

U-Multirank 2019

Specification of programmes and degrees included

This text specifies the range of degree programmes that can be included in U-Multirank subject rankings and defines and delineates the subjects of the 2019 edition. It refers close as possible to the [UNESCO ISCED 2013](#) classification of fields of education and training.

I. Degree Programmes

U-Multirank includes all programmes that are equivalent to [ISCED Classification](#) levels 6 and 7:

- Bachelor and equivalent (ISCED 6)
- Master and equivalent (ISCED 7)

Hence included as equivalents are in particular:

- First degrees equivalent to a Bachelor (up to 4 years duration)
- Undivided long first degrees equivalent to a Master (5 + years)

Not included are:

- Short degrees equivalent to ISCED 5 (e.g. Foundation degrees or associate degrees)
- Graduate certificates/diplomas
- PhD programmes (ISCED 8)

For reasons of comparability we do not include:

- Programmes of teacher education
- Genuine distance learning programmes

II. Specification of Subjects

As far as possible our definitions and delineations of the fields refer to the UNESCO *ISCED-F 2013 Classification of Fields of Education and Training*. For your information the overview classification of fields is attached as Annex I. The full document can be found [here](#).

In 2019 the sciences and engineering subjects will be updated. In addition, a number of new subjects will be added. The 2019 data collection includes:

- Mathematics (update)
- Physics (update)
- Chemistry (update)
- Biology (update)
- Computer science and engineering (update)
- Mechanical engineering (update)
- Electrical engineering (update)
- Chemical engineering (update)
- Civil engineering (update)
- Production / industrial engineering (update)
- Materials engineering (new)
- Environmental engineering (new)

General remark on interdisciplinary programmes

Inter-disciplinary or broad programmes and qualifications are those which combine several fields of education and training where no single field dominates. Many inter-disciplinary programmes and qualifications cover several narrow or even broad fields (in terms of ISCED-F 2013).

In our definitions, the *'leading subject rule'* is used to determine the field to which the inter-disciplinary study programme should be assigned.

To give an example: If a programme consists of 60% history, 20% sociology and 20% philosophy, it should be classified as history as this is the dominant subject.

If there is no leading subject (e.g. 50% chemistry and 50% environmental science), the decision to include the programmes into one of the six U-Multirank 2016 fields is left to the institution.

In the data collection for U-Multirank you can mark if fields are interdisciplinary.

1. Mathematics

Our definition of the field corresponds to the narrow field "054 Mathematics and statistics" of ISCED-F 2013

Included both general mathematics and applied and specialised mathematics, including

- Algebra
- Geometry
- Numerical analysis
- Operational research
- *Statistics*: both general statistics and applied and specialised statistics
- For specialised mathematics (e.g. technical mathematics) and statistics (e.g. Bio-statistics) mathematics/statistics should dominate over other fields involved, which means more than 50% of classes/courses should be in mathematics/statistics.

2. Physics

Our definition of the field corresponds to detailed field “0533 Physics” of ISCED-F 2013 classification. Included are both general physics programmes and specialised programmes as:

- Astronomy
- Astrophysics
- Chemical physics
- Medical physics
- Optics
- Space science

Not to be included:

- Opticians’ practice: belongs to the detailed field 0914 ‘Medical diagnostic and treatment technology’

3. Chemistry

Our definition of the field corresponds to detailed field “0531 Chemistry” of ISCED-F 2013 classification

Included are both general Chemistry programmes and specialised programmes such as:

- Inorganic chemistry
- Organic chemistry
- Physical chemistry

Not to be included are:

- Chemical engineering programmes (which are classified as detailed field 0711 Chemical engineering and processes in ISCED_F 2013); see number xx.
- Biochemistry: is included in Biology (see 4)

4. Biology

Our definition of biology corresponds to the narrow field “051 Biological and related sciences” of the ISCED_F 2013 classification

Included are both general biology programmes and specialised programmes, such as

- Botany
- Cell biology
- Entomology
- Genetics
- Mycology
- Neurobiology
- Zoology
- Biochemistry programmes (detailed field 0512 in ISCED_F 2013)

Not to be included are:

- Bio-engineering programmes
- Programmes classified as narrow field “052 Environment”
- Medical programmes with a specialisation in biomedicine (they were included in the 2018 medicine ranking)

5. Computer Science and Engineering

Our definition of computer science and engineering corresponds to the narrow field “061 Information and Communication Technologies (ICTs)” of the ISCED 2013 classification.

Included are all detailed fields listed there as well as computer science programmes (incl. applied programmes).

To be included:

- Computer Science
- Applied computer science
- Informatics
- Software / software engineering
- Hardware/ hardware engineering (detailed field 0714 ‘Electronics and automation’)
- Computer systems

Not to be included:

- Programmes included under electrical engineering (see 8.)

6. Mechanical Engineering

In some engineering fields the ISCED classification, which aims to apply to all of education from lower secondary to higher education, does not fit very well to higher education engineering programmes.

Mechanical engineering is the broadest of the engineering disciplines. This subject focuses on two major topics: thermal systems and mechanical systems. From ISCED-2013 particularly the narrow fields “0715 Mechanics and metal trades” and “0716 Motor vehicles, ships and aircraft” are included here.

Included are e.g.:

- “General” mechanical engineering
- Energy engineering
- Applied mechanics
- Thermodynamics
- Automotive engineering
- Aerospace engineering;

Not to be included:

- Programmes included under materials science & engineering (see 7.)

7. Materials Science and Engineering

Our definition of Materials engineering corresponds to the narrow field “0722 Materials” of the ISCED classification.

Included are both general programmes in material sciences and engineering and programmes specialising on particular materials, such as e.g.

- Ceramics and glasses
- Polymers
- Composite materials
- Nano materials
- Bio materials

Not to be included:

Programmes on metal work already included under mechanical engineering (“0715 Mechanics and metal trades”).

8. Electrical engineering

Our definition of the subject includes the detailed field “0714 Electronics and automation” (except of subjects “computer engineering” and “computer repairing”) of the ISCED classification.

To be included:

- Electrical and electronic engineering;
- Robotics and automatic control;
- Automation and control systems;
- Communication engineering and systems;
- Telecommunication;

Not to be included: programmes assigned to computer science and engineering (see 5)

9. Industrial Engineering/Production

Here ISCED does not offer a useful definition. Institutions can include units and programmes explicitly labeled and focused on this subject.

- Industrial engineering
- Production / product development
- Manufacturing
- Logistics engineering

Please note: Programmes have to be assigned *either* to industrial engineering/production *or* one of the other engineering fields!

10. Chemical Engineering

Our definition of the subject includes the detailed field “0711 Chemical engineering and processes”.

To be included:

- Chemical engineering (plants, products);
- Chemical process engineering

Not to be included:

- Science degrees in chemistry, ISCED detailed field “0531 Chemistry”.

11. Environmental Engineering

Environmental engineering is not exactly defined in the ISCED-2013 classification. Our definition includes the narrow field “0712 Environmental protection technology”.

Our definition of the subject includes general programmes “Environmental engineering” as well as specialised programmes such as e.g.

- Water resources and management
- Renewable Energy
- Sustainable Energy
- Climate Engineering

Not included are:

- Programmes included under civil engineering (see 12.)

12. Civil Engineering

Our definition of the field refers to detailed field “0732 Building and civil engineering”.

Included are both general programmes and specialised sub-fields, such as

- Water/hydraulic engineering
- Transport engineering

Not included are the ISCED detailed fields

- “0731 Architecture and town planning”
- “0521 Environmental sciences”

Appendix I. ISCED fields of education and training

Broad field	Narrow field	Detailed field
00 Generic programmes and qualifications	001 Basic programmes and qualifications 002 Literacy and numeracy 003 Personal skills and development	0011 Basic programmes and qualifications 0021 Literacy and numeracy 0031 Personal skills and development
01 Education	011 Education	0111 Education science 0112 Training for pre-school teachers 0113 Teacher training without subject specialisation 0114 Teacher training with subject specialisation
02 Arts and humanities	021 Arts	0211 Audio-visual techniques and media production 0212 Fashion, interior and industrial design 0213 Fine arts 0214 Handicrafts 0215 Music and performing arts
	022 Humanities (except languages)	0221 Religion and theology 0222 History and archaeology 0223 Philosophy and ethics
	023 Languages	0231 Language acquisition 0232 Literature and linguistics
03 Social sciences, journalism and information	031 Social and behavioural sciences	0311 Economics 0312 Political sciences and civics 0313 Psychology 0314 Sociology and cultural studies
	032 Journalism and information	0321 Journalism and reporting 0322 Library, information and archival studies
04 Business, administration and law	041 Business and administration	0411 Accounting and taxation 0412 Finance, banking and insurance 0413 Management and administration 0414 Marketing and advertising 0415 Secretarial and office work 0416 Wholesale and retail sales 0417 Work skills
	042 Law	0421 Law

Broad field	Narrow field	Detailed field
05 Natural sciences, mathematics and statistics	051 Biological and related sciences	0511 Biology 0512 Biochemistry
	052 Environment	0521 Environmental sciences 0522 Natural environments and wildlife
	053 Physical sciences	0531 Chemistry 0532 Earth sciences 0533 Physics
	054 Mathematics and statistics	0541 Mathematics 0542 Statistics
06 Information and Communication Technologies (ICTs)	061 Information and Communication Technologies (ICTs)	0611 Computer use 0612 Database and network design and administration 0613 Software and applications development and analysis
07 Engineering, manufacturing and construction	071 Engineering and engineering trades	0711 Chemical engineering and processes 0712 Environmental protection technology 0713 Electricity and energy 0714 Electronics and automation 0715 Mechanics and metal trades 0716 Motor vehicles, ships and aircraft
	072 Manufacturing and processing	0721 Food processing 0722 Materials (glass, paper, plastic and wood) 0723 Textiles (clothes, footwear and leather) 0724 Mining and extraction
	073 Architecture and construction	0731 Architecture and town planning 0732 Building and civil engineering

Broad field	Narrow field	Detailed field
08 Agriculture, forestry, fisheries and veterinary	081 Agriculture	0811 Crop and livestock production 0812 Horticulture
	082 Forestry	0821 Forestry
	083 Fisheries	0831 Fisheries
	084 Veterinary	0841 Veterinary
09 Health and welfare	091 Health	0911 Dental studies 0912 Medicine 0913 Nursing and midwifery 0914 Medical diagnostic and treatment technology 0915 Therapy and rehabilitation 0916 Pharmacy 0917 Traditional and complementary medicine and therapy
	092 Welfare	0921 Care of the elderly and of disabled adults 0922 Child care and youth services 0923 Social work and counselling
10 Services	101 Personal services	1011 Domestic services 1012 Hair and beauty services 1013 Hotel, restaurants and catering 1014 Sports 1015 Travel, tourism and leisure
	102 Hygiene and occupational health services	1021 Community sanitation 1022 Occupational health and safety
	103 Security services	1031 Military and defence 1032 Protection of persons and property
	104 Transport services	1041 Transport services
<p><i>In addition to the detailed fields in the table above; '0', '8' and '9' may be used (see also the guidelines in Sections 7 and 8):</i></p> <p><i>'8' is used at the narrow and detailed field level when classifying inter-disciplinary or broad programmes and qualifications to the broad field in which the greater part of the intended learning time is spent (e.g. 0288 'inter-disciplinary programmes and qualifications involving arts and humanities'). '0' is used when no further information is available about the field than the field description at the next higher level of the classification hierarchy (i.e. at the broad field or at the narrow field level).</i></p> <p><i>'9' is used at the detailed field level when classifying programmes and qualifications which do not fit within any of the listed detailed fields.</i></p> <p><i>'0000', '000' or '00' can be used in data collections, especially in surveys if the field is not known.</i></p>		