



**UNIVERSITY  
OF TRENTO - Italy**

---

**Department of Structural  
Mechanical Engineering**

*EXECUTIVE REGULATIONS OF THE DOCTORAL SCHOOL IN*

*ENGINEERING OF CIVIL AND MECHANICAL STRUCTURAL SYSTEMS*

Approved on 05.06.09  
By the Council of the Department of  
Mechanical and Structural Engineering

## Table of Contents

<b>Art.1 - Purpose</b> .....	3
<b>Art. 2 - Definitions</b> .....	3
<b>Art. 3 - Objectives of the Doctoral School</b> .....	3
<b>Art. 4 - Bodies of the Doctoral School</b> .....	3
<b>Art. 5 - The Head</b> .....	3
<b>Art. 6 - The Vice-Head</b> .....	4
<b>Art. 7 - The Doctoral School Committee</b> .....	4
<b>Art. 8 - The Executive Committee</b> .....	4
<b>Art. 9 – The Delegates</b> .....	4
<b>Art. 10 - The Secretariat</b> .....	5
<b>Art. 11 - Specific training objectives</b> .....	5
<b>Art. 12 - Training activities</b> .....	5
<b>Art. 13 - Criteria to formulate a syllabus</b> .....	6
<b>Art. 14 - Admission requirements and selection criteria</b> .....	7
<b>Art. 15 - Rights and duties of Doctoral students</b> .....	8
<b>Art. 16 - Doctoral title conferral</b> .....	8
<b>Art. 17 - Specific Curricula</b> .....	9
<b>Art. 18 - Amendments to the present Regulations</b> .....	9
<b>Art. 19 - Reference Rule</b> .....	9

## **Art.1 - Purpose**

In accordance with the University 's Regulation concerning the Doctoral School issued with D.R. no. 997 of 16.12.03 and modified with DR no. 359 of 19.04.06, herein referred to as *Regulation for Doctoral Schools*, and with the institution at the Department of Mechanical and Structural Engineering of the Doctoral School named Doctoral School in ENGINEERING OF CIVIL AND MECHANICAL STRUCTURAL SYSTEMS, the Department Council adopts the present Regulations for running and managing the Doctoral School in Engineering of Civil and Mechanical Structural Systems, and for defining the specific objectives, the internal organization and the rules of conduct for the Doctoral students attending the School.

## **Art. 2 - Definitions**

For the purposes of these Regulations, the terms used herein have the following meanings:

**University:** The University of Trento;

**Department:** Department of Mechanical and Structural Engineering

**Doctoral School:** The Doctoral School in Engineering of Civil and Mechanical Structural Systems;

**Partners:** public bodies, including Universities, and private organizations that take part in the Doctoral School.

## **Art. 3 - Objectives of the Doctoral School**

The Doctoral School aims at accomplishing the general objectives defined in art. 3 of the Regulation for Doctoral Schools in accordance with the Faculty of Engineering.

## **Art. 4 - Bodies of the Doctoral School**

The bodies of the Doctoral School are the following:

- a) The Head
- b) The Vice-Head
- c) The Doctoral School Committee
- d) The Executive Committee
- e) The Delegates
- f) The Secretariat

## **Art. 5 - The Head**

The Head of the School is elected by the Doctoral School Committee among the 1st and 2nd level professors who are members of the Doctoral School Committee and who work at the University of Trento; the Head of the School is responsible for the Doctoral School, coordinates its work and represents it.

The Head of the School remains in office for three years.

The Head of the School is responsible for carrying out the following tasks:

- a) co-ordinating and organizing the training and administrative work of the Research Doctorate;
- b) calling and chairing the Doctoral School Committee and implementing the relevant resolutions;
- c) authorizing Doctoral students, personally or through their tutors, to leave the university to

- conduct further research work or internships at partner universities or at other institutions or research centres for periods of less than six months;
- d) reporting to the relevant administrative offices of unexcused absences of the students for the purpose of suspending payment of the grant or expelling the student from the Doctoral School;
  - e) preparing a detailed report that will be submitted at the end of each year to the University Evaluation Commission on the status of the Doctorate, in accordance with formulation of the opinion as under Art. 3 of Ministerial Decree no. 224 of 30<sup>th</sup> of April 1999;
  - f) designating a Vice-Head of the School who will stand in for him or her in the event of illness or impediment.

#### **Art. 6 - The Vice-Head**

The Vice-Head is designated by the Head. He co-operates with the Head and stand in for him or her in the event of illness or impediment.

#### **Art. 7 - The Doctoral School Committee**

The Doctoral School Committee is made up of full or associate professors and researchers; at least eight members of the Committee must be tenured at the University of Trento; at least one must represent professors for each discipline of the Doctorate; and representatives of the public administrations and private organizations participating in the consortium. Student representatives may take part in the meetings of the Doctoral School Committee, but only for issues regarding the general progress of the programme and the training courses; two of such representatives are elected yearly from among the students enrolled in the Doctoral School.

The activity of Doctoral School Committee is supported by the Department Assistant.

The Doctoral School Committee carries out all the functions defined in art. 13 of the University Regulations for Doctoral Schools. The Doctoral School Committee can delegate the Executive Committee for one or more of its task.

#### **Art. 8 - The Executive Committee**

The Executive Committee is composed of at least 6 professors and researchers, appointed by the Doctoral School Committee among its members, plus the Head of the School as chairperson.

It is convened and chaired by the Head and speeds up the activities delegated by the Doctoral School Committee. It puts the Doctoral School Committee's resolutions into effect.

The Executive Committee is supported by the Department Assistant.

#### **Art. 9 – The Delegates**

Delegates can be appointed by the Doctoral School Committee to deal with specific activities including: budget, external funding, students recruitment, syllabus and regulations, national and international relationships, admissions and fellowships, finance and student aids, minority affairs.

## **Art. 10 - The Secretariat**

The School Secretariat is composed of the School Secretary, the Department Assistant and the Department Secretariat.

The Secretary is appointed by the Head of the School. The Secretary supports the activity of the Head of the School and writes the minutes of the School meetings.

The Department Assistant coordinates the secretariat activity.

## **Art. 11 - Specific training objectives**

The Doctorate programme is oriented towards the development of research and education in three main areas of research (curricula):

### **a) Solid and Structural Mechanics and Geotechnics**

The relevant courses focus on the mechanics of solids and structures and, more in general, on the study of the mechanical behaviour of materials. The Ph.D. curriculum develops fields of research inherent to the behaviour of a wide class of materials: from the innovative ones, viz. structural ceramics, composites, metal alloys with phase transformation, piezoelectric, smart materials, polymers, to those traditional to building engineering, i.e. steel, concrete, masonry, wood, stone, earth. The study of the mechanical behaviour of such materials, both from the viewpoint of the constitution and from that of the conditions of resistance, will be dealt with at an experimental level and from the technical/computational viewpoint.

### **b) Structural and Architectural Engineering**

The relevant courses focus on the following topics: analysis and performance-based design of structures; safety evaluation of structures using experimental analyses based on non-destructive testing techniques and comparison with computer models; durability and restoration to be considered during design; monitoring, analysis, diagnosis and identification of historical-monumental buildings and bridges, considering soil-structure interaction phenomena; strengthening and control of historical-monumental buildings and bridges; analysis and design of smart structures.

### **c) Mechanical and Mechatronic Systems**

The curriculum is focused on the design and modeling of mechatronics systems — both as end products and as manufacturing systems — involving fields like mechanism and machine theory (with special regards to vehicle dynamics and optimal path planning), automatic control (digital control applied to data storage, telerobotics and haptic devices, control of micro electromechanical systems), measurements (sensor fusion, measurement systems also for space applications), manufacturing technologies (process simulation, design and error compensation of machine tools). The relevant courses concern the dynamics of flexible and multibody systems, analysis of vibrations, finite element analysis for process simulation, scientific programming in C, C++, and Objective C.

## **Art. 12 - Training activities**

The teaching programme includes monographic courses, seminary cycles held by internal and external Lecturers and laboratory work. The monographic courses are aimed at giving basic preparation in carrying out highly qualified research activities.

The thesis topic and the tutor must be determined within the end of the first year, in agreement with the Doctoral School Committee. In order to obtain a Doctoral the candidate must gain 180 formation credits distributed as follows:

- a) **50 credits** reserved for the attendance of specific courses offered by the Doctoral School or by other graduate schools;
- b) **20 credits** for training courses and/or the attendance of seminars and specialization courses within companies and public and private research institutes;
- c) **110 credits** for research activity on the specific topic of the Doctoral dissertation.

Teaching experience is required for all students prior of taking the final examination. Teaching experience is defined as lecturing in either a problem-solving section or laboratory session, or in an undergraduate course designated by the Doctoral School Committee. The requirement can be fulfilled by service as a teaching assistant.

Doctoral students has the possibility of spending a period of activity in a foreign research centre, which shall not exceed 18 months (also not continuous). The location of such a period abroad will be agreed upon by the doctoral student, his/her own tutor and the Doctoral School Committee.

### **Art. 13 - Criteria to formulate a syllabus**

Along the first two years, a student must earn 50 credits following specific courses (activity type a) and 20 credits carrying out other training activities (activity type b, divided into categories b1, b2, b3, and b4).

Specific courses include:

- a1) fundamental courses devoted to strengthening the doctoral student's basic knowledge;
- a2) advanced courses which allow the student to specialise in some research topics related to the chosen research area.

Each course must be completed by an exam, whose procedure is left to the discretion of the teacher (test, oral exam, report).

The candidate is allowed to attend Doctoral level courses offered by other institutions. The tutor upon approval of the Doctoral School Committee assigns the credits earned with an external course. The internal and external courses chosen by the candidate must be approved by the tutor and by the Doctoral School Committee at the beginning of each year.

Other training activities includes:

- b1) attendance at seminars offered by universities and research institutes;
- b2) specialist courses offered by research institutes;
- b3) lectures offered by the student in either a problem-solving section or laboratory session, or in an undergraduate course as teaching assistant;
- b4) training courses offered by companies and research institutes.

The Doctoral School Committee evaluates the compatibility of such activities with the training objectives and establishes number of credits according to the value of the same.

A schedule of course offerings is available each fall for the following academic year. At the beginning of every academic year the doctoral student shall provide the list of courses he/she plans to follow.

#### **Art. 14 - Admission requirements and selection criteria**

Applications for Doctoral positions are invited from candidates, regardless of sex, age and nationality, who have an Italian *Laurea Specialistica (Magistrale)* according to Ministerial Decrees no. 509 of November 3, 1999 and no. 270 of October 22, 2004 or an equivalent degree qualification obtained abroad.

Applicants, having a foreign qualification that has not been officially recognized as equivalent to the Italian *Laurea Specialistica*, must make an explicit request for recognition of equivalence in the application for participation to the selection. In this case any relevant documents (degree certificate with exams and grades obtained) and the relative declaration of validity (*dichiarazione di valore*) must be attached to enable the Doctoral School committee to declare its equivalence, for the sole purpose of attending this Doctoral programme. The above documents must be officially translated by the Italian Embassy in the country of origin.

Applications are also invited from students who expect to complete their degree by the date of the examination. In such cases admission will be “conditional” and the applicant must be able to present the relevant degree certificate, or a declaration that the degree has been conferred (in conformity with Presidential Decree no. 445 of December 28, 2002, applicable only to citizens of the European Union), by the date of the examination. Otherwise, the applicant loses any right of admission to this Doctoral programme.

Admission to the Doctoral School is offered through a selective procedure, which aims at certifying the eligibility of the candidate and his or her aptitude for research.

The selection is performed by the Admission committee in two stages:

a) The evaluation of:

- i) a curriculum vitae of the candidate including scientific publications;
- ii) a research proposal based on the disciplines listed in the specific training objectives;

Each candidate is assigned points by the committee and applicants obtaining a minimum score of 36/60 are short-listed.

b) A written test or a lecture on topics of a fundamental discipline selected among the scientific-disciplinary areas listed in the specific training objectives, assessing the knowledge of English language.

Candidates obtaining the minimum score of 36/60 both in the written test or the lecture, will be short-listed. Foreign applicants may request that their admission exams be held in a foreign language. It is at the discretion of the Admission Committee whether to uphold or reject such a request.

Short-listed applicants will be admitted to the Doctoral School according to their order on the list until all available places have been filled.

If a successful applicant withdraws before the beginning of the course, the next applicant on the list will be offered the place.

If a successful applicant withdraws or is excluded in the first three-month term of the first year of the course, the Doctoral School committee may decide to fill the vacant place with another candidate on the list.

According to art. 23 of the University Regulations for Doctoral Schools, the Admission Committee may increase the total number of positions by up to 50 % of the total number of assigned places. The new places are reserved for:

- a) applicants who are eligible according to the list and who have been awarded grants under Italian Law no. 449/97 – art. 51 (Assegni di Ricerca);
- b) students from non-EU countries who are eligible according to the list and who have been awarded any kind of grant;
- c) applicants from a country with a specific intergovernmental agreement with Italy, on the basis of a bilateral agreement between the University of Trento and the foreign university (with no obligatory financial burden for the University of Trento).

### **Art. 15 - Rights and duties of Doctoral students**

Rights and duties of Doctoral students are defined in art. 25 of the University Regulations for Doctoral Schools. Additional specific rights and duties are listed in the following paragraphs.

The Doctoral student has the mandatory duty of preparing periodical reports (with deadlines communicated by the Doctoral school Committee). The reports are submitted for approval to the Tutor and the Doctoral School Committee (or a Committee specifically charged). Evaluation criteria include: the consistency of the number of credits achieved, following the indications of the School program, the scientific activity developed at the University of Trento or outside, and the fulfillment of duties required within the Doctoral School activity. If the reports are not presented or not approved by the Doctoral School Committee, the Committee can decide to suspend the scholarship or even decide to exclude the student from School, according to art. 25, comma 3 of the Regulation for Doctoral School.

If a student is funded through grants, obtained from other institutions, which are attached to a specific research project, he or she is expected to pursue that specific project in his/her Doctoral research.

### **Art. 16 - Doctoral title conferral**

The procedures to confer the Doctoral Title are reported in title V of the University Regulations for Doctoral Schools. In addition, the following specific procedures apply.

By the end of the Doctorate, each supervisor nominates under his/her responsibility an independent Reviewer of the candidate. The Reviewer can be a member of the Doctoral School Committee. The Reviewer independently evaluates the candidate work and submits a recommendation to the Doctoral School Committee before the admission of the candidate to the final exam.

The Doctoral School Committee states a final deadline to provide each member of the Examination Committee with a copy of the final version of the dissertation. Missing this deadline prevent the candidate from sitting the final examination.



### **Art. 17 - Specific Curricula**

The Doctoral Student has the possibility to propose a specific curriculum different from those listed in art. 11 above. Specific curricula are subjected the approval of the Doctoral School Committee.

### **Art. 18 - Amendments to the present Regulations**

Each modification of the present Regulations must be approved by the Department of Mechanical and Structural Engineering, consulting the Doctoral School Committee.

### **Art. 19 - Reference Rule**

For anything else not expressly mentioned in the present regulations, the provisions established by Italian law and the University Regulations for Doctoral Schools shall apply.