

UNIVERSITY OF CRETE

HANDBOOK OF REGULATIONS  
OF UNDERGRADUATE STUDIES

DEPARTMENT OF MATERIALS SCIENCE AND  
TECHNOLOGY



2020



DEPARTMENT OF MATERIALS SCIENCE  
AND TECHNOLOGY

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# I. General Regulations

## 1. Applicability

The provisions of this Handbook of Regulations of Undergraduate Studies govern the basic principles relating to the study, the structuring of the curriculum, and the requirements to obtain a degree from the Department of Science and Materials Technology. Detailed information about the Department and the courses offered are listed in the Program of Study that is posted on the Department's website. In case of conflict between the Greek original and English translation, the original prevails.

## 2. Competent bodies of the Department

The competent bodies of the Department regarding student issues are the General Assembly of the Department and the Committee of Undergraduate Studies. The Administration of the Department consists of the Chair, Vice-Chair and Department Secretary.

To address student issues, there exists the institution of the advocate of the student, who may mediate in the department for any problems that concern the student.

## 3. Acceptance to the Program

Admission to the Department of Materials Science and Technology of the University of Crete is done in any of the designated ways to enter Higher Education Institutions as regulated by the Greek Ministry of Education and Religious Affairs, such as nationwide exams, special categories of large families, three-children families, etc. foreign aliens, foreign nationals, Greek expatriates, those suffering from serious diseases, ranking of graduates either with exams or grade of degree.

The entrance requirements to the Department, the size of the Freshman Class, and the dates of enrollment of new students are regulated by the Greek Ministry of Education and Religious Affairs and the current legislation. In addition, graduates of other departments can enroll in our Department following successful results in qualifying examinations carried out every year in accordance with the law. The schedule is announced at the Department's website and the process is described in detail in a relevant entry (<https://www.materials.uoc.gr/el/undergrad/faqs/newbies.html>).

## 4. Student Status

The status as a Department's student is acquired by the initial registration at the Department, is maintained by the registration and course registration every semester of studies, and is lifted with the announcement and the receiving of the degree, or by the issuance of a diploma. Student status is also lifted throughout any leave of absence or postponement that a student may have applied for.

Students in the Department are considered to have a full-time status. In case of participation in an Internship, it has to be declared as an Elective course. Part-time status may be requested and in exceptional case may be approved by the School's Dean.

Students have the right to request a leave of absence/ postponement of studies for up to 8 semesters. The student has to submit the relevant form to the Secretariat, which presents it to the General Assembly of the Department for approval. The request must be made at the beginning of the semester, in the case of the current semester. During this time the student does not remain enrolled, does not enjoy the student status nor student benefits (meals, housing, reduced transportation fare, medical coverage, library access to the Student Web). At the end of the leave of absence, the student must inform the Secretariat so that his enrollment card may be reactivated. The total period of leave of absence is not counted in the years of study.

## II. Academic Information

### 5. Undergraduate Studies in the Department

Undergraduate studies in the Department last a total of four (4) years or eight (8) semesters. Each academic year begins each year on September 1<sup>st</sup> and ends on August 31<sup>st</sup> of the following year. The academic curriculum of each academic year, which is announced on the Department's website, is divided into two semesters, winter and spring. The standard curriculum determines the proposed structure of each semester.

### 6. Curriculum structure and educational outcomes

The curriculum of the Department of Materials Science and Technology consists of core courses, which are compulsory (C), elective compulsory courses (EC, where the student is required to choose from a group of courses) and optional courses (O). The main sections of the program are:

- *Introductory Stage:* During the first three semesters students attend basic introductory courses in Physics, Chemistry, Mathematics, Materials Science and Computer Science. Their fundamental understanding will provide the necessary background in the basic concepts, as well as the knowledge required to proceed with their studies. At this stage the student is also acquainted with English terminology on materials science.

- *Basic Stage:* During the next three semesters students attend Biology introductory courses, expand their laboratory experience, deepen their knowledge in Basic Materials Science with courses such as Thermodynamics (Classical and Statistical), Solid State Physics and Electromagnetism, and also introduced into basic categories of Materials such as Polymers-Colloids, Electronic Materials, Biomaterials, and Ceramic and Magnetic Materials.

- *Advanced stage:* The third stage enables students to further specialize in the various categories of Materials and attend a sufficient number of optional courses offered by the Department of Materials Science and Technology or other Departments of the University of Crete. The choice of these courses must be made by the student in a timely manner in order to adapt their studies to their interests and goals. Students are free to select the optional subjects of their choice in order to:

- a. specialize in a particular field aiming either to enroll in postgraduate courses in Material Science or to pursue a technological career in modern engineering,
- b. enrich their education in various fields of Natural Sciences and thus broaden their career prospects.

**The learning outcomes of the Curriculum correspond to the 6<sup>th</sup> level of the EU classification for educational qualifications.**

The weight of each course is stated in units of the European Credit Transfer System (ECTS). The six-month workload of a student is the sum of the ECTS units of the courses in which this semester is enrolled. Enrollment is at most eight (8) courses per semester. Students from 5<sup>th</sup> year (9<sup>th</sup> semester) will be able to enroll up to ten (10) courses per semester.

Students of the Department of Materials Science and Technology can focus their undergraduate studies on one of the following areas:

- Biomaterials
- Polymers - Colloids
- Electronics - Optoelectronics - Photonics
- Magnetic Materials
- Ceramic Materials
- Nanostructured Materials
- Computational Materials Science

### 7. Standard Curriculum

Each semester, upon provisional consultation with their advisor, students select the course they wish to take, provided that the formal requirements are met:

1. Students have met the prerequisites for this course.
2. Courses enrolled do not exceed the maximum number (8 per semester).
3. The selected course is offered during the specific semester.

The following tables provide a standard curriculum for the department:

Table I: Standard Basic Curriculum

1 <sup>st</sup> Semester		ECTS
101	General Physics I	6
111	General Mathematics I	6
114	Computer Science I	6
121	General Chemistry	6
141	Materials I: Introduction to Materials Science	6
011	English I	4
<b>Total ECTS</b>		<b>34</b>

2 <sup>nd</sup> Semester		ECTS
102	General Physics II	6
112	General Mathematics II	6
116	Applied Mathematics	6
122	Organic Chemistry	6
124	Chemistry Laboratory	8
012	English II	4
<b>Total ECTS</b>		<b>36</b>

3 <sup>rd</sup> Semester		ECTS
201	Contemporary Physics - Introduction to Quantum Mechanics	6
223	Inorganic Chemistry	6
225	Materials Chemistry Laboratory	8
203	Physics Laboratory I: Mechanics - Heat	8
211	Differential Equations	6
260	Thermodynamics	6
<b>Total ECTS</b>		<b>40</b>

4 <sup>th</sup> Semester		ECTS
204	Physics Laboratory II: Electricity - Optics	8
232	Biochemistry and Molecular Biology	6
242	Materials III: Microelectronic - Optoelectronic Materials	6
243	Materials II: Polymers – Colloids	6
	Elective Compulsory 1	6
<b>Total ECTS</b>		<b>32</b>

5 <sup>th</sup> Semester		ECTS
301	Electromagnetism	6
305	Solid-State Physics: Introduction	6
335	Molecular Cellular Biochemistry	6
343	Soft Materials Laboratory	8
391	Materials IV: Natural Biomaterials Science	6
<b>Total ECTS</b>		<b>32</b>

6 <sup>th</sup> Semester		ECTS
362	Materials V: Ceramics and Magnetic Materials	6
344	Solid State Materials Laboratory	8
IPA 001	Practical Exercise	5
	Elective Courses	15
<b>Total ECTS</b>		<b>34</b>

7 <sup>th</sup> Semester		ECTS
	Elective Courses or Elective Compulsory	16
<b>Total ECTS</b>		<b>16</b>

8 <sup>th</sup> Semester		ECTS
	Elective Courses or Elective Compulsory	16
<b>Total ECTS</b>		<b>16</b>

The program offers a variety of options which increase when the student completes the compulsory core courses at the suggested pace (e.g. according to the standard program). The choices depend on the interests of the student and the capabilities of the University. The Standard Curriculum as given in the tables above intends to assist the student in the first semesters of their studies. The normal weight of each semester (with normal progress) is about 35 ECTS on average. The standard program defines the compulsory courses as well as the proposed total number of ECTS units for elective courses. It is possible for students, in one semester, to take more or less of the proposed ECTS units for the elective courses.



A course is transformed into an "independent study" course when the number of registered or regularly attending  $n$  is:

(a)  $n \leq 10$  for compulsory course

(b)  $n \leq 5$  for a course of choice

If the course is converted into an independent study, the teacher must immediately inform the Committee of Studies. When the number of exams in the final examination of the course is less than 8 in case (a), or less than 4 in case (b), then the course is considered to be independent study.

## 8. Examinations, Grading, and Examination Integrity

Examinations are held after the end of the winter and spring semesters for the courses taught during these semesters and the examination period lasts for three weeks. In addition, students are eligible to take part in exams for either semester during the September re-examination period. Therefore, the examination periods are the following three:

a) January, for the winter semester courses

b) June, for the spring semester courses

c) September ("re-examination") for courses taught in either semester.

The exact starting and ending dates of the examination periods are determined by decision of the Senate. The schedule of the examination periods is made public at least one month before the examination. The method of examination and the evaluation process for each course are described in its outline that is posted on the Departmental website. The final examinations are usually written. Each final written exam is completed within two (2) or three (3) hours as determined for each course. Students who have included a course in the current semester's registration are eligible to take part in the examination period of January and June, whereas in September students may elect to take part in examinations of the courses they have registered in during the academic year, as well as examination of additional courses that they have registered in previous semesters.

Special care is taken for the examination of students with learning difficulties or disabilities, according to the guidelines of the Student Counseling Center of the University of Crete.

Procedures for the examinations and the assessment:

1. Upon arrival, examinees must bear a photo identification card (e.g. one issued by police or student ID or other government document). The ID should be placed on the desk where the student is sitting to be available for discrete checks by the proctors.
2. For laboratory courses, the conditions of the final exam are decided by the instructor and announced to the students at the beginning of the course. In general, for all courses, the way students are assessed (e.g. final exam, midterm, etc.) is announced by the teacher at the beginning of each semester, within two weeks of the first lecture.
3. The use of mobile phones or other electronic devices during the examinations is strictly forbidden, unless explicitly permitted by the instructor. Examinees must turn off their mobile phones throughout their examination. Notes, books and other aids are removed according to the proctor's instructions.
4. The proctor ensures that the validity, reliability of the examinations and the rules of academic conduct and honesty are maintained by distributing students at seats preventing visual access to each other's tests. The proctors can alter the sitting assignments of students if they deem so appropriate to prevent cheating.
5. Upon submission of their written exams, examinees sign a registry with their name, registration number and department name.
6. The examinees are not allowed to leave the examination room before the lapse of twenty (20) minutes from the starting time or, otherwise, before the time lapse set by the instructor/proctor at the beginning of the examination.
7. After the exam questions are handed out, no new students are allowed to enter the room.
8. All clarifications are made in public.
9. In case of academic dishonesty (cheating), the proctor should inform the course instructor, sign the examination booklet, expels the examinee from the room, and fills in a relevant form stating the student's delinquent behavior.

10. In order to ensure the reliability of the examinations, the last examinee is not allowed to be left alone and the penultimate examinee is kindly asked to remain in the room until the last one submits his / her writing.

Grading is the sole responsibility of the instructors. Grades may range from zero (0) to ten (10). The minimum passing grade is five (5). Examination scores are posted on electronic secretariat (StudentsWeb) no later than fifteen (15) days from the end of each exam period. Students have the opportunity to request from the instructors to see and discuss with them their corrected and graded exam. Instructors have the obligation to respond to any such requests made during the semester following the exam, as part of their collaboration with students.

In case of repeated failures on the course examination, the possibility of re-examination on the course by a three-member committee is considered at the request of the student. Details can be found at the link below: <http://www.sse.uoc.gr/review/258.html>

5<sup>th</sup> year (9<sup>th</sup> semester) students onwards may electronically register to take exams in up to ten (10) subjects

Students who have accumulated at least 200 ECTS credits have the opportunity to take examinations in both winter and spring semesters (January and June) for courses they had registered in any previous semester, provided that the courses are included in the courses to be examined during the examination period in question. This list is determined by the Department's General Assembly. The examination of the courses is done on the current material and by the instructor of the current semester.

Students who have accumulated at least 180 ECTS credits have the opportunity to request the Undergraduate Studies Committee to take courses with pre-requisites.

## 9. Degree Conferral and Diploma Supplement

**Requirements for the Degree Conferral:** The requirements for obtaining a degree are:

1. Enroll in the Department and attend courses for at least eight (8) semesters.
2. Successful completion of at least 240 ECTS units, of which at least 226 ECTS units from the Department of Materials Science and Technology. Non-Departmental ECTS units are subject to the restrictions set out in Table II below.
3. Success in all compulsory courses of the Department, listed in Table 1, which corresponds to 182 ECTS units (8 ECTS units in English and 174 ECTS units).
4. Successful completion of the student's specialization requirements.

A student is eligible to obtain a diploma based on the requirements of the study regulation applying during the year of the student's first enrollment in the Department of Materials Science and Technology. These requirements for the current study guide are summarized in the Table below.

**Table II:** Degree Requirements of the Department of Materials Science and Technology

Courses	ECTS	Details
<b>Total</b>	<b>≥240</b>	
Total in Department of Materials Science and Technology	≥226	Table I
<b>Obligatory:</b>	<b>182</b>	
Department of Materials Science and Technology (except English Language)	174	Table I
English Language	8	
<b>Obligatory Elective: EC1</b>	<b>≥6</b>	Table I
<b>Obligatory Elective: EC2</b>	<b>≥18</b>	Table I
<b>Options:</b>	<b>≥34</b>	
Department of Materials Science and Technology	≥20	Table I
Philosophy Studies	≤12	
Other Departments of the School of Sciences and Technology <sup>1</sup> and the School of Health Sciences	≤20	
Practical Training <sup>1</sup>	≤15	

<sup>1</sup> Total courses in Philosophy Studies/Other Departments and Practical Exercises may not exceed 30 ECTS credits.

*Clarifications:* There are two compulsory elective courses (EC1 and EC2) from which the student is required to take at least 6 and 18 ECTS points, respectively. The extra units in the EC1 and EC2 courses can be converted into optional courses at the student's request. Elective courses may also include courses in Philosophy, the School of Health

Sciences as well as basic courses in other Departments of the School of Science and Technology. From the courses of the Humanities cycle the upper limit is 12 ECTS units. From the courses of other Departments of the Faculty of Science and Engineering and the School of Health Sciences the maximum allowed level is 20 ECTS.

The Undergraduate Studies Committee may replace a course of choice of the Department of Materials Science and Technology with a course of another Department.

It is also possible for undergraduate students to enroll in postgraduate courses of the Department, subject to prior agreement and permission from the respective instructor. The course will be decided by the instructor. The ECTS units of the postgraduate courses are included in the total score of the student.

The **Diploma Supplement** is an explanatory note attached to the diplomas issued by Higher Education Institutions to their graduates, has a unified content across Institutions, and contains information about the nature, the level, the general education framework, the content and the status of the completed studies. The issuance of the Diploma Supplement in Greek and English is an obligation of the Department and is issued automatically upon graduation of the student.

The following grading system is used to evaluate undergraduate student work. The **grading scale** is between 0 and 10, with 5,0 being the minimum passing grade. The grade at the diploma is listed as follows:

Excellent: from 8,50 to 10

Very well: from 6,5 to 8,49

Satisfactory: from 5 to 6,49

A point grade less than 5,0 is unsatisfactory and equivalent to unsuccessful completion.

The **Degree Grade - Average Progress Indicator – Upgrades** is uniformly calculated for all Higher Education Institutions in the country, according to the Decision F-141 / B3 / 2166 (FEK 308 / 18-6-87, vol. B) by the Ministry of Education and Religious Affairs. According to this Decision, the average course scores are calculated using the following weighting factor for each course:

<b>ECTS Course Units</b>	<b>Weight Factor</b>
≤ 3	1,0
4 to 5	1,5
≥ 6	2,0

To calculate the grade of the degree,  $\bar{B}$ , multiply the score of each course by the weight factor of the course (see Table III) and the sum of the individual product is divided by the sum of the weight factors of all courses:

$$\bar{B} \equiv \frac{\sum_{i=1}^N \omega_i B_i}{\sum_{i=1}^N \omega_i}$$

Where  $B_i$  is the overall grade of the degree (where  $B_i \geq 5$ ),  $\omega_i$ : weight factor according to Table III, and  $N$ : number of all courses all semesters with  $B \geq 5$ , which also meet the requirements of Table I

If a student has collected more than the corresponding minimum required ECTS credits for the degree program, some optional courses may not be taken into account in order to maximize the final grade, provided that the number of ECTS units corresponding to the remaining courses is sufficient to meet the requirements for obtaining the degree.

**Average Progress Indicator:** In addition to the above grade and the corresponding graduation mark, the "Average Progress Indicator" is defined; It is calculated for each student each October or November following the second exam period, according to the following algorithm:

$$\Pi \equiv \frac{N_A}{N_o} \bar{B}$$

Where  $\bar{B}$  is the average score, given by the above formula for the degree grades with  $N$  the number of all previous half course (with  $B_i \geq 5$ , which also satisfy the conditions of Table. I),  $N_A$  is the total ECTS units the student has

gathered in all the  $N$  classes and  $N_o$  total of ECTS credits that would have been collected by the student according to the standard curriculum, and which reads as follows:

After the	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year	6 <sup>th</sup> year
No.	70	142	208	240	300	360

On the basis of the above average progress indicator, which is calculated and communicated to students each November, students are ranked in the 'annual success order' each year. The above average grades, progress indicators and success rates (yearly and diploma), can be used as one of the criteria for the award of honors, scholarships (IKY etc.).

The Commencement and Degree Conferral processes are described in the Internal Regulations of the University of Crete. Briefly, graduates take an oath in front of the university authorities on dates set by the Senate, stating their commitment to the science and principles they were taught during their studies in the Department.

## 10. Course Registration

Students are required to complete the course registration online at times/dates determined at the opening of each semester by the Secretariat. Late registration or changes will not be approved. In case of no registration, the student will not be eligible to participate in the examination. Course registration is only valid for the given semester.

### 10.1 Retaking or repeating a course to improve grades:

Students who want to improve their grades in a course that they have already passed can request a reset. As such, they must notify the Secretariat when registering for the new semester. If the student re-enrols in the same course in the next academic semester, then the latest grade will apply, while the previous grade will be deleted automatically with the student's enrolment.

### 10.2 Taking previously failed courses

Students have the opportunity to retake exams in previous years' courses which they failed and have not selected for the current academic year, provided that they apply to the Secretariat of the Department "Application for Courses" from 1 to 20 July of each year and that the course is offered in the current academic year by the Department.

## 11. Listed Courses

The following table (Table IV) summarizes the listed courses and their individual characteristics, namely the semester of study to which each course normally corresponds, its weight in ECTS units, whether it is a core, compulsory or elective course and its prerequisite courses, which is courses containing the knowledge necessary to attend the course.

Table IV: Regularly Offered Courses per Semester

Course Code	1 <sup>ST</sup> SEMESTER	Hours				ECTS	Prerequisites
		T	P	L			
101	General Physics I	4	2	0	C	6	-
111	General Mathematics I	4	2	0	C	6	-
114	Computers I: Introduction to Programming	2	0	3	C	6	-
121	General Chemistry	4	2	0	C	6	-
141	Materials I: Introduction to Materials Science	3	1	0	C	6	-
011	English I	3	0	0	C	4	-
Course Code	2 <sup>ND</sup> SEMESTER	Hours				ECTS	Prerequisites
		T	P	L			
102	General Physics II	4	2	0	C	6	-
112	General Mathematics II	4	2	0	C	6	-
116	Applied Mathematics	3	2	0	C	6	-
122	Organic Chemistry	4	2	0	C	6	-

124	Chemistry Laboratory	2	0	4	C	8	121
012	English II	3	0	0	C	4	-
<b>Course Code</b>	<b>3<sup>RD</sup> SEMESTER</b>	<b>Hours</b>				<b>ECTS</b>	<b>Prerequisites</b>
		<b>T</b>	<b>P</b>	<b>L</b>			
201	Contemporary Physics - Introduction to Quantum Mechanics	3	2	0	C	6	-
203	Physics Laboratory I: Mechanics - Heat	0	0	3	C	8	101
211	Differential Equations	3	2	0	C	6	111, 112
223	Inorganic Chemistry	4	1	0	C	6	121
225	Materials Chemistry Laboratory	2	0	4	C	8	124
260	Thermodynamics	3	1	0	C	6	112
215	Advanced Programming I	0	0	3	O	5	114
<b>Course Code</b>	<b>4<sup>TH</sup> SEMESTER</b>	<b>Hours</b>				<b>ECTS</b>	<b>Prerequisites</b>
		<b>T</b>	<b>P</b>	<b>L</b>			
204	Physics Laboratory II: Electricity-Optics	0	0	3	C	8	102
232	Biochemistry and Molecular Biology	3	0	0	C	6	122
242	Materials III: Microelectronic- Optoelectronic Materials	4	0	0	C	6	-
243	Materials II: Polymers- Colloids	4	0	0	C	6	-
202	Modern Physics II: Matter and Light	3	1	0	EC1	6	201, 116
212	Differential Equations II	3	1	0	EC1	6	211
213	Computers II: Introduction to Numerical Analysis	2	0	3	EC1	6	114, 116
222	Spectroscopy	3	0	0	O	5	-
248	Structural & Chemical Analysis of Materials	3	0	0	O	5	-
IIAI-016	Teaching Materials Science I	-	-	-	O	3	(laboratory assistants)
<b>Course Code</b>	<b>5<sup>TH</sup> SEMESTER</b>	<b>Hours</b>				<b>ECTS</b>	<b>Prerequisites</b>
		<b>T</b>	<b>P</b>	<b>L</b>			
301	Electromagnetism	3	2	0	C	6	102, 112
305	Solid-State Physics: Introduction	3	2	0	C	6	201
335	Molecular Cellular Biochemistry	3	0	0	C	6	122
343	Soft Materials Laboratory	1	0	5	C	8	243
391	Materials IV: Natural Biomaterials Science	3	0	0	C	6	122
349	Mechanical & Thermal Properties of Materials	3	0	0	O	5	-
IIAI-017	Teaching Materials Science II	-	-	-	O	3	(laboratory assistants)
IIPA-001	Practical Exercise I	-	-	-	O	5	-
<b>Course Code</b>	<b>6<sup>TH</sup> SEMESTER</b>	<b>Hours</b>				<b>ECTS</b>	<b>Prerequisites</b>
		<b>T</b>	<b>P</b>	<b>L</b>			
344	Solid State Materials Laboratory	1	0	5	C	8	204
362	Materials V: Ceramic and Magnetic Materials	3	0	0	C	6	201
461	Elements of Ceramics Science	3	0	0	EC2	6	-
302	Optics & Waves	3	0	0	O	5	102, 112
306	Solid-State Physics II	3	0	0	O	5	201

340	Transport Phenomena in Materials	3	0	0	O	5	211
346	Nanomaterials Surfaces Science	3	0	0	O	5	141
348	Materials & Environment	3	0	0	O	5	-
IIAI-018	Teaching Materials Science III	-	-	-	O	3	-
IIPA-002	Practical Exercise II	-	-	-	O	5	-
Course Code	7 <sup>TH</sup> SEMESTER	Hours				ECTS	Prerequisites
		T	P	L			
471	Elements of Colloidal Dispersions	3	0	0	EC2	6	243
481	Elements of Semiconductor Physics	3	0	0	EC2	6	242
483	Elements of Magnetic Materials	3	0	0	EC2	6	362
205	Innovation, Entrepreneurship and Intellectual Property	4	0	0	O	6	-
209	Innovation and Entrepreneurship	4	0	0	O	6	-
443	Nanomaterials & Biomaterials Laboratory	0	0	5	O	6	343
453	Crystal Chemistry	1	0	2	O	6	-
598	Bio-organic Nanostructures	3	0	0	O	5	121,122,012
Course Code	8 <sup>TH</sup> SEMESTER	Hours				ECTS	Prerequisites
		T	P	L			
447	Computational Materials Science	2	0	3	EC2	6	114
450	Polymer Physics	3	0	0	EC2	6	243
491	Biological Materials and Synthetic Biomaterials	3	0	0	EC2	6	232
207	Exploitation of Research Output and Entrepreneurship	4	0	0	O	6	-
410	Computer Control and Automation of Measuring Systems Laboratory	2	0	2	O	5	114
412	Solid State Chemistry	3	0	0	O	5	141
440	Technical Drawing Laboratory	2	0	2	O	5	-
442	Diploma Thesis	-	-	-	O	12	-
444	Properties & Selection of Materials	3	0	0	O	5	-
445	Fluid Dynamics	3	0	0	O	5	211
446	Electronic Microscopy	3	0	0	O	5	-
448	Special Chapters in Computational Materials Science	2	0	3	O	5	-
452	Polymer Synthesis	3	0	0	O	5	243
454	Rheology and Polymer Processing	3	0	0	O	5	211
462	Ceramic Materials and Properties	3	0	0	O	5	362
464	Special Chapters on Ceramic Materials	3	0	0	O	5	362
470	Synthesis & Characterization of Colloidal Dispersions	3	0	0	O	5	243
480	Heterostructures, Nanostructures & Semiconductor Nanotechnology	3	0	0	O	5	242

482	Introduction to Microelectronics	3	0	0	O	5	242
484	Optoelectrical and Photonic Materials	3	0	0	O	5	242
486	Semiconductor Processing Technology	3	0	0	O	5	242
488	Special Chapters on Magnetic Materials	3	0	0	O	5	362
490	Photonic Materials	4	0	0	O	5	-
492	Cellular Biology	3	0	0	O	5	232, 335
494	Introduction to Biomedical Mechanics	3	0	0	O	5	232 or 335
500	Symmetry in Materials Science	3	0	0	O	5	116, 305
512	Computational Materials Science II: Electronic Structure	2	0	3	O	5	305 and one of EC1
570	Special Chapters on Soft Materials	3	0	0	O	5	243
580	Optoelectronics & Lasers	3	0	0	O	5	242
582	Special Chapters on Optoelectronic Materials	3	0	0	O	5	242
594	Protein Motion and Molecular Machines	3	1	0	O	5	335
596	Molecular Imaging	3	0	0	O	5	-
911	Publication I	-	-	-	O	5	-
912	Publication II	-	-	-	O	5	-

Elective Compulsory courses are divided into Elective Compulsory 1 and 2 (EC1 and EC2), from which the student is required to take at least 6 and 18 ECTS points, respectively. The extra units in the EC1 and EC2 courses can be converted into optional courses at the student's request. Up to 10 ECTS units or up to 20 ECTS units (through the ERASMUS+ program) will be given for student internships, as detailed below.

The list of elective courses is indicative. Upon approval of the department's meeting and before the new academic year begins, new courses may be added whenever possible.

Students of the current curriculum, may also choose subjects from the Unified Study Guide (as long as it is still valid) as optional courses provided that the courses they have successfully passed are not the same or equivalent.

**Courses in other departments of the University of Crete:** Students of the MST can attend courses offered by other departments of the University of Crete. These options are updated and announced every six months by the undergraduate committee, based on the courses offered by the other Departments of the University.

## 12. Basic and elective courses

The courses of the Department of Science and Technology of Materials are coded with the letters "ETY" and in three digits. The first digit indicates the level of the lesson and usually corresponds (but not always) to the year in which the lesson is attended (according to Table I). The second digit is often related to the cognitive area of the course.

The compulsory courses for obtaining a degree are those specified in the Standard Curriculum - see Tables paragraph 9 and Table I. Table I also lists the optional compulsory courses and the TETY elective courses. The courses of electing other Departments, as already mentioned, are decided every year by the Undergraduate Studies Committee, based on the courses offered by the other Departments.

Due to the interdisciplinary nature of the Department of Materials Science and Technology, a significant number of courses offered by the other Departments of the University of Crete have a significant overlap with corresponding courses of the TETY. Because of this overlap, the courses of the other Departments that are considered equivalent to the courses offered by the TETY are not available for selection by the students. Table V gives a brief description of these courses.

<b>Table V: Courses of other Departments with sufficient significant content overlap to be considered equivalent to courses of the Department of MST</b>		
<b>Course Code</b>	<b>Course of non-MST Department</b>	<b>Equivalent course offered by the MST Department</b>
<b>Department of Physics</b>		
ΦΥΣ-101	General Physics I	General Physics I (ETY-101)
ΦΥΣ-102	General Physics II	General Physics II (ETY-102)
ΦΥΣ-105	Physics Laboratory I	Physics Laboratory I: Mechanics - Heat (ETY-203)
ΦΥΣ-111	General Mathematics I	General Mathematics I (ETY-111)
ΦΥΣ-112	General Mathematics II	General Mathematics II (ETY-112)
ΦΥΣ-113	Mathematics for Physicists I	Applied Mathematics (ETY-116)
ΦΥΣ-151	Computers I	Computers I: Introduction to Programming (ETY-114)
ΦΥΣ-152	Computers II	Computers II: Introduction to Numerical Analysis (ETY-213)
ΦΥΣ-201	Introduction to Modern Physics I	Contemporary Physics - Introduction to Quantum Mechanics (ETY-201)
ΦΥΣ-207	Physics Laboratory II	Physics Laboratory II: Electricity-Optics (ETY-204)
ΦΥΣ-208	Physics Laboratory III	Physics Laboratory II: Electricity-Optics (ETY-204)
ΦΥΣ-211	Differential Equations I	Differential Equations (ETY-211)
ΦΥΣ-273	Introduction to Microelectronics	Introduction to Microelectronics (ETY-482)
ΦΥΣ-306	Thermodynamics	Thermodynamics (ETY-260)
ΦΥΣ-351	Computational Physics I	Computational Materials Science I (ETY-447)
ΦΥΣ-371	Introduction to Semiconductor Physics	Elements of Semiconductor Physics (ETY-481)
ΦΥΣ-411	Introduction to Solid State Physics	Solid-State Physics: Introduction (ETY-305)
ΦΥΣ-446	Physics and Physical Chemistry of Polymers	Polymer Physics (ETY-450)
ΦΥΣ-570	Structural and Chemical Analysis of Materials	Structural & Chemical Analysis of Materials (ETY-248)
<b>Department of Mathematics</b>		
MAΘ-102	Calculus I	General Mathematics I (ETY-111)
MAΘ-103	Calculus II	General Mathematics II (ETY-112)
MAΘ-106	Programming	Computers I: Introduction to Programming (ETY-114)
MAΘ-213	Partial Differential Equations	Differential Equations (ETY-211)
MAΘ-216	Vector Calculus and Differential Equations	Differential Equations (ETY-211)
<b>Department of Chemistry</b>		
XHM-043	Principles of Chemistry	General Chemistry (ETY 121)
XHM-044	Quantitative and Qualitative Analysis	General Chemistry (ETY 121)
XHM-047	General Chemistry Laboratory	Chemistry Laboratory (ETY 124)
XHM-101	General Chemistry I	General Chemistry (ETY-121)
XHM-201	Organic Chemistry I	Organic Chemistry (ETY 122)
XHM-202	Organic Chemistry II	Organic Chemistry (ETY 122)
XHM-303	Physical Chemistry I	Thermodynamics (ETY-244)
XHM-401	Inorganic Chemistry I	Inorganic Chemistry (ETY 223)
XHM-402	Inorganic Chemistry II	Inorganic Chemistry (ETY 223)
XHM-049	Physical Chemistry II	Thermodynamics (ETY-244), Contemporary Physics - Introduction to Quantum Mechanics (ETY-201)



<b>Table V: Courses of other Departments with sufficient significant content overlap to be considered equivalent to courses of the Department of MST</b>		
<b>Course Code</b>	<b>Course of non-MST Department</b>	<b>Equivalent course offered by the MST Department</b>
<b>Department of Biology</b>		
BIOA-105K	General Chemistry	General Chemistry (ETY-121)
BIOA-107K	Organic Chemistry I	Organic Chemistry (ETY-122)
BIOA-150K	Cell Biology	Cell Biology (ETY-492)
BIOA-154K	Biochemistry I	Biochemistry and Molecular Biology (ETY-232)
BIOA-252M	Biochemistry II	Molecular Cell Biochemistry (ETY335)
<b>Department of Computer Science</b>		
HY-100	Introduction to Computer Science	Computers 0 (ETY-113) – not offered any longer

### 13. Eligibility and Transfer of Credit by other Higher Education Institutions or other Departments of the University of Crete

For students who are admitted to the Department via any available process (e.g. transcript with or without exams, or regular entrance exams) and have already successfully attended courses in other Higher Education Institutions in the country or abroad (or other Departments of the University of Crete), the following general principles apply for the transfer of these courses, having regard always to the legislation in force:

1. Courses provided by the curriculum of the Department of Materials Science and Technology of the University of Crete as core or elective courses:
  - A course from another AEI or other Department of the University of Crete is recognized only when the core curriculum of this course corresponds almost completely to the course material of the TETY, as the curricula show. This correspondence is established by the Committee of Studies. The recognized course takes the ECTS units that have the corresponding TETY course. If the student had passed the course in Greek University, the student retains the grade he / she had in the recognized course and it is written on his / her card. If the student had passed the course in University abroad, then the course is recognized by its grade adjusted to the Greek grading scale.
  - A course that has been attended through recognized inter-university cooperation programs (e.g. ERASMUS), in which the student participated, will be recognized as a regular course and will receive ECTS credits assigned to it, unless the Committee finds that the material of the new course overlaps with a similar course of the University of Crete for which ECTS units have already been recognized. In this case, the new course will not be recognized.
  - If the basic course material is not fully matched, then the student concerned should consult with the course instructor in order to determine whether the course is eligible for enrollment. This can be done by any method of evaluating the student's knowledge. The mark obtained while e.g. attending the ERASMUS program, is determined by the decision of the Student Council on the basis of student performance.
2. Courses of other Departments of the University of Crete, which the student has already taken before enrolling in MST. The usual procedure is to provide the Student Committee with a certificate of the respective Department of the University of Crete for the equivalence of the lesson being enrolled. For courses of other Departments of the University of Crete in Rethymno, the Committee may accept the course without the confirmation of the corresponding Department. The Committee determines the mark and the ECTS units to be attributed in these cases, based on the ECTS units of the courses at the other Universities and the University of Crete.

Students wishing to recognize such courses for credit must submit to the Department's Secretariat:

- A completed application form (exists in .docx and .pdf formats).
- Official transcript from the University where the credit needs to be transferred from in which will be stated among others which the date of first enrollment, the courses (and the laboratories or projects) successfully completed and for each of those whether it was compulsory or elective, etc., its credits (ECTS or formal equivalent), the semester in which the student successfully completed it and the grade.
- Website links from the official website of the University where the credit needs to be transferred from with the Program of Study and the link to the particular course. Alternatively, other official documents from the University where the subject course, course material covered, books, description of exercises and/or projects, method examination and total time spent in class, section, and laboratory.
- Contact information with the Department's Secretariat at the University where credit needs to be transferred from and, if possible, the contact info of the Course Instructor who taught the course the semester the student took it.

The acceptance of course documents is signed by members of the Committee of Undergraduate Studies and the Department Chair. In unclear or doubtful cases that are not covered by the above general principles, the Committee decides in consultation with the President of the Department.

## 14. Course Evaluation

The Department ensures and highlights the quality of its educational and research work through its regular evaluation as prescribed by the Quality Assurance Unit (known as MODIP). Each course is evaluated at the end of the semester by the students, by the anonymous online completion of questionnaires. Questionnaire completion is recommended to be done during the 9<sup>th</sup> week of each semester in order for the students to have formed an opinion about the course. The results of the course evaluations, instructor evaluations and course inventory are available at the website of the MODIP of the University of Crete (<https://www.modip.uoc.gr/el/qau/statistics/class-evaluations>).

The questionnaires are forwarded by the Secretariat of the Department to the Internal Evaluation Team and to the Instructors of each course and are carefully examined. Through this process, proposals for the improvements of the Undergraduate Studies are made and possible shortcomings are identified, and necessary reforms to course aspects are implemented. These changes are discussed at the Departmental Faculty Meeting and are incorporated as a review of the Undergraduate Studies Program

## 15. Participation in the ERASMUS Program

Detailed up-to-date information for students regarding the Erasmus Program is available at <https://www.uoc.gr/intrel/students/spoydes-student/erasmus/prokiryksi-kinitikotitas> For more information and the relevant regulations please refer to [Addendum 1](#).

## 16. Diploma thesis

Students have the option to engage in research work under the guidance of a professor-advisor, and present the outcome of their work in a thesis. Students who chose to do so, receive 12 ECTS points. The thesis may be written in Greek or English. The diploma is awarded after a public presentation, followed by an oral examination by a two-member panel of teachers. At least one member of the committee should be a professor in the department, while the other member may come from another department or institution or be a researcher at a recognized research center or a post graduate member of the Department holding a Ph.D. In each case, the members of the committee are appointed by the Department's Diploma Conferral Committee after the proposal of the supervising professor.

The Graduation Thesis is graded by the two-member Committee. The ECTS units from the thesis count towards MST credit.

Publication of a student in a valid international peer-reviewed scientific journal or in proceedings of a standing international peer-reviewed conference is considered equivalent to a special course and gives the student five (5) ECTS units of credit, with no grade. The file is recorded with code 9 I 1 (where I = 0,1, ... 9) and by name, publication 1. If there is a second publication by the same student, it is recorded with code 9 I 2 (where I = 0,1, ... 9) and by name, publication 2. The regulations the Department follows are described in [Addendum 2](#).

## 17. Internships

After the end of the 4<sup>th</sup> semester, students can and are encouraged to work preferably during the summer holidays, in Greek and international organizations and companies of the public and private sectors conducting activities relevant to the Department.

The Internship provides the opportunity for students to apply their knowledge in real-world working conditions, in public and private corporations whose activities are related to the subject matter of the Department. Internships can be carried out in companies, research institutes etc. The aim of the internship is to gain practical training, expand one's knowledge on technological applications of materials, while delving deeper in one material category or a particular application, and develop the trainee's sense of teamwork and collaboration in the workplace as well as the sense of professionalism.

The Department offers two elective courses entitled Internship I (IPA-001) and Internship II (IPA-002) whose duration is 2 months/course, are full-time, and receive 10 ECTS credits/course, of which only 5 ECTS credits/course are counted towards degree requirements. The remaining will be mentioned at the Diploma Supplement. In order to participate, students must have completed their 4th semester of their studies before the beginning date of the internship. This way, students can secure up to a total of 10 ECTS credits towards degree completion and up to 20 ECTS credits credited in their Diploma Supplement. The total ECTS credits of the Internship plus units of the Philosophical courses

or the courses of other departments of the School of Exact and Technological Sciences of the University of Crete cannot exceed 30 ECTS units.

The maximum number of students that can participate in Department-sponsored internships is determined annually by the funding provided for the program. The criterion for selecting and ranking students is the Individual Progress Index. In case of a tie, the student with the highest number of registered ECTS credits has priority.

To be considered complete, the Internship Application package includes: a) Application Form provided by the Secretariat and filled in by the student, b) Transcript. The application deadline is announced every year. Applications are collected by the Department Secretariat.

The selection of students is done by the Internship Committee of the Department and is validated by the Undergraduate Studies Committee. The results of the selection are announced via a Secretariat posting as well as an email. Appeals to the selection process may be submitted up to 5 business days after result announcement. The appeals are examined by the Internship Appeals Committee.

Course credit is accompanied by a grade which is awarded having taken into account the evaluation of the intern by their supervisor, a post-completion report written by the intern, and a post-completion oral examination given by a Department Faculty appointed by the Internship Committee.

The process that a student must follow to undertake an Internship is detailed in the Handbook of Internships that is at the website <https://www.materials.uoc.gr/el/undergrad/courses/praktiki/praktiki.html> and in Addendum 3 of the Regulations / current Handbook. New versions of the Handbook are validated from the Undergraduate Studies Committee of the Department. The supervision of the Internship from the Department is performed by a General Assembly of the Department-assigned Faculty member.

Students can also seek internships at a foreign institution (University, Research Center, company) through the ERASMUS+ program. In this case, they can secure up to 15 ECTS for two months or up to 20 ECTS for three or more months of employment, from which 10 ECTS units and 15 ECTS units respectively, are counted towards degree requirements (as elective course), while the rest are listed in the Diploma Supplement. The ECTS units of the Internship, which are taken into account in meeting the requirements of the Curriculum, cannot exceed the total of 15 units.

## 18. Laboratory Courses

The completion of laboratory courses may also require taking a final examination. This is decided by the teacher and communicated to the students at the beginning of the lesson. For any lab courses offered in both semesters, failure results to a complete repetition of the lab. Exceptions to this rule may be made after recommendation of the teacher and the decision of the Committee on Studies.

Students wishing to attend the Chemistry Laboratory (ETY 214), the Materials Chemistry Laboratory (ETY-225), the Soft Matter Laboratory (ETY-343) and Solid State Materials Laboratory must have attended the department's safety seminar (Addendum 4). The seminar takes place every year at the beginning of the spring semester.

Students in labs are preferably participating in groups of two per experiment. The laboratory instructor decides whether the processing and analysis of the measurements and its presentation in the laboratory exercise report will be done by each student individually or collectively by the group.

Each student is required to maintain a personal laboratory notebook (standard numbered pages). This booklet shall contain all information on the preparation and execution of the experiment, the date of the experiment, the measurements, the various calculations, the schematic layout or the electrical circuits and any additional information on the experiment and the instruments. Are given by the teacher and the assistants. This material is not written for the main purpose of presenting it to the teacher or assistants, but to serve as an exclusive source for the laboratory reference data, by the student himself, even if the report is compiled much later after the experiment has been carried out, including possible examinations of the laboratory course at the end of the semester. All recordings in the laboratory notebook must be made during each exercise. At the end of each exercise and before the student leaves, the instructor signs the last recording and checks the content of the notebook. Missing data will be proof of student's non-participation in the respective exercise. A citation or measurement that does not appear in the notes of each student's lab notebook is not accepted. The student should be prepared to perform the exercise before coming to the lab.

This preparation includes:

- The study of the subject of the experiment from the corresponding course books, laboratory guide and related literature.
- Keeping notes in the laboratory notebook so that information on the units, physical constants and formulas required are readily available at the time of the experiment.
- The design in the laboratory notebook of the experimental devices and setup

Laboratory reports should include:

- A very brief introduction (typically 200 to 300 words) for the purpose of the experiment and a summary of the related theory.
- A diagram of the experimental setup with brief comments, if needed, on the process of the experiment and the conditions under which the measurements were made.
- The formulas that are needed to perform and analyze the experiment.
- Tables with experimental results and their analysis as well as measurement errors, when requested.
- All graphs required to analyze the data and present the results.
- Brief conclusions and comments.

The guidelines vary, to some extent, with the specific subject of each lab. There are typical sample reports for each laboratory.

The report, as well as the personal notebook, consist evidence of attendance for the student. Students who have more than one unjustified absence are required to enroll in the lab the following year or semester. General regulations for each laboratory course are given in [Addendum 5](#).

## 19. Pedagogical and Teaching Adequacy Program

The Pedagogical and Teaching Adequacy Program (PTAP, “ΠΠΔΕ”), was initially approved by the 10<sup>th</sup>/ 22-11-2018 regular meeting of the Committee and by the 398<sup>th</sup>/ 29-11-2018 regular meeting of Senate of the University of Crete and has been amended with the provisions of case A of paragraph 3 of law 3848/2010 (Government Gazette A '71 / 19.5.2010), as amended and in case A of paragraph 22 No. 36 of law 4186/2013 (Government Gazette A '193 / 17.9.2013) and Law 4485/2017, no. 18 par. E, F, is implemented by the School of Exact and Technological Sciences pertaining to students of the Departments of said School, and in collaboration with the Pedagogical Department of Preschool Education, the Pedagogical Department of Primary Education, the Department of Philosophical and Social Studies and the Department of Psychology of the University of Crete.

PTAP is a two-semester program corresponding to full-time workload of 60 ECTS credits. Students and graduates of the School of Exact and Technological Sciences of the University of Crete have priority in enrollment. It is supported by the three-member Committee of Academic Coordination (CAC).

Registration takes place at the beginning of every academic year (September) and the prerequisites for application for enrollment are determined by the Committee of Academic Coordination of PTAP. After student petition, the CAC may recognize and count towards credit relevant courses that students have previously successfully completed, for example during their undergraduate studies.

The coursework of PTAP can be divided into three categories:

### **A: Courses on Education and Training**

### **B: Courses on Learning and Teaching**

### **C: Special Teaching (C1) – Teaching Practicum (C2)**

Interested applicants may complete the requirements for PTAP of the School of Exact and Technological Sciences after successful completion of at least 3 courses in each of categories A and B (36 ECTS total), one course from category C1 (6 ECTS), and the Teaching Practicum (18 ECTS).

Upon program completion, participants will receive the Certification of Pedagogical and Teaching Adequacy according to all laws and regulations and may work in public and private education, and in particular in categories ΠΕ03, ΠΕ04 and ΠΕ86.

## **Registration and Attendance**

A) For the undergraduate students of the School of Exact and Technological Sciences (SETS)

Registration in PTAP courses from the list available posted at the SETS website at the beginning of each semester, simultaneously with registration for all other courses towards degree completion.

Successful completion of 7 courses (at least 3 in A, at least 3 in B) for a total of 36 ECTS, one course in C1 (6 ECTS).

Successful completion of the mandatory course “Teaching Natural Sciences” or equivalent of category C1 is a prerequisite for participation in the Teaching Practicum (18 ECTS).

B) For graduates of the SETS of the University of Crete

Registration in PTAP program and program completion in two semesters.

Successful completion of the mandatory course “Teaching Natural Sciences” or equivalent of category C1 is a prerequisite for participation in the Teaching Practicum (18 ECTS), therefore care should be taken to complete it in the first semester.

Γ) For graduates of the Schools of Exact Sciences of other Greek Universities

Registration to the PTAP is possible for graduates of Departments of Schools of Exact Sciences of other Greek universities if there are available slots. Every year, the size of the incoming class is determined by the CAC of the PTAP.

### Remarks

Undergraduate students of SETS may initiate the PTAP by taking courses in the various categories A, B, C1 and complete PTAP during their undergraduate studies.

The formal registration to the PTAP is only relevant to graduates.

In case undergraduate students have started, but not completed the PTAP during their studies, they may register as graduates. Classes completed during their undergraduate studies will be counted towards certificate progress after petition to the CAC.

The Teaching Practicum (18 ECTS) is considerably demanding and one should plan ahead to dedicate a sufficient amount of time during the semester of enrollment.

Indicatively, the categorization of courses of pedagogical content (as defined for the PTAP completion) offered in the School of Exact and Technological Sciences is listed in the following Table.

<b>TABLE. Basic modules and courses offered in the Pedagogical and Teaching Adequacy Program for Certificate Completion to the students of the Department of Materials Science and Technology of the University of Crete</b>		
<b>A. Courses on Education and Training</b>	<b>B. Courses on Learning and Teaching</b>	<b>C. Special Teaching – Teaching Practicum</b>
<b>A1. Pedagogical Theory</b> A1.1. Introduction to Pedagogy <sup>1</sup> A1.2. Philosophy of Education A1.3. Philosophy of Culture and Education	<b>B1. Psychology</b> B1.1. Developmental Psychology and Learning B1.2. Educational Psychology B1.3. Psychopedagogy of children with developmental disorders	<b>C1. Special Teaching of Subject Matter</b> C1.1. Teaching Natural Sciences C1.2. Teaching Biology C1.3. Mathematics in Secondary Education C1.4. Teaching Physics C1.5. Teaching Chemistry
<b>A2. Sociology of Education</b> A2.1. Sociology of Education A2.2. Political Socialization and the role of School A2.3. Sociology of Pedagogical Theories	<b>B2. Teaching Methodology</b> B2.1. Teaching Methodology B2.2. The Curriculum: theory and research B2.3. Information and Communication Technologies (ICT) in Education for Sustainable Development	<b>Γ2. Teaching Practicum</b> Teaching Practicum in a Secondary School
<b>A3. Historical Comparative Approaches to Education</b> A3.1. History of Education A3.2. Comparative Pedagogy A3.3. The gender in the History of Modern Greek Education	<b>B3. Learning and the Use of New Technologies</b> B3.1. The Curriculum and Hypermedia B3.2. Training of Teachers via the Use of ICT e-Learning B3.3. Multimedia Applications in Education	

<sup>1</sup> Provided the Instructor will adapt the content to and draw examples from Secondary Education

<sup>2</sup> The University of Crete has co-signed the “Charter of Hellenic Universities towards Sustainability” in the Senate of Rectors (Volos, July 1-2, 2011) therefore the incorporation of relevant courses is considered mandatory.

For the best outcomes of the participation in the Program, the prerequisites for the Practicum are defined as: one course from A1, one from B2, and the relevant Special Teaching of Subject Matter from C1.

§ The Practicum in a secondary school (grades 7-9 or 10-12) will comprise three main activities for the PTAP students: a. attendance and apprenticeship in school administration and non-teaching activities, b. attendance of teaching c. the design and implementation of teaching from the PTAP student under supervision. The PTAP student must spend minimum 26 hours at the school during the semester of the Practicum. **Based on the NSRF framework, the Department of Materials Science and Technology recognizes the Teaching Practicum as equivalent to the PTAP (“ΠΠΔΕ”) Certification Teaching Practicum, as long as it takes place in a Secondary Education Institution.**

According to article 9 of Law 3848/2010 as amended by article 36, paragraph 22 (e) of Law 4186/2013, **the above provisions apply to those admitted to Institutions of Higher Education during the academic year 2013 - 2014 onwards.** For those admitted to Institutions of Higher Education before the start of the academic year 2013 – 2014, their participation in the competitions for the preparation of a table of classification of teachers by branch and by specialty, in order to appoint or hire them in primary and secondary education, the applicable laws are those before the entry into force of Law 3848 / 2010 in the publication of these provisions.

Additional information can be obtained from the website: <http://www.sse.uoc.gr/courses/lessons-sthete.html>

## III. Academic and Support Resources

### 20. Academic Advisors

Immediately after the submission of the lists of newly admitted students from the Ministry of Education and Religious Affairs to the Universities in early September, the Department appoints Academic Advisors (AA) and a notice is posted on the Departmental website (<https://www.materials.uoc.gr/el/undergrad/syllabus/syllabus.html>) with the Advisors' schedule inviting the incoming first-year students to schedule their first meeting with them. The goal is to advise students on their studies, registration for courses, registration in the Department and facilitate their introduction to courses. For first-year students, during the first semester of their studies, the courses are declared according to the standard study program by the Secretariat of the Department.

The Secretariat informs students which Faculty Member is their Academic Advisor. During the first meeting with the Advisor, The Advisor informs the student about the Curriculum, about the standard program, and offers advice on how to successfully complete the studies in the prescribed time. The Advisor also informs about the educational opportunities the Department offers, encouraging and stimulating the interest of the students in their chosen Department. Advising with the assigned advisor is recommended to be continuous and uninterrupted throughout the studies.

### 21. Administrative Support (Secretariat)

From enrollment to graduation, students have the support of the Departmental Secretariat which maintains an individual file for each student, while ensuring the confidentiality and protection of personal data.

Communication with the Secretariat can take place in any of the following ways: office hours for students on work days between 11.00 and 13.00; via electronic communication; with an authorized person; as well as through the Citizen Service Centers. The Secretariat strives to provide immediate service and to process requests on the same day.

The Secretariat strives to keep students informed via posts made on the Departmental website regarding academic announcements, answers to "frequently asked questions" that are often updated based on current developments. Students are also informed with printed material distributed to them, as well as with in person-to-person communication. Students are notified by e-mail or by phone concerning any urgent individual matters.

All members of the Secretariat are knowledgeable about academic rules and beyond, and can guide students to interpret the Handbook's instructions. They also provide information to students regarding any state or non-governmental benefits they are entitled to, such as scholarships, rent allowances, books. The Secretariat mediates between students and the Committee of Undergraduate Studies to promote their petitions. It also mediates between students and other services of the University of Crete such as the Counseling Center, Student Care etc. as needed.

Indicative services of the Secretariat to the students are course registration, the issue of certificates, the issue of student ID and its re-issue after loss, the management of their personal files, degrees conferral, etc.

### 22. Petitions to the Committee of Undergraduate Studies

Regarding rules and regulations of undergraduate studies, students with at least 180 ECTS credits may submit petitions to the Undergraduate Program Committee along with their transcripts. The Committee of Undergraduate Studies will review all petitions regarding the Course of Study and the courses in the Curriculum submitted at least one week prior to the start of the semester.

For any other matter, students are encouraged to communicate with their Advisor, who may forward their petition to the Committee of Undergraduate Studies for review if deemed appropriate.

### 23. Academic Conduct

Students are expected to follow the fundamental rules of academic conduct:

- Plagiarism will not be tolerated
- Lack of reference to the original source or code in a work presented as the student's own work, research and scholarship will not be tolerated.
- Cheating will not be tolerated. The use or attempt to use teaching materials, information, notes, teaching aids or other aids during any kind of academic examination or evaluation is not permitted without the explicit

- permission of the teacher.
- It is not permitted to assign or contract any part of the completion of academic assignments to third parties. A non-exclusive list of examples of such assignments are theses, course projects, code programming etc.
  - It is not permitted to accept with or without pay to perform any part of the academic assignments of any student. A non-exclusive list of examples of such assignments includes theses, course projects, code programming, etc.

Whenever violations occur, each case will be examined by Departmental and University Officials and as a matter of serious concern and will result in academic and disciplinary actions.

## 25. Scholarships

The regulatory framework for student scholarships is determined by the Scholarship Regulation approved by the meeting 354/30.6.2016 of the Senate of the University of Crete and its amendment by the meeting 372/22.6.2017 of the Senate of the University of Crete. The above decisions can be found on the website:

<https://www.elke.uoc.gr/committee/scholarships.aspx>. Scholarships provided by the University of Crete through donations, bequests, etc. are posted on the Departmental website.

## 26. Resources for Students

Through the central service "EUODOXOS" of the Ministry of Education, students can choose and receive free-of-charge textbooks for the courses in which they enroll. The maximum number of free textbooks that each student is entitled to during their studies is equal to the minimum number of courses required to obtain a degree according to the standard curriculum. The same service also provides the ability to exchange books between students.

The Student Identity Card (ID), issued through the "Academic Identity" service of the Ministry of Education and Religious Affairs, also serves as a special ticket (pass) ticket for transportation, which allows the issuance of a reduced (student) ticket on public transport.

Students may petition for free meal plans or/and free accommodation. Petitions will be reviewed based on individual and familiar financial and other conditions and their locality, through the Student Welfare Center of the University of Crete.

Students without medical coverage are entitled to full medical and hospital care from the National Health System by covering the relevant expenses by the National Organization for the Provision of Health Services (EOPYY), accordingly. Article 33 of Law 4368/2016 (A '83). For the terms, conditions and procedure for the provision of care, students can refer to the Student Welfare Center of the University of Crete.

Students can be financially supported during their studies through performance scholarships and awards of excellence and reciprocal scholarships. In particular, for the scholarships provided via the Department, information is available on the Departmental website, whereas scholarships announced throughout the year are also posted at the website of the Networking Office of Career Center of the University of Crete.

Students can be financially supported during their studies through performance scholarships and awards of excellence and reciprocal scholarships. In particular, for the scholarships provided by the Department, information is available in a relevant post on the website of the department, while information on scholarships that are announced throughout the year are also posted on the website of the Liaison Office of DASTA of UoC.

Under current law, the Department's General Assembly appoints an Academic Advisor for each newly admitted student. The Advisor's role is to counsel the student during his or her studies on academic matters. The first-year student is informed of the name of his Academic Advisor upon enrollment in the Department and may make use of the Advisor's knowledge and experience throughout his/her studies. The Academic Advisor is not in charge of providing advice on procedural issues or reminding students of their obligations. The student is invited to benefit of the presence of the Academic Advisor, as the Advisor's role is not decisive, but advisory. The Advisor is not meant to be the sole mentor as the student should consult any other Faculty, especially the Instructors of the courses he/she intends to choose.

The University of Crete has a Student Counseling Center in operation since September 2003, with the aim of providing psychological support to the institution's undergraduate and graduate students, supporting students with special educational needs, raising awareness and informing the university community about mental health issues and the formulation of a well-established mental health policy.

In addition, the University of Crete Sports Complex including various teams are open to all students, while various Student Cultural Groups are active.



## **27. Computer Systems, Networks, and Computer Room**

The Department of Materials Science and Technology provides its members, teachers, students and staff with the opportunity to use its computer systems and networks to serve their educational, research and other needs within the academic operation of the Department and the University of Crete. A user account is given to the students with their initial registration in the Department and is maintained until their graduation.

The Department of Materials Science and Technology has a Computer Room with personal computers, equipped with suitable software applications connected to the local network and the Internet. It is located in the Mathematics building, opposite the Department's Secretariat. The regulations governing its operation are described in Addendum 6.

# IV APPENDICES

## APPENDIX 1

### ERASMUS+ MOBILITY REGULATION

#### **Mobility with the Erasmus+ Program**

The Erasmus program was launched in 1987, and is one of the most famous activities of the European Community, addressing higher education, supports the creation of the European Higher Education Area, and enhances the contribution of higher education and higher vocational training and empowerment, as well as promoting equal opportunities. In addition to academic benefits, it promotes intercultural dialogue and strengthens the identity of the European citizens.

The Department of Materials Science and Technology (DMST) participates in the activities of the Erasmus+ program, exchanging students. With Erasmus+ there are the following mobility opportunities for students: a) for studies, b) for internships. The student mobility program within Erasmus+ is determined by the Department of International Relations of the University of Crete, and students are informed by announcing the program on the website of the University and the Department. The students' applications are collected on the University Erasmus+ online platform and evaluated by the Erasmus Course Recognition and Score Reconciliation Committee set by the Department (DMST) Assembly, according to the guidelines prepared by the University. The students who move receive financial aid (scholarship), the amount of which is determined by the State Scholarships Foundation (IKY), which centrally coordinates the Erasmus+ program.

To inform students about mobility, communication with the central structures of the University of Crete (Department of International Relations), assignment of scores, etc., the Department (DMST) has appointed an Erasmus+ Coordinator, who is a faculty member of the Department.

#### **Conditions and evaluation criteria for outgoing Erasmus+ students**

##### **A) Mobility for studies**

1. Proven basic knowledge of the language in which the courses are taught at the host institution.
2. Successful examination in the core courses of the first two years.
3. Good performance, with a minimum average of 6.5.
4. The student has not been involved in any irregularity during their study which has occupied the Assembly of the Department.

In case of mobility for a dissertation, supervisors of the dissertation must have been appointed both in the Department of Materials Science and Technology and in the host institution, and preparation of a transfer for courses has been made. Students who will move with the Erasmus+ program will have to choose the courses they will attend at the host institution in collaboration with the Professors of the Department who are directly related to the subject of the selected courses. The above procedure is coordinated by the academically responsible coordinator of the program.

#### **Credit Transfer System (ECTS)**

According to Ministerial Decision Y.A. Φ5/89656/B3, Official Government Gazette ΦΕΚ 1466/13-8-07 τ.Β., the Higher Education Institutions (HEI) of our country organize undergraduate and postgraduate programs based on the European Course Credit Transfer System (ECTS). The ECTS system was developed to facilitate the mobility of students between European Universities through the mutual understanding and recognition of the studies of each moving student from the involved HEIs (sending institution and reception institution). The above Ministerial Decision institutes the practices (ECTS system) applied by the DMST, but also all the Departments of the University of Crete and other Greek HEIs, to enable students exchange between European HEIs through Erasmus+ programs at undergraduate and graduate level.

## **Recognition Rules**

Courses or dissertations that have been successfully completed at the host institution will be audited by an examination committee consisting of the Erasmus+ program coordinator as chair, and three faculty members of the Department. Specifically:

Courses that have been successfully completed at the host institution, and are included in the course list of the agreement between the student and the originating institution, will be evaluated and accredited by the relevant committee taking into account a) the suggestions of faculty members who have worked together to compile the course list prior to the student's mobility, as well as b) the measurable workload of the courses (theory/laboratory hours, level of difficulty, type of examination, etc.) for assigning the proper number of academic credits. It is emphasized that the number of credit units (ECTS) that have been assigned to each of the above courses by the host institution is transferred to the originating institution without modifications.

A dissertation that is successfully completed at the host institution can be accredited by the originating institution with the consent of the supervisor appointed at the sending institution. The grade of the dissertation is determined by the academic evaluation committee.

## **B) Mobility for internship**

Our students can do their internship at a foreign institution (University, Research Center, company) through the Erasmus+ program. In this case, they can secure 15 ECTS for two-month employment, or up to 20 ECTS for three-month or longer-term employment.

The evaluation of the internship abroad after its recognition is registered as an elective course. The score and the ECTS that the student will receive, are evaluated by the Erasmus+ coordinator, in collaboration with the ECTS coordinator and the internship coordinator, taking into account the employment time, the work performed, the report submitted, and the score obtained by the host (if any).

## APPENDIX 2

### DIPLOMA THESIS REGULATION

#### Scope

The purpose of the diploma course is to help students gain experience and pursue further education in research methodology and in analysis and writing scientific results, obtaining from his / her research work according to commonly accepted rules by the scientific community. Students seek to delve deeper into a specific topic of Materials Science (synthesis, properties and technological applications) and to develop critical thinking, abilities of decision making, and a sense of collaboration and group work. Finally, undergraduate students have an opportunity to participate in research projects based on international standards and to enrich their knowledge and analytical skills in the multidisciplinary subject areas of Materials Science.

#### Elaboration of diploma thesis

The Department offers an elective course entitled Diploma Thesis (ETY-442), lasting two academic semesters.

The elaboration of the diploma thesis is optional. Students, who have shown a good performance in the courses, can carry out research work under the guidance of a professor-consultant in the research laboratories of the Department or in the laboratories of other research institutes in Greece or abroad (Universities, Research Centers, Institutes, etc.).

The thesis topic is selected by the student in the 6<sup>th</sup> semester of his / her study (in conjunction with a faculty advisor) and takes place during the 7<sup>th</sup> and 8<sup>th</sup> semesters.

Upon completion of the diploma thesis, students can gain 12 ECTS credit points, which belong to the ECTS elective units of the Department.

#### Diploma thesis' elaboration process

Each student chooses the thematic area of his / her diploma work and come to an agreement with a supervising professor in order to jointly define the research topic and the work schedule.

The subject of the project should be within the scientific interests of both the supervising professor and the student and should be related with the subject matters of Materials Science and their applications. Also, it should be specific and feasible; the maximum elaboration time shall not exceed two academic semesters.

Students wishing to pursue a diploma thesis must fill in the "Diploma Thesis Proposal" form online and submit it to the Head of the Diploma course for approval. This form should contain the title of the research work, a brief summary of the main objectives, the methodology and expected results of the proposed work, the area (laboratory) of implementation, the duration of the diploma thesis, and the members of the examination committee.

Students must declare the diploma thesis as an elective course at the Secretariat of the Department at the beginning of the spring semester, during the period of the course statements.

During the elaboration of the diploma thesis, each student works independently on a research project, under the guidance of a professor-advisor, gives informative presentations to the group, analyzes the experimental data, writes and submits a paper in which she/he presents the main results and conclusions of his/her work.

The writing of the thesis can be performed in Greek or English language. The student must submit the full text of the thesis to the examination committee members at least one week prior to the scheduled examination date.

The student must inform the Secretariat of undergraduate studies for the date of presentation, which is then advertised as an open invitation to all members of the Department.

The diploma is awarded after public presentation in front of the two-member committee and an audience of faculty members, and postgraduate and undergraduate students. The presentation of the diploma work can be in Greek or English and the duration must not exceed 30 minutes. After the presentation, a few minutes will be provided for clarifying questions from the audience, followed by an oral examination by the committee members.

Upon completion of the examination, the student leaves the room and the bilateral committee approves the diploma thesis and awards a grade to the thesis according to the student's performance during the elaboration of the diploma project, the quality and completeness of the thesis, the completeness of the oral presentation, and a adequate response to committee questions.

The certificate of the diploma and the course grade are submitted to the secretariat of the Department.

The student must respond to any comments and suggestions from the members of the examination committee and submit his / her thesis, in printed form, to the secretariat of the Department. The cost of printing and binding the diploma thesis is borne by the student.

## **General guidelines and regulations**

The selection of undergraduate students for diploma thesis is based on the following criteria: the Average Progress Indicator, the academic performance (average score) in all the courses taken by the student and also in these courses related to the subject of the diploma thesis, as well as additional criteria that may be considered by the supervisor when conducting the final evaluation (e.g. those required for the successful completion of the proposed work).

At least one member of the committee must be a faculty member of the Department, while the other member may be a professor from another department or institution or a researcher of a recognized research center or a teaching laboratory staff member of the Department holding a doctorate. In any case, the supervising professor is the faculty member of Department. The members of the committee are appointed by the Head of the Diploma course of the Department upon recommendation of the supervising professor.

If a faculty member has an education/training leave of absence greater than six months cannot take over the supervision of a diploma thesis.

The extent of the diploma thesis can vary as it depends on a number of factors such as the subject of research, the proposed methodology, the analysis of results, etc. However, all diploma theses should adequately describe the subject of the proposed research activities and present a brief summary in both Greek and English, a short but comprehensive introduction to the research problem, the objectives pursued, the applied methodology/approach, the analysis of results, and the conclusions drawn from the interpretation of observations and findings. Also, at the end of the text, a list of the bibliography used in order to create the thesis should be mentioned.

A change in the subject of diploma thesis could only be made if there are serious reasons. The change is notified, at the request of the student and the supervisor, to the Head of the Diploma course.

The diploma thesis may be terminated if there are serious concerns, which are substantiated at the request of the student in conjunction with the supervisor to the Head of the Diploma course. The supervisor may also terminate the diploma course, provided that the student does not comply with the time schedule and with his / her obligations.

## **Publications**

The supervising professor is responsible for the management of copyright and related rights protections in published materials. In any case, the student's participation in the authors list of an article (published in a scientific journal or in conference proceedings) is decided by the supervisor, in accordance with rules and practices that ensure scientific integrity, transparency and impartiality of decisions made.

Publication of a student in a valid international peer-reviewed scientific journal or in proceedings of an international peer-reviewed conference is considered equivalent to a special course and gives the student five (5) ECTS units, with no grade. The file is recorded with code 9I1 (where I = 0.1, ... 9) and by name, publication 1. If there is a second publication by the same student, it is recorded with code 9I2 (where I = 0.1, ... 9) and by name, publication 2.

## APPENDIX 3

### INTERNSHIP REGULATION

#### 1. Internship at Materials Science Department

Internship is an integral part of the education provided by the University, complementing the academic knowledge with work experience. Materials Science Department, having a strong research and technological orientation, has from the beginning participated to the Internship programs of the University of Crete.

The students of Materials Science can prepare their Internship in Private and Public sector, on fields related to the subject of the Department.

The Internship is implemented in the context of Operational Programs. Since 2016, the Program is funded by the European Social Fund (ECB) and co-financed by National Resources through the Operational Program "Human Resource Development, Education and Lifelong Learning" and the Operational Program "Competitiveness, Competitiveness and Entrepreneurship" of the Development Frame 2014-2020, having as Intermediate Body the Special Management Service of the Operational Program "Human Resource Development, Education and Lifelong Learning"

#### 2. The course of Internship

The Internship is a free choice course in the Department. In specific, two free choice courses are offered, entitled Internship I (PRA-001) and Internship II (PRA-002).

Each course (Practice I, II) lasts 2 months full time, and worth 10 ECTS credits, of which only 5 are taken into account to meet the requirements of the Degree Program, while the rest are listed in the Diploma Supplement. In this way, students can require a total of up to 10 ECTS credits to meet the requirements of the Curriculum for obtaining a degree and up to 20 ECTS credits for their Diploma Supplement

The course is accompanied by a grade which is obtained taking into account the student's evaluation by the Internship company, the written report he delivers after the end of the Internship and the oral examination of the student after the end of the Internship, by a member of the Department, appointed by the Internship Committee.

The ECTS units of the Internship and the ECTS units of the Philosophical cycle or the courses of other departments of the School of Positive and Technological Sciences of University of Crete cannot exceed the total of 30 ECTS units.

#### 3. Right to participate and selection criteria

Students who have completed at least the 4th semester of their studies have the right to participate in the Internship.

The maximum number of students that can be trained is determined on an annual basis by the funding that, at the level of University of Crete, has been secured for the program.

The criterion for selecting and ranking students is the Individual Progress Index. In case of a tie, the student with the highest number of registered ECTS credits has priority.

#### 4. Academic Supervisor of the Internship

The Academic Supervisor of the Internship is appointed by the Department Assembly. The Department is responsible for the coordination and supervision of the Internship. The responsibilities of the Academic Supervisor also include the following:

He/she updates the website of the Internship and in collaboration with the Office of Internship of the University of Crete organizes open informative meetings for the Internship, takes care of implementation on time of the invitations to participate in the Internship Program, coordinates the collection of applications and selects the company of the Internship of the selected student. In addition, it takes care of the supervision of the rules of transparency and equality of opportunity at all stages of the Internship. Finally, he/she is responsible for the implementation of all the deliverables of the funded program of the internship and any other contractual obligation resulting from the participation of the Department in the funded program.

#### 5. Internship Committees

In order to ensure transparency and equal opportunities in the Internship, the Department appoints Evaluation and Objections Committees by decisions of the Department Assembly, having the following responsibilities:

- The Evaluation Committee consists of the Academic Supervisor of the Internship and two other members. It is responsible for the selection, and the writing of the relevant selection procedure, of the students who will be selected for Internship based on the criteria.
- The Objection Committee consists of three members, different than those of Evaluation Committee. It is responsible for examining the objections raised in the PA selection process.

The Assembly of the Department has determined that after the completion of the selection process and the possible objections, the final selection tables are validated by the Department's Undergraduate Studies Committee.

## 6. Procedure for the elaboration of the Internship

The procedure that a student needs to follow in order to perform an Internship practice is mentioned in detail on the website of the course as well as in the Internship Guide of the Central Internship Office of the University of Crete.

In brief, these steps are the following

- **Update:** At regular time intervals, the Academic Supervisor of the Internship, in collaboration with the Central Office of Internship of the University, organizes open information meetings
- **Step 1: Invitation to participate:** In order to fill the available Internship positions, calls for participation in the Program are made at regular intervals (typically on a semi-annual or annual basis). The invitations are open to all students who can potentially participate in the Program and are announced and posted on the website of the Department. The invitation states the relevant procedure, the time period (start - end) of the submission of applications by the interested students, the necessary accompanying documents, as well as the academic selection criteria. Only active undergraduate students can participate in the Internship Program.
  - **Student applications:** The interested students submit the applications for participation, as well as a detailed score list within the calendar period of submission of proposals, as defined by the relevant call. Applications or accompanying documents submitted late are rejected and not forwarded to the next step of the selection process.
  - **Selection procedure:** The selection of students is made by the Evaluation Committee of the Department and is announced on the website of the course. The announcement also explicitly states the time during which objections to the above selection results may be done, which can't be less than 3 business days.
  - **Objection procedure:** Students who have not been selected (and if there is any reason) have the right to file a written objection within the time period specified in the announcement of the results. The objections are considered by the corresponding three-member Committee for the Internship.
  - **Announcement of Final Selection Tables** The final selection tables are announced on the course website after they have been validated by the committee of Undergraduate Studies of the Department, as defined in the institution of the Internship by the Assembly of the Department.
- **Step 2: Search and Selection of Implementing Agency** The Internship is implemented in an institution or a Company chosen by the student in collaboration with the Supervisor of the program and the Central Internship Office. The institution may be based either in the city of study (Heraklion or Rethymnon) or in another city. More specifically, students who have been selected to participate in the Program may be looking for possible Institutions:
  - Through the Central Support System of the Internship of University Students (ATLAS)
  - With the guidance of the Supervisor of the Internship of the Department.
  - Through the Central Internship Office for additional information.
  - By personal communication with Agencies.
- **Step 3: Implementation of the Internship:** In addition to the Academic Supervisor of the Internship that is responsible for the overall supervision, it is also defined by the Reception Supervisory Body that assists and trains the student during the implementation of the Internship. The administrative part of the implementation of the Internship is coordinated by the Central Internship Office of the University.
- **Step 4: Completion of the Internship** The registration of the course is accompanied by a grade which is obtained taking into account the criteria set out in Article 2 of this Regulation

## 7. Revisions of the regulation, other issues

Every revision of this Regulation is approved by the Committee of Undergraduate Studies of the Department.

For any issue that concerns the Internship of the Department, which is not covered by the existing regulation, the provisions of the Internship Guide of the University of Crete apply.

## APPENDIX 4

### UNDERGRADUATE LABORATORIES CONDUCT AND SAFETY RULES

#### **In the Laboratory Courses:**

Computers I (ETY114),  
Physics Laboratory I (ETY203),  
Physics Laboratory II (ETY204),  
Automation Laboratory (ETY410),

no special safety rules apply other than those applicable to any course taught in classrooms.

#### **In the Laboratory Courses:**

General Chemistry Laboratory (ETY124),  
Chemistry of Materials Laboratory (ETY225),  
Soft Matter Laboratory (ETY343),  
Solid State Materials Laboratory (ETY344),

the following safety rules apply:

a) In order to be eligible to enroll in any of the above courses, a signed presence proof of attending the "Laboratory Safety Seminar" which is held at the Department of Materials Science and Technology once or twice per academic year (in the winter and/or spring semester respectively) is necessary. The presentation given at the Seminar is shown below (Section A. "Laboratory Safety Seminar")

b) All students must comply with the general Safety Rules of the undergraduate laboratories of the Department. These rules are listed below (Section B. "SAFETY PROCEDURES AND RULES IN UNDERGRADUATE LABORATORIES"). The file is also available on the websites of the above listed laboratory courses and is posted in the laboratories in printed form.

c) For the "Solid State Materials Laboratory" students are encouraged to study a file that lists information and risk data for all chemical reagents used during the laboratory experiments (see below Section C. "Material Safety Data (MSDS) for reagents used in the Solid State Materials Laboratory"). The file can also be found on the course website.



## A. Laboratory Safety Seminar ("Safety undergrads")



Χρήσιμα Τηλέφωνα:		Χρήσιμα Τηλέφωνα:	
Πρώτες Βοήθειες (ΕΚΑΒ):	166	Πρώτες Βοήθειες (ΕΚΑΒ):	166
Πυροσβεστική:	199	Πυροσβεστική:	199
Άμεση Δράση:	100	Άμεση Δράση:	100
ΦΥΛΑΚΑΣ Βούτες:	2810 394150	ΦΥΛΑΚΑΣ Βούτες:	2810 394150
Προσ. Συντήρησης:	2810 394006,7	Προσ. Συντήρησης:	2810 394006,7
Βλάβες ΔΕΗ:	1050	Βλάβες ΔΕΗ:	1050
Βλάβες ΔΕΥΑΗ:	11122	Βλάβες ΔΕΥΑΗ:	11122
ΠΑΓΝΗ:	2810 392100, 392111	ΠΑΓΝΗ:	2810 392100, 392111
Βενιζέλειο:	2810 368000-29	Βενιζέλειο:	2810 368000-29
Κέντρο Δηλητηριάσεων:	210 7793777	Κέντρο Δηλητηριάσεων:	210 7793777

Χρήσιμα Τηλέφωνα:		Χρήσιμα Τηλέφωνα:	
Πρώτες Βοήθειες (ΕΚΑΒ):	166	Πρώτες Βοήθειες (ΕΚΑΒ):	166
Πυροσβεστική:	199	Πυροσβεστική:	199
Άμεση Δράση:	100	Άμεση Δράση:	100
ΦΥΛΑΚΑΣ Βούτες:	2810 394150	ΦΥΛΑΚΑΣ Βούτες:	2810 394150
Προσ. Συντήρησης:	2810 394006,7	Προσ. Συντήρησης:	2810 394006,7
Βλάβες ΔΕΗ:	1050	Βλάβες ΔΕΗ:	1050
Βλάβες ΔΕΥΑΗ:	11122	Βλάβες ΔΕΥΑΗ:	11122
ΠΑΓΝΗ:	2810 392100, 392111	ΠΑΓΝΗ:	2810 392100, 392111
Βενιζέλειο:	2810 368000-29	Βενιζέλειο:	2810 368000-29
Κέντρο Δηλητηριάσεων:	210 7793777	Κέντρο Δηλητηριάσεων:	210 7793777

## B. SAFETY PROCEDURES AND RULES IN UNDERGRADUATE LABORATORIES

### UNIVERSITY OF CRETE DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY

#### Safety Rules

- Wear a safety laboratory coat throughout your presence in the laboratory. Wear clothes that cover all body beneath the laboratory coat (to this end, short sleeved clothes, shorts, cropped or capri pants, skirts/dresses that are not full length etc. are not allowed). Long hair must be tied back (or confined) for both male and female students as loose hair can easily ignite from any flame or be trapped by an apparatus.
- Safety goggles must be worn at all times in the laboratory, not just when an experiment is in progress.
- It is strongly recommended **not** to wear contact lenses in the laboratory. Chemical vapors may penetrate the contact lens material and cause the lens to adhere to the eye, which could be detrimental to the eye. Goggles are not vapor tight and do not completely eliminate the danger of chemical absorption. If one understands this risk and chooses to wear contact lenses in the lab, the laboratory supervisor should be notified and a sticker must be placed on the lab safety goggles for easy identification in case of an emergency.
- Direct contact to the skin with all chemicals should be avoided. Regulation-approved gloves will be provided for use during all laboratory experiments. Check gloves for tears or holes before using them.
- Do not store personal items (clothing, bags etc.) in the laboratory.
- The consumption, presence or storage of food or drinks in the laboratory is **strictly prohibited**.
- The use of mobile phones in the laboratory is strictly prohibited.
- The use of earbuds or earphones is strictly prohibited in the laboratory.
- Smoking is strictly prohibited in the laboratory.
- Your presence in the laboratory prerequisites permission of the laboratory responsible or supervisor.
- To prevent accidents, avoid unnecessary activities within the laboratory so as to avoid interfering with the access to corridors and safety exits.

- Be careful and focused in your work. Be professional and respect yourself and your colleagues. Joking and pranks are not allowed in the laboratory.
- It is not allowed to leave the laboratory wearing safety gloves and/or safety coat.
- Make sure you know the location of the emergency exit(s) and check that it is easily accessible and unlocked.
- The lab is equipped with a firefighting, fire detection and alarm system - be informed by those in charge of the positions and the handling of the safety equipment.
- The laboratory is equipped with a portable first-aid kit, be informed by those in charge about its location. In case of an accident or injury, immediately inform the laboratory supervisor. First aid and medical care are required immediately after any chemical accident.
- Report **all** accidents, even the most insignificant – do not attempt to handle any accident without informing the laboratory responsible or supervisor.
- Pay attention to the instructions provided by the laboratory supervisor and follow **only** the procedures described in the experimental manual in the presence of the supervisor – Any other procedure is strictly prohibited.
- Do not participate in the laboratory when not properly prepared -it is dangerous! Study and understand the experimental procedure, get acquainted with theory and practices that need to be followed and discuss any questions with the person in charge **before** the experiment is performed.
- Never try practices and experiments other than the approved experimental procedures described in the laboratory manual and recommended by the laboratory responsible.
- Check the risk indicators of chemicals before every experiment (<http://www.ilpi.com/msds/index.html>, <http://hazard.com>), always read the label before using any chemical, never mix unknown chemicals.
- Always label your flasks.
- Moving chemicals out of the fume-hoods is **prohibited**. It is **strongly prohibited** to take any chemicals from the laboratory with you.
- Moving equipment, apparatuses or chemicals to a new position in or out of the laboratory is **strictly prohibited** (unless the laboratory supervisor gives a relevant instruction) as is their use for experiments not described in the Laboratory Manual.
- **Never** inhale or under any conditions put anything found in the laboratory (equipment, chemicals) in the mouth. Avoid any contact with chemicals and keep chemical containers closed when not in use.
- Only necessary equipment, materials, chemicals (prohibited that they are allowed to be utilized outside a hood) and books should be present on workbenches.
- Keep your workspace clean and tidy. Clean the surfaces of workbenches and hoods before and after the experiment.
- Keep the laboratory floor clean and dry. If any hazardous chemicals spill on the floor, immediately inform the laboratory supervisor and look into the MSDS (Material Safety Data Sheet) on the proper procedure to inactivate the substance.
- Be careful when using scientific instruments. Always follow the instructions found in their instruction manual.
- Care must be taken when reading the indications of the devices both at the preparation and during a measurement.
- Check the condition of all electric and electronic devices and remove cables from heated surfaces prior to their use.
- Make sure that you understand how the fume-hoods operate. Never allow your head or body to enter the plane of the hood opening.
- Laboratory experiments involving toxic or irritating chemicals that produce harmful vapors (solvent evaporation, distillations, dilutions, transfers etc.) must be always performed under the ventilated fume-hoods.
- Be careful and cautious with glassware. Never use cracked or broken glassware. Broken glassware is not only expensive but is also involved in many accidents.
- Particular care is required when using pressure regulating valves in gas cylinders and liquid nitrogen containers.
- Flammable solvents and closed systems (flasks, bottles) should never be heated using a bare flame. For this purpose, use water baths or olive baths.



- Pay special attention to the use of acids or bases. If an acid or a base falls on your hands or eyes, rinse with plenty of water – immediately inform the laboratory supervisor.
- Particular attention should be given to waste management: all chemicals should be discarded in the proper waste container, using the approved method, as instructed by the laboratory responsible. Always check the label of the waste container BEFORE discarding waste in any container. **Never** pour solutions down the sink or dispose of solid waste in the trash cans. Get informed by those in charge of water, organic, chlorinated waste collection containers. **Never** pour chemicals into the sink, **never** throw solid waste into the sink, use the appropriate collection containers.
- Particular attention should be paid to the disposal of (broken) glass and sharp objects (such as syringe needles): They should be discarded **only** in the specially marked boxes and never in the large trash cans. Plastic syringes should be discarded in the appropriate box **together** with its special protective cover.
- At the end of each experiment, each group should rinse and clean all glassware and labware used and hand over a clean workbench. Make sure that all water, electricity and gas supplies are turned off and the reagent containers are closed.
- For each laboratory day a team will be specified as “lab cleaning team” that will be responsible to clean all shared glassware and deliver the laboratory clean to the supervisor.











*Violation of any of the above stated safety rules entitles the laboratory responsible not to allow the continuation of a laboratory experiment resulting in an unjustified absence from the lab.*

*Remember that most accidents are caused by negligence or recklessness.*

#### First Aid

1. Fire in the laboratory: Water is not always the appropriate extinguishing agent. In the case of a fire, immediately remove all flammable substances, cut the power supply off and cover the fire with a damp cloth or sand or use the fire extinguisher.
2. Electric shock: Immediately turn the power off.
3. Contact with acids and bases: In the case of direct contact with your skin or eyes, wash with plenty of water for at least 15 minutes and consult the person in charge.
4. Chemical spill in the fume-hood: Lower the fume-hood cover, turn ventilation to maximum and notify immediately the laboratory supervisor.
5. Hydrogen Fluoride (HF): Even in the case of suspicion of hydrogen fluoride (HF) contact, immediately place the contact point under running water. If the laboratory responsible is not near you, ask a colleague to immediately notify him -do not try to notify him yourself, keep the contact point under water at all times. HF is the most dangerous chemical in the laboratory as it is corrosive and its action is not manifested immediately but rather when it has already penetrated into the tissue.
6. Organic compounds and solvents: Pay special attention to organic solvents and other chemicals -most are toxic and dangerous. Notify the laboratory supervisor in case of any skin or eye contact.
7. Fumes: In case fume inhalation, transfer to an open space and supply oxygen. The laboratory supervisor should be immediately notified.
8. Burns: In case of a burn, notify the laboratory supervisor, apply ethanol or picric acid solution or the appropriate medical lotion and a bandage from the first-aid kit depending on the instructions.
9. Broken glass injury: In case of broken glass injury, immediately notify the laboratory responsible, wash the wound with dilute oxygen peroxide solution or ethanol, smear with iodine tincture and bandage according to instructions.
10. In case of any accident: Keep calm and immediately notify the laboratory responsible and assistants.

## Chemical hazard symbols and precautions

 <p><b>E</b> <b>Εκρηκτικό - Explosive</b> Πρέπει να διατηρείται μακριά από γυμνές φλόγες, εστίες θέρμανσης, ηλεκτρικούς σπινθήρες, και ν' αποφεύγεται η τριβή και η κρούση.</p>	 <p><b>C</b> <b>Διαβρωτικό - Corrosive</b> Πρέπει να αποφεύγεται κάθε επαφή με τα μάτια, το δέρμα, τα ρούχα ή διάφορες συσκευές, γιατί καταστρέφει τα ζωικά κύτταρα και τα ανόργανα υλικά.</p>
 <p><b>F</b> <b>Πολύ Εύφλεκτο - Highly Flammable</b> Πρέπει να φυλάγεται μακριά από γυμνές φλόγες, εστίες θέρμανσης, ηλεκτρικούς σπινθήρες και να μην έρχεται σε επαφή με θερμές επιφάνειες.</p>	 <p><b>Xn</b> <b>Βλαβερό - Harmful</b> Πρέπει να αποφεύγεται η εισπνοή ατμών και η επαφή με το ανθρώπινο σώμα, γιατί προκαλεί ερεθισμό στο δέρμα, στα μάτια και στα αναπνευστικά όργανα.</p>
 <p><b>F+</b> <b>Εξαιρετικά Εύφλεκτο - Extremely Flammable</b></p>	 <p><b>Xi</b> <b>Ερεθιστικό - Irritant</b></p>
 <p><b>T+</b> <b>Πολύ Τοξικό - Very Toxic</b> Πρέπει να αποφεύγεται οποιαδήποτε επαφή με το δέρμα και τα μάτια, καθώς και η εισπνοή του.</p>	 <p><b>O</b> <b>Οξειδωτικό - Oxidizing</b> Πρέπει να διατηρείται μακριά από γυμνές φλόγες, εστίες θέρμανσης και ηλεκτρικούς σπινθήρες.</p>
 <p><b>T</b> <b>Τοξικό - Toxic</b></p>	 <p><b>N</b> <b>Επικίνδυνο για το περιβάλλον Dangerous for the environment</b> Πρέπει να παίρνονται ιδιαίτερες προφυλάξεις και να αποθηκεύονται σωστά, για να αποφευχθεί η μόλυνση του περιβάλλοντος.</p>

### Special Safety Measures

1. Do not touch with bare hands substrates, tips of tongs, vessel interiors and oven alumina containers. This will ensure not only safety but also the success of your experiment.
2. When working with skin-absorbing corrosive substances (acids, bases) it is **mandatory** to additionally wear the protective neoprene gloves which can be found in the cupboards under the fume-hoods. These gloves can be removed only after rinsing with plenty of water. It is advised not to unnecessarily touch other labware while wearing these gloves.
3. When using a glass dropper pipette **never, ever** use your mouth to pull the liquid into the pipette. This is the most common method of becoming poisoned in a laboratory. A manual bulb or wheel pipetter should always be used to transfer chemicals.
4. Special care must be given to ensure that the amounts of reagents withdrawn from containers are not much greater than those need. Do not return excess chemicals to reagent bottles. Do not insert dropper pipettes in the reagent bottles
5. Cover the mortar during powdering to avoid any spills and inhalation of the substance.
6. The mouth of a test tube used in an experiment should never face the person performing the experiment or other people close-by.
7. Take extra care when using the High Temperature Furnace. When the furnace is hot it has to be handled using the Heat Protection Gloves that can be found stored beside the fume-hood in which the furnace is placed. You should avoid wearing disposable gloves underneath the heat protection gloves. When the furnace is hot, contact with its interior surfaces, even wearing the heat protection gloves, is **strictly prohibited**. When cold, bare skin contact with the interior surfaces of the furnace must also be avoided.
8. Do not attempt to touch alumina boats and crucibles taken out of the High Temperature Furnace until at least a half an hour has passed after extraction or else you run the risk of suffering serious burns.

## APPENDIX 5

### LAB CLASSES REGULATIONS

#### 1. Computers I Regulations (ETY-114)

##### A. STUDENT PERFORMANCE EVALUATION

- Attendance of exercises and taking part in the subsequent examination is compulsory.
- Two (2) absences are permitted. One additional absence can be excused by the undergraduate studies' committee. Attendance is recorded automatically during the exercises. Turning in the subsequent exam is necessary to mark the attendance.
- On each session, during the last half hour, an exam on that session's syllabus takes place. On absence, the grade is 0. The total grade of all sessions is the average of all grades. The two worst grades are ignored. A student passes the exercise part of the course when he/she achieves at least 4.0 as total grade.
- Failing the exercise part of the course, either due to absences or due to low total grade, a student cannot take part in the course examination in June or September. He/She must repeat the exercise part of the course and succeed.
- The total grade of the course comprises the grade of the exercise part (40%) and the grade of the final exam (60%).
- On passing the exercise part but failing the course (that is, total grade less than 5.0) the student retains the grade in the exercise part for a future exam. Due to the high number of students, repetition of exercises is not possible for those passed it.

##### B. SYLLABUS

- For final exams the Syllabus are from notes S. Stamatidis, Chapters 1,2,3,4,5,7,8, (except sections: 2.7, 2.7.1, 5.2, 5.8, 5.8.1, 7.3.2, 8.7.2, 8.7.3 8.8, 8.11).
- The exams, both these during the session and the final one, take place in the computer room. They comprise only exercises. The course notes are available in each computer during the exams. Each student can use one of the course books. Use of smartphones or other electronic devices during the exam is prohibited.

## 2. General Chemistry Laboratory Regulations (ETY-124)

- Each student is entitled to a maximum of one absence from the laboratory exercises. More than one absence results to the interruption of the student's participation for the rest of the semester. Absences cannot be justified in any way, even with a doctor's or hospital notice.
- Before the start of the laboratory, a brief oral or written examination is performed on the day's experiment. The grade of the examination is taken into account with the degree of the report.
- Lab reports must be submitted at the end of the laboratory exercise. Each team submits one common report and therefore all members receive the same grade.
- Copying and plagiarism result to rejection of the lab report.
- The report is handed the next laboratory day. Any delay beyond that time shall result in a penalty equal to 20% of the grade. For delay of more than one week from the deadline, the report is rejected.
- The final grade in the Chemistry Laboratory Course is the average of the grades of the reports and the grade in the written examination of the Laboratory at the end of the semester, provided that the grade in the written examination is at least five (5.0).

### 3. Physics Laboratory I Regulations (ETY203)

#### Mechanics - Heat

- The Lab consists of eight (8) experiments. Students are performing each experiment in groups and are expected to deliver a written essay after the completion of each experiment. The essay must include the original experimental measurements, signed by the supervisor of the experiment.
- The essay is written collectively by all the members of the group and is submitted in one printed copy. The mark for each essay is the same for all the members of the group. However, it is also allowed for a member of a group to deliver individual essay. For the first experiment only, an individual essay is expected from all students.
- Students are expected to be prepared for the experiment. To ensure that, a brief oral or written test is performed during the experiment and each student is assigned an oral test mark (OTM). In cases where students are found totally unprepared for the experiment, a zero mark is assigned for the specific essay, though the student is still considered to be attending the exercise.
- The deadline for submitting the essay is seven days after the completion of the experiment. In case of delay, essays for up to extra seven days are still accepted but are assigned only the 80% of the grade. The deadlines refer exclusively to submission of printed or hand-written essays. In all other cases (email or delayed submission) the essay is not accepted, and the mark is zero
- If the report is typed on a computer, the submission of an electronic copy is also required in order to facilitate the check for plagiarism.
- Copying of essays between groups is forbidden. In case parts or the whole essay is identical between to groups the marks for the essay will be reduced, depending on the extend of plagiarism. Marks will be reduced for both groups, regardless of which team delivered the original report.
- The attendance of the experiments is mandatory, and each student is entitled only to one absence. When a student does not attend an experiment, their mark for the specific report is zero. Exceptions are made when a student is absent due to verified by an MD health issues. In that case the student has the option to perform the experiment on another date and submit individual report.
- Students are considered to have successfully attended the Lab when the final mark is equal or greater to five and the mark on the written exam is equal or greater to four. The final mark for the Lab (FML) is calculated using the average of the oral tests (<OTM>) the average mark from all eight reports (<ARM>) and the mark of the final exam (FEM) using the following formula:
$$(FML) = 0.1 \times (< OTM >) + 0.5 \times (< ARM >) + 0.4 \times (FEM)$$
- If FEM is less than four, the student is considered to have failed the class and FEM is sent to the students' administration office as overall grade.
- In case of failure the student has the right to take resit exams without performing again the experiments, while the report and oral test marks are transferred from his previous attendance.

## 4. Physics Laboratory II Regulations (ETY204)

### Electromagnetism - Optics

- The course consists of eight (8) laboratory exercises. Students practice on each experiment in groups. They are obliged to deliver a written report after completion of the experiment. The report must include the original measurements, formally signed by the lab instructor assigned to each specific experiment.
- The report is prepared by all members of the group that performed the exercise and one copy is submitted. The grade of the report is accredited to each and every member of the group. It is allowed, however, for a member of a group to deliver an individual report, upon his/her request. For the first experiment (H1) only, it is compulsory for all members of a group to prepare individual reports.
- Students are expected to be prepared for conducting the experiments in a proper manner. To ensure that, each student attends a brief oral or written test, held at the beginning or during the experiment and receives an oral test mark, on site. In cases where a student is repeatedly found to be inadequately prepared for conducting experiments, he/she individually receives a penalty that degrades the report grade for the corresponding lab exercises.
- The formal deadline for submitting the report is seven days after the completion of each lab exercise. Reports delivered up to seven days later (14 days in total, after completion of the exercise) are still accepted, but with a 20% penalty on the grade. Reports delivered past the total 14-day period are not accepted.
- Reports are accepted as hardcopies. In general, they can be prepared with the aid of a computer or in a hand-written form. In the case that a report is prepared using a computer, the corresponding file must be sent via e-mail to the lab instructor in order to facilitate crosschecks for copying or plagiarism. Fully computer-prepared reports are mandatory specifically for the Lab exercises: "H2. AC electrical circuits, Oscilloscope, RLC, resonance", "H4. Magnetic field in solenoids" and "O6. Fraunhofer diffraction and Interference". These include computer-prepared graphs/charts. It is compulsory however for the graphs/charts of all remaining exercises to be prepared in a hand-written form using a millimeter paper.
- Copying of reports between groups either in full or in parts is strictly forbidden. In the opposite case a substantial reduction of the report grade or a complete nullification will be applied to all members of all groups that take part in copying or plagiarism, depending on its extent.
- Physical attendance in the lab is mandatory for all Lab exercises. A student can miss only one class. In such a case both the oral test mark and the report grade of the corresponding Lab exercise are nullified. Department regulations state that the student is considered to have failed the course upon second absence from the Laboratory. An exception can be made only after the relevant decision of the Departments' Undergraduate Studies Committee which can be taken when a substantiated and acceptable justification of inability to participate is given by the student, within a week's period after the absence was made. In that case the missed class is rescheduled at a later time and the student submits an individual report.
- Students are considered to have successfully attended the course when both the Overall Course Grade (OCG) is equal or greater than five-tenths (5/10) and the Written Examination Grade (WEG) is equal or greater than four-tenths (4/10). The written examination is taken at the end of the series of Lab exercises. The overall course grade (OCG) is calculated using a) the average of all oral test marks (OTMa), b) the average of all lab report grades (LRGa) and c) the written examination grade (WEG) using the following formula:

$$\text{OCG} = 0.1 * \text{OTMa} + 0.5 * \text{LRGa} + 0.4 * \text{WEG}$$

OTMa and LRGa are calculated taking all possible nullifications in full account. If WEG is less than four-tenths (4/10), the student is considered to have failed the course even in the case that OCG is calculated to be higher than five-tenths (5/10). In such case WEG is sent to the Department's Secretariat as the overall course grade.



- In case of course failure the student has the right to take written examinations in forthcoming semesters without having to perform the Lab exercises again. The overall course grade will always be calculated using the above formula with the most recent WEG and the OTMa and LRGa of his/her last course attendance.

## 5. Chemistry of Materials Laboratory Regulations (ETY-225)

- Each student is entitled to a maximum of one absence from the laboratory exercises. More than one absence results to the interruption of the student's participation for the rest of the semester. Absences cannot be justified in any way, even with a doctor's or hospital notice.
- Before the start of the laboratory, a brief oral or written examination is performed on the day's experiment. The grade of the examination is taken into account with the degree of the report.
- Lab reports must be submitted at the end of the laboratory exercise. Each team submits one common report and therefore all members receive the same grade.
- Copying and plagiarism result to rejection of the lab report.
- The report is handed the next laboratory day. Any delay beyond that time shall result in a penalty equal to 20% of the grade. For delay of more than one week from the deadline, the report is rejected.
- The final grade in the Chemistry Laboratory Course is the average of the grades of the reports and the grade in the written examination of the Laboratory at the end of the semester, provided that the grade in the written examination is at least five (5.0).

## 6. Regulations for the Soft Matter Laboratory Course (ETY-343)

### 1. INTRODUCTION

In the Soft Matter Laboratory Course, the students will use basic synthetic techniques and instrumentation, to prepare four different types of soft materials and characterize them in terms of their molecular size, mechanical and thermal properties. The students must comply to certain basic safety rules and precautions required for the successful and safe execution of the exercises and to avoid possible accidents. Therefore, the students are kindly requested to carefully study the "Safety Procedures and Rules in Undergraduate Laboratories" and be aware of the "First Aid Measures" extensively presented in the "Undergraduate Laboratories Conduct and Safety Rules" manual. Of great importance in the laboratory course is to keep detailed notes during the experiment and write an appropriate and detailed laboratory report after each experiment. For more details on these topics, the students are referred to the relevant sections below.

### 2. TEMPLATES OF LABORATORY NOTES AND REPORTS

#### Work Plan

- The student must have studied the theoretical and experimental part of the experiment in advance and must have understood the method or technique to be applied.
- Before the experiment, the students give a short test to check their basic understanding of the concepts, purpose, and importance of the experiment. Students who are not properly prepared do not continue with the experimental part.
- During the experiment, the best possible planning should be done in order to perform the work in the given time in a correct and safe manner.
- At the end of the experiment, the students give a copy of all the primary experimental results obtained to the supervisor. Lab reports, prepared according to the following template, are submitted by each work group 15 days after the execution of the laboratory experiment to allow for time to dry and measure the product(s). Extension is given only in exceptional cases, while an unjustified delay has an impact on the grading of the report.

#### Laboratory Notes Template

Keeping the correct notes in the lab is of critical importance in this course. Notes written in a clear and systematic way allow the facile assessment of the accuracy of the results as well as the repeatability of the experimental procedure and the understanding of the obtained data after a long time. Notes are written in a special notebook (with double sheets) using a pen (not a pencil), while a copy is given to the supervisor before leaving the laboratory. Careful notes will help the students when writing their laboratory report of the experiment.

Notes shall include:

- a) The title of the experiment, the date of conduct and the names of the students (notes without names are not taken into account by the tutor).
- b) The chemical reagents, devices and instrumentation used for the experiment and odd observations (if any) made during the experiment.
- c) The solutions prepared and used during the experiment. We note the concentrations of the solutions, the calculations for the determination of the concentrations, the calculation of the volumes and the weights and any other data during the preparation process.
- d) The conditions of the experiment such as temperature, pressure, pH, time, etc., and the steps followed during the experiment.
- e) The primary results obtained during the experiment. Instrument indications, observed colors, etc. Any measurements that are not reliable (and the reason for the lack of reliability) are also noted.
- f) Observations and remarks made during the experiment, especially if these were not expected or self-evident. These observations may have influenced the outcome of the experiment and this is why they should be seriously taken into consideration and discussed in the corresponding section of the lab report.

#### Lab Report Template

(Lab reports should be written following a scientific article template and must be easily readable. It is desirable to use a computer, but it is not mandatory. All the pages of the report have to be numbered consecutively, paginated and stapled).

- Title of Lab Exercise
- Names of Students that performed the Experiment

- Summary. The purpose of the experiment and the basic methods used are briefly described (not more than 5-10 lines).
- Introduction. Brief description of the principle of the method, the theoretical background of the exercise, the basic concepts and techniques and the importance of the experiment. The terms and abbreviations that will be used below are explained, and a comparison is made with similar techniques. In no case should you copy the theoretical part of your notes.
- Experimental part. The experimental procedure followed is described in detail and in such a way that it can be repeated by anyone.
- Results and Discussion. The results tables, statistics and diagrams are presented. All tables and diagrams must be numbered and must have a legend describing what they contain. They are analyzed in detail and the results of the experiment are discussed, explained and compared with the expected theoretical values.
- Conclusions. Short description. Assessment of the performance of the technique and the quality of the results.
- References. The books and articles from which actual pieces of information were retrieved and used in the report are cited. We only cite references that were **truly** of use to us.

## 7. Solid State Materials Laboratory Regulations (ETY344)

- All students must attend the laboratory wearing a lab coat covering the body in full. Admittance is permitted with a maximum 10-minute delay from the official class start time. After this time margin passes, no one will be admitted and an absence will be counted.
- It is mandatory that the students are aware of the "Safety Procedures and Rules in Undergraduate Laboratories" and of the "First Aid Measures" extensively presented in the "Undergraduate Laboratories Conduct and Safety Rules" manual of the Department.
- The formal deadline for submitting the report is seven days after the completion of each lab exercise. Hardcopies of the reports will either be directly handed to a course supervisor or delivered inside an envelope at the office of Dr. Spanakis (E-110 Mathematics Building). The reports must include the original measurements officially signed by the lab instructor or else they will not be accepted or graded.
- Reports delivered up to seven days later (14 days in total, after completion of the exercise) are still accepted, but with a 20% penalty on the grade. Reports delivered past the total 14-day period are not accepted and the corresponding lab exercise report grade will be nullified.
- Physical attendance in the lab is mandatory for all Lab exercises. A student can miss only one class. In such a case the report grade of the corresponding Lab exercise is nullified. Department regulations state that the student is considered to have failed the course upon second absence from the Laboratory. An exception can be made only after the relevant decision of the Departments' Undergraduate Studies Committee which can be taken when a substantiated and acceptable justification of inability to participate is given by the student, within a week's period after the absence was made. In that case the missed class is rescheduled at a later time and the student submits an individual report.
- Students are considered to have successfully attended the course when both the Overall Course Grade (OCG) is equal or greater than five-tenths (5/10) **and** the Written Examination Grade (WEG) is equal or greater than four-tenths (4/10). The written examination is taken at the end of the series of Lab exercises. The overall course grade (OCG) is calculated using the following formula:

$$\text{OCG} = 0.2 * \text{WPT} + 0.6 * \text{LRGa} + 0.2 * \text{WEG}$$

where LRGa is the average of all lab report grades and WPT is the grade of the written progress test held before the beginning of the series of lab exercises.

- If WEG is less than four-tenths (4/10), the student is considered to have failed the course even in the case that OCG is calculated to be higher than five-tenths (5/10). In such case WEG is sent to the Department's Secretariat as the overall course grade.
- (For students that attended the course at an academic year older than the current, the following formula is also applied:

$$\text{OCG} = 0.6 * \text{LRGa} + 0.2 * \text{WEG}$$

In this case the Written Examination Grade (WEG) must be equal or greater than five-tenths (5/10). The Overall Course Grade sent to the Department's Secretariat is then the maximum between the two values calculated from the two above formulae)

## **8. Automation Laboratory Regulations (ETY -410)**

### **1. Number of absences:**

- For students who have missed one (1) class, a substantiated and acceptable justification of inability to participate is required. In case the justification is not acceptable, the missed class is rescheduled at a later time.
- For students who have missed two (2) classes, a substantiated and acceptable justification of inability to participate in both exercises is required. A mandatory rescheduling of at least one of the experimental laboratory exercises at the end of the semester will be required.
- For students who have missed three (3) or more classes, the laboratory course will be postponed for the next academic year.

### **2. Arrival time:**

- Attendance of the laboratory courses should be no later than fifteen (15) minutes from the scheduled laboratory start time.

### **3. General rules:**

- Food and beverages are not allowed in the laboratory during the exercise.
- The use of a laboratory uniform is not required.
- Smoking is prohibited in laboratory, as in all closed public places.
- Finally, all students are kindly requested to pay special attention and care to the use and maintenance of all kinds of instruments and equipment of the laboratory in a spirit of functionality and economy!

## APPENDIX 6

### COMPUTER SYSTEMS, NETWORKS and COMPUTER ROOM OPERATING REGULATIONS

#### Regulation for the operation of computer systems and networks

The Department of Materials Science and Technology provides its members, faculty, students and staff with the opportunity to use its computer systems and networks to serve their educational, research and other needs within the academic operation of the Department and the University of Crete.

The right of using their accounts is given to the students with their first registration in the Department and is maintained until their graduation.

The right to use is renewed every academic semester with the renewal of registration. In case the student does not renew his / her registration for a semester, he / she temporarily loses the right to access his / her account.

Students from other Departments of the University of Crete also get the right to use the systems if they attend a course offered by our Department, for the specific semester that the course lasts and only for the needs of the course.

Users must follow certain basic rules in order the service level of the systems and the image of the Department in the international networks which we are connected to, to be maintained as high as possible.

Each account is provided to serve specific needs. Other uses require the prior approval of the administrators.

Users are provided with the ability to create a web page and host it on the WWW server of the Department, as long as the general rules that apply to the usage of the systems are not violated.

Each user is responsible for keeping the hardware and software provided for use in good condition. The account is strictly personal. The user is solely responsible for any intentional action, incompatible with the purpose of the Department and the University of Crete.

Actions incompatible with the purposes of the Department and the University include:

- Any action that bothers other users (inside or outside the University) such as:
  - Lack of respect for other users' personal accounts.
  - Attempting to breach other accounts or systems.
  - Sending mass messages that harass other users or defame the personality and reputation of individuals.
  - The reckless use of computer and network resources.
- Transfer, copy, use any form of commercial software, without an official license.
- Copyright infringement.
- Any action of direct or indirect speculative / commercial / advertising nature or proselytizing.
- Providing sensitive information to third parties, which may jeopardize the security of the Department's systems.
- Any action that violates national or international law.

Finally, users must follow the instructions of the administrators that are given in addition or clarification to the present regulation via email or orally. Similar suggestions may also be given to address individual needs and problems.

In the event of a breach of the terms of this regulation, system administrators may immediately terminate access to the systems. Prolonged access prohibition may be decided by the Chair of the Department or by the Assembly of the Department. The Assembly has the right to terminate access to the systems permanently.

## **Regulations for Computer Room E-107**

The Computer Room of the Department of Materials Science and Technology (TETY) has personal computers, equipped with operating systems and appropriate software applications and are connected to the local network and the Internet. It is located in the Mathematics building, opposite the Secretariat of TETY.

The infrastructure is provided for the following purposes:

- The familiarization of the students of the Department in the use of personal computer systems and the modern electronic information and communication services.
- The support of the educational activities of the Department in the context of undergraduate and postgraduate courses.
- Searching for information via the internet and practicing the use of programs to prepare various student assignments.

### **a) Management & Support**

The smooth operation and overall development and utilization of the Computer Room's infrastructure is supervised by a three-member committee consisting of the Department Chair, a faculty member and the Systems Administrator, appointed by the Department's Assembly.

The Administrator has the overall responsibility for the operation, technical support, supervision, protection, security and proper operation of the Room's equipment and software, as well as the responsibility to maintain order and take the necessary measures to address problems. He / She is also responsible for the interconnection of the Room with the wider network of the University. In these duties, he/she may be assisted by a Technical Support Officer with special qualifications or by students, postgraduate or undergraduate. They are assigned specific tasks by the Systems Administrator.

The three-member committee may put forward to the Assembly of the Department any amendments to this regulation.

### **b) Rules of Operation**

The Computer Room is available according to a weekly schedule, which is compiled at the beginning of each semester and which is kept electronically on the Department's website. Computer training needs are a top priority. During the rest of the working days and hours, the room is available for the use of the students of the Materials Science and Technology Department as well as the other departments of the University, for purposes related to the teaching of courses or to carry out the work of their courses.

Any action that disturbs other users (inside or outside the University) or violates applicable law is considered incompatible with the purposes of the room's infrastructure. Indicatively, it is not allowed:

- Lack of respect for other users' personal accounts.
- Attempting to breach other accounts or systems.
- Sending mass messages that harass other users or defame the personality and reputation of individuals.
- The reckless use of computer and network resources.
- Transfer, copy, use of commercial software, without an official license.
- Copyright infringement.
- Any action of direct or indirect speculative / commercial / advertising nature or proselytizing.
- Providing sensitive information to third parties, which may jeopardize the security of the Department's systems.
- Any action that violates applicable national or international law.

For the most efficient use of the Computer Room but also for the safety of its facilities and equipment, smoking, consumption of drinks and food, as well as any other action that disturbs the orderly operation of the Room is not



allowed in the Room. Users of the Room must avoid any actions that impede the work of other persons or that could jeopardize the smooth operation of its facilities and equipment.

When regular or extraordinary maintenance needs are required, a partial or total suspension of the operation of the Computer Room may be imposed for as long as necessary. Extraordinary educational needs (courses, exams, etc.) can also be a reason to suspend the general use of the Room. Relevant notification / update is posted at the entrance of the room.

All users of the Computer Room are required to be aware of, accept unconditionally, and meticulously comply with its operating conditions, always respecting other users and the general infrastructure of the Room. Any questions and suggestions on the operating conditions of the Computer Room are clarified and discussed with the Systems Administrator. The irresponsible, harmful or dangerous handling of the Computer Room's equipment and software, as well as non-compliance with the operating conditions of the Room, gives the three-member Operating Committee the right to temporarily suspend access and may even prohibit future use of the Room.

#### **c) Equipment**

- The room is equipped with forty (40) computers in an equal number of desks. Their current specifications are:
- CPU: Intel Core i3
- RAM: 8GB
- OS hard disk: 250GB
- Display: 22" LCD
- Operating Systems: Microsoft Windows 10, Debian Linux 10.0

#### **d) Use**

- The users of the room are not allowed, for any reason and in any way, to tinker with the BIOS, the operating systems, the installed applications and the computer network.
- Creating or storing files related to the purposes of computer use by users is allowed only in the individual accounts of the LINUX operating system. The maximum total size of the files is determined by the technical capabilities of the Department's equipment. Copies of these files are kept for a reasonable period of time. Files that are not related to students' educational or research activities can be deleted by the administrator without notice.
- In the Windows operating system, any file created or stored by users must be copied to a removable storage medium or otherwise (e.g. email) retrieved by users. After completing the use of the computer, the users' files may be deleted. The backup of these files rests exclusively with the users.
- In any case of malfunction of the equipment, the Systems Administrator must be informed.