Classification and distribution by Fields of Research and Development (FORD)

For a number of reasons, survey practitioners and data users often find it helpful and relevant to classify r&d-performing units and distribute their r&d resources according to the knowledge domain in which they operate. This manual proposes the use of the oeCd fields of research and development (ford) classification for such purposes. This classification, developed for r&d measurement purposes, follows primarily a content approach. Where the content of the r&d subject matter is closely related, subjects are grouped together to form the broad (one-digit) and narrower (two-digit) fields of the classification. While the classification can be applied to a broader range of science and technology (S&T) and knowledge-based activities, its formulation by the oeCd is focused on r&d as defined in this manual.

The aim is to distribute r&d efforts and classify the units that undertake such efforts. Two r&d projects can be said to belong to the same field if their content is the same or sufficiently similar. The following criteria give rise to the ford classification and can help inform the assessment of the degree of similarity of the subject matter content:

- The knowledge sources drawn upon for the r&d activity carried out. The application of developments in some technology fields often gives rise to new scientific efforts, in the same way that scientific knowledge provides a basis for new technological developments.
- The objects of interest – the phenomena to be understood or the problems to be solved as part of r&d.
- The methods, techniques and professional profiles of the scientists and other r&d workers – different domains can be distinguished sometimes on the basis of the methodological approaches to the study of a given phenomenon or question.
- The areas of application. for example, in the ford classification, the medical sciences and agricultural sciences are specifically defined by their applications to human health and agricultural activities.

This classification is closely related to and consistent with uneSCo's "recommendation concerning the International Standardisation of Statistics on Science and Technology" (uneSCo, 1978), which provided the initial basis for the oeCd classification of r&d by the field of S&T in previous versions of this manual. There is also a degree of relationship with the ISCed fields of education and Training (ISCed-f), which is aimed at the classification of study and training programmes and reflects to a large extent the way in which schools, departments, etc., organise their activities and award credentials to students who successfully complete these programmes. It is recognised that ford and the ISCed-f have different purposes, and it is not feasible to ensure a direct correspondence between the two classifications (uneSCo-uIS, 2014, p. 17).

In light of ongoing changes in the way r&d is conducted and the progressive emergence of new domains, the ford classification will be subject to continuing revision after the publication of this manual's edition. for more up- to-date versions, the reader should consult the online annexes to this manual where more detail can be found on this classification and its use.

Fields of R&D classification

Broad classification	Second-level classification
1. Natural sciences	1.1 Mathematics 1.2 Computer and information sciences 1.3 Physical sciences 1.4 Chemical sciences 1.5 Earth and related environmental sciences 1.6 Biological sciences 1.7 Other natural sciences
2. Engineering and technology	2.1 Civil engineering 2.2 Electrical engineering, electronic engineering, information engineering 2.3 Mechanical engineering 2.4 Chemical engineering 2.5 Materials engineering 2.6 Medical engineering 2.7 Environmental engineering 2.8 Environmental biotechnology 2.9 Industrial biotechnology 2.10 Nano-technology 2.11 Other engineering and technologies
3. Medical and health sciences	3.1 Basic medicine 3.2 Clinical medicine 3.3 Health sciences 3.4 Medical biotechnology 3.5 Other medical science
4. Agricultural and veterinary sciences	4.1 Agriculture, forestry, and fisheries 4.2 Animal and dairy science 4.3 Veterinary science 4.4 Agricultural biotechnology 4.5 Other agricultural sciences
5. Social sciences	5.1 Psychology and cognitive sciences 5.2 Economics and business 5.3 Education 5.4 Sociology 5.5 Law 5.6 Political science 5.7 Social and economic geography 5.8 Media and communications 5.9 Other social sciences
6. Humanities and the arts	6.1 History and archaeology 6.2 Languages and literature 6.3 Philosophy, ethics and religion 6.4 Arts (arts, history of arts, performing arts, music) 6.5 Other humanities