



UNIVERSITÀ DEGLI STUDI
DI TRENTO

Manifesto of Studies

a.y. 2006/2007

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1. Introduction

The 60 credits of the Doctoral School in Materials Engineering (ME) should preferably be achieved by attending the courses proposed in this Manifesto. However, the doctorate student is also allowed to include in his/her curriculum courses attended at other institutes, as well as to participate in summer schools, workshops, seminars (held at the ME Doctoral School or at other institutes). Such activities must be certified, based on actual attendance and the achievement of specific learning objectives.

As a general rule, 49 credits should be achieved by attending the courses under the Manifesto, whereas 9 credits refer to qualifications and 2 to the achievement of a proficiency in English (see below).

The Manifesto includes fundamental (mandatory) (F) and free (C) courses. The latter focus on advanced and specialized topics, mostly related to specific technologies. Students are asked to prepare a personal curriculum, listing courses and activities they will follow, to be submitted for approval by the Teaching Body. In the absence of a personal curriculum, students will be assigned, ex officio, a standard curriculum, as specified below.

Students are invited to present free (personal) curricula, i.e. individual study programs in order to complement their syllabus with research periods abroad, work placements at private companies and other activities conducted outside the Doctoral School premises.

Free curricula must be accompanied by a written motivated request and undersigned by the Tutor. The Teaching Body evaluates free curricula, modifies them if necessary, assigns credits to the various activities (if different from those provided for in the Manifesto), and finally decides on approval. If needed, students are asked to attend English courses to attain at least a Toefl (or equivalent) degree.

During the first year students are offered advanced courses on the basics of materials engineering, whereas the second year focuses on specialized topics mostly addressed to technology.

Courses under the Manifesto are held preferably from November to April, in order to allow students to better organize research activities at the Doctoral School and outside. The timetable is organized in such a way to avoid overlapping between courses, thus making it possible for students to catch up with courses from the previous year, or to anticipate courses for the following year.

Credits can also be achieved by attending classes of the Degree courses in Industrial Engineering and Materials Engineering. This can be specifically required of students that are given conditional admission to the Doctoral School because they lack sufficient knowledge and background in basic engineering disciplines. In this case, if the courses in the standard Manifesto curriculum do not cover all the required disciplines, students may be asked to obtain part of the credits by attending Degree courses on some of the main, basic engineering topics.

The curriculum described below is the result of well-established knowledge and expertise at the Department of Materials Engineering and Industrial Technologies. The Manifesto may also be supplemented by one-off courses, for example when visiting professors are available at the Doctoral School. As a consequence, the Manifesto may change from year to year and require constant updating. This Manifesto is valid for the 2006/2007 a.y.. Changes may be expected in the following years so as to provide students with the best educational offer.

**2. List of Manifesto courses**

No.	Course	Year	Professor	Credits	Type	Hours
Fundamental						
1	Methods of statistical and numerical analysis (basic)	I	Siboni, Fontanari	6	F	36
2	Experimental mechanics of materials	I	Sglavo, Pegoretti, Leoni	6	F	36
3	Electron microscopy techniques	I	Gialanella	3	F	18
4	Techniques of thermal analysis	I	Pellizzari, Ceccato, Fambri, Di Maggio	3	F	18
5	X-ray Diffraction I: basic concepts and materials crystallography.	I	Scardi	3	F	18
				21		126
Special and one-off courses 2006/2007						
6	Materials characterization by Neutron techniques	I/II	Cervellino	1	F	6
7	Physical and mechanical properties of polymer blends	I/II	Kolarik, Fambri	2	F	12
8	Biodegradable polymers	I/II	Vert	1	F	8
9	Technical/Scientific English	I/II	CIAL	2	F	24
				4		26
Advanced-specialized (Free choice)						
10	High temperature materials	I/II	Raj	2	C	12
11	Coatings to improve the corrosion and wear behaviour	I/II	Rossi, Deflorian, Pellizzari, Straffelini	5	C	30
12	Nanostructured materials	I/II	Sorarù, Dirè, Leoni	3	C	18
13	Advanced techniques for surface analyses and optical prop. of materials.	I/II	Della Mea, Quaranta	3	C	18
14	Surface analysis techniques for the evaluation of materials degradation.	I/II	Deflorian, Rossi	2	C	12
15	X-Ray Diffraction II: the real structure of materials.	I/II	Scardi	2	C	12
16	Hybrid macromolecular materials	I/II	Di Maggio, Fambri	2	C	12
17	Powder technology	I/II	Molinari, Dal Maschio, Penati	4	C	24
18	Tissue-biomaterial interactions	I/II	Motta	2	C	12
19	Advanced thermodynamics	I/II	Della Volpe	2	C	12
20	Nanocomposites & multiphase polymeric materials	I/II	Migliaresi, Pegoretti, Fambri	2	C	12
				29		174
Qualification						
21	English language (Toefl)(**)			2	F	
22	Qualification: (°) Scanning electron microscopy		Several (Resp. Gialanella)	2	C	12
23	Qualification: (*) X-ray diffraction		Several (Resp. Scardi)	2	C	12
24	Qualification: (§) Thermal analysis		Several (Resp. Pellizzari)	2	C	12
25	Qualification: (#) Mechanical testing machines		Several (Resp. Pegoretti)	2	C	12
26	Personal Web-page (°°)		Resp. Sglavo	1	C	4
				11		52

(°) Introductory course: 3; (*) Introductory course: 5, 13; (§) Introductory course: 4; (#) Introductory course: 2

(°°) 1 credit assigned after attendance of the short course and production/approval of the personal web-page.

(**) Proficiency in English can also be certified during the II or III year admission examination (see below).



3. Curricula and conditional admission

Credits in the standard curriculum are broken down as follows:

- I year: 35 credits (courses 1 - 7, Toefl qualification, selection of C courses)
II year: 25 credits (choice of C courses and qualifications)

The standard curriculum requires attendance of Manifesto courses (Fundamental, Special one-off courses and Advanced-specialized) and Qualifications for 58 credits (+2 English language). Students already holding a Toefl (equivalent or higher) qualification are automatically assigned 2 credits for proficiency in English. As an alternative to the Toefl (or equivalent) qualification, the Teaching Body, or a commission suitably nominated by the Teaching Body, can assign 2 credits for proficiency in English on the basis of the presentation in English given by each student to be admitted to the following (II or III) year.

Students are strongly recommended to present free (personal) curricula, i.e. individual study programs in order to complement their syllabus with research periods abroad, work placements at private companies and other activities conducted outside the Doctoral School premises. Free curricula must be accompanied by a written motivated request and undersigned by the Tutor. The Teaching Body evaluates free curricula, modifies them if necessary, assigns credits to any activity not provided for in the Manifesto, and finally decides on approval.

Students that are given conditional admission to the Doctoral School because they lack sufficient knowledge in basic engineering disciplines are asked to fill the gap with activities worth 3 to 6 credits. Basic engineering disciplines usually are:

Solid Mechanics	3 credits
Machine Design	3 credits

Based on the recommendations of the Admissions Committee, the Supervisor prepares a list of students admitted conditionally to the Doctoral School and assigns them a number of activities they must perform. Students are assisted in their activities by the teachers responsible for each area (Prof. Bigoni for Solid Mechanics and Prof. Fontanari for Machine Design). The latter organize meetings with the students and prepare personal curricula, suggesting books and specific reading materials.

A final examination on the above topics is used to verify that the proposed objective has been achieved (i.e. the gap has been filled).

4. Course syllabi

See Annex A

Trento, 23.10.2006

Approved by the Teaching Body of the Doctoral School in Materials Engineering.

**The Director of the School
Prof. Paolo Scardi**