

The Department follows the traditional training of technicians wishing to work in the field of transport systems, hydraulics and civil architecture, and their related cultural heritage, instituted in the early years of the 18th century and developed throughout the 19th and 20th centuries. This basic training is rooted in the contributions made by scientists of European stature, such as Giovanni Poleni, who worked during the times of the *Serenissima* Republic of Venice (18th century) and Simone Stratico, who worked in Padova between the 18th and 19th centuries.

The new Department protects this scientific heritage which now spans three centuries, enhancing its memory and conserving its past work. It is not only a collection of cultures and resources, but also an opportunity to optimise and enhance them.

The new structure will cover the entire spectrum of disciplines within Civil Engineering and Architecture (ICAR), although there is also a small group of disciplines in Industrial Engineering (ING-IND), of historical importance, deriving from the original yet still actual scientific and methodological affinity of these sectors with Civil and Construction Engineering.

The Department aims at being one of the leading institutions in Italy for research in the fields of civil, construction and environmental engineering, with particular focus also on interdisciplinary aspects and the applications of these disciplines, sometimes in fields which differ from the classic ones. The shared aims of those working in the new structure concern the following strategic fields: the territory, knowledge of computer science, and technological innovation.

The new Department, instituted as a collection of several specialised fields, also promotes multidisciplinary perspectives in developing teaching and research initiatives, in order to offer the new market of knowledge an ample range of prospects. It also constitutes an authoritative point of reference for various territorial situations and can offer support not only in decision-making but also in research.

“Territory” is understood here as the field in which the Department, at the level of research, is working on the knowledge, conservation, management and requalification of the entire cultural heritage of the territory, whether it is composed of land, stretches of water, urbanised areas, infrastructures, architectural features, or natural and man-made environments.

In this field, the new structure has inherited and devotes particular attention to developing the great tradition of Venetian hydraulic skills, as well as the more recent environmental disciplines. The word “Territory” covers disciplines which describe it and aim at its conservation, proper management and transformation. As regards the last aim, the Department enhances and develops the teaching of *how* to organise projects, which has long been part of the sphere of civil and public construction engineering.

Knowledge of computer science now plays an essential role in many sectors covering

computational methods and numerical modelling, traditionally developed by the Department's researchers. The passage from scale models to virtual three-dimensional models has revealed the need to proceed with accurate simulations of the processes governing planning within the sphere of civil and industrial constructions, from the basic architectural concept, to the choice of materials, and numerical simulation of the performance of both materials and structures. To all this must be added the development and application of advanced models for optimal performance in the sector of transportation of both people and goods.

The research field comprises not only the topics usually developed in all traditional disciplines of civil construction and environmental engineering, but is extended to cover the topics of materials and their mechanical performance in a broader sense, creating a link with innovative disciplines such as biomechanics and aerospace engineering. Technological innovation is understood as a field in which the research and experimentation undertaken in the new Department can face the challenging topic of the transfer of acquired scientific knowledge to applications in the sectors of civil, hydraulic, maritime, geotechnical, infrastructural constructions and transport systems engineering, and also to other sectors using similar research tools, e.g., aerospace structures, biomaterials and biomechanical structures.

The Department aims to coordinate and carry out both research and consultancy work in the above disciplines, by means of contracts and agreements with other institutions and both public and private bodies and according to the spirit and the letter of the autonomy of the University.

The Department is open to international collaboration, mobility of teaching personnel, researchers, graduates and students, and to prospects of collaboration on research projects on an international and particularly European scale. With this aim, it organises and coordinates advanced courses for master degrees, conferences, seminars, and collaboration agreements with international research groups.

In establishing the new Department, its planners examined several aspects which the new organisation must face:

- the culture and habit of assessment of research;
- the improved international image and position of universities;
- the capacity to attract public and private funding, which becomes competitive with other university departments;
- the development of “Excellent” research projects;
- the capacity to publicise research aims and results outside the University environment;
- the capacity to create favourable environments to attract students and teachers from outside

Italy;

- to favour recognition of the presence and authority of the Department at national and international level.