine
9-56.40 Acoustical insulator
9-56.50 Boiler and pipe insulator
9-56.60 Refrigeration and air-conditioning equipment insulator
9-56.90 Other insulators

*7.1.2.8 GLAZIERS

GLAZIERS cut, fit and set glass in windows, doors, shop fronts and other frames.

TASKS include -

(a) selecting glass panes or cutting panes to measure and fixing them in windows, doors and partitions of buildings;

(b) fastening glass panes in puttyless roof lights;

(c) installing flat and curved glass in shop fronts, swing doors, showcases, portholes or other openings;

(d) cutting, assembling and installing pieces of glass in lead or copper framework to form decorative windows and panels;

(e) installing ordinary and shatterproof glass panels in windows, doors and windscreens of vehicles;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

9-57 Glaziers, consisting of -

9-57.20 Building glazier
9-57.30 Patent roofing glazier
9-57.40 Plate-glass glazier
9-57.50 Leaded-glass glazier
9-57.60 Vehicle glazier
9-57.90 Other glaziers
7.1.2.9 PAINTERS AND PAPERHANGERS

PAINTERS AND PAPERHANGERS prepare surfaces of buildings and other structures for painting, apply protective and decorative coats of paint and/or cover interior walls and ceilings of buildings with wallpaper or similar materials.

TASKS include -

(a) cleaning and preparing walls and other surfaces of buildings for painting or wallpapering;

(b) applying coats of paint, varnish, shellac and similar materials to surfaces, trimmings and fixtures of buildings;

(c) measuring and mounting wallpaper or similar materials on interior walls and ceilings of buildings and ships;

(d) applying paint, red lead, bituminous emulsion and similar materials to vehicles, ships' hulls and metal superstructures, steel frameworks of buildings, bridges and metal structures;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

9-31 Painters, construction, consisting of -

9-31.20 Building painter
9-31.30 Structural steel and ship painter
9-31.90 Other painters, construction

9-39.30 Spray-painter, except construction
9-39.60 Automobile painter

9-59.25 Paperhanger

*MAJOR GROUP *7.2
METAL AND MACHINERY TRADES WORKERS

METAL AND MACHINERY TRADES WORKERS cut, shape, and join metal to produce, install, maintain and repair tools, dies, jigs, fixtures, machinery, instruments and other products made of metal and other minerals, and design and fabricate mould patterns for moulding molten metal. The work is carried out by hand and by hand-powered and other tools which are used to reduce the amount of physical effort and/or time required for specific tasks, or to increase the quality of the products.
Most occupations in this sub-major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as education at the second level, first and second stage, or as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses at the second skill level, first stage, begin at age 11 or 12 and last for about three years, while courses at the second level, second stage, begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this sub-major group require experience with and understanding of the work situation, the materials worked with and the requirements of the tools, machinery and other products produced. The required skills, including manual strength and dexterity, are often acquired through informal or formal on-the-job training and through experience as helper or labourer in similar types of production - supplementing or replacing partly or wholly formal vocational training.

Tasks performed by Metal and machinery trades workers include shaping metal; fitting, installing and repairing plumbing fixtures, pipes and pipeline systems; shaping, assembling and repairing heavy metal members to form structures or structural frameworks; fitting, installing and repairing machinery and other metal products; fitting, installing and repairing precision instruments, jewellery and handicraft products; fitting, installing and repairing electrical and electronic machinery and instruments; composing type, casting and engraving printing plates and binding books. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*7.2.1 Metal moulders, plumbers, welders, sheet-metal workers and structural metal preparers, and related workers
*7.2.2 Blacksmiths, toolmakers and related workers
*7.2.3 Machinery mechanics and fitters
*7.2.4 Precision and handicraft workers
*7.2.5 Electrical and electronic instrument fitters and installers
*7.2.6 Printing and related trades workers

COMMENTS

Occupations calling mainly for sufficient experience with and understanding of the machinery operated, controlled or monitored to ensure that it operates properly, to identify malfunctions and to take simple measures when something is about to go wrong or actually fails, are classified under major group *8 Plant and machine operators and assemblers. These occupations involve operating vehicles and other equipment, controlling and monitoring the operation of industrial plants and machinery, on the spot or by remote control, or assembling products from component parts according to strict rules and procedures.
Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools, some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

MINOR GROUP *7.2.1
METAL MOULDERS, PLUMBERS, WELDERS, SHEET-METAL WORKERS AND STRUCTURAL METAL PREPARERS, AND RELATED WORKERS

METAL MOULDERS, PLUMBERS, WELDERS, SHEET-METAL WORKERS AND STRUCTURAL METAL PREPARERS, AND RELATED WORKERS make moulds and cores for casting metal, fit, install and repair plumbing fixtures and pipeline systems, weld and cut metal parts, make and repair articles of sheet metal, erect heavy metal structures and hoisting equipment or carry out similar work under water.

Tasks performed include moulding cores for casting metal; fitting, installing and repairing plumbing fixtures and pipeline systems; welding and cutting metal parts; making and repairing articles of sheet metal; erecting heavy metal structures and hoisting equipment; carrying out similar work under water. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.2.1.1 Metal moulders and coremakers
*7.2.1.2 Plumbers and pipe fitters
*7.2.1.3 Welders and flame-cutters
*7.2.1.4 Sheet-metal workers
*7.2.1.5 Structural metal preparers and erectors
*7.2.1.6 Riggers and cable splicers
*7.2.1.7 Underwater workers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 5-89.90 Other protective service workers, part; 7-25 Metal moulders and coremakers; 8-71 Plumbers and pipe fitters; 8-72 Welders and flame-cutters; 8-73 Sheet-metal workers; 8-74 Structural metal preparers and erectors; 9-59.60 Underwater worker; 9-72 Riggers and cable splicers.
*7.2.1.1 METAL MOULDERS AND COREMAKERS

METAL MOULDERS AND COREMAKERS make moulds and cores for casting metal.

TASKS include -

(a) making moulds by hand or by using auxiliary machines on a bench for small metal castings, or on the foundry floor or in a pit for large castings;

(b) making core for use in metal moulds;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

7-25 Metal moulders and coremakers, consisting of -

7-25.20 Bench moulder, metal
7-25.30 Floor and pit moulder
7-25.40 Moulder, machine
7-25.50 Coremaker, hand
7-25.60 Coremaker, machine
7-25.90 Other metal moulders and coremakers

*7.2.1.2 PLUMBERS AND PIPE FITTERS

PLUMBERS AND PIPE FITTERS assemble, fit, install and repair plumbing fixtures, pipes and pipeline systems.

TASKS include -

(a) cutting, threading, bending, jointing, assembling, installing, maintaining and repairing pipes, fittings and fixtures of drainage, heating, water supply and sanitary systems;

(b) assembling, installing, maintaining and repairing pipeline systems in ships, aircraft, buildings, industrial plants, etc.;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

8-71 Plumbers and pipe fitters, consisting of -

8-71.05 Plumber, general
8-71.10 Pipe fitter, general
8-71.20 Gas pipe fitter
8-71.30 Marine pipe fitter
8-71.40 Aircraft pipe and tube fitter
8-71.90 Other plumbers and pipe fitters
*7.2.1.3 WELDERS AND FLAME-CUTTERS

WELDERS AND FLAME-CUTTERS join and cut metal parts using flame, electric arc and other sources of heat to melt and cut or to melt and fuse metal.

TASKS include -
(a) welding metal parts, using flame, electric arc, thermite compound and other methods;
(b) operating resistance welding machines;
(c) using blowtorch to make and repair lead linings, pipes, floors and other lead fixtures;
(d) brazing metal parts together;
(e) cutting metal pieces using gas flame and electric arc;
(f) joining metal parts by hand soldering;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:
8-72 Welders and flame-cutters, consisting of -
   8-72.10 Gas and electric welder, general
   8-72.15 Gas welder
   8-72.20 Electric arc welder, hand
   8-72.25 Electric arc welder, machine
   8-72.30 Thermite welder
   8-72.35 Resistance welder
   8-72.40 Lead burner
   8-72.45 Brazer
   8-72.50 Flame-cutter, hand
   8-72.55 Flame-cutter, machine
   8-72.60 Solderer, hand
   8-72.90 Other welders and flame-cutters

*7.2.1.4 SHEET-METAL WORKERS

SHEET-METAL WORKERS make, install and repair articles and parts of articles of sheet metal such as sheet steel, galvanised iron, copper, tin, brass, aluminium and zinc.

TASKS include -
(a) marking sheet metal for cutting and shaping;
(b) making and repairing household utensils and other articles in tin-plate, copper and light alloys, or ornamental articles and fittings;
(c) making and repairing boilers, tanks, vats and other similar containers;
(d) installing and repairing sheet-metal parts of vehicles and aircraft;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:
8-73 Sheet-metal workers, consisting of -
   8-73.10 Sheet-metal worker, general
   8-73.20 Sheet-metal marker
   8-73.30 Coppersmith
   8-73.40 Tinsmith
   8-73.50 Boilersmith
   8-73.60 Ornamental sheet-metal worker
   8-73.70 Vehicle sheet-metal worker
   8-73.80 Aircraft sheet-metal worker
   8-73.90 Other sheet-metal workers

*7.2.1.5 STRUCTURAL METAL PREPARERS AND ERECTORS

STRUCTURAL METAL PREPARERS AND ERECTORS shape, assemble and erect heavy metal girders and plates to form structures and frameworks

TASKS include -
(a) marking metal members to guide in cutting, drilling and shaping them for use in buildings, ships and other structures;
(b) drilling, cutting and shaping structural steel in a workshop;
(c) erecting steel members for buildings, bridges and other constructions;
(d) assembling and erecting framework and other metal parts of ships' structures;
(e) shaping and fitting structural steel plates of ships under construction or repair;
(f) riveting structural metal members by hand, machine or pneumatic hammer;
(g) performing other related tasks;
(h) supervising other workers in this group.
ISCO-68 GROUPS included:

8-74 Structural metal preparers and erectors, consisting of -

- 8-74.20 Structural metal marker
- 8-74.30 Structural metal worker, workshop
- 8-74.40 Constructional steel erector
- 8-74.50 Metal shipwright
- 8-74.55 Ship plater
- 8-74.60 Hand riveter
- 8-74.65 Machine riveter
- 8-74.70 Pneumatic riveter
- 8-74.90 Other structural metal preparers and erectors

7.2.1.6 RIGGERS AND CABLE SPLICERS

RIGGERS AND CABLE SPLICERS erect tackle for lifting and hauling, and install and maintain cables, ropes and wires on construction sites, on oil and gas well-drilling sites, in ships and aircraft and in other places.

TASKS include -

(a) setting up various types of cages, moving platforms, lifting tackle and other hoisting equipment for moving construction workers, materials, machinery and other heavy objects about workshops, shipyards or other locations;

(b) joining, repairing and fitting attachments to wires, hemp ropes and cables;

(c) installing and repairing ropes, wires and cables on ships and aircraft;

(d) working as member of crew erecting and repairing derricks for drilling water, gas and oil wells and installing cables, hoisting and drilling equipment;

(e) working as member of cable crew building up, fitting and installing wire cables in the construction of suspension bridges;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

9-72 Riggers and cable splicers, consisting of -

- 9-72.05 Hoisting equipment riggers, general
- 9-72.10 Rope and cable splicer, general
- 9-72.20 Hoisting equipment rigger, construction
- 9-72.30 Ship rigger
- 9-72.40 Aircraft rigger
- 9-72.50 Oil and gas well-drilling rigger
- 9-72.60 Suspension bridge cable worker
- 9-72.90 Other riggers and cable splicers
*7.2.1.7 UNDERWATER WORKERS

UNDERWATER WORKERS work under water, dressed in scuba gear or diving suit, to inspect, repair, remove and install equipment and structures.

TASKS include -

(a) working under water to lay and repair bridges, piers and harbour-wall foundations;
(b) inspecting for suspected damage and making minor repairs to ships' hulls and underwater installations;
(c) reporting on condition of wrecked ships;
(d) removing underwater obstructions;
(e) drilling holes for underwater blasting;
(f) performing various underwater tasks connected with salvage work or recovering dead bodies;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

5-89.90 Other protective service workers, part
9-59.60 Underwater worker

MINOR GROUP *7.2.2
BLACKSMITHS, TOOLMAKERS AND RELATED WORKERS

BLACKSMITHS, TOOLMAKERS AND RELATED WORKERS form steel and other metal to make and repair various kinds of tools and equipment.

Tasks performed include forming iron, steel and other metal to make various kinds of tools and equipment; setting and operating metal-cutting machines working to fine tolerances; polishing and sharpening metal surfaces and tools. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.2.2.1 Blacksmiths, hammersmiths and forging-press workers
*7.2.2.2 Toolmakers, metal pattern makers and metal markers
*7.2.2.3 Machine-tool setter-operators
*7.2.2.4 Metal grinders, polishers and tool sharpeners
COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-27.20 Wire drawer, hand; 8-31 Blacksmiths, hammersmiths and forging-press operators; 8-32 Toolmakers, metal pattern makers and metal markers; 8-33 Machine-tool setter-operators; 8-35 Metal grinders, polishers and tool sharpeners 8-39.20 Gunsmith; 8-39.30 Locksmith; 8-39.40 Metal spinner; 8-39.50 Metal former, hand.

*7.2.2.1 BLACKSMITHS, HAMMERSMITHS AND FORGING-PRESS WORKERS

BLACKSMITHS, HAMMERSMITHS AND FORGING-PRESS WORKERS hammer, bend and forge bars, rods, ingots and plates of iron, steel or other metal to make various kinds of tools, metal articles, pieces of equipment, agricultural implements and shoes for use on animals.

TASKS include -

(a) pouring molten metal into moulds to produce metal castings;

(b) heating metal in forge furnace and manufacturing and repairing articles by drawing, bending, cutting, hammering metal on an anvil, punching, shearing, joining and hardening or tempering;

(c) shaping heated metal into forgings on power hammer equipped with open dies;

(d) operating closed-die drop-hammer to forge metal articles;

(e) operating a power-press machine equipped with closed dies to forge metal articles;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

7-27.20 Wire drawer, hand

8-31 Blacksmiths, hammersmiths and forging-press operators, consisting of -

8-31.10 Blacksmith, general
8-31.20 Hammersmith
8-31.30 Drop-hammer operator
8-31.40 Forging-press operator
8-31.90 Other blacksmiths, hammersmiths and forging-press operators

8-39.50 Metal former, hand
*7.2.2.2 TOOLMAKERS, METAL PATTERN MAKERS AND METAL MARKERS

TOOLMAKERS, METAL PATTERN MAKERS AND METAL MARKERS make and repair tools, sports guns, locks, dies, patterns and other metal articles, using hand and machine tools to work metal to fine tolerances.

TASKS include -

(a) making, maintaining and repairing dies, jigs, gauges and fixtures, using hand tools and various kinds of machine tools;
(b) fitting and assembling parts to make and repair jigs, fixtures and gauges;
(c) repairing and modifying sports guns and other small arms;
(d) making, fitting, assembling, repairing and installing lock parts and locks;
(e) making and repairing metal patterns for preparation of foundry moulds;
(f) laying out lines and reference points on metal stock to guide other workers who cut, turn, mill, grind or otherwise shape metal;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

8-32 Toolmakers, metal pattern makers and metal markers, consisting of -
   8-32.20 Tool and die maker
   8-32.30 Jig and gauge maker
   8-32-40 Metal pattern maker, foundry
   8-32.50 Metal marker
   8-32.90 Other toolmakers, metal patternmakers and metal markers

8-39.20 Gunsmith
8-39.30 Locksmith

*7.2.2.3 MACHINE-TOOL SETTER-OPERATORS

MACHINE-TOOL SETTER-OPERATORS set, or set and operate, metal-cutting machines working to fine tolerances.

TASKS include -

(a) setting one or more types of machine tools for operators to produce metal articles in standardised series;
(b) setting and operating a variety of machine tools;
(c) setting and operating a particular type of metal-working machine, such as lathe, milling, planing, boring, drilling, grinding or honing machine, including multi-purpose numerically controlled metal-working machines;
(d) performing similar tasks in machining of plastics and other metal substitutes;

(e) performing other related tasks;

(f) supervising other workers in this group.

**ISCO-68 GROUPS included:**

**8-33** Machine-tool setter-operator, consisting of -

- 8-33.05 Metalworking-machine setter, general
- 8-33.10 Metalworking-machine setter-operator, general
- 8-33.20 Lathe setter-operator
- 8-33.30 Milling-machine setter-operator
- 8-33.40 Planing-machine setter-operator
- 8-33.50 Boring-machine setter-operator
- 8-33.60 Drilling-machine setter-operator
- 8-33.70 Precision-grinding-machine setter-operator
- 8-33.80 Honing-machine setter-operator
- 8-33.85 Numerical-control-machine setter-operator
- 8-33.90 Other machine-tool setter-operators

**9-39.40** Metal spinner

*7.2.2.4 METAL GRINDERS, POLISHERS AND TOOL SHARPENERS*

**METAL GRINDERS, POLISHERS AND TOOL SHARPENERS** grind and polish metal surfaces and sharpen tools.

**TASKS include** -

(a) operating stationary or portable buffing and polishing machines;

(b) sharpening cutting tools and instruments using grinding wheel or mechanically operated grinding machines;

(c) repairing, adjusting and sharpening saw blades and metal teeth of cylinders in textile carding machine;

(d) performing other related tasks;

(e) supervising other workers in this group.

**ISCO-68 GROUPS included:**

**8-35** Metal grinders, polishers and tool sharpeners, consisting of -

- 8-35.20 Buffing- and polishing-machine operators
- 8-35.30 Tool grinder, machine tools
- 8-35.40 Cutting instruments sharpener
- 8-35.50 Saw repairer and sharpener
- 8-35.60 Textile card grinder
- 8-35.90 Other metal grinders, polishers and tool sharpeners
MINOR GROUP *7.2.3
MACHINERY MECHANICS AND FITTERS

MACHINERY MECHANICS AND FITTERS fit, install, maintain and repair vehicles, engines and mechanical parts of industrial machinery.

Tasks performed include fitting, installing, maintaining and repairing vehicles, engines, mechanical parts of industrial machinery and related equipment. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.2.3.1 Motor vehicle mechanics and fitters
*7.2.3.2 Aircraft mechanics and fitters
*7.2.3.3 Other machinery mechanics and fitters

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 8-41 Machinery fitters and machine assemblers, part; 8-43 Motor-vehicle mechanics; 8-44 Aircraft engine mechanics; 8-49 Machinery fitters, machine assemblers and precision-instrument makers (except electrical) not elsewhere classified, except .65 Office machines mechanic, part and .90 Other machinery fitters, machine assemblers and precision-instrument makers (except electrical), part.

*7.2.3.1 MOTOR VEHICLE MECHANICS AND FITTERS

MOTOR VEHICLE MECHANICS AND FITTERS fit, install, maintain and repair the mechanical and related equipment of motorcycles, passenger and delivery cars, trucks and other motor vehicles.

TASKS include -

(a) fitting, examining, adjusting, dismantling, rebuilding and replacing defective mechanical parts of motor vehicles;

(b) installing and adjusting motors, brakes, steering and other parts of motor vehicles;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

8-41.05 Machinery fitter, general (part)
8-41.10 Machinery fitter-assembler, general (part)
8-41.15 Internal combustion engine fitter-assembler, except aircraft and marine engines (part)
8-43 Motor vehicle mechanics, consisting of:

- 8-43.20 Automobile mechanic
- 8-43.30 Motor-truck mechanic
- 8-43.40 Motor-cycle mechanic
- 8-43.90 Other motor-vehicle mechanics

*7.2.3.2 AIRCRAFT MECHANICS AND FITTERS

AIRCRAFT MECHANICS AND FITTERS fit, service, repair and overhaul aircraft engines.

**TASKS include:**

(a) fitting, examining, testing and servicing aircraft engines;

(b) replacing engine components or complete engines;

(c) performing other related tasks;

(d) supervising other workers in this group.

**ISCO-68 GROUPS included:**

- 8-41.05 Machinery fitter, general (part)
- 8-41.10 Machinery fitter-assembler, general (part)
- 8-41.20 Aircraft engine fitter-assembler, part
- 8-41.85 Airframe fitter-assembler

8-44 Aircraft engine mechanics, consisting of -

- 8-44.10 Aircraft engine mechanic, general
- 8-44.20 Aircraft engine service mechanic
- 8-44.90 Other aircraft engine mechanics

*7.2.3.3 OTHER MACHINERY MECHANICS AND FITTERS

OTHER MACHINERY MECHANICS AND FITTERS fit, install, service and repair engines (except motor vehicle and aircraft engines), industrial machinery and related equipment.

**TASKS include:**

(a) fitting, installing, examining, servicing and repairing engines (except motor vehicle and aircraft engines), industrial machinery and related mechanical equipment;

(b) oiling and greasing stationary engines, machinery and vehicles;

(c) inspecting and testing new machinery and mechanical equipment for conformity with standards and specifications;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

8-41.05 Machinery fitter, general (part)
8-41.10 Machinery fitter-assembler, general (part)
8-41.25 Marine engine fitter-assembler, part
8-41.30 Turbine fitter-assembler, except aircraft and marine (part)
8-41.35 Metalworking machine-tool fitter-assembler, part
8-41.40 Mining machinery fitter-assembler, part
8-41.45 Printing machinery fitter-assembler, part
8-41.50 Textile machinery fitter-assembler, part
8-41.55 Woodworking machinery fitter-assembler, part
8-41.60 Agricultural machinery fitter-assembler, part
8-41.65 Earth-moving equipment fitter-assembler, part
8-41.70 Office machinery fitter-assembler, part
8-41.75 Machinery erector and installer
8-41.80 Refrigeration and air-conditioning plant installer and mechanic
8-41.90 Other machinery fitters and machine assemblers, part

8-49.10 Machinery mechanic, general
8-49.15 Reciprocating steam-engine mechanic
8-49.20 Diesel engine mechanic, except motor vehicle
8-49.25 Turbine mechanic, except aircraft and marine turbines
8-49.30 Metal-working machine-tool mechanic
8-49.35 Mining machinery mechanic
8-49.40 Printing machinery mechanic
8-49.45 Textile machinery mechanic
8-49.50 Woodworking machinery mechanic
8-49.55 Agricultural machinery mechanic
8-49.60 Earth-moving equipment and construction machinery mechanic
8-49.65 Office machines mechanic, part
8-49.70 Plant maintenance mechanic
8-49.75 Pedal-cycle repairer
8-49.80 Oilier and greaser, except ships' engines
8-49.85 Mechanical products inspector and tester
8-49.90 Other machinery fitters, machine assemblers and precision-instrument makers (except electrical), part

MINOR GROUP *7.2.4
PRECISION AND HANDICRAFT WORKERS

PRECISION AND HANDICRAFT WORKERS make and repair mechanical parts of precision instruments, acoustic musical instruments, make and repair jewellery and articles of precious metals, shape and finish glass and glass products, pottery, porcelain and related products.

Tasks performed include making and repairing the mechanical parts of precision instruments and optical equipment; making and repairing acoustic musical instruments; forming glass articles, pottery, porcelain and related products; decorating jewellery and other articles. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*7.2.4.1 Precision instrument makers and repairers
*7.2.4.2 Acoustic musical instrument makers and tuners
*7.2.4.3 Jewellery and precious metal workers
*7.2.4.4 Glass formers, cutters, grinders and finishers
*7.2.4.5 Potters and related clay and abrasive formers
*7.2.4.6 Glass engravers and etchers
*7.2.4.7 Decorations painters

**COMMENTS**

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-24.90 Other metal casters; 8-42 Watch, clock and precision-instrument makers; 8-80 Jewellery and precious metal workers; 8-91.20 Glass blower; 8-91.24 Scientific glass blower; 8-91.32 Glass lens moulder; 8-91.56 Glass cutter; 8-91.60 Optical glass cutter; 8-91.64 Glass edge grinder; 8-91.68 Lens grinding-machine operator; 8-91.72 Lens polishing-machine operator; 8-91.80 Glass tube bender; 8-91.90 Other glass formers, cutters, grinders and finishers; 8-92 Potters and related clay and abrasive formers; 8-94 Glass engravers and etchers; 8-95 Glass and ceramics painters and decorators; 9-39.20 Brush-painter, except construction; 9-39.40 Hand dipper; 9-39.50 Sign-painter; 9-41 Musical instrument makers and tuners.

*7.2.4.1 PRECISION INSTRUMENT MAKERS AND REPAIRERS

PRECISION INSTRUMENT MAKERS AND REPAIRERS make and repair mechanical watches, clocks, precision instruments, optical equipment and medical appliances.

**TASKS include** -

(a) making, assembling, adjusting and repairing mechanical watches, clocks and precision instruments;
(b) making, adjusting and repairing optical instruments;
(c) making and repairing medical, orthopaedic and dental appliances and prostheses;
(d) performing other related tasks;
(e) supervising other workers in this group.
ISCO-68 GROUPS included:

8-42 Watch, clock and precision-instrument makers, consisting of -

8-42.20 Watch and clock assembler
8-42.25 Watch and clock repairer
8-42.30 Precision-instrument maker and repairer
8-42.35 Optical instrument maker and repairer
8-42.40 Precision-instrument assembler
8-42.45 Orthopaedic appliance maker and repairer
8-42.50 Dental prothesis maker and repairer
8-42.90 Other watch, clock and precision-instrument makers

*7.2.4.2 ACOUSTIC MUSICAL INSTRUMENT MAKERS AND TUNERS

ACOUSTIC MUSICAL INSTRUMENT MAKERS AND TUNERS make, repair and tune stringed, wind or percussion acoustic instruments with hand or power tools.

TASKS include -

(a) making and repairing acoustic accordions, stringed and wind instruments;
(b) building and repairing acoustic organs and making parts of such organs;
(c) making instrumental parts of acoustic pianos and assembling and repairing such pianos;
(d) tuning organs, pianos and other acoustic instruments;
(e) making and repairing other acoustic instruments;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:

9-41 Musical instrument makers and tuners, consisting of -

9-41.20 Stringed instrument maker
9-41.30 Woodwind instrument maker
9-41.40 Metal wind instrument maker
9-41.50 Accordion maker
9-41.60 Organ builder
9-41.70 Piano maker
9-41.80 Musical instrument tuner
9-41.90 Other musical instrument makers and tuners

*7.2.4.3 JEWELLERY AND PRECIOUS METAL WORKERS

JEWELLERY AND PRECIOUS METAL WORKERS make and repair jewellery and precious metalware, cut and set gems and engrave designs on jewellery and precious metal articles.
TASKS include -

(a) casting jewellery and other non-ferrous metal articles by hand;
(b) making complete jewellery articles such as rings, brooches and bracelets;
(c) cutting and polishing gems and setting them in jewellery articles;
(d) making and repairing precious metalware;
(e) rolling and beating precious metals;
(f) engraving letters and designs on jewellery and precious metalware;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-24.90 Other metal casters
8-80 Jewellery and precious metal workers, consisting of -
  8-80.10 Jeweller, general
  8-80.20 Jewellery repairer
  8-80.30 Gem cutter and polisher
  8-80.40 Gem setter
  8-80.50 Goldsmith and silversmith
  8-80.60 Precision metal roller
  8-80.70 Precious metal leaf maker
  8-80.80 Jewellery engraver
  8-80.90 Other jewellery and precious metal workers

*7.2.4.4 GLASS FORMERS, CUTTERS, GRINDERS AND FINISHERS

GLASS FORMERS, CUTTERS, GRINDERS AND FINISHERS blow, mould, press and roll shapes from molten glass and cut, grind and polish glass.

TASKS include -

(a) shaping molten glass by means of blowpipe, hand moulding, heating and bending;
(b) heating, moulding and pressing optical glass to make lens blanks;
(c) grinding and polishing lens blanks;
(d) grinding and bevelling edges of glass;
(e) cutting sheet glass with hand tools and sawing prisms and other shapes from optical glass blocks;
(f) performing other related tasks;
(g) supervising other workers in this group.
ISCO-68 GROUPS included:

8-91.20 Glass blower
8-91.24 Scientific glass blower
8-91.32 Glass lens moulder
8-91.56 Glass cutter
8-91.60 Optical glass cutter
8-91.64 Glass edge grinder
8-91.68 Lens grinding-machine operator
8-91.72 Lens polishing-machine operator
8-91.80 Glass tube bender
8-91.90 Other glass formers, cutters, grinders and finishers

*7.2.4.5 POTTERS AND RELATED CLAY AND ABRASIVE FORMERS

POTTERS AND RELATED CLAY AND ABRASIVE FORMERS make pottery, porcelain ware, bricks, tiles and abrasive wheels.

TASKS include -

(a) making articles of pottery and porcelain completely;
(b) making clay or plaster-of-paris moulds;
(c) forming ware on potter's wheel with hands, or using interior or exterior moulding shapes and shaping tools;
(d) forming ware by casting semi-liquid clay in plaster-of-Paris moulds;
(e) forming bricks and tiles of special shapes by hand:
(f) making ware by pressing plastic clay into moulds by hand;
(g) operating screw-press or hydraulic press to make products from clay dust;
(h) operating a machine which extrudes moist clay for further processing;
(i) forming abrasive wheels by moulding and pressing abrasive mixture;
(j) performing other related tasks;
(k) supervising other workers in this group.

ISCO-68 GROUPS included:

8-92 Potters and related clay and abrasive formers, consisting of -

8-92.10 Potter, general
8-92.15 Pottery and porcelain modeller
8-92.20 Pottery and porcelain mould maker
8-92.25 Pottery and porcelain thrower
8-92.30 Pottery and porcelain jiggerman
8-92.35 Pottery and porcelain caster, hand
8-92.40 Brick and tile moulder, hand
8-92.45 Pottery and porcelain presser, hand
8-92.50 Pottery and porcelain die-presser
8-92.55 Clay extruding-press operator
8-92.60 Abrasive wheel moulder
8-92.90 Other potters and related clay and abrasive formers

*7.2.4.6 GLASS ENGRAVERS AND ETCHERS

GLASS ENGRAVERS AND ETCHERS engrave and etch designs on glass articles.

TASKS include -

(a) engraving monograms and ornamental designs on glassware;
(b) etching decorative designs, calibration markings and other figures on glass articles;
(c) cutting designs on glass articles;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

8-94 Glass engravers and etchers, consisting of -

8-94.20 Glass engraver
8-94.30 Glass etcher
8-94.40 Glass sandblaster
8-94.90 Other glass engravers and etchers

*7.2.4.7 DECORATIONS PAINTERS

DECORATIONS PAINTERS decorate jewellery and articles made of wood, metal, textiles, glass, ceramics and other materials; and plan, lay out and paint letters and designs to make signs.

TASKS include -

(a) painting designs on articles with a brush or by spraying, or transferring designs using stencils, transfers, rubber stamps and other means;
(b) applying glaze, enamel, stain, varnish, lacquer and similar liquids on articles by spraying or dipping;
(c) coating mirror glass with silver solutions;
(d) laying out and painting letter and designs to make signs;
(e) performing other related tasks;
(f) supervising other workers in this group.
ISCO-68 GROUPS included:

8-95 Glass and ceramics painters and decorators, consisting of -

8-95.20 Glass painter
8-95.30 Ceramics painter
8-95.40 Ceramics decorator
8-95.50 Ceramics spray-painter
8-95.60 Ceramics dipper
8-95.70 Mirror silverer
8-95.90 Other glass and ceramics painters and decorators

9-39.20 Brush painter, except construction
9-39.40 Hand dipper
9-39.50 Sign-painter

MINOR GROUP *7.2.5
ELECTRICAL AND ELECTRONIC INSTRUMENT FITTERS AND INSTALLERS

ELECTRICAL AND ELECTRONIC INSTRUMENT FITTERS AND INSTALLERS fit, adjust, install and repair electrical machinery, wiring and equipment, and fit, service and repair computer hardware and other electronic equipment or install, construct and repair electrical cables.

Tasks performed include fitting, adjusting and repairing electrical machinery, wiring and equipment; fitting, servicing and repairing computer hardware and other electronic products; servicing and repairing radio and television receivers; installing, servicing and repairing telegraph and telephone equipment; installing, constructing and repairing electrical line and joint cables. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.2.5.1 Electrical fitters and electricians
*7.2.5.2 Electronics fitters and servicers
*7.2.5.3 Radio and television servicers
*7.2.5.4 Telegraph and telephone installers
*7.2.5.5 Electrical linemen and cable jointers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational category: 8-49.65 Office machines mechanics, part; 8-51 Electrical fitters; 8-52 Electronics fitters; 8-54 Radio and television repairmen; 8-55 Electrical wiremen; 8-56 Telephone and telegraph installers; 8-57 Electrical linemen and cable jointers; 8-59 Electrical fitters and related electrical and electronics workers not elsewhere classified.
**7.2.5.1 ELECTRICAL FITTERS AND ELECTRICIANS**

ELECTRICAL FITTERS AND ELECTRICIANS fit, adjust, install and repair electrical machinery, electrical wiring and other electrical apparatus and equipment in buildings, factories, workshops or other places of use.

**TASKS include -**

(a) fitting, adjusting and repairing various kinds of electrical machinery, motors, generators, switchgear and control apparatus, instruments, or electrical parts of elevators and related equipment;

(b) fitting, adjusting and repairing electrical apparatus in domestic appliances, industrial machines and other appliances, aircraft, ships and vehicles;

(c) installing, servicing and repairing electrical wiring systems and related equipment in houses, mines, industrial and commercial establishments, other buildings, aircraft, ships and motor vehicles;

(d) performing other related tasks;

(e) supervising other workers in this group.

**ISCO-68 GROUPS included:**

**8-51 Electrical fitters, consisting of -**

- 8-51.10 Electrical fitter, general
- 8-51.20 Electrical motor and generator fitter
- 8-51.30 Electrical transformer fitter
- 8-51.40 Electrical switchgear and control apparatus fitter
- 8-51.50 Electrical instrument fitter
- 8-51.60 Electrical elevator and related equipment fitter
- 8-51.90 Other electrical fitters

**8-55 Electrical wiremen, consisting of -**

- 8-55.10 Electrician, general
- 8-55.20 Building electrician
- 8-55.30 Aircraft electrician
- 8-55.35 Ship's electrician
- 8-55.40 Vehicle electrician
- 8-55.50 Stage and studio electrician
- 8-55.60 Maintenance electrician
- 8-55.70 Electrical repairman
- 8-55.90 Other electrical wiremen

**8-59 Electrical fitters and related electrical and electronics workers not elsewhere classified, part, consisting of -**

- 8-59.20 Electrical and electronic products inspector and tester, part
- 8-59.90 Other electrical fitters and related electrical and electronics workers, part
*7.2.5.2  ELECTRONICS FITTERS AND SERVICERS

ELECTRONICS FITTERS AND SERVICERS fit, adjust, service and repair computer hardware and other electronic apparatus in factory, workshop or place of use.

TASKS include -

(a) fitting, adjusting, servicing and repairing computer hardware, radio and television transmitters, radar equipment, electronic components of musical instruments, medical equipment, industrial equipment and signalling systems;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

8-49.65 Office machines mechanics, part

8-52  Electronics fitters, consisting of -

8-52.10 Electronics fitter, general
8-52.20 Electronics fitter (radio, television and radar equipment)
8-52.30 Electronics fitter, medical equipment
8-52.40 Electronic computer and related equipment fitter
8-52.50 Electronics fitter, industrial equipment
8-52.60 Electronic signalling systems fitter
8-52.90 Other electronics fitters

8-59 Electrical fitters and related electrical and electronics workers not elsewhere classified, part, consisting of -

8-59.20 Electrical and electronic products inspector and tester, part
8-59.90 Other electrical fitters and related electrical and electronics workers, part

*7.2.5.3  RADIO AND TELEVISION SERVICERS

RADIO AND TELEVISION SERVICERS service and repair radio and television receivers, tape recorders, phonographs and video cassette recorders.

TASKS include -

(a) examining radio or television receiver, tape recorder, phonograph or video cassette recorder, replacing defective parts and making adjustments and repairs;

(b) performing other related tasks;

(c) supervising other workers in this group.
ISCO-68 GROUPS included:

8-54 Radio and television repairmen, consisting of -
   8-54.20 Radio and television mechanic
   8-54.90 Other radio and television repairmen

*7.2.5.4 TELEGRAPH AND TELEPHONE INSTALLERS

TELEGRAPH AND TELEPHONE INSTALLERS install, service and repair telephone and telegraph equipment in central installation or place of use.

TASKS include -
(a) installing, servicing and repairing telephone and telegraph equipment in central installation or place of use;
(b) performing other related tasks;
(c) supervising other workers in this group.

ISCO-68 GROUPS included:

8-56 Telephone and telegraph installers, consisting of -
   8-56.20 Telephone and telegraph installer
   8-56.30 Telephone and telegraph mechanic
   8-56.90 Other telephone and telegraph installers

*7.2.5.5 ELECTRICAL LINEMEN AND CABLE JOINTERS

ELECTRICAL LINEMEN AND CABLE JOINTERS install, construct and repair electrical lines and joint cables.

TASKS include -
(a) installing and repairing overhead and underground electric power and electric traction lines;
(b) installing and repairing overhead and underground telephone and telegraph lines;
(c) making joints in surface and underground cables;
(d) performing other related tasks;
(e) supervising other workers in this group.
ISCO-68 GROUPS included:

8-57 Electric Linemen and cable jointers, consisting of -

- 8-57.20 Electrical power lineman
- 8-57.30 Electrical traction lineman
- 8-57.40 Telephone and telegraph lineman
- 8-57.50 Electrical cable jointer
- 8-57.90 Other electric linemen and cable jointers

MINOR GROUP *7.2.6
PRINTING AND RELATED TRADES WORKERS

PRINTING AND RELATED TRADES WORKERS set and arrange printing type by hand or machine, make printing plates from set-up type, engrave lithographic stones, printing plates and rollers, make and print with silk-screens, print on materials other than paper, or bind books.

Tasks performed include setting and arranging printing type by hand or machine; making printing plates from set-up type; engraving printing plates, rollers, dies and blocks; making and printing with silk-screens; printing on materials other than paper; binding covers to books and performing book-finishing operations. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.2.6.1 Compositors and type-setters
*7.2.6.2 Stereotypers and electrotypers
*7.2.6.3 Printing engravers
*7.2.6.4 Bookbinders and related workers
*7.2.6.5 Silk-screen, block and textile printers

COMMENTS

This minor group contains the following ISCO-68 unit groups: 9-21 Compositors and type-setters; 9-23 Stereotypers and electrotypers; 9-24 Printing engravers, except photo- engravers; 9-25 Photo-engravers; 9-26 Bookbinders and related workers, except .30 Bookbinder, machine, and .50 Book embosser, machine; 9-29 Printers and related workers not elsewhere classified.

*7.2.6.1 COMPOSITORS AND TYPE-SETTERS

COMPOSITORS AND TYPE-SETTERS set and arrange printing type by hand and machine.
TASKS include -

(a) setting type by hand and printing copies with small machine;
(b) operating linotype, monotype and type-casting machines;
(c) arranging set-up of type and spacing material and illustration blocks to make pages;
(d) arranging pages in sequence for printing;
(e) operating keyboard machine which reproduces letters on film or sensitised paper for photographic reproduction plates;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:

9-21 Compositors and type-setters, consisting of -
  9-21.10 Printer, general
  9-21.20 Hand compositor
  9-21.30 Linotype operator
  9-21.35 Monotype keyboard operator
  9-21.40 Type-casting-machine operator
  9-21.45 Printing maker-up
  9-21.50 Imposer
  9-21.55 Photo-type-setting machine operator
  9-21.90 Other compositors and type-setters

*7.2.6.2 STEREOTYPERS AND ELECTROTYPERS

STEREOTYPERS AND ELECTROTYPERS make printing plates from set-up type by stereotyping and electroplating processes.

TASKS include -

(a) making moulds of set-up type with papier maché, wax or other materials;
(b) making printing plates by casting metal in moulds of papier-maché or other material bearing impression of type, or by putting metal backing on shell made by electroplating moulds to reproduce type;
(c) performing other related tasks;
(d) supervising other workers in this group.
ISCO-68 GROUPS included:

9-23 Stereotypers and electrotypers, consisting of -
   9-23.20 Stereotyper
   9-23.30 Electrotyper
   9-23.90 Other stereotypers and electrotypers

*7.2.6.3 PRINTING ENGRAVERS

PRINTING ENGRAVERS engrave lithographic stones and printing plates, rollers, dies and blocks by various processes.

TASKS include -

(a) cutting designs through film applied to surface of lithographic stones;
(b) engraving steel and copper plates, rollers, dies and wood, rubber and linoleum blocks by hand;
(c) engraving metal plates and rollers with machine;
(d) transferring designs from lithographic stone to metal plates;
(e) performing all or several tasks in preparing printing plates by photogravure process;
(f) etching metal plates or rollers with acid and retouching;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

9-24 Printing engravers, except photo-engravers, consisting of -
   9-24.15 Lithographic stone engraver
   9-24.20 Metal printing plate, roller and die engraver, hand
   9-24.30 Wood, rubber or linoleum block engraver, hand
   9-24.40 Metal printing roller engraver, machine
   9-24.45 Engraving pantograph operator
   9-24.50 Direct lithographic transferrer
   9-24.60 Metal engraving etcher
   9-24.90 Other printing engravers, except photo-engravers

9-25 Photo-engravers, consisting of -
   9-25.10 Photo-engraver, general
   9-25.20 Photogravure cameraman
   9-25.30 Photogravure retoucher
   9-25.40 Photo-mechanical transferrer
   9-25.50 Photogravure etcher
   9-25.60 Printing plate retoucher
   9-25.90 Other photo-engravers
7.2.6.4 BOOKBINDERS AND RELATED WORKERS

BOOKBINDERS AND RELATED WORKERS bind covers to books and perform book-finishing operations.

TASKS include -
(a) binding books and periodicals by hand;
(b) setting and operating bookbinding machines;
(c) embossing designs or titles on books by hand or machine;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:
9-26.20 Bookbinder, hand
9-26.40 Book Embosser, hand
9-26.90 Other bookbinders and related workers

7.2.6.5 SILK-SCREEN, BLOCK AND TEXTILE PRINTERS

SILK-SCREEN, BLOCK AND TEXTILE PRINTERS cut stencils for use in silk-screen printing and print on paper, metal, textile and other materials with silk-screens, blocks of rubber, wood or other material or engraved printing rollers.

TASKS include -
(a) cutting stencils for silk-screen printing;
(b) printing on paper, metal, textile and other materials by silk-screen process;
(c) printing designs and patterns on cloth or wallpaper with engraved blocks or machine equipped with engraved rollers;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:
9-29 Printer and related workers not elsewhere classified, consisting of -
9-29.20 Silk-screen stencil dusher
9-29.30 Silk-screen printer
9-29.40 Block printer
9-29.50 Textile printer
9-29.90 Other printers and related workers
FOOD-PROCESSING, WOODWORKING, TEXTILE, LEATHER AND RELATED TRADES WORKERS

treat and process agricultural raw materials and process them into food and other products, manufacture and repair goods of wood, textile, fur and leather. The work is carried out by hand and by hand-powered and other tools which are used to reduce the amount of physical effort and/or time required for specific tasks, or to increase the quality of the products.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this sub-major group require experience with and understanding of the work situation, the materials worked with and the requirements of the products produced. The required skills, including manual strength and dexterity, are often acquired through informal or formal on-the-job training and through experience as helper or labourer in similar types of production, supplementing or replacing partly or wholly formal vocational training.

Tasks performed by Food-processing, woodworking, textile, leather and related trades workers include treating and processing meat, fish, grain, fruit and vegetables into food products for human and animal consumption; treating and processing natural fibres, skins and hides; making and repairing goods made of wood, textile, skin or leather. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*7.3.1 Food-processing trades workers
*7.3.2 Woodworking trades workers
*7.3.3 Textile and garment trades workers
*7.3.4 Pelt, leather and shoemaking trades workers

COMMENTS

Occupations calling mainly for sufficient experience with and understanding of the machinery operated, controlled or monitored to ensure that it operates properly, to identify malfunctions and to take simple measures when something is about to go wrong or actually fails, are classified under major group *8 Plant and machine operators and assemblers. These
occupations involve operating vehicles and other equipment, controlling and monitoring the operation of industrial plant and machinery, on the spot or by remote control, or assembling products from component parts according to strict rules and procedures.

Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools, some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

MINOR GROUP *7.3.1
FOOD-PROCESSING TRADES WORKERS

FOOD-PROCESSING TRADES WORKERS slaughter animals and fish, treat and prepare them for human and animal consumption, make various kinds of bread and other flour products, prepare tobacco and make tobacco products, or inspect and grade food and beverage products.

Tasks performed include slaughtering animals and fish; treating and producing various foods and food products; making various kinds of bread and other flour products; preparing tobacco and making tobacco products; inspecting and grading food products and beverages. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.3.1.1 Meat and fish butchers and preparers
*7.3.1.2 Bakers, pastrycooks and confectionery makers
*7.3.1.3 Food and beverage tasters and graders
*7.3.1.4 Tobacco preparers and tobacco products makers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-73 Butchers and meat preparers; 7-74.50 Pickler, food; 7-74.60 Meat and fish smoker; 7-74.90 Other food preservers, part; 7-76 Bakers, pastrycooks and confectionery makers; 7-77.20 Coffee and tea taster; 7-78.60 Wine and liquor taster; 7-79.40 Fish butcher; 7-81 Tobacco preparers; 7-82 Cigar makers; 7-83.90 Other cigarette makers; 7-89 Tobacco preparers and tobacco product makers not elsewhere classified.

*7.3.1.1 MEAT AND FISH BUTCHERS AND PREPARERS

MEAT AND FISH BUTCHERS AND PREPARERS slaughter animals and fish, make various meat and fish products and preserve meat, fish and other foods and food products by drying, salting or smoking.
TASKS include -

(a) slaughtering animals and fish;
(b) flaying and trimming carcasses;
(c) cutting and dressing meat and fish for sale or further processing;
(d) preparing ingredients for sausages and similar products using simple chopping, mixing and shaping machines;
(e) curing meat, fish and other foods and food products;
(f) operating smoke chambers or ovens to smoke meat, fish and other foodstuffs;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-73 Butchers and meat preparers, consisting of -
   7-73.10 Butcher, general
   7-73.20 Slaughterer
   7-73.30 Meat cutter
   7-73.40 Sausage maker
   7-73.90 Other butchers and meat preparers

7-74.50 Pickler, food
7-74.60 Meat and fish smoker
7-74.90 Other food preservers, part

7-79.40 Fish butcher

*7.3.1.2 BAKERS, PASTRYCOOKS AND CONFECTIONERY MAKERS

BAKERS, PASTRYCOOKS AND CONFECTIONERY MAKERS make various kinds of bread, cake, other flour products and chocolate and sugar confectionery.

TASKS include -

(a) making bread, cake, biscuits, pastries, pies, macaroni and other flour products;
(b) operating grinding, pressing and other machines to make chocolate;
(c) making confectionery from mixtures of sugar, chocolate and other ingredients;
(d) performing other related tasks;
(e) supervising other workers in this group.
ISCO-68 GROUPS included:

7-76 Bakers, pastrycooks and confectionery makers, consisting of -

- 7-76.10 Baker, general
- 7-76.20 Bread baker
- 7-76.30 Pastry maker
- 7-76.40 Macaroni maker
- 7-76.50 Chocolate maker
- 7-76.60 Confectionery maker
- 7-76.90 Other bakers, pastrycooks and confectionery makers

*7.3.1.3 FOOD AND BEVERAGE TASTERS AND GRADERS

FOOD AND BEVERAGE TASTERS AND GRADERS inspect, taste and grade various types of agricultural products, food and beverages.

TASKS include -

(a) inspecting, testing and tasting agricultural products, food and beverages at various stages of processing to determine quality and grade into appropriate class;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

7-77.20 Coffee and tea taster
7-78.60 Wine and liquor taster

*7.3.1.4 TOBACCO PREPARERS AND TOBACCO PRODUCTS MAKERS

TOBACCO PREPARERS AND TOBACCO PRODUCTS MAKERS prepare tobacco leaves and make various tobacco products.

TASKS include -

(a) grading cured tobacco leaves by type, quality and locality where grown;

(b) mixing tobacco leaves according to formula to obtain a blend of distinct flavour;

(c) tending vacuum container which moistens tobacco for further processing;

(d) removing mid-ribs and stalks from tobacco leaves and shredding tobacco;

(e) making complete cigars, cigarettes, snuff and other tobacco products by hand or with simple machines;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:

7-81 Tobacco preparers, consisting of -
  7-81.20 Tobacco grader
  7-81.30 Tobacco blender
  7-81.40 Tobacco conditioner operator
  7-81.50 Tobacco stripper, hand
  7-81.60 Tobacco stripper, machine
  7-81.70 Tobacco-cutting-machine operator
  7-81.90 Other tobacco preparers

7-82 Cigar makers, consisting of -
  7-82.20 Cigar maker, hand
  7-82.30 Cigar maker, machine
  7-82.90 Other cigar makers

7-83.90 Other cigarette makers

7-89 Tobacco preparers and tobacco product makers not elsewhere classified, consisting of -
  7-89.20 Snuff maker
  7-89.90 Other tobacco preparers and tobacco products makers

MINOR GROUP *7.3.2
WOODWORKING TRADES WORKERS

WOODWORKING TRADES WORKERS season and preserve wood and manufacture, decorate and repair wooden articles and wooden parts of goods.

Tasks performed include seasoning and preserving wood; performing the more skilled tasks in the manufacture, decoration and repair of wooden articles and wooden parts of goods. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.3.2.1 Wood treaters
*7.3.2.2 Cabinetmakers and related workers
*7.3.2.3 Woodworking machine setter-operators
COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-31 Wood treaters; 8-11 Cabinetmakers; 8-12 Woodworking-machine operators, except 08 Woodworking-machine operator, general; 8-19 Cabinetmakers and related workers not elsewhere classified.

*7.3.2.1 WOOD TREATERS

WOOD TREATERS season and preserve wood.

TASKS include -

(a) operating steam-heated kilns to season wood;
(b) treating wood with chemicals to protect it against decay or parasites;
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:

7-31 Wood treaters, consisting of -

7-31.20 Wood-seasoning worker
7-31.30 Wood-treating worker
7-31.40 Other wood treaters

*7.3.2.2 CABINETMAKERS AND RELATED WORKERS

CABINETMAKERS AND RELATED WORKERS perform the more skilled tasks in the manufacture, decoration and repair of wooden parts of vehicles, wooden casks, wooden furniture and similar objects.

TASKS include -

(a) making completely and repairing wooden articles, such as cabinets and furniture, using woodworking machines and hand tools;
(b) making and repairing wooden vehicles or parts of wooden vehicles;
(c) making and repairing articles of wood, such as patterns, scale models and mock-ups, casks or smoking pipes;
(d) decorating furniture and fixtures by inlaying wood, applying veneer and carving designs;
(e) finishing surfaces of wooden articles or furniture;
(f) performing other related tasks;
(g) supervising other workers in this group.
ISCO-68 GROUPS included:

8-11 Cabinetmakers, consisting of -
   8-11.20 Cabinetmaker
   8-11.90 Other cabinetmakers

8-19 Cabinetmakers and related workers not elsewhere classified, consisting of -
   8-19.20 Coach-body builder
   8-19.25 Cartwright
   8-19.30 Cooper
   8-19.35 Wooden patternmaker
   8-19.40 Wooden model maker
   8-19.45 Wood carver
   8-19.50 Veneer applier
   8-19.55 Wooden furniture finisher
   8-19.60 Smoking-pipe maker
   8-19.65 Marquetry inlayer
   8-19.90 Other cabinetmakers and related woodworkers

*7.3.2.3 WOODWORKING MACHINE SETTER-OPERATORS

WOODWORKING MACHINE SETTER-OPERATORS set and operate woodworking machines, such as precision sawing, shaping, planing, boring, turning and woodcarving machines.

TASKS include -

(a) setting and adjusting various kinds of machines for operation by others;
(b) setting and operating one or several types of woodworking machines;
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:

8-12.05 Woodworking-machine setter, general
8-12.10 Woodworking-machine setter-operator, general
8-12.20 Precision sawyer
8-12.30 Wood turner
8-12.40 Wood-lathe setter-operator
8-12.50 Wood-shaping-machine setter-operator
8-12.60 Wood-routing-machine setter-operator
8-12.70 Wood-planing-machine setter-operator
8-12.80 Wood-spindle-carving-machine setter-operator
8-12.90 Other woodworking machine operators
TEXTILE AND GARMENT TRADES WORKERS prepare natural textile fibres and make materials by weaving, knitting and other means, make and repair garments and other articles made of textiles and furs, or upholster furniture.

Tasks performed include preparing natural textile fibres for spinning and winding; making materials by weaving, knitting and other techniques; making complete tailored garments and performing more difficult tasks in the manufacturing of ready-to-wear garments; altering and repairing articles made of fur; making patterns and marking and cutting textile and kindred material; sewing textiles and kindred materials by hand or hand-operated machine; upholstering furniture and making mattresses. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.3.3.1 Fibre preparers
*7.3.3.2 Hand weavers, knitters and other hand textile products makers
*7.3.3.3 Tailors, dressmakers and hatters
*7.3.3.4 Fur tailors and related workers
*7.3.3.5 Patternmakers and cutters
*7.3.3.6 Hand sewers, embroiderers and related workers
*7.3.3.7 Upholsterers and related workers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 5-40.70 Wardrobe mistress, stage and studio; 7-51 Fibre preparers; 7-54.20 Loom threader, hand; 7-54.30 Cloth weaver, hand; 7-54.35 Tapestry maker, hand; 7-54.55 Carpet weaver, hand; 7-54.70 Fabrics examiner; 7-54.75 Fabrics repairer; 7-54.90 Other weavers and related workers; 7-55.40 Knitter, hand-operated machine; 7-55.50 Hand knitter; 7-59.20 Braid maker, hand; 7-59.30 Crocheter, hand; 7-59.40 Net maker, hand; 7-91 Tailors and dressmakers; 7-92 Fur tailors and related workers; 7-93.20 Milliner; 7-93.90 Other milliners and hatmakers, part; 7-94 Patternmakers and cutters; 7-95 Sewers and embroiderers, except .50 Sewing-machine operator and .70 Machine embroiderer; 7-96 Upholsterers and related workers; 7-99 Tailors, dressmakers, sewers, upholsterers and related workers not elsewhere classified; 9-49.40 Doll and stuffed toy maker, part.

*7.3.3.1 FIBRE PREPARERS

FIBRE PREPARERS prepare wool, cotton, flax, jute, hemp and other natural textile fibres for spinning and winding.
TASKS include -

(a) grading and classifying natural textile fibres;
(b) washing wool fibres;
(c) tending machines which mix textile fibres into uniform blends;
(d) operating machines which clean and fluff textile fibres, transform them into sliver, comb them into sliver for first drawing, combine slivers into sliver lap or sliver laps into ribbon lap, combine several slivers into one attenuated strand of regular quality and weight, or transform sliver into roving;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-51 Fibre preparers, consisting of -

- 7-51.15 Fibre grader and classer
- 7-51.20 Wool scourer
- 7-51.25 Fibre mixer and blender
- 7-51.30 Fibre picker
- 7-51.35 Fibre carder
- 7-51.40 Fibre lapper
- 7-51.45 Fibre comber
- 7-51.50 Fibre drawer
- 7-51.55 Fibre rover
- 7-51.90 Other fibre preparers

*7.3.3.2 HAND WEAVERS, KNITTERS AND OTHER HAND TEXTILE PRODUCTS MAKERS

HAND WEAVERS, KNITTERS AND OTHER HAND TEXTILE PRODUCTS MAKERS weave materials on hand looms, make carpets by tying knots, knit garment fabrics by hand or hand-operated machine or perform other textile fabrics manufacturing tasks by hand or hand-operated machine.

TASKS include -

(a) drawing warp threads into loom by hand;
(b) weaving plain or figured cloth, tapestry, lace, carpet or other fabrics on hand looms;
(c) making carpets by tying knots;
(d) knitting garments and other articles on hand-operated machine or by hand;
(e) crocheting or making braid by hand;
(f) making nets by hand;
performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-54.20  Loom threader, hand
7-54.30  Cloth weaver, hand
7-54.35  Tapestry maker, hand
7-54.55  Carpet weaver, hand
7-54.70  Fabrics examiner
7-54.75  Fabrics repairer
7-54.90  Other weavers and related workers
7-55.40  Knitter, hand-operated machine
7-55.50  Hand knitter
7-59.20  Braid maker, hand
7-59.30  Crocheter, hand
7-59.40  Net maker, hand

**7.3.3.3 TAILORS, DRESSMAKERS AND HATTERS**

TAILORS, DRESSMAKERS AND HATTERS make complete items of tailored clothing, dresses and other made-to-order garments and hats (except fur garments), perform the more difficult tasks in the manufacturing of ready-to-wear garments, and alter and repair garments.

TASKS include -

(a) making overcoats, suits, skirts and similar tailored garments to clients' individual requirements;

(b) performing the more difficult hand- or machine-sewing tasks in the manufacture of ready-to-wear clothing;

(c) making complete dresses, shirts, blouses, lingerie and corsetry;

(d) making complete hats;

(e) altering, renovating and repairing garments;

(f) making and caring for costumes used in theatrical, television and motion picture productions;

(g) performing other related tasks;

(h) supervising other workers in this group.
ISCO-68 GROUPS included:

5-40.70  Wardrobe mistress, stage and studio

7-91  Tailors and dressmakers, consisting of -

7-91.20  Tailor, made-to-measure garments
7-91.30  Tailor, ready-to-wear garments
7-91.40  Dressmaker
7-91.90  Other tailors and dressmakers

7-93.20  Milliner
7-93.90  Other milliners and hatmakers, part

*7.3.3.4  FUR TAILORS AND RELATED WORKERS

FUR TAILORS AND RELATED WORKERS make, alter, repair and renovate garments and other articles made of fur.

TASKS include -

(a) making complete fur garments or performing the more difficult tasks in making, altering, renovating and repairing fur garments and other fur articles;

(b) preparing patterns and full-size canvas models for garments and other articles;

(c) sorting, grading and matching furs prior to cutting and making them into garments or other articles;

(d) cutting fur according to pattern for making and repairing fur garments and other articles;

(e) stretching and trimming dressed furs to conform to pattern outline of fur garments or other articles;

(f) reclaiming furs or skins from old coats, gluing fabric to interior of fur coats and trimming blocked fur garments;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-92  Fur tailors and related workers, consisting of -

7-92.20  Fur tailor
7-92.30  Fur patternmaker
7-92.40  Fur grader and matcher
7-92.50  Fur cutter
7-92.60  Fur nailer
7-92.90  Other fur tailors and related workers
**7.3.3.5 PATTERNMAKERS AND CUTTERS**

PATTERNMAKERS AND CUTTERS make patterns and mark and cut materials in the manufacture of garments, gloves and miscellaneous products of textile and kindred materials and leather.

**TASKS include** -

(a) drawing and cutting out patterns for making suits, dresses, shirts, blouses, hats and caps and other garments;

(b) making outlines of patterns on cloth, light leathers or similar materials to guide cutting;

(c) cutting material according to pattern outline for making up garments and gloves;

(d) performing patternmaking, marking and cutting tasks in the manufacture of other products such as soft furnishings, canvas goods and umbrellas;

(e) performing other related tasks;

(f) supervising other workers in this group.

**ISCO-68 GROUPS included:**

7-94 Patternmakers and cutters, consisting of -

7-94.20 Garment patternmaker
7-94.30 Hat and cap patternmaker
7-94.40 Garment marker
7-94.50 Garment cutter, except leather
7-94.60 Leather garment cutter
7-94.70 Glove cutter, except leather
7-94.80 Leather glove cutter
7-94.90 Other patternmakers and cutters

**7.3.3.6 HAND SEWERS, EMBROIDERERS AND RELATED WORKERS**

HAND SEWERS, EMBROIDERERS AND RELATED WORKERS sew and embroider garments, gloves and miscellaneous products of fur, gloves and kindred materials and perform various related tasks.

**TASKS include** -

(a) perform various hand- and machine-sewing tasks in making, altering and repairing articles of textile and kindred materials;

(b) operating a standard or specialised, single- or multiple-needle sewing machine;

(c) embroidering decorative designs on garment parts and other materials;

(d) making sails, tents, awnings and similar article by hand or machine
(e) assembling and covering umbrellas;
(f) performing other related tasks;
(g) supervising other workers in this group.

**ISCO-68 GROUPS included:**

7-95.10 Hand and machine sewer, general  
7-95.20 Garment hand sewer, except leather and fur  
7-95.30 Leather garment hand sewer  
7-95.40 Fur hand sewer  
7-95.60 Hand embroiderer  
7-95.90 Other sewers and embroiders

7-99 Tailors, dressmakers, sewers, upholsterers and related workers not elsewhere classified, consisting of -

7-99.20 Sail, tent and awning maker  
7-99.30 Umbrella maker  
7-99.90 Other tailors, dressmakers, sewers, upholsterers and related workers

9-49.40 Doll and stuffed toy maker, part

**7.3.3.7 UPHOLSTERERS AND RELATED WORKERS**

UPHOLSTERERS AND RELATED WORKERS upholster furniture, make mattresses, make and install interior decorations of textiles, leather and similar materials, and perform related tasks.

**TASKS include -**

(a) installing, arranging and securing springs, padding and covering material to furniture frames;

(b) installing covering and cushioning for seats and other furnishings on vehicles, such as motor cars, railway coaches and aircraft;

(c) making mattresses;

(d) fitting and installing soft furnishings and interior decorations of textiles, leather and similar materials;

(e) performing other related tasks;

(f) supervising other workers in this group.
ISCO-68 GROUPS included:
7-96 Upholsterers and related workers, consisting of -
7-96.20 Furniture upholsterer
7-96.30 Vehicle upholsterer
7-96.40 Mattress maker
7-96.90 Other upholsterers and related workers

MINOR GROUP *7.3.4
PELT, LEATHER AND SHOEMAKING TRADES WORKERS

PELT, LEATHER AND SHOEMAKING TRADES WORKERS treat fur- and wool-bearing pelts, make leather from hides and skins, make and repair footwear and other articles from leather and similar materials.

Tasks performed include preparing fur- and wool-bearing pelts for making garments and other products; making leather from hides and skins; making and repairing footwear and other articles, mainly from leather and similar materials. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*7.3.4.1 Pelt dressers, tanners and fellmongers
*7.3.4.2 Shoemakers and related goods makers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-61 Tanners and fellmongers; 7-62 Pelt dressers; 8-01 Shoemakers and shoe repairers; 8-02 Shoe cutters, lasters, sewers and related workers; 8-03 Leather goods makers, except .60 Leather goods assembler.

*7.3.4.1 PELT DRESSERS, TANNERS AND FELLMONGERS

PELT DRESSERS, TANNERS AND FELLMONGERS prepare fur- and wool-bearing pelts for making garments and other products, and make leather from hides and skins.

TASKS include -

(a) sorting and grading pelts, hides and skin;
(b) removing flesh and fat from pelts before curing;
(c) removing flesh and hair from hides;
(d) removing long, coarse hair from pelts andtrimming underlying hair to even length;
(e) operating machine to split hides edgeways;
(f) treating hides to convert them into leather;
(g) applying dyes to fur pelts;
(h) dressing and applying dyes and stains to leather;
(i) stretching and smoothing dressed pelts;
(j) performing other related tasks;
(k) supervising other workers in this group.

**ISCO-68 GROUPS included:**

**7-61 Tanners and fellmongers, consisting of -**

- 7-61.20 Hide and skin grader
- 7-61.25 Fellmonger
- 7-61.30 Hide flesher and dehairer, hand
- 7-61.35 Hide flesher and dehairer, machine
- 7-61.40 Hide splitter
- 7-61.45 Tanner
- 7-61.50 Leather currier
- 7-61.55 Leather dyer and stainer
- 7-61.90 Other tanners and fellmongers

**7-62 Pelt dressers, consisting of -**

- 7-62.20 Pelt grader
- 7-62.30 Pelt flesher
- 7-62.40 Pelt plucker and trimmer
- 7-62.50 Pelt dyer, hand
- 7-62.60 Pelt stretcher
- 7-62.90 Other pelt dressers

*7.3.4.2 SHOEMAKERS AND RELATED GOODS MAKERS*

SHOEMAKERS AND RELATED GOODS MAKERS make and repair standard or special footwear or other articles other than garments and gloves, mainly from leather and similar materials, or perform specialised tasks in the manufacturing of shoes and similar goods.

**TASKS include -**

(a) making patterns to guide the cutting of shoe parts;
(b) cutting out, preparing and fitting together shoe parts;
(c) sewing shoe parts together;
(d) making standard or orthopaedic footwear to individual requirements;
(e) making other special types of footwear to order;
(f) examining and finishing footwear;
(g) repairing footwear;
(h) making and repairing articles such as saddles and harnesses for animals, luggage, briefcases and leather novelties;
(i) cutting out, shaping and padding parts for making leather articles;
(j) sewing and stitching leather parts by hand or machine;
(k) performing other related tasks;
(l) supervising other workers in this group.

ISCO-68 GROUPS included:

8-01 Shoemakers and shoe repairers, consisting of -

8-01.10 Shoemaker, general
8-01.20 Orthopaedic footwear maker
8-01.30 Shoe repairer
8-01.90 Other shoemakers and shoe repairers

8-02 Shoe Cutters, lasters, sewers and related workers, consisting of -

8-02.15 Shoe patternmaker
8-02.20 Clicker cutter, machine
8-02.25 Shoe cutter, hand
8-02.30 Uppers preparer
8-02.35 Sole pressman
8-02.40 Sole fitter
8-02.45 Laster
8-02.50 Shoe sewer, machine
8-02.55 Shoe finisher
8-02.90 Other shoe cutters, lasters, sewers and related workers

8-03.10 Leather goods maker, general
8-03.20 Saddler and harness maker
8-03.30 Leather cutter
8-03.40 Leather sewer, hand
8-03.50 Leather sewer, machine
8-03.90 Other leather goods makers
MAJOR GROUP *8
PLANT AND MACHINE OPERATORS AND ASSEMBLERS

SUB-MAJOR GROUPS

*8.1 Industrial plant operators
*8.2 Stationary machine operators and assemblers
*8.3 Drivers and mobile machine operators

SUB-MAJOR AND MINOR GROUPS

*8.1 Industrial plant operators
   *8.1.1 Mining and mineral-processing plant operators
   *8.1.2 Metal-processing plant operators
   *8.1.3 Glass and ceramics kiln and related plant operators
   *8.1.4 Wood-processing plant operators
   *8.1.5 Chemical-processing plant operators
   *8.1.6 Power-generating and related plant operators
   *8.1.7 Automated assembly-line operators

*8.2 Stationary machine operators and assemblers
   *8.2.1 Metal and mineral products machine operators
   *8.2.2 Chemical products machine operators
   *8.2.3 Rubber and plastic products machine operators
   *8.2.4 Wood products machine operators
   *8.2.5 Printing, binding and paper products machine operators
   *8.2.6 Textile products machine operators
   *8.2.7 Food-processing machine operators
   *8.2.8 Assemblers
*8.1 Industrial plant operators

*8.1.1 Mining and mineral-processing plant operators
  *8.1.1.1 Mining plant operators (7-11.20 + .30 + .40)
  *8.1.1.2 Mineral ore and stone treating plant operators (7-12, except .20)
  *8.1.1.3 Well drillers and borers and related workers (7-13.20 + .30 + .40 + .60 + .80 + .90, part)

*8.1.2 Metal-processing plant operators
  *8.1.2.1 Metal smelting, converting and refining furnace operators (7-21)
  *8.1.2.2 Metal melters, casters and rolling-mill operators (7-22 + 7-23 + 7-24, except .90)
  *8.1.2.3 Metal heat-treating plant operators (7-26)
  *8.1.2.4 Metal drawers and extruders (7-27, except .20)

*8.1.3 Glass and ceramics kiln and related plant operators
  *8.1.3.1 Glass and ceramics kiln operators (8-91.28 + .36 + .40 + .44 + .48 + .52 + .76 + 8-93)
  *8.1.3.2 Other glass and ceramics plant operators (8-99)

*8.3 Drivers and mobile machinery operators
  *8.3.1 Railway engine drivers and related workers
  *8.3.2 Motor vehicle drivers
  *8.3.3 Agricultural and materials-handling machinery operators
  *8.3.4 Ships' deck crews and related workers
*8.1.4 Wood-processing plant operators
  *8.1.4.1 Sawmill, wood panel and related wood-processing plant operators (7-32)
  *8.1.4.2 Paper pulp preparation plant operators (7-33)
  *8.1.4.3 Paper mill operators (7-34)

*8.1.5 Chemical-processing plant operators
  *8.1.5.1 Crushing, grinding and mixing equipment operators (7-41)
  *8.1.5.2 Cooking, roasting and related heat-treating plant operators (7-42)
  *8.1.5.3 Filtering and separating equipment operators (7-43)
  *8.1.5.4 Still and reactor operators (7-44, except .60 and .90)
  *8.1.5.5 Petroleum-refining plant operators (7-45)
  *8.1.5.6 Other chemical-processing plant operators (7-49, except .30 and .90)

*8.1.6 Power-generating and related plant operators
  *8.1.6.1 Power-generating plant operators (9-61)
  *8.1.6.2 Steam turbine, boiler and engine operators (9-69.30 + 9-82 + 9-83.30)
  *8.1.6.3 Other industrial plant operators (9-69, except .30 + 9-89.30 + .90, part)

*8.1.7 Automated assembly-line operators
  *8.1.7.0 Automated assembly-line operators (new)

*8.2 Stationary machine operators and assemblers
  *8.2.1 Metal and mineral products machine operators
    *8.2.1.1 Machine-tool operators (8-34 + 8-39.60 + .70 + .80 + .90)
    *8.2.1.2 Cement and other minerals processing machine operators (9-43 + 9-74.70 + .75)
*8.2.2 Chemical products machine operators

*8.2.2.1 Pharmaceutical and toiletry products machine operators (new)

*8.2.2.2 Ammunition and explosive products machine operators (new)

*8.2.2.3 Metal finishers, platers and coaters (7-28 + 7-29 + 9-39.90)

*8.2.2.4 Photographic products machine operators (9-27 + 9-49.70 + .90, part)

*8.2.2.5 Other chemical products machine operators (7-49.90 + 9-49.30 + .60 + .90, part)

*8.2.3 Rubber and plastics products machine operators

*8.2.3.1 Tire making and vulcanising machine operators (9-02)

*8.2.3.2 Other rubber and plastics products machine operators (9-01.20 + .25 + .30 + .35 + .50 + .55 + .60 + .80 + .90)

*8.2.4 Wood products machine operators

*8.2.4.0 Wood products machine operators (8-12.08)

*8.2.5 Printing, binding and paper products machine operators

*8.2.5.1 Printing machine operators (3-99.50 + 9-22)

*8.2.5.2 Binding machine operators (9-01.65 + 9-26.30 + .50 + 9-49.40, part + .50)

*8.2.5.3 Paper and paperboard products machine operators (9-10)

*8.2.6 Textile products machine operators

*8.2.6.1 Spinning and winding machine operators (7-52)

*8.2.6.2 Weaving and knitting machine operators (7-53 + 7-54.15 + .25 + .40 + .45 + .50 + .60 + .65 + 7-55, except .40 and .50)

*8.2.6.3 Textile products treating machine operators (5-60.10, part + .20 + .30 + .60 + .90, part + 7-56)

*8.2.6.4 Sewing and embrodiering machine operators (7-95.50 + .70)

*8.2.6.5 Other textile products machine operators (7-59.25 + .35 + .45 + .50 + .90 + 7-93.30 + .90, part)
*8.2.7 Food-processing machine operators

*8.2.7.1 Meat and fish processing machine operators (7-74.10, part + .15 + .20, part + .30, part)

*8.2.7.2 Dairy products machine operators (7-75 + 9-71.55, part + .60, part)

*8.2.7.3 Grain and spice milling machine operators (7-71 + 9-71.55, part + .60, part)

*8.2.7.4 Baking-goods and cereals producing machine operators (new)

*8.2.7.5 Fruit, vegetable and nut processing machine operators (7-74.10, part + .20, part + .30, part + .40 + .90, part + 7-78.80 + 7-79, except .40 + 9-71.55, part + .60, part)

*8.2.7.6 Sugar processing and refining machine operators (7-72 + 9-71.55, part + .60, part)

*8.2.7.7 Tea, coffee and cocoa preparing machine operators (7-77, except .20 + 9-71.55, part + .60, part)

*8.2.7.8 Tobacco products processing machine operators (7-83.20 + 9-71.55, part + .60, part)

*8.2.7.9 Brewers, wine and similar beverage machine operators (7-44.90 + 7-78, except .60 and .80)

*8.2.8 Assemblers

*8.2.8.1 Mechanical machinery assemblers (8-41.10, part + .15, part + .20, part + .25, part + .30, part + .35, part + .40, part + .45, part + .50, part + .55, part + .60, part + .65, part + .70, part + .90, part + 8-49.90, part)

*8.2.8.2 Electrical machinery assemblers (8-53, except .30 and .90)

*8.2.8.3 Electronic equipment assemblers (8-41.70, part + 8-53.30 + .90)

*8.2.8.4 Metal, rubber and plastic products assemblers (9-01.40 + .70)

*8.2.8.5 Wood and related materials products assemblers (new)

*8.2.8.6 Paperboard, textile and related products assemblers (8-03.60 + 9-49.40, part)
*8.3 Drivers and mobile machinery operators

*8.3.1 Railway engine drivers and related workers

*8.3.1.1 Railway engine drivers (3-59.30, part + 9-83, except .30)

*8.3.1.2 Railway brakers, signalers and shunters (3-59.30, part + 9-84)

*8.3.2 Motor vehicle drivers

*8.3.2.1 Motorcycle drivers and lifting-truck operators (9-79.20 + 9-85.70)

*8.3.2.2 Taxi and light van drivers (9-85.30 + .50, part + .90)

*8.3.2.3 Bus and tram drivers (3-59.45 + 9-85.20 + .40)

*8.3.2.4 Heavy truck and van drivers (9-79.30 + .40 + 9-85.50, part + .60)

*8.3.3 Agricultural and materials-handling machinery operators

*8.3.3.1 Motorised farm and forestry machinery operators (6-28.20 + 6-31.90, part + 9-79.50)

*8.3.3.2 Earth-moving and related machinery operators (9-74, except .70 and .75)

*8.3.3.3 Crane, hoist and related materials-moving equipment operators (9-73 + 9-79.90)

*8.3.4 Ships’ deck crews and related workers

*8.3.4.0 Ships’ deck crews and related workers (9-81)
MAJOR GROUP *8
PLANT AND MACHINE OPERATORS AND ASSEMBLERS

PLANT AND MACHINE OPERATORS AND ASSEMBLERS operate vehicles and other mobile equipment; tend, control and monitor the operation of industrial plants and machinery, on the spot or by remote control; or assemble products from component parts according to strict rules and procedures.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this major group require mainly experience with and understanding of the machinery tended, controlled or monitored, sufficient to ensure that it operates properly and to identify malfunctions, and to take simple measures when something is about to go wrong or actually fails. Ability to cope with machine-paced operations will often be required. The required skills, including manual strength and dexterity, may be acquired through informal or formal on-the-job training and through experience as helper or labourer in the same or similar establishments, supplementing or replacing partly or wholly formal vocational training.

Tasks performed by Plant and machine operators and assemblers include assembling products from component parts according to strict rules and procedures; tending, controlling and monitoring mining machinery and automated and mechanical plants processing metal and other minerals, wood or chemicals, or generating electric power; tending and operating machinery producing products made of metal and other minerals, chemicals, wood, textiles, skin or leather; tending and operating machines processing food; tending and operating printing presses and book-binding machines; driving trains and motor vehicles and operating materials-handling equipment. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major groups:

*8.1 Industrial plant operators
*8.2 Stationary machine operators and assemblers
*8.3 Drivers and mobile machinery operators

COMMENTS

Occupations calling mainly for experience with and understanding of the work situation, the materials worked with and the requirements of the structures, machinery and other products produced are classified under major group *7 Craft and related workers. In these occupations the work may be carried out by hand or using hand-powered and other tools to reduce the amount of physical effort and/or time required for specific tasks, or to improve the quality of the products.
Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools and some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

**SUB-MAJOR GROUP *8.1**  
**INDUSTRIAL PLANT OPERATORS**

INDUSTRIAL PLANT OPERATORS tend, control and monitor, on the spot or by remote control, the operation of mining machinery or industrial plants processing metal and minerals, wood or chemicals, generating power, or assembling products or parts automatically or with the use of industrial robots.

Most occupations in this sub-major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this sub-major group require mainly experience with and understanding of the machinery tended, controlled or monitored, sufficient to ensure that it operates properly and to identify malfunctions, and to take simple measures when something is about to go wrong or actually fails. Ability to cope with machine-paced operations will often be required. The required skills, including manual strength and dexterity, may be acquired through informal or formal on-the-job training and through experience as helper or labourer in the same or similar establishments, supplementing or replacing partly or wholly formal vocational training.

Tasks performed by Industrial plant operators include tending, controlling and monitoring mining machinery and automated and mechanical plants processing metal and other minerals, wood or chemicals, or generating electric power; or tending, controlling and monitoring automated or semi-automated assembly lines or industrial robots. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

* *8.1.1 Mining and mineral-processing plant operators
* *8.1.2 Metal-processing plant operators
* *8.1.3 Glass and ceramics kiln and related plant operators
* *8.1.4 Wood-processing plant operators
*8.1.5 Chemical-processing plant operators

*8.1.6 Power-generating and related plant operators

*8.1.7 Automated assembly-line operators

COMMENTS

Occupations calling mainly for experience with and understanding of the work situation, the materials worked with and the requirements of the structures, machinery and other products produced are classified under major group *7 Craft and related workers. In these occupations the work may be carried out by hand or using hand-powered and other tools to reduce the amount of physical effort and/or time required for specific tasks, or to improve the quality of the products.

Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools and some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

MINOR GROUP *8.1.1
MINING AND MINERAL-PROCESSING PLANT OPERATORS

MINING AND MINERAL-PROCESSING PLANT OPERATORS tend, operate and monitor heavy equipment cutting channels in mine workface, plants processing mineral ore or drilling plants for sinking wells.

Tasks performed include tending, operating and monitoring heavy equipment cutting channels in mine workface, plants processing mineral ore and stone, or drilling plants for sinking wells. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.1.1.1 Mining plant operators

*8.1.1.2 Mineral ore and stone treating plant operators

*8.1.1.3 Well drillers and borers and related workers

COMMENTS

This minor group contains the following ISCO-68 occupational categories: 7-11.20 Cutting-machine operator, mine; 7-11.30 Drilling-machine operator, mine and quarry; 7-11.40 Continuous-mining-machine operator; 7-12 Mineral and stone treaters, except .20 Stone splitter; 7-13.20 Derrickman, oil and gas wells; 7-13.30 Rotary driller, oil and gas wells; 7-13.40 Cable driller, oil and gas wells; 7-13.60 Well puller, oil and gas wells; 7-13.80 Well driller and borer, except oil and gas wells; 7-13.90 Other well drillers, borers and related workers, part.
*8.1.1.1 MINING PLANT OPERATORS

MINING PLANT OPERATORS tend, operate and monitor machinery which cuts channels in mine workface or holes for blasting, or operate continuous-mining heavy equipment.

TASKS include -

(a) tending, operating and monitoring heavy equipment cutting channels in mine workface or drill holes for blasting in mines or quarries;
(b) operating and monitoring continuous-mining heavy equipment;
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:

7-11.20 Cutting-machine operator, mine
7-11.30 Drilling-machine operator, mine and quarry
7-11.40 Continuous-mining-machine operator

*8.1.1.2 MINERAL ORE AND STONE TREATING PLANT OPERATORS

MINERAL ORE AND STONE TREATING PLANT OPERATORS operate and monitor equipment processing mineral ore and stone.

TASKS include -

(a) operating and monitoring equipment which crushes and breaks lumps of minerals and stones to required size;
(b) tending and operating washing, separating, leaching, precipitating, filtering, extracting and combining equipment to wash mineral ores to remove waste material;
(c) combining mineral ores with solvents to facilitate further processing;
(d) separating mineral concentrate from ore or alluvial deposits by thickening, flotation, gravity separation, filtration, or magnetic or electrostatic separation;
(e) performing other related tasks;
(f) supervising other workers in this group.
ISCO-68 GROUPS included:

7-12.30 Mineral-crushing-machine operator
7-12.40 Mineral-milling-machine operator
7-12.50 Jig tender
7-12.60 Flotation man
7-12.70 Precipitator
7-12.80 Cone operator, mine
7-12.90 Other mineral and stone treaters

*8.1.1.3 WELL DRILLERS AND BORERS AND RELATED WORKERS

WELL DRILLERS AND BORERS AND RELATED WORKERS erect and operate drilling plant and perform related tasks in the sinking and operation of wells.

TASKS include -

(a) preparing and operating derrick pipe-handling devices and slush pumps;
(b) operating rotary or percussion drilling plants to drill oil or gas wells;
(c) cleaning and servicing oil or gas wells and replacing pumping rods, casings and tubings;
(d) setting up and operating drilling plant to drill wells or bores other than for oil or gas;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-13.20 Derrickman, oil and gas wells
7-13.30 Rotary driller, oil and gas wells
7-13.40 Cable driller, oil and gas wells
7-13.60 Well puller, oil and gas wells
7-13.80 Well driller and borer, except oil and gas wells
7-13.90 Other well drillers, borers and related workers, part

MINOR GROUP *8.1.2
METAL-PROCESSING PLANT OPERATORS

METAL-PROCESSING PLANT OPERATORS operate and monitor metal-smelting and refining furnaces, metal rolling mills, metal heat-treating plants or metal extrusion plants.

Tasks performed include controlling, operating and monitoring furnaces for melting, refining or treating metal, or plants for rolling, extruding or shaping metal. Supervision of other workers may be included.
Occupations in this minor group are classified under the following unit groups:

*8.1.2.1 Metal smelting, converting and refining furnace operators
*8.1.2.2 Metal melters, casters and rolling-mill operators
*8.1.2.3 Metal heat-treating plant operators
*8.1.2.4 Metal drawers and extruders

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-21 Metal smelting, converting and refining furnacemen; 7-22 Metal rolling-mill workers; 7-23 Metal melters and reheaterson; 7-24 Metal casters, except .90 Other metal casters; 7-26 Metal annealers, temperers and case-hardeners; 7-27 Metal drawers and extruders, except .20 Wire drawer, hand.

*8.1.2.1 METAL SMELTING, CONVERTING AND REFINING FURNACE OPERATORS

METAL SMELTING, CONVERTING AND REFINING FURNACE OPERATORS operate, control and monitor metal smelting, converting and refining furnaces.

TASKS include -

(a) operating and monitoring blast furnaces to smelt ores for the production of ferrous or non-ferrous metals;
(b) operating and monitoring furnaces to convert or refine pig-iron or scrap-metal to produce steel;
(c) operating and monitoring furnaces to convert or refine non-ferrous metals;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

7-21 Metal smelting, converting and refining furnacemen, consisting of -

7-21.20 Blast furnaceman, ore smelting
7-21.30 Open-hearth furnaceman, steel
7-21.40 Oxygen furnaceman, steel converting
7-21.50 Bessemer furnaceman, steel converting
7-21.60 Electric arc furnaceman, steel refining
7-21.70 Furnaceman, non-ferrous metal converting and refining
7-21.90 Other metal smelting, converting and refining furnacemen
8.1.2.2 METAL MELTERS, CASTERS AND ROLLING-MILL OPERATORS

METAL MELTERS, CASTERS AND ROLLING-MILL OPERATORS operate and monitor rolling mills to roll metal, or furnaces to melt or reheat metal, or operate metal casting equipment.

TASKS include -

(a) operating and monitoring furnaces to melt ferrous and non-ferrous metal for casting;
(b) operating and monitoring furnaces to reheat stock metal forms prior to forging, power-pressing, rolling and other further processing;
(c) operating and monitoring rolling mills to shape hot or cold steel into shapes for further processing or into final shapes;
(d) operating and monitoring rolling mills to reduce or form hot or cold non-ferrous metal to specified shapes and dimensions;
(e) operating and monitoring rolls to form seamless tubes and pipes;
(f) operating and monitoring casting equipment;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-22 Metal rolling-mill workers, consisting of -

7-22.20 Hot-roller, steel
7-22.30 Continuous-mill roller, steel
7-22.40 Cold-roller, steel
7-22.50 Roller, non-ferrous metals
7-22.60 Seamless pipe and tube roller
7-22.70 Manipulator, rolling mill
7-22.90 Other metal rolling-mill workers

7-23 Metal melters and reheaters, consisting of -

7-23.20 Furnaceman, metal melting (except cupola)
7-23.30 Cupola furnaceman
7-23.40 Furnaceman, metal reheating
7-23.90 Other metal melters and reheaters

7-24.20 Metal pouring
7-24.30 Centrifugal casting-machine operator
7-24.40 Die-casting-machine operator
7-24.50 Continuous rod-casting-machine operator, non-ferrous metal
METAL HEAT-TREATING PLANT OPERATORS operate and monitor plants altering the physical properties of metal objects by heating, cooling and chemical treatment.

TASKS include -

(a) operating and monitoring furnaces to heat and cool metal objects to relieve internal stresses, restore ductility and refine grain structure;

(b) operating and monitoring furnace to harden steel objects;

(c) operating and monitoring plant to impart a hard skin and tough, ductile core to steel objects by treating them with chemicals, heating and quenching or cooling them;

(d) operating and monitoring furnace to reheat hardened steel objects to relieve stresses and to impart toughness;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-26 Metal annealers, temperers and case-hardeners, consisting of -

   7-26.20 Annealer
   7-26.30 Hardener
   7-26.40 Case-hardener
   7-26.50 Temperer
   7-26.90 Other metal annealers, temperers and case-hardeners

METAL DRAWERS AND EXTRUDERS operate and tend equipment to draw and extrude metals to make wire, tubes and similar products.

TASKS include -

(a) operating and tending wire-drawing equipment;

(b) operating and tending equipment to draw seamless metal tubing;

(c) operating and tending extrusion press to make metal rods, bars and seamless tubing;

(d) performing other related tasks;

(e) supervising other workers in this group.
ISCO-68 GROUPS included:

7-27.30 Wire drawer, machine
7-27.40 Seamless pipe and tube drawer
7-27.50 Extruder operator, metal
7-27.90 Other metal drawers and extruders

MINOR GROUP *8.1.3
GLASS AND CERAMICS KILN AND RELATED PLANT OPERATORS

GLASS AND CERAMICS KILN AND RELATED PLANT OPERATORS operate and monitor kilns, furnaces and other equipment used in the manufacturing of glass, ceramics or products made of glass or ceramics.

Tasks performed include controlling, operating and monitoring kilns, furnaces and other equipment for making glass and glass products or various types of ceramics. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.1.3.1 Glass and ceramics kiln operators

*8.1.3.2 Other glass and ceramics plant operators

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 8-91.28 Glass-blowing-machine operator; 8-91.36 Glass-pressing machine operator; 8-91.40 Glass-drawing-machine operator; 8-91.44 Plate-glass rollerman; 8-91.48 Plate-glass polisher; 8-91.52 Float-glass bath operator; 8-91.76 Glass tube maker; 8-93 Glass and ceramics kilnmen; 8-99 Glass formers, potters and related workers not elsewhere classified.

*8.1.3.1 GLASS AND CERAMICS KILN OPERATORS

GLASS AND CERAMICS KILN OPERATORS operate and monitor kilns, furnaces and other equipment used in the manufacture of glass and glass and ceramics products.

TASKS include -

(a) operating and tending glass-making furnace;

(b) operating and tending glass-annealing furnace to prevent or remove internal stresses;

(c) operating and tending tempering furnace to toughen glass;

(d) operating and tending equipment which shapes glass articles by blowing or pressure-moulding;
(e) operating and monitoring equipment which draws or rolls molten glass to a continuous sheet of flat glass;

(f) operating and monitoring floating glass production plant;

(g) operating and tending equipment which polishes and levels plate-glass surfaces;

(h) operating and tending equipment which makes glass rods and tubes from molten glass by drawing or drawing and blowing;

(i) operating and tending kiln to bake pottery and porcelain ware or to bake ware again to fix glazing and decoration;

(j) operating kiln to bake bricks and tiles;

(k) performing other related tasks;

(l) supervising other workers in this group.

ISCO-68 GROUPS included:

8-91.28 Glass-blowing-machine operator
8-91.36 Glass-pressing-machine operator
8-91.40 Glass-drawing-machine operator
8-91.44 Plate-glass rollerman
8-91.48 Plate-glass polisher
8-91.52 Float-glass bath operator
8-91.76 Glass tube maker

8-93 Glass and ceramics kilnmen, consisting of -
   8-93.20 Glass-making furnaceman
   8-93.30 Glass-annealing furnaceman
   8-93.40 Glass temperer
   8-93.50 Pottery and porcelain kilnman
   8-93.60 Brick and tile kilnman
   8-93.90 Other glass and ceramics kilnmen

*8.1.3.2 OTHER GLASS AND CERAMICS PLANT OPERATORS

OTHER GLASS AND CERAMICS PLANT OPERATORS operate and tend equipment used to mix ingredients for glass making and performing various tasks preparing clay for the production of ceramics and bricks, equipment used to make glaze or abrasives or to extrude molten glass to fibreglass filaments.

TASKS include -

(a) operating and tending equipment mixing ingredients for glass making;

(b) operating and tending equipment preparing clay for the production of ceramics and bricks;

(c) operating and tending equipment making glaze or abrasives;
(d) operating and tending equipment extruding molten glass to form fibreglass filaments;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

8-99 Glass formers, potters and related workers not elsewhere classified, consisting of:

- 8-99.20 Glass mixer
- 8-99.30 Clay mixer
- 8-99.40 Clay slip maker
- 8-99.50 Glaze maker
- 8-99.60 Abrasives mixer
- 8-99.70 Fibreglass maker
- 8-99.90 Other glass formers, potters and related workers

MINOR GROUP *8.1.4
WOOD-PROCESSING PLANT OPERATORS

WOOD-PROCESSING PLANT OPERATORS operate and monitor equipment which saws and cuts wood in preparation for further use, convert wood and other materials into stock for making paper or operate plants that make paper from stock.

Tasks performed include controlling, operating and monitoring equipment for processing wood for further use, for converting wood and other materials into stock for making paper and for making paper from stock. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.1.4.1 Sawmill, wood panel and related wood-processing plant operators
*8.1.4.2 Paper pulp preparation plant operators
*8.1.4.3 Paper mill operators

COMMENTS

This minor group contains the following ISCO-68 unit groups: 7-32 Sawyers, plywood makers and related wood-processing workers; 7-33 Paper pulp preparers; 7-34 Paper makers.

*8.1.4.1 SAWMILL, WOOD PANEL AND RELATED WOOD-PROCESSING PLANT OPERATORS

SAWMILL, WOOD PANEL AND RELATED WOOD-PROCESSING PLANT OPERATORS operate and monitor equipment and equipment sawing wood, cutting veneer and making plywood and otherwise prepare wood for further use.
TASKS include -

(a) operating log in-feed and conveyor systems;

(b) controlling, operating and tending head saws, resaws and multiblade saws to saw logs, cants, flitches, slabs or wings and remove rough edges from sawn timber;

(c) controlling, operating and tending equipment to cut veneer;

(d) operating plywood core-laying equipment and hot-plate plywood presses;

(e) grading wood according to quality and size;

(f) performing other related tasks;

(g) supervising other workers in this group.

ISCO-68 GROUPS included:

7-32 Sawyers, plywood makers and related wood-processing workers, consisting of -

7-32.10 Sawmill sawyer, general
7-32.20 Edge sawyer
7-32.30 Band-saw operator
7-32.40 Veneer cutter
7-32.50 Plywood core-laying-machine operator
7-32.60 Plywood press operator
7-32.70 Wood grader
7-32.90 Other sawyers, plywood makers and related wood-processing workers

*8.1.4.2 PAPER PULP PREPARATION PLANT OPERATORS

PAPER PULP PREPARATION PLANT OPERATORS control, operate and monitor equipment that converts materials such as wood, rags, esparto, straw, scrap pulp and paper into stock for use in making paper.

TASKS include -

(a) controlling, operating and monitoring chipper and grinding equipment to reduce logs to pulp;

(b) controlling, operating and monitoring digesters to produce pulp from materials such as wood, rags, esparto, straw or scrap pulp and paper;

(c) controlling, operating and monitoring equipment to bleach wood pulp, rags, esparto, straw or scrap pulp and paper;

(d) controlling, operating and monitoring equipment which mixes, beats and hydrates pulp and other ingredients to prepare stuff for making paper;

(e) performing other related tasks;

(f) supervising other workers in this group.
*8.1.4.3 PAPER MILL OPERATORS

PAPER MILL OPERATORS operate equipment that makes paper, paper board and sheet pulp from pulp stock.

TASKS include -

(a) controlling, operating and monitoring section of paper-making equipment in which wet pulp is formed into paper or in which paper is dried, calendered, wound, slit and rewound;

(b) controlling, operating and monitoring supercalender equipment to impart gloss and finish to surface of paper;

(c) controlling, operating and monitoring equipment to glaze or impregnate paper with coating mixture;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

7-33 Paper pulp preparers, consisting of -

7-33.20 Wood grinder
7-33.30 Chipperman
7-33.40 Digester operator
7-33.50 Bleacher operator
7-33.60 Beater operator
7-33.90 Other paper pulp preparers

*8.1.5 CHEMICAL-PROCESSING PLANT OPERATORS

CHEMICAL-PROCESSING PLANT OPERATORS control, operate and monitor equipment that processes chemicals and other materials to obtain products with desirable properties.
Tasks performed include controlling, operating and monitoring equipment for processing chemicals by crushing, heating, mixing or distilling to obtain products with desirable properties. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.1.5.1 Crushing, grinding and mixing equipment operators
*8.1.5.2 Cooking, roasting and related heat-treating plant operators
*8.1.5.3 Filtering and separating equipment operators
*8.1.5.4 Still and reactor operators
*8.1.5.5 Petroleum-refining plant operators
*8.1.5.6 Other chemical-processing plant operators

**COMMENTS**

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-41 Crushers, grinders and mixers; 7-42 Cookers, roasters and related heat-treaters; 7-43 Filter and separator operators; 7-44 Still and reactor operators, except .60 Extractor operator, wood distillation, and .90 Other still and reactor operators; 7-45 Petroleum-refining workers; 7-49 Chemical processers and related workers not elsewhere classified, except .30 Charcoal burner and .90 Other chemical processers and related workers.

**8.1.5.1 CRUSHING, GRINDING AND MIXING EQUIPMENT OPERATORS**

CRUSHING, GRINDING AND MIXING EQUIPMENT OPERATORS control, operate and monitor equipment that crushes, grinds, mixes and blends chemicals and other materials used in chemical and related processes.

**TASKS include** -

(a) controlling, operating and monitoring mills and crushing equipment to reduce solid chemicals and related materials to suitable size for further processing;

(b) controlling, operating and monitoring equipment in which solids or liquids used in chemical and related processes are mixed or blended;

(c) performing other related tasks;

(d) supervising other workers in this group.
ISCO-68 GROUPS included:

7-41 Crushers, grinders and mixers, consisting of -

7-41.20 Crusher Operator, chemical and related processes
7-41.30 Miller-grinder, chemical and related processes
7-41.40 Mixing- and blending-machine operator, chemical and related processes
7-41.90 Other crushers, grinders and mixers

*8.1.5.2 COOKING, ROASTING AND RELATED HEAT-TREATING PLANT OPERATORS

COOKING, ROASTING AND RELATED HEAT-TREATING PLANT OPERATORS operate equipment to cook, roast and give other types of heat treatment in chemical and related processes.

TASKS include -

(a) controlling, operating and monitoring equipment to cook materials to purify, mix or compound them, give them a special property or effect chemical changes in them;

(b) controlling, operating and monitoring ovens, kilns or similar devices to heat substances in order to dry them, give them special properties or effect chemical changes in them;

(c) controlling, operating and monitoring driers for the processing of chemicals and related materials;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

7-42 Cookers, roasters and related heat-treaters, consisting of -

7-42.20 Cooker, chemical and related processes
7-42.30 Roaster, chemical and related processes
7-42.40 Drier operator, chemical and related processes
7-42.90 Other cookers, roasters and related heat-treaters

*8.1.5.3 FILTERING AND SEPARATING EQUIPMENT OPERATORS

FILTERING AND SEPARATING EQUIPMENT OPERATORS operate devices to filter and separate chemicals and related materials.

TASKS include -

(a) controlling, operating and monitoring equipment in which solutions are forced under pressure through a filtering unit;
(b) controlling, operating and monitoring equipment in which solutions are vacuum-drawn through filtering media fitted to a rotating drum;

(c) controlling, operating and monitoring equipment which separate substances by centrifugal force;

(d) controlling, operating and monitoring equipment to remove sediment and water from crude oil;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-43 Filter and separator operators, consisting of -
   7-43.20 Filter-press operator
   7-43.30 Rotary-drum filterer
   7-43.40 Centrifugal separator operator
   7-43.50 Crude oil treater, oilfield
   7-43.90 Other filter and separator operators

*8.1.5.4 STILL AND REACTOR OPERATORS

STILL AND REACTOR OPERATORS operate equipment to distil and refine chemicals, except petroleum.

TASKS include -

(a) controlling, operating and monitoring equipment in which crude liquid chemicals are treated to separate them into, or refine, their chemical constituents;

(b) controlling, operating and monitoring equipment which performs a sequence of operations in a chemical reaction process;

(c) controlling, operating and monitoring evaporation tanks, vacuum pans or similar devices to concentrate solutions and suspensions;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

7-44.20 Batch-still operator, chemical processes (except petroleum)
7-44.30 Continuous-still operator, chemical processes (except petroleum)
7-44.40 Reactor-converter operator, chemical processes (except petroleum)
7-44.50 Evaporator operator
*8.1.5.5 PETROLEUM-REFINING PLANT OPERATORS

PETROLEUM-REFINING PLANT OPERATORS operate plant to refine, distil and treat petroleum and petroleum products.

TASKS include -

(a) controlling, operating and monitoring plant to remove sulphur from petrol and petroleum products;
(b) controlling, operating and monitoring pumps to circulate petroleum products, water and chemical solutions through refinery;
(c) controlling, operating and monitoring stills to distil or refine petroleum products;
(d) controlling, operating and monitoring equipment to blend petrol with chemicals and other additives;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-45 Petroleum-refining workers, consisting of -

7-45.20 Desulphurisation treater, petroleum refining
7-45.30 Pumpman, petroleum refining
7-45.40 Stillman, petroleum refining
7-45.50 Controlman, petroleum refining
7-45.60 Blender, petroleum refining
7-45.70 Paraffin plant operator
7-45.90 Other petroleum-refining workers

*8.1.5.6 OTHER CHEMICAL-PROCESSING PLANT OPERATORS

OTHER CHEMICAL-PROCESSING PLANT OPERATORS operate equipment to treat chemical solutions with bleaching reagents, to produce coke or gas from coal, to extrude or form natural or synthetic polymers into synthetic fibres, to process radioactive material or other chemical products.

TASKS include -

(a) controlling, operating and monitoring equipment to treat chemical solutions with bleaching reagents;
(b) controlling, operating and monitoring equipment to produce coke or gas from coal;
(c) controlling, operating and monitoring plant to remove sulphur from petrol and petroleum products;
(d) controlling, operating and monitoring equipment to separate and extract radioactive materials from their ores or to process such materials;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-49.15 Chemical bleacher operator
7-49.20 Coke burner
7-49.25 Coal-gas maker
7-49.35 Synthetic fibre maker
7-49.40 Chemical processor, radioactive materials

MINOR GROUP *8.1.6
POWER-GENERATING AND RELATED PLANT OPERATORS

POWER-GENERATING AND RELATED PLANT OPERATORS control, operate and monitor equipment to produce electric power, other types of steam turbines and boilers or other stationary plant and equipment.

Tasks performed include controlling, operating and monitoring equipment for producing electric power; controlling, operating and monitoring other steam turbines and boilers and other stationary plants and equipment such as incineration plants, water treatment plants and pumping stations. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.1.6.1 Power-generating plant operators
*8.1.6.2 Steam turbine, boiler and engine operators
*8.1.6.3 Other industrial plant operators

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 9-61 Power-generating machinery operators; 9-69 Stationary engine and related equipment operators not elsewhere classified; 9-82 Ships' Engine-room ratings; 9-83.30 Railway steam-engine fireman; 9-89.30 Lock operator, canal or port; 9-89.90 Other transport equipment operators, part.

*8.1.6.1 POWER-GENERATING PLANT OPERATORS

POWER-GENERATING PLANT OPERATORS operate equipment to produce electric power and control its distribution.
TASKS include -

(a) controlling, operating and monitoring coal- or oil-fired steam power-generating plant;

(b) controlling, operating and monitoring nuclear fuelled steam power-generating plant;

(c) controlling, operating and monitoring hydro electric generating station;

(d) controlling power output and distribution of electricity from power station;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

9-61 Power-generating machinery operators, consisting of -

9-61.20 Power-plant operator, steam
9-61.30 Hydroelectric station operator
9-61.40 Power reactor operator
9-61.50 Turbine operator, power station
9-61.60 Power switchboard operator
9-61.70 Load dispatcher, electric power
9-61.90 Other power-generating machinery operators

*8.1.6.2 STEAM TURBINE, BOILER AND ENGINE OPERATORS

STEAM TURBINE, BOILER AND ENGINE OPERATORS tend, operate and monitor steam turbines, boilers and engines on land, in locomotives and in ships.

TASKS include -

(a) tending, operating and monitoring coal- or oil-fired steam turbine, boiler or engine on land, in locomotive or in ship;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

9-69.30 Boiler fireman

9-82 Ships’ engine-room ratings, consisting of -

9-82.20 Ship’s fireman
9-82.30 Ship’s oiler and greaser
9-82.90 Other ships’ engine-room ratings

9-83.30 Railway steam-engine fireman
*8.1.6.3 OTHER INDUSTRIAL PLANT OPERATORS

OTHER INDUSTRIAL PLANT OPERATORS operate other types of industrial plant and equipment, such as air and gas compressors, pumping stations, water treatment plants, incinerator plants, refrigeration systems, heating and ventilation systems, or locks in canals or ports.

TASKS include -

(a) controlling, operating and monitoring air and gas compressors;

(b) controlling, operating and monitoring pumping stations for transferring liquids, gases, semi-liquids and powdered substances from one location to another;

(c) controlling, operating and monitoring plant equipment to purify and clarify water for human consumption or disposal into natural water systems (rivers, lakes or ocean);

(d) controlling, operating and monitoring incinerator plant equipment to burn garbage or other waste materials;

(e) controlling, operating and monitoring refrigeration systems for cool or cold storage, production and other purposes;

(f) controlling, operating and monitoring equipment in heating and ventilation systems;

(g) controlling, operating and monitoring gates and valves in aqueducts, dams and locks to control flow of water;

(h) performing other related tasks;

(i) supervising other workers in this group.

ISCO-68 GROUPS included:

9-69.10 Stationary engine operator, general
9-69.20 Air-compressor operator
9-69.25 Gas-compressor operator
9-69.40 Pumping-station operator
9-69.50 Water treatment plant operator, waterworks
9-69.60 Incinerator plant operator
9-69.70 Refrigeration system operator
9-69.80 Heating and ventilation equipment operator
9-69.90 Other stationary engine and related equipment operators
9-89.30 Lock operator, canal or port
9-89.90 Other transport equipment operators, part.
MINOR GROUP *8.1.7
AUTOMATED ASSEMBLY-LINE OPERATORS

AUTOMATED ASSEMBLY-LINE OPERATORS control, operate and monitor automated or semi-automated assembling processes and the operation of industrial robots.

Tasks performed include controlling, tending, operating and monitoring automated or partly automated assembling processes and the operation of industrial robots.

Occupations in this minor group are classified under the following unit group:

*8.1.7.0 Automated assembly-line operators

COMMENTS

Occupations in this minor group are not described in ISCO-68. They would have been classified under various unit groups in major group 7/8/9 Production and related workers, transport equipment operators and labourers, depending upon the type of products involved.

*8.1.7.0 AUTOMATED ASSEMBLY-LINE OPERATORS

AUTOMATED ASSEMBLY-LINE OPERATORS control, operate and monitor automated or semi-automated assembling processes and the operation of industrial robots.

TASKS include:

(a) controlling, tending, operating and monitoring automated or partly automated assembling processes;
(b) controlling, tending, operating and monitoring industrial robots;
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:

Occupations in this minor group are not described in ISCO-68. They would have been classified under various unit groups in major group 7/8/9 Production and related workers, transport equipment operators and labourers, depending upon the type of products involved.
SUB-MAJOR GROUP *8.2
STATIONARY MACHINE OPERATORS AND ASSEMBLERS

STATIONARY MACHINE OPERATORS AND ASSEMBLERS tend, operate, control and monitor stationary machines, on the spot or by remote control, or they assemble products from component parts according to strict rules and procedures.

Most occupations in this sub-major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education - where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this sub-major group require mainly experience with and understanding of the machinery tended, controlled or monitored, sufficient to ensure that it operates properly and to identify malfunctions, and to take simple measures when something is about to go wrong or actually fails. Ability to cope with machine-paced operations will often be required. The required skills, including manual strength and dexterity, may be acquired through informal or formal on-the-job training and through experience as helper or labourer in the same or similar establishments, supplementing or replacing partly or wholly formal vocational training.

Tasks performed by Stationary machine operators and assemblers include tending and operating machines used to produce products made of metal and other minerals, chemicals, wood, textiles, skin or leather; tending and operating machines processing food; tending and operating printing presses and book-binding machines, or assembling products from component parts according to strict rules and procedures. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*8.2.1 Metal and mineral products machine operators
*8.2.2 Chemical products machine operators
*8.2.3 Rubber and plastics products machine operators
*8.2.4 Wood products machine operators
*8.2.5 Printing, binding and paper products machine operators
*8.2.6 Textile products machine operators
*8.2.7 Food-processing machine operators
*8.2.8 Assemblers
COMMENTS

Occupations calling mainly for experience with and understanding of the work situation, the materials worked with and the requirements of the structures, machinery and other products produced are classified under major group *7 Craft and related workers. In these occupations the work may be carried out by hand or using hand-powered and other tools to reduce the amount of physical effort and/or time required for specific tasks, or to improve the quality of the products.

Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools and some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

MINOR GROUP *8.2.1
METAL AND MINERAL PRODUCTS MACHINE OPERATORS

METAL AND MINERAL PRODUCTS MACHINE OPERATORS operate machines to form metal and other minerals into parts or finished products.

Tasks performed include tending, operating and monitoring one or more machine tools such as lathe, power shears, boring, grinding or sawing metal; or machines to extrude, mould, mix, grind and cut various pre-cast cement, concrete and stone products. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.2.1.1 Machine-tool operators

*8.2.1.2 Cement and other minerals processing machine operators

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 8-34 Machine-tool operators; 8-39.60 Metal-press operator; 8-39.70 Metal-bending-machine operator; 8-39.80 Power-shear operator; 8-39.90 Other blacksmiths, toolmakers and machine-tool operators; 9-43 Non-metallic mineral product makers; 9-74.70 Concrete-mixer operator; 9-74.75 Concrete-mixing-plant operator.

*8.2.1.1 MACHINE-TOOL OPERATORS

MACHINE-TOOL OPERATORS operate automatic or semi-automatic metalworking machines which have been set up by machine-tool setters (classified under *7.2.2.3 Machine-tool setters-operators) to perform repetitive work.
**TASKS include -**

(a) tending, operating and monitoring one or more machine tools such as lathe, stamping press, power shears, metal-bending, milling, planing, boring, drilling, grinding, honing or metal-sawing machines which may be numerically controlled or linked by an automatic transfer machine;

(b) performing other related tasks;

(c) supervising other workers in this group.

**ISCO-68 GROUPS included:**

8-34 Machine-tool operators, consisting of -

- 8-34.10 Machine-tool operator, general
- 8-34.20 Lathe operator
- 8-34.30 Milling-machine operator
- 8-34.40 Planing-machine operator
- 8-34.50 Boring-machine operator
- 8-34.60 Drilling-machine operator
- 8-34.65 Precision-grinding-machine operator
- 8-34.70 Honing-machine operator
- 8-34.75 Metal-sawing-machine operator
- 8-34.80 Automatic transfer-machine operator
- 8-34.90 Other machine-tool operators

8-39.60 Metal-press operator
8-39.70 Metal-bending-machine operator
8-39.80 Power-shear operator
8-39.90 Other blacksmiths, toolmakers and machine-tool operators

*8.2.1.2 CEMENT AND OTHER MINERALS PROCESSING MACHINE OPERATORS*

CEMENT AND OTHER MINERALS PROCESSING MACHINE OPERATORS operate extrusion, moulding, mixing, grinding and cutting machines to manufacture and finish various pre-cast concrete and stone products such as flagstones, fencing posts, moulded pipe sections and trench liners, walling and partition slabs, building components, cable conduits, fume and dust extraction conduits, or making cast stone for building purposes.

**TASKS include -**

(a) tending and operating machine to mix sand, gravel, cement and water to make concrete;

(b) tending and operating extrusion, moulding, mixing, grinding and cutting machines to manufacture and finish various pre-cast concrete and stone products;

(c) performing other related tasks;

(d) supervising other workers in this group.
ISCO-68 GROUPS included:

9-43 Non-metallic mineral product makers, consisting of -
   9-43.20 Cast concrete product maker
   9-43.30 Asbestos cement product maker
   9-43.40 Cast stone maker
   9-43.90 Other non-metallic mineral product makers

9-74.70 Concrete-mixer operator
9-74.75 Concrete-mixing-plant operator.

MINOR GROUP *8.2.2
CHEMICAL PRODUCTS MACHINE OPERATORS

CHEMICAL PRODUCTS MACHINE OPERATORS operate machines to process a variety of chemicals and other ingredients to produce pharmaceuticals, toiletries, explosives, photographic or other chemical products, or to finish, plate and coat metal articles to give improved protection against corrosion.

Tasks performed include tending, operating and monitoring machines to mould, filter, ferment, mix, blend and otherwise process chemicals to give them desired properties or produce various products, or to give chemical treatment to metal and other minerals. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.2.2.1 Pharmaceutical and toiletry products machine operators
*8.2.2.2 Ammunition and explosive products machine operators
*8.2.2.3 Metal finishers, platers and coaters
*8.2.2.4 Photographic products machine operators
*8.2.2.5 Other chemical products machine operators

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-28 Metal platers and coaters; 7-29 Metal processers not elsewhere classified; 7-49.90 Other chemical processers and related workers; 9-27 Photographic dark-room workers; 9-39.90 Other painters; 9-49.30 Linoleum maker; 9-49.60 Candle maker; 9-49.70 Photographic film and paper maker; 9-49.90 Other production and related workers not elsewhere classified.
*8.2.2.1 PHARMACEUTICAL AND TOILETRY PRODUCTS MACHINE OPERATORS

PHARMACEUTICAL AND TOILETRY PRODUCTS MACHINE OPERATORS operate machinery to process a variety of chemicals and other ingredients to produce pharmaceuticals and toiletries.

TASKS include -

(a) tending, operating and monitoring moulding, filtering, fermenting, heating, mixing, grinding, filling and sealing machines in the production of pharmaceuticals and toiletries;

(b) operating controls to regulate temperature, pressure, flow and speed of operation;

(c) cleaning and disinfecting machinery;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 7-49.90 Other chemical processors and related workers.

*8.2.2.2 AMMUNITION AND EXPLOSIVE PRODUCTS MACHINE OPERATORS

AMMUNITION AND EXPLOSIVE PRODUCTS MACHINE OPERATORS operate machinery to process a variety of chemicals and other ingredients to produce ammunition and explosives.

TASKS include -

(a) tending, operating and monitoring equipment to mix, blend and otherwise process chemicals to produce explosive substances such as nitrocellulose, gelignite and various types of propellant powders;

(b) tending, operating and monitoring equipment to make matches;

(c) tending, operating and monitoring equipment to make fuses for explosives and pyrotechnics;

(d) tending, operating and monitoring equipment to assemble and load shells, bombs, rockets, mines and similar ammunition;

(e) performing other related tasks;

(f) supervising other workers in this group.
ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 7-49.90 Other chemical processors and related workers or under 9-49.90 Other production and related workers not elsewhere classified.

*8.2.2.3 METAL FINISHERS, PLATERS AND COATERS

METAL FINISHERS, PLATERS AND COATERS operate machines or equipment to finish, plate and coat metal articles or parts in order to give them improved resistance to corrosion and abrasion, for decorative purposes, or to impart electrical or magnetic properties.

TASKS include -

(a) operating equipment to clean metal articles in preparation for electroplating, galvanising, enamelling or similar processes;
(b) setting and controlling electroplating equipment;
(c) operating hot-dip equipment to coat iron and steel products;
(d) coating wire with non-ferrous metal by automatic machine;
(e) operating equipment to spray molten metal or other substances on metal products to provide a protective or decorative coating or to build up worn or damaged surfaces;
(f) operating equipment to impart a rust-resistant finish to metal articles by treating them with chemicals and heating them;
(g) performing other related tasks;
(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-28 Metal platers and coaters, consisting of -

7-28.20 Electroplater
7-28.30 Hot-dip plater
7-28.40 Wire-coating-machine operator
7-28.50 Metal sprayer
7-28.90 Other metal platers and coaters

7-29 Metal processers not elsewhere classified, consisting of -

7-29.20 Metal bluer
7-29.30 Casting finisher
7-29.40 Metal cleaner
7-29.90 Other metal processers

9-39.90 Other painters
*8.2.2.4 PHOTOGRAPHIC PRODUCTS MACHINE OPERATORS

PHOTOGRAPHIC PRODUCTS MACHINE OPERATORS operate machinery to make photographic film and paper and to process exposed photographic film and make photographic prints.

TASKS include -

(a) tending, operating and monitoring equipment to make photographic film and paper;
(b) operating machines for coating and backing photographic plates;
(c) tending, operating and monitoring equipment to process colour and black-and-white films and plates to obtain negatives or transparent positives;
(d) tending, operating and monitoring equipment to print black-and-white or colour photographs or to enlarge or reduce photographs;
(e) performing other related tasks;
(f) supervising other workers in this group.

ISCO-68 GROUPS included:

9-27 Photographic dark-room workers, consisting of -
   9-27.20 Colour developer
   9-27.30 Black-and-white developer
   9-27.40 Photographic printer
   9-27.50 Photograph enlarger
   9-27.90 Other photographic dark-room workers

9-49.70 Photographic film and paper maker
9-49.90 Other production and related workers not elsewhere classified, part

*8.2.2.5 OTHER CHEMICAL PRODUCTS MACHINE OPERATORS

OTHER CHEMICAL PRODUCTS MACHINE OPERATORS operate machinery controlling chemical processes and producing chemical products, other than those used by workers classified elsewhere, such as machines producing linoleum, vinyl and other plastic covers for floors and walls, machines producing soap and detergents, candles, crayons, etc.

TASKS include -

(a) tending, operating and monitoring chemical machinery and equipment not elsewhere classified, such as equipment used to make linoleum, vinyl or other plastic covers, soap and detergents, candles, crayons, etc.;
(b) performing other related tasks;
(c) supervising other workers in this group.
ISCO-68 GROUPS included:

7-49.90 Other chemical processors and related workers

9-49.30 Linoleum maker
9-49.60 Candle maker
9-49.90 Other production and related workers not elsewhere classified, part

MINOR GROUP *8.2.3
RUBBER AND PLASTICS PRODUCTS MACHINE OPERATORS

RUBBER AND PLASTICS PRODUCTS MACHINE OPERATORS operate machines to make tires for vehicles or to knead, blend and form rubber, rubber compounds or plastics to produce various components and articles.

Tasks performed include tending, operating and monitoring machines to mould or build up tires, knead, mix and blend rubber, rubber compounds and plastic, or form and shape various articles made of these materials. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.2.3.1 Tire making and vulcanising machine operators

*8.2.3.2 Other rubber and plastics products machine operators

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 9-01.20 Rubber millman; 9-01.25 Rubber calender operator; 9-01.30 Rubber-extruding-machine operator; 9-01.35 Rubber moulding-press operator; 9-01.50 Plastics injection-moulding-machine operator; 9-01.55 Plastics compression-moulding-machine operator; 9-01.60 Plastics extruding-machine operator; 9-01.80 Plastics products fabricator; 9-01.90 Other rubber and plastics product makers, except tire makers and tire vulcanisers; 9-02 Tire makers and vulcanisers.

*8.2.3.1 TIRE MAKING AND VULCANISING MACHINE OPERATORS

TIRE MAKING AND VULCANISING MACHINE OPERATORS operate machines making tires for vehicles such as bicycles, automobiles, tractors and aircraft.

TASKS include -

(a) tending, operating and monitoring equipment that builds up tires on a form, cures tires in mould or rebuilds used tires;

(b) performing other related tasks;

(c) supervising other workers in this group.
*8.2.3.2 OTHER RUBBER AND PLASTICS PRODUCTS MACHINE OPERATORS

OTHER RUBBER AND PLASTICS PRODUCTS MACHINE OPERATORS operate machines to knead, blend and form rubber and rubber compounds and work natural and synthetic rubber and plastics to produce various components and articles, such as moulded footwear, domestic articles, insulating materials and industrial accessories.

TASKS include:

(a) tending, operating and monitoring equipment that kneads, mixes and blends rubber and rubber compounds for further processing, produces sheets of rubber or rubberised fabric by a rolling process, extrudes compounded rubber or shapes uncured rubber by moulding;

(b) tending, operating and monitoring equipment that shapes plastic materials by injection-moulding, compression-moulding and extrusion;

(c) laminating plastics and plastic-impregnated materials;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

9-02 Tire makers and vulcanisers, consisting of -

9-02.20 Tire builder
9-02.30 Tire moulder
9-02.40 Tire rebuilder
9-02.90 Other tire makers and vulcanisers

MINOR GROUP *8.2.4

WOOD PRODUCTS MACHINE OPERATORS

WOOD PRODUCTS MACHINE OPERATORS operate automatic or semi-automatic woodworking machines to perform repetitive work.
Tasks performed include tending, operating and monitoring woodworking machines for sawing, shaping, boring, planing, turning or carving wood. Supervision of other workers may also be included.

Occupations in this minor group are classified under the following unit groups:

*8.2.4.0 Wood products machine operators

**COMMENTS**

This minor group contains the following ISCO-68 occupational category: 8-12.08 Woodworking-machine operator, general.

*8.2.4.0 WOOD PRODUCTS MACHINE OPERATORS

WOOD PRODUCTS MACHINE OPERATORS operate automatic or semi-automatic woodworking machines which have been set up by woodworking machine setters (classified under *7.3.2.3 Woodworking machine setter-operators) to perform repetitive work.

**TASKS include** -

(a) tending, operating and monitoring one or more previously set up machines for sawing, shaping, boring, planing, turning or carving wood;

(b) performing other related tasks;

(c) supervising other workers in this group.

**ISCO-68 GROUPS included:**

8-12.08 Woodworking-machine operator, general

**MINOR GROUP *8.2.5**

PRINTING, BINDING AND PAPER PRODUCTS MACHINE OPERATORS

PRINTING, BINDING AND PAPER PRODUCTS MACHINE OPERATORS operate various types of printing and copying machines, machines to bind and emboss books or machines to make various articles from paper, paperboard and similar materials.

Tasks performed include tending, operating and monitoring various types of printing and copying machines, machines to bind and emboss books or machines to make various articles from paper, paperboard and similar materials. Supervision of other workers may also be included.
Occupations in this minor group are classified under the following unit groups:

*8.2.5.1 Printing machine operators
*8.2.5.2 Binding machine operators
*8.2.5.3 Paper and paperboard products machine operators

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 3-99.50 Office machine operator, reproduction processes; 9-01.65 Plastics laminator; 9-10 Paper and paperboard products makers; 9-22 Printing pressmen; 9-26.30 Bookbinder, machine; 9-26.50 Book embosser, machine; 9-49.40 Doll and stuffed toy maker, part; .50 Rubber stamp maker.

*8.2.5.1 PRINTING MACHINE OPERATORS

PRINTING MACHINE OPERATORS operate various types of machines which print on paper, tinplate and other materials.

TASKS include -

(a) tending, operating and monitoring cylinder, platen, rotary, offset, direct lithographic, rotogravure, and wallpaper printing presses;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

3-99.50 Office machine operator, reproduction processes
9-22 Printing pressmen, consisting of -

9-22.20 Cylinder pressman
9-22.25 Platen pressman
9-22.30 Rotary pressman
9-22.40 Offset pressman
9-22.50 Direct lithographic pressman
9-22.60 Rotogravure pressman
9-22.70 Wallpaper printer
9-22.90 Other printing pressmen

*8.2.5.2 BINDING MACHINE OPERATORS

BINDING MACHINE OPERATORS operate machines to bind and emboss books.
TASKS include -

(a) tending, operating and monitoring bookbinding machines;
(b) tending, operating and monitoring pressing machines to emboss designs and titles on book covers;
(c) performing other related tasks;
(d) supervising other workers in this group.

ISCO-68 GROUPS included:

9-01.65 Plastics laminator
9-26.30 Bookbinder, machine
9-26.50 Book embosser, machine
9-49.40 Doll and stuffed toy maker, part
9-49.50 Rubber stamp maker

*8.2.5.3 PAPER AND PAPERBOARD PRODUCTS MACHINE OPERATORS

PAPER AND PAPERBOARD PRODUCTS MACHINE OPERATORS operate machines to make boxes, envelopes, bags and other products from paper, paperboard, cardboard, cellophane and similar materials.

TASKS include -

(a) tending, operating and monitoring machines which glue paper to cardboard, cut it to required length or cut and crease cardboard or paperboard to form box blanks;
(b) tending, operating and monitoring pressing machines to form drinking cups or other containers from paper, paperboard or cardboard;
(c) tending, operating and monitoring machines which cut, fold and glue paper to make envelopes and paper bags or which form bags from other materials;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

9-10 Paper and paperboard products makers, consisting of -

9-10.20 Paper box maker, hand
9-10.30 Paper box maker, machine
9-10.40 Cardboard lining-machine operator
9-10.50 Paper box cutting- and creasing-press operator
9-10.60 Cardboard-press operator
9-10.70 Paper bag and envelope maker, machine
9-10.80 Cellophane bag maker, machine
9-10.90 Other paper and paperboard products makers
TEXTILE PRODUCTS MACHINE OPERATORS operate various types of machines to spin and wind thread, weave fabrics, bleach or dye textile products or sew or embroider garments.

Tasks performed include tending, operating and monitoring various types of machines to spin and wind thread, weave fabrics, bleach or dye textile products or sew or embroider garments. Supervision of other workers may also be included.

Occupations in this minor group are classified under the following unit groups:

*8.2.6.1 Spinning and winding machine operators
*8.2.6.2 Weaving and knitting machine operators
*8.2.6.3 Textile products treating machine operators
*8.2.6.4 Sewing and embroidering machine operators
*8.2.6.5 Other textile products machine operators

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 5-60.10 Launderer, general (part); 5-60.20 Laundering-machine operator; 5-60.30 Dry-cleaning machine operator; 5-60.60 Laundry pressing-machine operator; 5-60.90 Other launderers, dry-cleaners and pressers (part); 7-52 Spinners and winders; 7-53 Weaving- and knitting-machine setters and pattern-card preparers; 7-54.15 Beam warper; 7-54.25 Loom threader, machine; 7-54.40 Cloth weaver, machine (except Jacquard loom); 7-54.45 Jacquard weaver; 7-54.50 Lace weaver, machine; 7-54.60 Carpet weaver, machine; 7-54.65 Net maker, machine; 7-55 Knitters, except .40 Knitter, hand-operated machine and .50 Hand knitter; 7-56 Bleachers, dyers and textile product finishers; 7-59.25 Braid maker, machine; 7-59.35 Crocheter, machine; 7-59.45 Fur fibre mixer, machine; 7-59.50 Felt hood former; 7-59.90 Other spinners, weavers, knitters, dyers and related workers; 7-93.30 Hat-blocking-machine operator; 7-93.90 Other milliners and hatmakers, part; 7-95.50 Sewing-machine operator; 7-95.70 Machine embroiderer.

*8.2.6.1 SPINNING AND WINDING MACHINE OPERATORS

SPINNING AND WINDING MACHINE OPERATORS operate machine to spin, double, twist and wind thread and yarn from natural textile fibres.

TASKS include -

(a) tending, operating and monitoring machines to spin thread and yarn from roving, wind two or more threads onto bobbin, twist two or more strands of yarn or thread into single heavier and stronger strand, or wind yarn or thread from one package to another;
(b) performing other related tasks;
(c) supervising other workers in this group.

ISCO-68 GROUPS included:

7-52 Spinners and winders, consisting of -
   7-52.20 Spinner, thread and yarn
   7-52.30 Doubler
   7-52.40 Twister
   7-52.50 Winder
   7-52.90 Other spinners and winders

*8.2.6.2 WEAVING AND KNITTING MACHINE OPERATORS

WEAVING AND KNITTING MACHINE OPERATORS operate weaving and knitting machines and related equipment to produce materials and fabrics.

TASKS include -

(a) tending, operating and monitoring machines to weave or knit plain or figured cloth, tapestry, lace, carpets, garments, hosiery or other fabrics or articles;
(b) performing other related tasks;
(c) supervising other workers in this group.

ISCO-68 GROUPS included:

7-53 Weaving- and knitting-machine setters and pattern-card preparers, consisting of -
   7-53.20 Loom fixer
   7-53.30 Knitting-machine setter
   7-53.40 Jacquard design copyist
   7-53.50 Jacquard card cutter
   7-53.90 Other weaving- and knitting-machine setters and pattern-card preparers

7-54.15 Beam warper
7-54.25 Loom threader, machine
7-54.40 Cloth weaver, machine (except Jacquard loom)
7-54.45 Jacquard weaver
7-54.50 Lace weaver, machine
7-54.60 Carpet weaver, machine
7-54.65 Net maker, machine

7-55.20 Knitting-machine operator, garment
7-55.30 Knitting-machine operator, hosiery
7-55.90 Other knitters
TEXTILE PRODUCTS TREATING MACHINE OPERATORS operate equipment to bleach, dye, wash and otherwise treat fibres, cloth and other textile products.

TASKS include:

(a) tending, operating and monitoring machines treating textile products to make them lighter in colour or to give them specific colour;

(b) tending, operating and monitoring machines washing or dry-cleaning textile products to remove dirt, impurities, excess chemicals or natural gum;

(c) tending, operating and monitoring equipment to shrink materials or strengthen the weave by interlocking the fibres;

(d) tending, operating and monitoring equipment waterproofing textiles with chemicals;

(e) tending, operating and monitoring equipment treating silk to give it body and weight;

(f) tending, operating and monitoring machines which press, stretch, or impart lustre, waterproof or other type of finish to textiles;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

5-60.10 Launderer, general (part)
5-60.20 Laundering-machine operator
5-60.30 Dry-cleaning machine operator
5-60.60 Laundry pressing-machine operator
5-60.90 Other launderers, dry-cleaners and pressers (part)

7-56 Bleachers, dyers and textile product finishers, consisting of -

7-56.15 Textile bleacher
7-56.20 Yarn dyer
7-56.25 Fabric dyer
7-56.30 Garment dyer
7-56.35 Textile washer
7-56.40 Silk degummer
7-56.45 Wool carboniser
7-56.50 Textile shrinker
7-56.55 Textile fuller
7-56.60 Textile waterproofer
7-56.65 Silk weighter
7-56.70 Textile calender operator
7-56.90 Other bleachers, dyers and textile product finishers
*8.2.6.4 SEWING AND EMBROIDERING MACHINE OPERATORS

SEWING AND EMBROIDERING MACHINE OPERATORS operate sewing machines to make garments or reproduce ornamental designs on garments or other materials.

TASKS include -

(a) tending, operating and monitoring standard or specialised single- or multiple-needle sewing machines to make or repair garment, gloves and miscellaneous products in textiles and kindred materials;

(b) tending, operating and monitoring standard or specialised single- or multiple-needle sewing machines to reproduce ornamental designs on garment parts or other materials;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

7-95.50 Sewing machine operator
7-95.70 Machine embroiderer

*8.2.6.5 OTHER TEXTILE PRODUCTS MACHINE OPERATORS

OTHER TEXTILE PRODUCTS MACHINE OPERATORS operate other types of machines used to make textile products, such as machines that make braids, crochet trimmings, mix and purify fur fibres, make hat forms or stretch felt cones to form hat shapes.

TASKS include -

(a) tending, operating and monitoring machines used to make textile products, other than those used by workers classified under other groups, such as machines that make braids, crochet trimmings, mix and purify fur fibres, make hat forms or stretch felt cones to form hat shapes;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

7-59.25 Braid maker, machine
7-59.35 Crocheter, machine
7-59.45 Fur fibre mixer, machine
7-59.50 Felt hood former
7-59.90 Other spinners, weavers, knitters, dyers and related workers
7-93.30 Hat-blocking-machine operator
7-93.90 Other milliners and hatmakers, part
MINOR GROUP *8.2.7
FOOD-PROCESSING MACHINE OPERATORS

FOOD-PROCESSING MACHINE OPERATORS operate various types of machines to process food and make food products for human and animal consumption.

Tasks performed include tending, operating and monitoring various types of machines to slaughter fish or animals and cut them into pieces for storage, sale or further processing, to process milk and cream and make dairy products, to crush and grind grain, spices or similar foodstuffs, to bake bread, pasta or related products, to process fruits and vegetables, to process and refine sugar, to prepare tea, coffee or tobacco or to produce beer, wine and similar beverages. Supervision of other workers may also be included.

Occupations in this minor group are classified under the following unit groups:

*8.2.7.1 Meat and fish processing machine operators
*8.2.7.2 Dairy products machine operators
*8.2.7.3 Grain and spice milling machine operators
*8.2.7.4 Baking-goods and cereals producing machine operators
*8.2.7.5 Fruit, vegetable and nut processing machine operators
*8.2.7.6 Sugar processing and refining machine operators
*8.2.7.7 Tea, coffee and cocoa preparing machine operators
*8.2.7.8 Tobacco products processing machine operators
*8.2.7.9 Brewers, wine and similar beverage machine operators

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 7-44.90 Other still and reactor operators; 7-71 Grain millers and related workers; 7-72 Sugar processors and refiners; 7-74.10 Preserving cook, general; 7-74.15 Fish-preserving cook; 7-74.20 Sterilising cook; 7-74.30 Foodstuffs freezer; 7-74.40 Foodstuffs dehydrator; 7-74.90 Other food preservers, part; 7-75 Dairy product processors; 7-77 Tea, coffee and cocoa preparers, except .20 Coffee and tea taster; 7-78 Brewers, wine and beverage makers, except .60 Wine and liquor taster; 7-79 Food and beverage processors not elsewhere classified, except .40 Fish butcher; 7-83.20 Cigarette maker, machine; 9-71.55 Machine packer; 9-71.60 Machine labeller.

*8.2.7.1 MEAT AND FISH PROCESSING MACHINE OPERATORS

MEAT AND FISH PROCESSING MACHINE OPERATORS operate machines used to slaughter fish or animals and to process carcasses for storage and consumption by humans or animals.
TASKS include -

(a) tending, operating and monitoring machines used to slaughter fish or animals and to cut carcasses into pieces for storage, sale or further processing;

(b) tending, operating and monitoring machines used to grind, mince and mix fish and meat products;

(c) tending, operating and monitoring machines used to cook, can, freeze, smoke or pickle fish or meat products for storage or sale to consumers;

(d) tending, operating and monitoring machines used to pack fish and meat products for sale to consumers from refrigerated counters;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-74.10 Preserving cook, general (part)
7-74.15 Fish-preserving cook
7-74.20 Sterilising cook, part
7-74.30 Foodstuffs freezer, part

*8.2.7.2 DAIRY PRODUCTS MACHINE OPERATORS

DAIRY PRODUCTS MACHINE OPERATORS operate machines to process milk and cream and make dairy products.

TASKS include -

(a) tending, operating and monitoring equipment to pasteurise, homogenise and heat-treat milk and cream for storage and sale to consumers;

(b) tending, operating and monitoring equipment to make condensed or powdered milk;

(c) tending, operating and monitoring equipment to make butter, cheese and other milk or milk-based products;

(d) tending, operating and monitoring machines used to fill milk, cream and other liquid milk-based products in containers or to pack butter, cheese and similar products, for sale to consumers;

(e) performing other related tasks;

(f) supervising other workers in this group.
ISCO-68 GROUPS included:

7-75 Dairy product processers, consisting of -
- 7-75.10 Dairy product processor, general
- 7-75.20 Dairy product pasteuriser
- 7-75.30 Butter maker
- 7-75.40 Cheese maker
- 7-75.50 Ice-cream maker
- 7-75.90 Other dairy product processers

9-71.55 Machine packer, part
9-71.60 Machine labeller, part

*8.2.7.3 GRAIN AND SPICE MILLING MACHINE OPERATORS

GRAIN AND SPICE MILLING MACHINE OPERATORS operate machinery to crush, grind, blend and otherwise process grain, spices and related foodstuffs for human or animal consumption.

TASKS include -
(a) tending, operating and monitoring machinery for the production of flour, meal and animal feed and for the processing of rice;
(b) tending, operating and monitoring mills for the grinding of spices;
(c) tending, operating and monitoring machines used to fill flour, meal, animal foodstuffs and spices in bags and other types of containers, for sale to consumers;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

7-71 Grain millers and related workers, consisting of -
- 7-71.20 Grain miller
- 7-71.30 Rice miller
- 7-71.40 Spice miller
- 7-71.90 Other grain millers and related workers

9-71.55 Machine packer, part
9-71.60 Machine labeller, part

*8.2.7.4 BAKING-GOODS AND CEREALS PRODUCING MACHINE OPERATORS

BAKING-GOODS AND CEREALS PRODUCING MACHINE OPERATORS operate mixing, blending, shaping and baking machines to produce bread, pastry, pasta, cereals, chocolate and related products from flour or cocoa.
TASKS include -

(a) tending, operating and monitoring machinery for the mixing and blending of flour with other ingredients to prepare dough for the production of bread, pastries, pasta and related products;

(b) tending, operating and monitoring machines for extruding and shaping dough for the production of bread, pastries, pasta and related products;

(c) tending, operating and monitoring ovens used to bake bread, pastries, pasta and related products;

(d) tending, operating and monitoring machines used to make cereals;

(e) tending, operating and monitoring machines used to make chocolate and confectionery;

(f) tending, operating and monitoring machines used to cut and pack bread, pastry, pasta, cereals and related products, for sale to consumers;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 7-76 Bakers, pastry cooks and confectionery makers, 9-71.55 Machine packer or under 9-71.60 Machine labeller.

*8.2.7.5 FRUIT, VEGETABLE AND NUT PROCESSING MACHINE OPERATORS

FRUIT, VEGETABLE AND NUT PROCESSING MACHINE OPERATORS operate machines to extract juice from fruit and vegetables or oil from oil-bearing seeds, nuts and fruits, and to process fruits, vegetables and nuts for storage and human and animal consumption.

TASKS include -

(a) tending, operating and monitoring equipment to extract juice from fruits and vegetables by heating and/or pressing;

(b) tending, operating and monitoring equipment to extract and refine oil from oil-bearing seeds, nuts and fruits;

(c) tending, operating and monitoring machines to make margarine and similar products from animal and vegetable oils;

(d) tending, operating and monitoring machines to prepare fruits, vegetables and nuts for further processing;

(e) tending, operating and monitoring machines to dehydrate, can, freeze or roast fruits, vegetables and nuts for storage or sale to consumers;
(f) tending, operating and monitoring machines used to pack fruits, vegetables or nuts, or products based on such raw materials, for sale to consumers;

(g) performing other related tasks;

(h) supervising other workers in this group.

**ISCO-68 GROUPS included:**

7-74.10 Preserving cook, general (part)
7-74.20 Sterilising cook, part
7-74.30 Foodstuffs freezer, part
7-74.40 Foodstuffs dehydrator
7-74.90 Other food preservers, part

7-78.80 Fruit-press operator

7-79.20 Oil pressman, edible oils
7-79.25 Refining-machine operator, oils and fats
7-79.30 Hydrogenation operator, oils and fats
7-79.90 Other food and beverage processors

9-71.55 Machine packer, part
9-71.60 Machine labeller, part

**8.2.7.6 SUGAR PROCESSING AND REFINING MACHINE OPERATORS**

SUGAR PROCESSING AND REFINING MACHINE OPERATORS operate equipment to process sugar-cane and -beet and make refined sugar.

**TASKS include -**

(a) tending, operating and monitoring equipment to crush sugar-cane or diffusers to extract sugar liquor from beet;

(b) tending, operating and monitoring tanks used to purify sugar liquor or produce sugar crystals from hot sugar liquor;

(c) tending, operating and monitoring machines refining beet or cane sugar by a continuous process;

(d) tending, operating and monitoring machines extracting and refining sugar juices from maple, palm and other vegetable sources;

(e) tending, operating and monitoring machines processing honey;

(f) tending, operating and monitoring machines used to pack sugar and related products, for sale to consumers;

(g) performing other related tasks;

(h) supervising other workers in this group.
ISCO-68 GROUPS included:

7-72 Sugar processers and refiners, consisting of -
   7-72.20 Sugar-cane grinder
   7-72.30 Diffuser operator, beet sugar
   7-72.40 Carbonation man, sugar refining
   7-72.50 Crystalliser operator, sugar refining
   7-72.60 Continuous sugar-refining-machine operator
   7-72.90 Other sugar processers and refiners

9-71.55 Machine packer, part
9-71.60 Machine labeller, part

*8.2.7.7 TEA, COFFEE AND COCOA PREPARING MACHINE OPERATORS

TEA, COFFEE AND COCOA PREPARING MACHINE OPERATORS operate equipment to blend and prepare tea leaves, coffee and cocoa beans and chicory roots.

TASKS include -

(a) tending, operating and monitoring equipment to wither tea leaves, roll withered leaves or dry rolled fermented leaves, blend various grades of tea;

(b) tending, operating and monitoring equipment to cut coffee or cocoa berries and remove and wash off pulp, peel off husk from beans, and cure and blend beans;

(c) tending, operating and monitoring machines to roast blended coffee or cocoa beans or chicory roots;

(d) tending, operating and monitoring machines used to crush tea or grind coffee, cocoa or chicory, or to pack tea, coffee, cocoa or chicory and related products, for sale to consumers;

(e) performing other related tasks;

(f) supervising other workers in this group.

ISCO-68 GROUPS included:

7-77.30 Coffee blender
7-77.40 Tea blender
7-77.50 Coffee roaster
7-77.60 Cocoa-bean roaster
7-77.90 Other tea, coffee and cocoa preparers

9-71.55 Machine packer, part
9-71.60 Machine labeller, part
*8.2.7.8 TOBACCO PRODUCTS PROCESSING MACHINE OPERATORS

TOBACCO PRODUCTS PROCESSING MACHINE OPERATORS operate machines to process tobacco and to make cigarettes and other tobacco products.

TASKS include -

(a) tending, operating and monitoring equipment to process tobacco in preparation for manufacturing cigarettes and other tobacco products;

(b) tending, operating and monitoring machines to produce cigarettes and other tobacco products;

(c) tending, operating and monitoring machines used to pack cigarettes and other tobacco products, for sale to consumers;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

7-83.20 Cigarette maker, machine

9-71.55 Machine packer, part

9-71.60 Machine labeller, part

*8.2.7.9 BREWERS, WINE AND SIMILAR BEVERAGE MACHINE OPERATORS

BREWERS, WINE AND SIMILAR BEVERAGE MACHINE OPERATORS operate equipment to mix, press, malt and ferment grains and fruits to make malt liquors, wine and similar beverages.

TASKS include -

(a) tending, operating and monitoring equipment to process barley and other grains used in making distilled and malt liquors and controlling the fermentation process;

(b) tending, operating and monitoring equipment to process grapes and other fruits used in making wines and controlling the fermentation process;

(c) tending, operating and monitoring stills to increase or reduce the alcohol content of alcoholic beverages;

(d) tending, operating and monitoring equipment to blend wines and liquors to obtain desired tastes and flavours;

(e) tending, operating and monitoring machines used to fill alcoholic and similar beverages in containers, for sale to consumers;

(f) performing other related tasks;

(g) supervising other workers in this group.
MINOR GROUP *8.2.8
ASSEMBLERS

ASSEMBLERS perform limited, specialised tasks in assembling components into products according to strictly laid out procedures. The products worked on may move from one worker to the next along assembly lines.

Tasks performed include performing limited specialised tasks in assembling components into various types of products according to strictly laid out procedures, using hand or power tools to fasten, screw, solder, weld, rivet or glue parts together. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.2.8.1 Mechanical machinery assemblers
*8.2.8.2 Electrical machinery assemblers
*8.2.8.3 Electronic equipment assemblers
*8.2.8.4 Metal, rubber and plastic products assemblers
*8.2.8.5 Wood and related materials products assemblers
*8.2.8.6 Paperboard, textile and related products assemblers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 8-03.60 Leather goods assembler; 8-41.10 Machinery fitter-assembler, general (part); 8-41.15 Internal combustion engine fitter-assembler, except aircraft and marine engines (part); 8-41.20 Aircraft engine fitter-assembler, part; 8-41.25 Marine engine fitter-assembler, part; 8-41.30 Turbine fitter-assembler, except aircraft and marine (part); 8-41.35 Metalworking machine-tool fitter-assembler, part; 8-41.40 Mining machinery fitter-assembler, part; 8-41.45 Printing machinery fitter-assembler, part.
8-41.50 Textile machinery fitter-assembler, part; 8-41.55 Woodworking machinery fitter-assembler, part; 8-41.60 Agricultural machinery fitter-assembler, part; 8-41.65 Earth-moving equipment fitter-assembler, part; 8-41.70 Office machinery fitter-assembler, part; 8-41.90 Other machinery fitters and machine assemblers, part; 8-49.90 Other machinery fitters, machine assemblers and precision-instrument makers (except electrical), part; 8-53 Electrical and electronic equipment assemblers; 9-01.40 Rubber goods assembler; 9-01.70 Plastics products assembler; 9-49.40 Doll and stuffed toy maker, part.

*8.2.8.1 MECHANICAL MACHINERY ASSEMBLERS

MECHANICAL MACHINERY ASSEMBLERS perform limited, specialised tasks in assembling components into mechanical machinery or mechanical parts of machinery according to strictly laid out procedures, using hand or power tools to fasten, screw, hammer or weld the components together.

TASKS include -

(a) performing limited, specialised tasks in assembling components into mechanical machinery, engines and vehicles or their mechanical parts, using hand or power tools to fasten, screw, hammer or weld the components together;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

8-41.10 Machinery fitter-assembler, general (part)
8-41.15 Internal combustion engine fitter-assembler, except aircraft and marine engines (part)
8-41.20 Aircraft engine fitter-assembler, part
8-41.25 Marine engine fitter-assembler, part
8-41.30 Turbine fitter-assembler, except aircraft and marine (part)
8-41.35 Metalworking machine-tool fitter-assembler, part
8-41.40 Mining machinery fitter-assembler, part
8-41.45 Printing machinery fitter-assembler, part
8-41.50 Textile machinery fitter-assembler, part
8-41.55 Woodworking machinery fitter-assembler, part
8-41.60 Agricultural machinery fitter-assembler, part
8-41.65 Earth-moving equipment fitter-assembler, part
8-41.70 Office machinery fitter-assembler, part
8-41.90 Other machinery fitters and machine assemblers, part
8-49.90 Other machinery fitters, machine assemblers and precision-instrument makers (except electrical), part

*8.2.8.2 ELECTRICAL MACHINERY ASSEMBLERS

ELECTRICAL MACHINERY ASSEMBLERS perform limited, specialised tasks in assembling components into electrical machinery or electrical parts of machinery according to strictly laid out procedures, using hand or power tools to fasten, screw, solder or weld the components together.
TASKS include -

(a) performing limited, specialised tasks in assembling components into electrical machinery or electrical parts, using hand or power tools to fasten, screw, solder or weld the components together;

(b) installing and connecting wiring in electrical machinery or equipment by clamping or soldering;

(c) winding electrical wire coils onto cores by machine and by hand;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:

8-53.20 Electrical equipment assembler
8-53.40 Coil winder, machine
8-53.50 Coil winder, hand

*8.2.8.3 ELECTRONIC EQUIPMENT ASSEMBLERS

ELECTRONIC EQUIPMENT ASSEMBLERS perform limited, specialised tasks in assembling components into electronic equipment or electronic parts according to strictly laid out procedures, using hand or power tools to fasten, screw or solder the components together.

TASKS include -

(a) performing limited, specialised tasks in assembling components into electronic machinery or electronic parts, using hand or power tools to fasten, screw or solder the components together;

(b) installing and connecting wiring in electronic equipment by clamping or soldering;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

8-41.70 Office machinery fitter-assembler, part
8-53.30 Electronic equipment assembler
8-53.90 Other electrical and electronic equipment assemblers
*8.2.8.4 METAL, RUBBER AND PLASTIC PRODUCTS ASSEMBLERS

METAL, RUBBER AND PLASTIC PRODUCTS ASSEMBLERS perform limited, specialised tasks in assembling components made of metal, rubber or plastics into various types of products such as toys, novelties, sports articles, bicycles, etc. according to strictly laid out procedures, using hand or power tools to fasten, screw, glue, laminate or solder the components together.

TASKS include -

(a) performing limited, specialised tasks in assembling components made of metal, rubber or plastics into various types of products, using hand or power tools to fasten, screw, glue, laminate or solder the components together;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

9-01.40 Rubber goods assembler
9-01.70 Plastics products assembler

*8.2.8.5 WOOD AND RELATED MATERIALS PRODUCTS ASSEMBLERS

WOOD AND RELATED MATERIALS PRODUCTS ASSEMBLERS perform limited, specialised tasks in assembling components made of wood or related materials into various types of products such as wooden frames and furniture according to strictly laid out procedures, using hand or power tools to fasten, screw, glue, laminate or solder the components together.

TASKS include -

(a) performing limited, specialised tasks in assembling components made of wood or related materials into various types of products, using hand or power tools to fasten, screw, glue, laminate or solder the components together;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 8-19.90 Other cabinetmakers and related woodworkers.
*8.2.8.6 PAPERBOARD, TEXTILE AND RELATED PRODUCTS ASSEMBLERS

PAPERBOARD, TEXTILE AND RELATED PRODUCTS ASSEMBLERS perform limited, specialised tasks in assembling components made of paperboard, textile, leather or related materials into various types of products such as boxes, luggage, handbags, etc. according to strictly laid out procedures, using hand or power tools to fasten, rivet, glue, laminate or solder the components together.

TASKS include -

(a) performing limited, specialised tasks in assembling components made of wood or related materials into various types of products, using hand or power tools to fasten, rivet, glue, laminate or solder the components together;

(b) attaching metal, plastic or other fittings;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

8-03.60 Leather goods assembler
9-49.40 Doll and stuffed toy maker, part

SUB-MAJOR GROUP *8.3

DRIVERS AND MOBILE MACHINERY OPERATORS

DRIVERS AND MOBILE MACHINERY OPERATORS mainly control, tend and operate vehicles and other equipment used to transport or move materials, goods or persons, or whose mobility is essential to its functioning.

Most occupations in this major group require skills at the second skill level, as defined by ISCO. When these skills are acquired through formal education or vocational training, they normally demand courses classified by ISCED as Educational Categories 2 and 3. In a system of continuous education where primary education begins at age 5, 6 or 7 - courses in Educational Category 2 begin at age 11 or 12 and last for about three years, while courses in Educational Category 3 begin at about age 14 or 15 and last for about three years.

It should be stressed that the occupations in this sub-major group require mainly experience with and understanding of the machinery tended, controlled or operated, sufficient to ensure that it operates properly and to identify malfunctions, and to take simple measures when something is about to go wrong or actually fails. The required skills, including manual strength and dexterity, may be acquired through informal or formal on-the-job training and through experience as helper or labourer in the same or similar establishments, supplementing or replacing partly or wholly formal vocational training.
Tasks performed by Drivers and mobile machinery operators include controlling, tending and operating trains, motor vehicles and materials-handling equipment, or other equipment whose mobility is essential to its functioning. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

* 8.3.1 Railway engine drivers and related workers
* 8.3.2 Motor vehicle drivers
* 8.3.3 Agricultural and materials-handling machinery operators
* 8.3.4 Ships’ deck crews and related workers

COMMENTS

Occupations consisting of simple and routine tasks carried out by helpers and labourers, and which mainly entail the use of hand-held tools and some physical effort, little or no previous experience and understanding of the work and limited initiative or judgement, are classified under major group *9 Labourers.

MINOR GROUP *8.3.1

RAILWAY ENGINE DRIVERS AND RELATED WORKERS

RAILWAY ENGINE DRIVERS AND RELATED WORKERS drive railway engines to transport materials, freight or passengers, manoeuvre railway coaches or operate railway signals.

Tasks performed include driving railway engines, operating railway signals, switching rolling stock and assembling trains in railway yards. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

* 8.3.1.1 Railway engine drivers
* 8.3.1.2 Railway brakemen, signalers and shunters

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 3-59.30 Railway transport service inspector; 9-83 Railway engine-drivers and firemen, except .30 Railway steam-engine fireman; 9-84 Railway brakemen, signalmen and shunters.
*8.3.1.1 RAILWAY ENGINE DRIVERS

RAILWAY ENGINE DRIVERS drive, or assist in driving, railway engines to transport passengers and freight.

TASKS include -

(a) driving or assisting in driving a steam, electric or diesel-electric railway engine;
(b) driving an underground or elevated passenger train;
(c) driving a locomotive to haul cars underground or on surface of mine or quarry;
(d) performing other related tasks;
(e) supervising other workers in this group.

ISCO-68 GROUPS included:

3-59.30 Railway transport service inspector, part
9-83.20 Railway engine-driver
9-83.40 Assistant railway engine-driver
9-83.50 Underground or elevated train driver
9-83.60 Engine-driver, mine and quarry
9-83.90 Other railway engine-drivers and firemen

*8.3.1.2 RAILWAY BRAKERS, SIGNALERS AND SHUNTERS

RAILWAY BRAKERS, SIGNALERS AND SHUNTERS take charge of and safeguard railway freight trains during trips, control the movement of railway traffic by operating signals, switch rolling stock and assemble trains in railway yards, make up trains of cars for hauling in mines and control their movement.

TASKS include -

(a) taking charge of and safeguarding freight train during trip;
(b) controlling flow of railway traffic over section of line by operating signals and switches from control panel or signal box;
(c) switching and coupling rolling stock in railway yards and sidings in accordance with orders about loading, unloading and make-up of trains;
(d) making up trains of cars for hauling by locomotive or cable and directing their movement along haulageways in a mine or quarry;
(e) performing other related tasks;
(f) supervising other workers in this group.
MINOR GROUP *8.3.2
MOTOR VEHICLE DRIVERS

MOTOR VEHICLE DRIVERS drive and tend motor vehicles to transport materials, goods or passengers.

Tasks performed include tending and driving motorcycles, lifting-trucks, taxis, trams and buses, light and heavy vans and trucks to transport passengers, goods and materials. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.3.2.1 Motorcycle drivers and lifting-truck operators
*8.3.2.2 Taxi and light van drivers
*8.3.2.3 Bus and tram drivers
*8.3.2.4 Heavy truck and van drivers

COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 3-59.45 Road passenger transport service inspector; 9-79.20 Lifting-truck operator; 9-79.30 Dumper driver; 9-79.40 Shuttle-car operator, mine; 9-85 Motor vehicle drivers.

*8.3.2.1 MOTORCYCLE DRIVERS AND LIFTING-TRUCK OPERATORS

MOTORCYCLE DRIVERS AND LIFTING-TRUCK OPERATORS drive motorcycle or motorised tricycle equipped to transport goods or passengers, or operate lifting-truck or similar vehicle to transport, lift and stack pallets with goods.

TASKS include -

(a) driving and tending motorcycle or motorised tricycle to transport goods or passengers;
(b) operating lifting-truck and similar equipment to load and unload, transport, lift and stack goods and pallets with goods in goods terminals, harbours, warehouses, factories and other establishments;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:
9-79.20 Lifting-truck operator
9-85.70 Motor-cyclist

*8.3.2.2 TAXI AND LIGHT VAN DRIVERS

TAXI AND LIGHT VAN DRIVERS drive motor cars and light vans to transport passengers or goods.

TASKS include -

(a) driving and tending motor car to transport passengers for private individuals, companies or public institutions;

(b) driving and tending hired passenger cars or taxis;

(c) driving and tending cars, light vans or trucks to deliver goods;

(d) performing other related tasks;

(e) supervising other workers in this group.

ISCO-68 GROUPS included:
9-85.30 Taxi driver
9-85.50 Lorry and van driver, local transport (part)
9-85.90 Other motor-vehicle drivers

*8.3.2.3 BUS AND TRAM DRIVERS

BUS AND TRAM DRIVERS drive buses or street tram cars to transport passengers and goods.

TASKS include -

(a) driving and tending motor bus, trolley bus or motor coach to transport local or long distance passengers, mail and goods;

(b) driving and tending street railway car transporting passengers;

(c) performing other related tasks;

(d) supervising other workers in this group.
ISCO-68 GROUPS included:
3-59.45 Road passenger transport service inspector
9-85.20 Tram driver
9-85.40 Motor bus driver

**8.3.2.4 HEAVY TRUCK AND VAN DRIVERS**

HEAVY TRUCK AND VAN DRIVERS drive heavy motor vehicles to transport goods, liquids and heavy materials over short or long distances.

**TASKS include** -

(a) driving and tending a heavy motor vehicle, such as a truck with or without trailer or a dump-truck, to transport goods, liquids or heavy materials over short or long distances;

(b) performing other related tasks;

(c) supervising other workers in this group.

ISCO-68 GROUPS included:
9-79.30 Dumper driver
9-79.40 Shuttle-car operator, mine
9-85.50 Lorry and van driver, local transport, part
9-85.60 Lorry and van driver, long-distance transport

**MINOR GROUP *8.3.3**

AGRICULTURAL AND MATERIALS-HANDLING MACHINERY OPERATORS

AGRICULTURAL AND MATERIALS-HANDLING MACHINERY OPERATORS operate agricultural and other machinery for handling materials and heavy objects.

Tasks performed include tending and operating tractors and other specialised machinery in agriculture and forestry, or earth-moving, hoisting and related machinery for moving materials and heavy goods. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit groups:

*8.3.3.1 Motorised farm and forestry machinery operators
*8.3.3.2 Earth-moving and related machinery operators
*8.3.3.3 Crane, hoist and related materials-moving equipment operators
COMMENTS

This minor group contains the following ISCO-68 unit group and occupational categories: 6-28.20 Motorised farm equipment operator; 6-31.90 Other loggers, part; 9-73 Crane and hoist operators; 9-74 Earth-moving and related machinery operators, except .70 Concrete-mixer operator and .75 Concrete-mixing-plant operator; 9-79.50 Timber-carrier driver; 9-79.90 Other material handling equipment operators.

*8.3.3.1 MOTORISED FARM AND FORESTRY MACHINERY OPERATORS

MOTORISED FARM AND FORESTRY MACHINERY OPERATORS operate one or more types of motorised, mobile machinery or equipment used in farming or forestry operations.

TASKS include -

(a) driving and tending tractor or self-propelled ploughing, planting, harvesting, baling or other special-purpose farm machinery, or similar tractor-drawn equipment;

(b) driving and tending tractor or self-propelled clearing, planting, harvesting, timber-carrying or other special-purpose forestry machinery;

(c) performing other related tasks;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:

6-28.20 Motorised farm equipment operator
6-31.90 Other loggers, part
9-79.50 Timber-carrier driver

*8.3.3.2 EARTH-MOVING AND RELATED MACHINERY OPERATORS

EARTH-MOVING AND RELATED MACHINERY OPERATORS operate machines to excavate, grade, level and compact earth or similar materials, mix concrete and lay surfaces of asphalt and concrete.

TASKS include -

(a) operating and tending an excavating machine, equipped with moveable shovel, grab-bucket or dragline bucket, to excavate and move earth, rock, sand, gravel or similar material, or to tear down buildings or other structures;

(b) operating and tending machine for digging trenches for sewer, drainage, water, oil, gas or similar pipelines;
(c) operating and tending machine equipped with concave steel blade to move, distribute and level earth, sand, snow and other materials;

(d) operating and tending equipment to remove sand, gravel and mud from bottom of body of water;

(e) operating and tending machine for hammering wooden, concrete or steel piles into ground;

(f) operating and tending power roller to compact and smooth layers of materials in making roads, pavements and similar work;

(g) operating and tending machine which spreads and smooths concrete or bituminous or tar preparations to construct roadways, roads or similar work;

(h) performing other related tasks;

(i) supervising other workers in this group.

ISCO-68 GROUPS included:

9-74.20 Excavating-machine operator
9-74.25 Trench-digging-machine operator
9-74.30 Bulldozer operator
9-74.35 Dredge operator
9-74.40 Pile-driver operator
9-74.45 Road-grader and scraper operator
9-74.50 Road-roller operator
9-74.55 Concrete paving-machine operator
9-74.60 Tar-spreading machine operator
9-74.90 Other earth-moving and related machinery operators

*8.3.3.3 CRANE, HOIST AND RELATED MATERIALS-MOVING EQUIPMENT OPERATORS

CRANE, HOIST AND RELATED MATERIALS-MOVING EQUIPMENT OPERATORS operate cranes and other hoisting equipment.

TASKS include -

(a) operating and tending mobile or stationary cranes with mobile or fixed jib, boom;

(b) controlling, operating and tending equipment for hoisting, lowering or raising men and materials on construction site or in mine;

(c) controlling, operating and tending ski-lifts and similar equipment;

(d) operating and tending machinery used to haul float or barge with goods, passengers and vehicles across short stretches of water;

(e) controlling, operating and tending machinery to open and close bridge for the passage of road and water traffic;
(f) performing other related tasks;
(g) supervising other workers in this group.

**ISCO-68 GROUPS included:**

**9-73** Crane and hoist operators, consisting of -
- 9-73.20 Bridge- or gantry-crane operator
- 9-73.25 Stationary jib-crane operator
- 9-73.27 Tower-crane operator
- 9-73.30 Mobile-crane operator
- 9-73.35 Hoist operator, construction
- 9-73.40 Hoist operator, mine
- 9-73.45 Mine cageman
- 9-73.50 Winch operator
- 9-73.55 Opening bridge operator
- 9-73.90 Other crane and hoist operators

**9-79.90** Other material handling equipment operators

**MINOR GROUP *8.3.4**

**SHIPS' DECK CREWS AND RELATED WORKERS**

SHIPS' DECK CREWS AND RELATED WORKERS carry out deck duties on board ship and similar duties on board other waterborne craft.

Tasks performed include standing lookout watches at sea and in harbour, steering ship according to instructions, and cleaning, painting and maintaining ship and its deck equipment as required. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit group:

**8.3.4.0** Ships' deck crews and related workers

**COMMENTS**

This minor group contains the following ISCO-68 unit group: 9-81 Ships' deck ratings, barge crews and boatmen.

**8.3.4.0 SHIPS' DECK CREWS AND RELATED WORKERS**

SHIPS' DECK CREWS AND RELATED WORKERS carry out deck duties on board ship and similar duties on board other waterborne craft.

**TASKS include** -

(a) standing lookout watches at sea and standing lookout when entering or leaving harbour or other narrow waters;
(b) steering ship according to instructions;
(c) handling mooring lines on board;
(d) maintaining ship's equipment, cargo gear, rigging, life-saving and fire-fighting appliances;
(e) performing deck and hull cleaning, scraping, painting and other maintenance duties as required;
(f) performing other related tasks;
(g) supervising other workers in this group.

ISCO-68 GROUPS included:
9-81 Ships' deck ratings, barge crews and boatmen, consisting of -
   9-81.20 Boatswain
   9-81.30 Able seaman
   9-81.40 Ordinary seaman
   9-81.90 Other ships' deck ratings, barge crews and boatmen
MAJOR GROUP *9
LABOURERS

SUB-MAJOR GROUPS

*9.1 Sales and service labourers
*9.2 Farm and forestry labourers
*9.3 Other labourers

SUB-MAJOR AND MINOR GROUPS

*9.1 Sales and service labourers
  *9.1.1 Street vendors and related labourers
  *9.1.2 Street services labourers
  *9.1.3 Domestic helpers and cleaners
  *9.1.4 Building caretakers and cleaners
  *9.1.5 Messengers, porters and watchers
  *9.1.6 Garbage collectors and related labourers
  *9.1.7 Prostitutes

*9.2 Farm and forestry labourers
  *9.2.1 Farm and forestry labourers

*9.3 Other labourers
  *9.3.1 Mining and construction labourers
  *9.3.2 Manufacturing and transport labourers
SUB-MAJOR, MINOR AND UNIT GROUPS

*9.1 Sales and service labourers

*9.1.1 Street vendors and related labourers

*9.1.1.1 Street food vendors (4-52.20, part + .90, part + 4-90.90, part)

*9.1.1.2 Other street vendors (4-52.20, part + .40 + .90, part + 4-90.90, part)

*9.1.1.3 Canvassers (4-52.30 + .90, part)

*9.1.2 Street services labourers

*9.1.2.0 Street services labourers (5-99.90, part)

*9.1.3 Domestic helpers and cleaners

*9.1.3.0 Domestic helpers and cleaners (5-40.20 + 5-52.20, part)

*9.1.4 Building caretakers and cleaners

*9.1.4.1 Hotels' and other buildings' caretakers (5-51)

*9.1.4.2 Hotels' and other establishments' helpers and cleaners (5-40.50 + 5-52, except .20, part)

*9.1.4.3 Hand launderers and pressers (5-60.10, part + .40 + .50 + .70 + .90, part)

*9.1.5 Messengers, porters and watchers

*9.1.5.1 Messengers, goods and luggage porters and deliverers (3-70.40 + .90, part + 5-99.90, part + 9-71.90, part)

*9.1.5.2 Watchers and doorkeepers (5-40.55 + 5-89.40 + .90, part + 5-99.90, part + 9-89.40)

*9.1.6 Garbage collectors and related labourers

*9.1.6.1 Garbage collectors (9-99, part)

*9.1.6.2 Sweepers and related labourers (9-99, part)

*9.1.7 Prostitutes

*9.1.7.0 Prostitutes (new)
*9.2 Farm and forestry labourers

*9.2.1 Farm and forestry labourers

*9.2.1.1 Farm hands and labourers (6-21.10 + 6-22, part + 6-23, part + 6-24, part + 6-25, part + 6-26, part + 6-27, part + 6-29, part)

*9.2.1.2 Forestry labourers (9-99, part)

*9.3 Other labourers

*9.3.1 Mining and construction labourers

*9.3.1.0 Mining and construction labourers (7-11.90, part + 9-99, part)

*9.3.2 Manufacturing and transport labourers

*9.3.2.1 Hand packers and other manufacturing labourers (7-54.90 + 9-71.50)

*9.3.2.2 Freight handlers (9-71.20 + .30 + .35 + .40 + .45 + .70 + .90, part)

*9.3.2.3 Hand and pedal vehicle drivers (9-89.50 + .90, part)
MAJOR GROUP *9
LABOURERS

LABOURERS perform simple and routine tasks, requiring mainly use of hand-held tools and often some physical effort. With few exceptions, only limited personal initiative or judgement are called for.

Most occupations in this major group require skills at the first skill level, as defined by ISCO. When these skills are acquired by formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 1. In a system of continuous education these courses usually begin at age five, six or seven, and last for about five or six years.

It should be stressed that in the case of most of the occupations in this major group the needed skills may be acquired through appropriate work experience or on-the-job training. For some of these occupations basic numeracy or literacy may be required.

Tasks performed by Labourers usually include selling goods in streets, public places, or from door to door, and soliciting orders; providing various street services; cleaning, washing, sweeping; carrying or delivering luggage, goods, or messages; ushering; watching and guarding; providing escort and related services; digging, shovelling, stacking, lifting, carrying, pushing, pulling, loading, unloading, raking, pitching, sacking; packing by hand; freight handling; pedalling and hand-guiding vehicles to transport passengers and goods. Supervision of other labourers may be included.

Occupations in this major group are classified under the following sub-major groups:

*9.1 Sales and service labourers
*9.2 Farm and forestry labourers
*9.3 Other labourers

SUB-MAJOR GROUP *9.1
SALES AND SERVICE LABOURERS

SALES AND SERVICE LABOURERS mostly perform simple and routine tasks, requiring simple hand-held tools and in some cases certain physical effort. With few exceptions, only limited personal initiative or judgement are called for.

Most occupations in this sub-major group require skills at the first skill level, as defined by ISCO. When these skills are acquired by formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 1. In a system of continuous education these courses usually begin at age five, six or seven, and last for about five or six years.
It should be stressed that in the case of most of the occupations in this sub-major group the needed skills may be acquired through appropriate work experience or on-the-job training. For some of these occupations basic numeracy or literacy may be required.

Tasks performed by Sales and service labourers usually include selling goods in streets, public places, or from door to door, and soliciting orders; providing various street services; cleaning, washing, sweeping; watching and guarding; ushering; carrying or delivering luggage, goods, or messages; escorting and providing related services. Supervision of other labourers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*9.1.1 Street vendors and related labourers
*9.1.2 Street services labourers
*9.1.3 Domestic helpers and cleaners
*9.1.4 Building caretakers and cleaners
*9.1.5 Messengers, porters and watchers
*9.1.6 Garbage collectors and related labourers
*9.1.7 Prostitutes

MINOR GROUP *9.1.1
STREET VENDORS AND RELATED LABOURERS

STREET VENDORS AND RELATED LABOURERS sell food and other goods or solicit orders on streets, public places, or from door to door.

Tasks performed usually consist of selling goods previously bought, although in some cases vendors themselves may prepare foods, drinks or other products that are being sold. Supervision of other labourers in this group may be included.

Occupations in this minor group are classified under the following unit groups:

*9.1.1.1 Street food vendors
*9.1.1.2 Other street vendors
*9.1.1.3 Canvassers

COMMENTS

This minor group contains ISCO-68 unit group 4-52 Street vendors, canvassers and newsvendors; 4-90.90 Other sales workers.
*9.1.1.1 STREET FOOD VENDORS

STREET FOOD VENDORS sell hot or cold foods, vegetables, fruits, ice-cream and various drinks, on streets or in public places such as stations or cinemas.

TASKS include -

(a) buying food and drinks for sale;
(b) preparing, either previously or on the spot, food and drinks for sale;
(c) loading and unloading pushcart, or truck, to bring food and drinks to the desired place on street, or to public places, such as stations or cinemas;
(d) displaying food and drinks and offering price;
(e) receiving payment on the spot;
(f) performing other itinerant selling tasks;
(g) supervising other labourers in this group.

ISCO-68 GROUPS included:

4-52.20 Street vendor, part
4-52.90 Other street vendors, canvassers and newsvendors (part)
4-90.90 Other sales workers, part

*9.1.1.2 OTHER STREET VENDORS

OTHER STREET VENDORS than those selling food and drinks, sell various goods on streets, or in public places such as stations or cinemas.

TASKS include -

(a) buying or making various items for sale;
(b) loading and unloading pushcart, bicycle or truck, to bring goods to the desired place on streets or to other public places such as stations or cinemas;
(c) displaying goods and offering price;
(d) bringing and selling newspapers or similar goods to customers;
(e) receiving payment on the spot;
(f) performing other itinerant selling tasks;
(g) supervising other labourers in this group.
ISCO-68 GROUPS included:
4-52.20 Street vendors, part
4-52.40 Newsvendors
4-52.90 Other street vendors, canvassers and newsvendors (part)
4-90.90 Other sales workers, part

*9.1.1.3 CANVASSERS

CANVASSERS solicit business for an establishment, particularly from households, by going from door to door.

TASKS include -
(a) going from door to door, giving details of various goods or services and of the firm's terms of sale;
(b) demonstrating goods by pointing to their main characteristics or showing how they work;
(c) taking notes of orders received and forwarding them to the firm;
(d) distributing advertising literature or leaving samples;
(e) collecting payment of instalments, if needed;
(f) performing other related tasks;
(g) supervising other labourers in this group.

ISCO-68 GROUPS included:
4-52.30 Canvasser
4-52.90 Other street vendors, canvassers and newsvendors (part)

MINOR GROUP *9.1.2
STREET SERVICES LABOURERS

STREET SERVICES LABOURERS provide various on-the-spot services such as cleaning shoes, washing car windows, or running errands.

Tasks performed usually consist of a very quick on-the-spot service, for which payment is made immediately. Supervision of other labourers in this group may be included.

Occupations in this minor group are classified under the following unit group:

*9.1.2.0 Street services labourers
COMMENTS

This minor group contains ISCO-68 occupational category 5-99.90 Other service workers not elsewhere classified, part.

*9.1.2.0 STREET SERVICES LABOURERS

STREET SERVICES LABOURERS clean shoes, wash car windows, run errands and provide other on-the-spot services of a similar kind.

TASKS include -

(a) obtaining materials necessary to perform cleaning services;
(b) cleaning and polishing shoes;
(c) cleaning and polishing car windows and similar items;
(d) running errands for various persons;
(e) receiving payment on the spot;
(f) performing other related tasks;
(g) supervising other labourers in this group.

ISCO-68 GROUPS included:

5-99.90 Other service workers not elsewhere classified, part

MINOR GROUP *9.1.3
DOMESTIC HELPERS AND CLEANERS

DOMESTIC HELPERS AND CLEANERS perform various tasks in private households in order to ensure clean and orderly interiors, purchase of household supplies, and prepare and serve meals.

Tasks performed usually include cleaning, washing, ironing, preparing food and serving meals and refreshments. Supervision of other labourers in this group may be included.

Occupations in this minor group are classified under the following unit group:

*9.1.3.0 Domestic helpers and cleaners

COMMENTS

This minor group contains the following ISCO-68 occupational categories: 5-40.20 Housemaid; 5-52.20 Charworker, part.
*9.1.3.0 DOMESTIC HELPERS AND CLEANERS

DOMESTIC HELPERS AND CLEANERS clean, wash, prepare food, serve meals and perform additional domestic duties.

TASKS include -

(a) sweeping, washing, cleaning and polishing floors, furniture, windows;
(b) washing, ironing and mending linen and other textiles;
(c) washing dishes;
(d) preparing, cooking and serving meals and refreshments;
(e) purchasing food and various household supplies;
(f) performing other domestic duties;
(g) supervising other labourers in this group.

ISCO-68 GROUPS included:
5-40.20 Housemaid
5-52.20 Charworker, part

MINOR GROUP *9.1.4
BUILDING CARETAKERS AND CLEANERS

BUILDING CARETAKERS AND CLEANERS take care of apartment houses, hotels, offices, churches and other buildings and maintain them in a clean and orderly condition, or provide hand-laundering services in various establishments.

Tasks performed usually consist of supervising and participating in cleaning, repair and maintenance of buildings; regulating conduct of tenants and other users of the buildings in such matters as noise and misuse of property; cleaning rooms and other premises in hotels, offices and similar establishments; laundering and pressing linen and other textiles by hand. Supervision of other labourers may be included.

Occupations in this minor group are classified under the following unit groups:

*9.1.4.1 Hotels' and other buildings' caretakers
*9.1.4.2 Hotels' and other establishments' helpers and cleaners
*9.1.4.3 Hand launderers and pressers
COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 5-40.50 Chambermaid; 5-51 Building caretakers; 5-52 Charworkers, cleaners and related workers, except .20, Charworker, part; 5-60.10 -Launderer, general (part); 5-60.40 Dry-cleaner, hand; 5-60.50 Spotter, dry-cleaner; 5-60.70 Presser, hand; 5-60.90 Other launderers, dry-cleaners and pressers (part).

*9.1.4.1 HOTELS' AND OTHER BUILDINGS' CARETAKERS

HOTELS' AND OTHER BUILDINGS' CARETAKERS take care of apartment houses, hotels, offices, churches and other buildings and maintain them in a clean and orderly condition.

TASKS include -

(a) supervising or participating in cleaning, simple repairs and maintenance of buildings, including existing equipment;

(b) tending furnaces and boilers to ensure provision of heat and hot water;

(c) regulating conduct of tenants and visitors in such matters as noise and misuse of property;

(d) performing other related tasks;

(e) supervising other labourers in this group.

ISCO-68 GROUPS included:

5-51 Building caretakers, consisting of -

5-51.20 Concierge, apartment house
5-51.30 Janitor
5-51.40 Verger
5-51.90 Other building caretakers

*9.1.4.2 HOTELS' AND OTHER ESTABLISHMENTS' HELPERS AND CLEANERS

HOTELS' AND OTHER ESTABLISHMENTS' HELPERS AND CLEANERS perform various cleaning tasks in order to keep interiors and other premises of these establishments clean and tidy.

TASKS include -

(a) sweeping, washing, cleaning and polishing floors and furniture in buildings, coaches, buses, trams and aircraft;

(b) making beds, cleaning bathrooms, supplying towels, soap and related items;

(c) cleaning kitchens and helping with kitchen work in general, including dishwashing;
(d) cleaning windows;
(e) sweeping chimneys;
(f) performing other related tasks;
(g) supervising other labourers in this group.

**ISCO-68 GROUPS included:**

5-40.50 Chambermaid
5-52.20 Charworker, part
5-52.30 Window cleaner
5-52.40 Chimney sweep
5-52.90 Other charworkers, cleaners and related workers

**9.1.4.3 HAND-LAUNDERERS AND PRESSERS**

HAND-LAUNDERERS AND PRESSERS launder, press or dry-clean linen and other textiles by hand.

**TASKS include -**

(a) laundering and pressing linen, clothing, fabrics and similar articles by hand in a laundry or in other establishments;
(b) cleaning, by hand and with chemical solution, clothing, fabrics, leather goods and similar articles, in a dry-cleaning place or other establishments;
(c) performing other related tasks;
(d) supervising other labourers in this group.

**ISCO-68 GROUPS included:**

5-60.10 Launderer, general (part)
5-60.40 Dry-cleaner, hand
5-60.50 Spotter, dry-cleaner
5-60.70 Presser, hand
5-60.90 Other Launderers, dry-cleaners and pressers (part)

**MINOR GROUP *9.1.5**

MESSENGERS, PORTERS AND WATCHERS

MESSENGERS, PORTERS AND WATCHERS carry and deliver messages, various goods or luggage; attend, watch and guard either persons or private and public properties against hazards, fire, theft and illegal entry.
Tasks performed usually include delivering messages, packages and other items within an establishment, between establishments, to households or elsewhere; carrying luggage especially at hotels, stations or airports; doorkeeping, watching and guarding persons or properties. Supervision of other labourers may be included.

Occupations in this minor group are classified under the following unit groups:

*9.1.5.1 Messengers, goods and luggage porters and deliverers

*9.1.5.2 Watchers and doorkeepers

COMMENTS

This minor group contains the following ISCO-68 occupational categories: 3-70.40 Messenger; 3-70.90 Other mail distribution clerks, part; 5-40.55 Hotel concierge; 5-89.40 Watchman; 5-89.90 Other protective service workers, part; 5-99.90 Other service workers not elsewhere classified, part; 9-71.90 Other dockers and freight handlers, part; 9-89.40 Lighthouse man.

*9.1.5.1 MESSENGERS, GOODS AND LUGGAGE PORTERS AND DELIVERERS

MESSENGERS, GOODS AND LUGGAGE PORTERS AND DELIVERERS carry and deliver messages, packages, luggage and other items within an establishment, between establishments, to households and elsewhere.

TASKS include -

(a) delivering messages, packages and other items to offices within an establishment or elsewhere;

(b) performing tasks of a post-runner;

(c) delivering various goods from enterprises to households and elsewhere;

(d) carrying and delivering luggage at hotels, stations, airports and elsewhere;

(e) performing other related tasks;

(f) supervising other labourers in this group.

ISCO-68 GROUPS included:

3-70.40 Messenger
3-70.90 Other mail distribution clerks, part
5-99.90 Other service workers not elsewhere classified, part
9-71.90 Other dockers and freight handlers, part
*9.1.5.2 WATCHERS AND DOORKEEPERS

WATCHERS AND DOORKEEPERS watch and guard persons or property against hazards, fire, theft and illegal entry.

TASKS include -

(a) guarding apartment and other houses, industrial plants, warehouse or other property against fire, theft and illegal entry;

(b) doorkeeping in hotels and helping guests, especially on their arrival and departure, with luggage, keys, information about directions, etc.;

(c) taking charge of cloakrooms or lavatories in public places;

(d) ushering people into courtrooms, sporting places and similar establishments;

(e) performing duties of a bodyguard;

(f) patrolling beaches and swimming pools to prevent accidents and to rescue bathers from drowning;

(g) operating warning light and signal apparatus of lighthouses;

(h) performing other related tasks;

(i) supervising other labourers in this group.

ISCO-68 GROUPS included:

5-40.55 Hotel concierge
5-89.40 Watchman
5-89.90 Other protective service workers, part
5-99.90 Other service workers not elsewhere classified, part
9-89.40 Lighthouse man

MINOR GROUP *9.1.6
GARBAGE COLLECTORS AND RELATED LABOURERS

GARBAGE COLLECTORS AND RELATED LABOURERS collect garbage from buildings, yards, streets and other public places, keep streets, public lavatories and other public places clean or perform odd jobs for private households or establishments. They use simple hand-tools, such as brooms, picks, shovels or wheelbarrows and other containers.
Tasks performed usually consist of collecting, loading and unloading garbage; sweeping streets; sweeping and cleaning lavatories and similar public places; unloading coal or wood and putting it into the cellars of households or establishments; chopping wood; carrying water; beating dust out of carpets, and performing other similar tasks. Supervision of other labourers may be included.

Occupations in this minor group are classified under the following unit groups:

*9.1.6.1 Garbage collectors
*9.1.6.2 Sweepers and related labourers

**COMMENTS**

This minor group contains ISCO-68 occupational category 9-99 Labourers not elsewhere classified, part.

*9.1.6.1 GARBAGE COLLECTORS

GARBAGE COLLECTORS collect and remove garbage from buildings, yards, streets and other public places.

**TASKS include** -

(a) collecting garbage by putting it into bigger containers;
(b) collecting garbage and loading it a vehicle;
(c) performing other related tasks;
(d) supervising other labourers in this group.

**ISCO-68 GROUPS included:**

9-99 Labourers not elsewhere classified, part, consisting of -

9-99.10 Labourer, part

*9.1.6.2 SWEEPERS AND RELATED LABOURERS

SWEEPERS AND RELATED LABOURERS sweep and clean streets and other public places or perform odd jobs.

**TASKS include** -

(a) sweeping streets, parks, airports, stations and similar public places;
(b) cleaning public toilets;
(c) unloading coal or wood and putting it into cellars of private households or establishments;
(d) chopping wood and arranging it in piles;
(e) carrying water;
(f) shovelling snow;
(g) beating dust out of carpets by using a special hand-stick;
(h) performing other related tasks;
(i) supervising other labourers in this group.

ISCO-68 GROUPS included:
9-99 Labourers not elsewhere classified, part, consisting of -
  9-99.10 Labourer, part

MINOR GROUP *9.1.7
PROSTITUTES

PROSTITUTES provide sexual services to clients met mostly on the streets, in night clubs and other similar establishments, or contacted by telephone.

Tasks performed usually include looking for clients and directly offering sexual services; performing some other services with an understanding that the sexual services will ultimately be provided.

Occupations in this minor group are classified under the following unit group:

*9.1.7.0 Prostitutes

COMMENTS

Occupations in this minor group are not described in ISCO-68. They would have been classified under 5-99.90 Other service workers not elsewhere classified.

*9.1.7.0 PROSTITUTES

PROSTITUTES look for clients and provide sexual services.

TASKS include:
(a) standing in the streets, or other public places, trying to attract attention of passers-by and offering to provide sexual services;
(b) keeping clients company, or performing other services but with the tacit understanding that sexual services will ultimately be provided;
(c) providing these services;
(d) receiving payment on the spot;
(e) performing other related tasks;
(f) supervising other labourers in this group.

ISCO-68 GROUPS included:

Occupations in this unit group are not described in ISCO-68. They would have been classified under 5.29.90 Other service workers not elsewhere classified.

SUB-MAJOR GROUP *9.2
FARM AND FORESTRY LABOURERS

FARM AND FORESTRY LABOURERS mostly perform simple and routine farming and forestry tasks, requiring simple hand-held tools and very often considerable physical effort, but not needing much personal initiative or judgement.

Most occupations in this sub-major group require skills at the first skill level, as defined by ISCO. When these skills are acquired by formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 1. In a system of continuous education these courses usually begin at age five, six or seven, and last for about five or six years.

It should be stressed that in the case of most of the occupations in this sub-major group the needed skills may be acquired through appropriate work experience or on-the-job training. In some cases experience and training obtained through these jobs may lead workers to obtain jobs classified under major group *6 Farm, fishery and related workers.

Tasks performed by Farm and forestry labourers usually include digging, shovelling, loading, unloading, pushing, pulling, stacking, raking, pitching; spreading manure or fertilizers, watering, weeding, picking fruits, vegetables and various plants; feeding animals; cleaning animal quarters and farm grounds; clearing grounds and forest undergrowth. Supervision of other labourers may be included.

Occupations in this sub-major group are classified under the following minor group:

*9.2.1 Farm and forestry labourers
MINOR GROUP *9.2.1
FARM AND FORESTRY LABOURERS

FARM AND FORESTRY LABOURERS perform simple and routine farming and forestry tasks requiring physical effort and use of simple hand-held tools such as pick, shovel or wheelbarrow.

Tasks performed usually include digging, shovelling, loading, unloading, pushing, pulling, stacking, raking, pitching; spreading manure, watering, weeding, picking fruits, vegetables and various plants; feeding animals; cleaning animal quarters and various farm grounds; clearing grounds and forest undergrowth. Supervision of other labourers may be included.

Occupations in this minor group are classified under the following unit groups:

*9.2.1.1 Farm hands and labourers
*9.2.1.2 Forestry labourers

COMMENTS

This minor group contains the following ISCO-68 unit groups and occupational categories: 6-21.10 Farm helper, general; 6-22 Field crop and vegetable farm workers, part; 6-23 Orchard, vineyard and related tree and shrub crop workers (part); 6-24 Livestock workers, part; 6-25 Dairy farm workers, part; 6-26 Poultry farm workers, part; 6-27 Nursery workers and gardeners, part; 6-29 Agricultural and animal husbandry workers not elsewhere classified, part; 9-99 Labourers not elsewhere classified, part.

*9.2.1.1 FARM HANDS AND LABOURERS

FARM HANDS AND LABOURERS assist generally on the farm, performing a variety of simple farming tasks.

TASKS include -

(a) digging and shovelling to clear ditches or for other purposes;
(b) loading, unloading, pushing, pulling various crops and other materials;
(c) raking, pitching and stacking hay;
(d) feeding, watering, and cleaning animals and keeping their quarters clean;
(e) weeding and watering plants and trees;
(f) picking fruits, vegetables and various plants;
(g) performing various tasks in connection with planting, harvesting and general work of farm;
(h) supervising other labourers in this group.
ISCO-68 GROUPS included:

6-21.10 Farm helper, general

6-22 Field crop and vegetable farm workers, part, consisting of -
  6-22.10 Field crop farm worker, general (part)
  6-22.20 Vegetable farm worker, part
  6-22.30 Wheat farm worker, part
  6-22.40 Cotton farm worker, part
  6-22.50 Rice farm worker, part
  6-22.60 Sugar-cane farm worker, part
  6-22.90 Other field crop and vegetable farm workers, part

6-22 Field crop and vegetable farm workers, part, consisting of -
  6-22.10 Field crop farm worker, general (part)
  6-22.20 Vegetable farm worker, part
  6-22.30 Wheat farm worker, part
  6-22.40 Cotton farm worker, part
  6-22.50 Rice farm worker, part
  6-22.60 Sugar-cane farm worker, part
  6-22.90 Other field crop and vegetable farm workers, part

6-23 Orchard, vineyard and related tree and shrub crop workers (part), consisting of -
  6-23.20 Orchard worker, part
  6-23.30 Vineyard worker, part
  6-23.40 Tea plantation worker, part
  6-23.50 Rubber plantation worker, part
  6-23.90 Other orchard, vineyard and related tree and shrub crop workers (part)

6-24 Livestock workers, part, consisting of -
  6-24.10 Livestock worker, general (part)
  6-24.20 Beef cattle farm worker, part
  6-24.30 Sheep farm worker, part
  6-24.40 Pig farm worker, part
  6-24.50 Fur-bearing animal farm worker, part
  6-24.90 Other livestock workers, part

6-25 Dairy farm workers, part, consisting of -
  6-25.10 Dairy farm worker, general (part)
  6-25.20 Milker, machine (part)
  6-25.90 Other dairy farm workers, part

6-26 Poultry farm workers, part, consisting of -
  6-26.10 Poultry farm worker, general (part)
  6-26.20 Poultry hatchery worker, part
  6-26.90 Other poultry farm workers, part

6-27 Nursery workers and gardeners, part, consisting of -
  6-27.20 Market garden worker, part
  6-27.30 Nursery worker, part
  6-27.40 Gardener, part
  6-27.90 Other nursery workers and gardeners, part
6-29 Agricultural and animal husbandry workers not elsewhere classified, part, consisting of -

6-29.20 Apiary worker, part
6-29.30 Sericulture worker, part
6-29.40 Tree tapper, except rubber (part)
6-29.50 Irrigator, part
6-29.60 Groundsman, part
6-29.90 Other agricultural and animal husbandry workers, part

*9.2.1.2 FORESTRY LABOURERS

FORESTRY LABOURERS assist in the general work of natural or plantation forests, performing a variety of simple forestry tasks.

TASKS include -

(a) digging holes for tree planting;
(b) pulling, pushing, and piling cut trees and logs;
(c) clearing undergrowth in forest stands;
(d) performing other related tasks;
(e) supervising other labourers in this group.

ISCO-68 GROUPS included:

9-99 Labourers not elsewhere classified, part, consisting of -

9-99.10 Labourer, part

SUB-MAJOR GROUP *9.3
OTHER LABOURERS

OTHER LABOURERS mostly perform simple and routine tasks, in connection with mining, construction, manufacturing and transport, requiring simple hand-held tools and very often considerable physical effort, but not needing much personal initiative or judgement.

Most occupations in this sub-major group require skills at the first skill level, as defined by ISCO. When these skills are acquired by formal education or vocational training, they normally demand courses classified by ISCED as Educational Category 1. In a system of continuous education these courses usually begin at age five, six or seven, and last for about five or six years.
It should be stressed that in the case of most of the occupations in this sub-major group the needed skills may be acquired through appropriate work experience or on-the-job training. In some cases experience and training obtained through these jobs may lead workers to obtain jobs classified under major groups *7 Craft and related workers or *8 Plant and machine operators and assemblers.

Tasks performed by Other labourers usually include digging, shovelling, lifting, carrying, pushing, pulling, loading, unloading; packing by hand; freight handling; pedalling and hand-guiding vehicles to transport passengers and goods. Supervision of other labourers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*9.3.1 Mining and construction labourers
*9.3.2 Manufacturing and transport labourers

MINOR GROUP *9.3.1
MINING AND CONSTRUCTION LABOURERS

MINING AND CONSTRUCTION LABOURERS perform simple and routine tasks requiring physical effort and the use of simple hand-tools such as pick, shovel or wheelbarrow.

Tasks performed usually consist of digging, shovelling, lifting, moving, carrying, clearing, pushing, pulling, loading and unloading. Supervision of other labourers may be included.

Occupations in this minor group are classified under the following unit group:

*9.3.1.0 Mining and construction labourers

COMMENTS

This minor group contains the following ISCO-68 occupational categories: 7-11.90 Other miners and quarrymen, part; 9-99 Labourers not elsewhere classified, part.

*9.3.1.0 MINING AND CONSTRUCTION LABOURERS

MINING AND CONSTRUCTION LABOURERS perform simple and routine tasks in connection with mining and construction work, usually of roads and buildings.

TASKS include -

(a) removing wood and steel supports from disused workings in mines and quarries;
(b) extracting chalk, clay, gravel or sand from open pits;

(c) digging and filling holes and trenches, spreading gravel and other materials and performing other tasks related to building or maintenance of railway tracks and roads;

(d) cleaning used building bricks and doing other simple work on demolition sites;

(e) carrying surveyors' instruments and clearing obstructions as instructed;

(f) carrying bricks and mortar to bricklayer on construction site;

(g) performing other related tasks;

(h) supervising other workers in this group.

ISCO-68 GROUPS included:

7-11.90 Other miners and quarrymen, part

9-99 Labourers not elsewhere classified, part, consisting of -

9-99.10 Labourer, part

MINOR GROUP *9.3.2
MANUFACTURING AND TRANSPORT LABOURERS

MANUFACTURING AND TRANSPORT LABOURERS perform simple and routine tasks requiring mainly physical effort and use of simple hand-held tools.

Tasks performed usually consist of packing by hand; lifting, carrying, pushing, pulling, loading, unloading and washing raw materials or products in various manufacturing industries or repair and maintenance establishments; freight handling; pedalling and hand-guiding vehicles to transport passengers and goods. Supervision of other labourers may be included.

Occupations in this minor group are classified under the following unit groups:

*9.3.2.1 Hand packers and other manufacturing labourers

*9.3.2.2 Freight handlers

*9.3.2.3 Hand and pedal vehicle drivers
COMMENTS

This minor group contains the following ISCO-68 occupational categories:
7-54.90 Other weavers and related workers; 9-71.20 Docker; 9-71.30 Railway and road vehicle loader; 9-71.35 Aircraft loader; 9-71.40 Boat loader, liquids and gases; 9-71.45 Warehouse porter; 9-71.50 Hand packer; 9-71.70 Bale-press operator; 9-71.90 Other dockers and freight handlers, part; 9-89.50 Pedal-vehicle driver; 9-89.90 Other transport equipment operators (rickshaws, handcarts), part.

*9.3.2.1 HAND PACKERS AND OTHER MANUFACTURING LABOURERS

HAND PACKERS AND OTHER MANUFACTURING LABOURERS pack materials or products by hand and perform a variety of simple routine tasks connected with manufacturing.

TASKS include -

(a) packing materials or products by hand in boxes, bags, cartons, crates, kegs and other containers for shipment or storage;

(b) moving, lifting, carrying, loading, unloading and washing raw materials or products, in various manufacturing industries or repair and maintenance establishments;

(c) performing other tasks related to manufacturing;

(d) supervising other workers in this group.

ISCO-68 GROUPS included:
7-54.90 Other weavers and related workers
9-71.50 Hand packer

*9.3.2.2 FREIGHT HANDLERS

FREIGHT HANDLERS perform freight handling tasks such as packing, carrying, loading and unloading furniture and other household items; loading and unloading ship and aircraft cargoes and other freight, or carrying and stacking goods in various warehouses.

TASKS include -

(a) packing, lifting, loading and unloading furniture and other household items into vans or from vans into living quarters;

(b) loading and unloading ships’ cargoes;

(c) loading and unloading aircraft cargoes;
(d) loading and unloading goods carried in trucks, wagons and other vehicles;

(e) loading and unloading grain, coal, sand and other similar goods by using conveyor-belts, pipes etc.;

(f) connecting hoses between pipes of main shore installation and tanks of barges, tankers and other ships to load and unload petroleum, liquefied gases and other liquids;

(g) carrying and stacking goods in warehouses, markets or similar establishments;

(h) performing other related tasks;

(i) supervising other labourers in this group.

ISCO-68 GROUPS included:

9-71.20 Docker
9-71.30 Railway and road vehicle loader
9-71.35 Aircraft loader
9-71.40 Boat loader, liquids and gases
9-71.45 Warehouse porter
9-71.70 Bale-press operator
9-71.90 Other dockers and freight handlers, part

*9.3.2.3 HAND AND PEDAL VEHICLE DRIVERS

HAND AND PEDAL VEHICLE DRIVERS propel cycles and similar vehicles to transport passengers or goods.

TASKS include -

(a) loading or unloading goods, or assisting passengers in getting on or off vehicle;

(b) moving vehicle in the desired direction;

(c) making minor repairs and keeping vehicle in good order;

(d) collecting fares or charges;

(e) performing other related tasks;

(f) supervising other labourers in this group.

ISCO-68 GROUPS included:

9-89.50 Pedal-vehicle driver
9-89.90 Other transport equipment operators, part
MAJOR 0
MILITARY OPERATIONS PERSONNEL

SUB-MAJOR GROUP

*0.1 Military operations personnel

SUB-MAJOR AND MINOR GROUPS

*0.1 Military operations personnel
  *0.1.1 Military operations managers
  *0.1.2 Military weapons operators

SUB-MAJOR, MINOR AND UNIT GROUPS

*0.1 Military operations personnel
  *0.1.1 Military operations managers
    *0.1.1.0 Military operations managers (new)
  *0.1.2 Military weapons operators
    *0.1.2.0 Military weapons operators (new)
MAJOR GROUP *0
MILITARY OPERATIONS PERSONNEL

MILITARY OPERATIONS PERSONNEL carry out military tasks and duties undertaken as collective defence measures, preparation and training to deter military aggression, and in the surveillance and protection of national territory, air space and coastal waters; and provide aid to civilian authorities as requested in situations such as civil disorder, natural disasters and other emergencies.

Tasks performed by Military operations personnel include planning, directing and co-ordinating military operations and training exercises; planning, directing and supervising operations of military organisational unit in consultation with higher authority; planning, directing and implementing a military operational programme for a group or area; operating and training in the use of military weapons; performing ceremonial and public duties. Supervision of other workers may be included.

Occupations in this major group are classified under the following sub-major and minor groups:

*0.1 Military operations personnel
   *0.1.1 Military operations managers
   *0.1.2 Military weapons operators

COMMENTS

Included in this major group are regular members of the army, navy, air force and other military services, as well as temporary members enrolled for training or other service for a limited period. Regular or temporary members of the armed forces whose specific tasks and duties are not known should also be included.

Excluded from this major group are regular or temporary members of the armed forces, and other persons employed by the defense authorities, known to have tasks and duties closely corresponding to those of civilian occupations. Police, customs inspectors and members of other armed civilian services, members of military reserves not currently on full-time active service and persons who have been withdrawn from civilian life for a period of military training or exercise of less than three months are also excluded from this major group.

SUB-MAJOR GROUP *0.1
MILITARY OPERATIONS PERSONNEL

MILITARY OPERATIONS PERSONNEL carry out military tasks and duties undertaken as collective defence measures, preparation and training to deter military aggression, and in the surveillance and protection of national territory, air space and coastal waters; and provide aid to civilian authorities as requested in situations such as civil disorder, natural disasters and other emergencies.
Tasks performed by Military operations personnel include planning, directing and co-ordinating military operations and training exercises; planning, directing and supervising operations of military organisational unit in consultation with higher authority; planning, directing and implementing a military operational programme for a group or area; operating and training in the use of military weapons; performing ceremonial and public duties. Supervision of other workers may be included.

Occupations in this sub-major group are classified under the following minor groups:

*0.1.1 Military operations managers

*0.1.2 Military weapons operators

COMMENTS

Included in this sub-major group are regular members of the army, navy, air force and other military services, as well as temporary members enrolled for training or other service for a limited period. Regular or temporary members of the armed forces whose specific tasks and duties are not known should also be included.

Excluded from this sub-major group are regular or temporary members of the armed forces, and other persons employed by the defense authorities, known to have tasks and duties closely corresponding to those of civilian occupations. Police, customs inspectors and members of other armed civilian services, members of military reserves not currently on full-time active service and persons who have been withdrawn from civilian life for a period of military training or exercise of less than three months are also excluded from this sub-major group.

MINOR GROUP *0.1.1
MILITARY OPERATIONS MANAGERS

MILITARY OPERATIONS MANAGERS plan, direct and administer military operations undertaken as collective defence measures, preparation and training to deter military aggression, and in the surveillance and protection of national territory, air space and coastal waters; and plan, direct and administer aid to civilian authorities as requested in situations such as civil disorder, natural disasters and other emergencies.

Tasks performed include planning, directing and co-ordinating military operations and training exercises; planning, directing and supervising operations of military organisational unit in consultation with higher authority; planning, directing and implementing a military operational programme for a group or area; performing ceremonial and public duties. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit group:

*0.1.1.0 Military operations managers
COMMENTS

This minor group contains part of ISCO-68 major group Members of the armed forces.

Occupations in this minor group have tasks and duties at roughly similar levels of authority and skills as those occupations classified under sub-major group *1.2 Company directors and managers or major groups *2 Professionals or *3 Technicians and associate professionals. In many countries they would be ranked as officers.

*0.1.1.1 Military operations managers

MILITARY OPERATIONS MANAGERS plan, direct and administer military operations undertaken as collective defence measures, preparation and training to deter military aggression, and in the surveillance and protection of national territory, air space and coastal waters; and plan, direct and administer aid to civilian authorities as requested in situations such as civil disorder, natural disasters and other emergencies.

TASKS include -

(a) advising and providing information on military aspects of defence policy;
(b) planning, directing and co-ordinating military operations and training exercises;
(c) planning, directing and supervising operations of military organisational unit in consultation with higher authority;
(d) planning, directing and implementing a military operational programme for a group or area;
(e) directing and monitoring the activities of junior officers and other staff and maintaining discipline;
(f) directing and monitoring record-keeping systems and the preparation of reports;
(g) preparing estimates and budgets and controlling expenditures and stores use;
(h) performing ceremonial and public duties;
(i) performing other related tasks.

ISCO-68 GROUPS included:

Occupations in this unit group would have been classified under Members of the armed forces.
MINOR GROUP *0.1.2
MILITARY WEAPONS OPERATORS

MILITARY WEAPONS OPERATORS operate military weapons and other military equipment in operations undertaken as collective defence measures, in preparation and training to deter military aggression, and in the surveillance and protection of national territory, air space and coastal waters; and participate in operations to provide aid to civilian authorities as requested in situations such as civil disorder, natural disasters and other emergencies.

Tasks performed include operating military weapons and other military equipment; standing watch and guard; performing ceremonial and public duties. Supervision of other workers may be included.

Occupations in this minor group are classified under the following unit group:

*0.1.2.0 Military weapons operators

COMMENTS

This minor group contains part of ISCO-68 major group Members of the armed forces.

Occupations in this minor group include tasks and duties at roughly similar levels of authority and skills as those occupations classified under major groups *7 Craft and related workers, *8 Plant and machine operators and assemblers and *9 Labourers. In many countries they would be given the rank of non-commissioned officer or private.

*0.1.2.0 Military weapons operators

MILITARY WEAPONS OPERATORS operate military weapons and other military equipment in operations undertaken as collective defence measures, in preparation and training to deter military aggression, and in the surveillance and protection of national territory, air space and coastal waters; and participate in operations to provide aid to civilian authorities as requested in situations such as civil disorder, natural disasters and other emergencies.

TASKS include -

(a) tending, operating and monitoring military weapons and other military equipment;

(b) standing watch and guarding military quarters and other buildings and installations:

(c) patrolling areas of possible military activities;

(d) training and exercising in the use of military weapons and other military equipment;

(e) training and exercising in military operations;
(f) participating in operations to help civil authorities as requested in situations such as civil disorder, natural disasters and other emergencies;

(g) performing ceremonial and public duties;

(h) performing other related tasks;

(i) supervising other workers in this group and maintaining discipline.

ISCO-68 GROUPS included:
Occupations in this unit group would have been classified under Members of the armed forces.