



## MSc by Research in Electrical - Electronics Engineering

### A.11 MSc PROGRAM INTERNAL REGULATION

|                      |   |
|----------------------|---|
| <b>Regulation</b>    | MSc Program Internal Regulation                         |
| <b>Department</b>    | Department of Electrical and Electronics Engineering    |
| <b>Faculty</b>       | Faculty of Engineering                                  |
| <b>University</b>    | University of West Attica                               |
| <b>Aim</b>           | To regulate the operation of the MSc Program            |
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## ARTICLE 1: PROGRAM AIM and OBJECTIVES – LEARNING OUTCOMES – MSc DEGREE

### 1.1 General terms

The Department of Electrical and Electronics Engineering (DEEE) in the Faculty of Engineering of the University of West Attica (UNIWA), Greece, organizes this MSc program in English, starting in the winter semester 2025-26, in order to offer graduate-level studies leading to the “Master of Science By Research in Electrical - Electronics Engineering” (in short: MRES; title in the original language: ΠΜΣ Ηλεκτρολόγων - Ηλεκτρονικών Μηχανικών μέσω Έρευνας).

### 1.2 Aim and Objectives

The aim of the program is to form graduates that (i) are specialized in an area of their choice within the field of Electrical and Electronics Engineering, (ii) have acquired adequate research skills and experience in order to staff research teams in research institutions and laboratories, (iii) are able to make an informed decision as to whether they should engage in PhD studies in the field of Electrical and Electronics Engineering.

Under the supervision and guidance of the experienced academic staff, students are encouraged and led to delve into a specific area of interest within the field of Electrical and Electronics Engineering and to engage in innovative research in this area. Research areas are strongly connected to the research carried out in the Laboratories of the Department. Students become members of the laboratory teams right from the beginning of the study program; they are thus smoothly introduced to the research atmosphere, procedures and ethics. Laboratories host, encourage and scaffold young researchers in their first steps towards independent research. Moreover, through this program, students that aspire to PhD studies can get a lived experience of research and make an informed decision as to whether they will engage in a long-term project, such as PhD studies are – and this at minimum risk of dropout; a benefit for both the involved parties, student and supervisor/department.

These objectives dictate the character of the program that features a limited number of places opened annually, strict selection criteria, and close academic supervision throughout the study program. Taught courses are kept to a minimum (4 taught modules, 24 ECTS) in order to maximize the part dedicated to research (4 research modules, 66 ECTS). Research work towards the MSc thesis starts from day one, proceeds along all 3 academic semesters of the program and is culminated by the (required) publication of the results in relevant, internationally renowned journals or conference proceedings, as deemed suitable by the supervisor.

### 1.3 Learning Outcomes

Upon successful completion of this MSc program, students are expected to be able to:

1. Demonstrate their expertise in the chosen area of specialization within the field of Electrical and Electronics Engineering. To do so, they are expected to understand, describe and classify the underlying theories, knowledge representation models, methods and tools employed to address



existing as well as emerging problems / challenges and open research questions in this area.

2. Analyze problems, construct solutions and comparatively evaluate alternative solutions or approaches within their chosen area of research.
3. Design and implement (initially, under supervision and later on, independently) research plans based on specific research methodologies and protocols, in order to pose, test and accept or reject scientific hypotheses, through theoretic or experimental approaches.
4. Describe and present in an accurate, detailed and complete manner the results of their work, either individual or teamwork, in speech, text or other multimedia form.
5. Collaborate with peer scientists and engineers on cross-disciplinary fields and apply their specialized skills in the development of innovative knowledge and technology.
6. Cultivate and demonstrate their awareness on the rules and ethics of research regarding personal, social, economic and environmental dimensions and the impact of research results on all these axes and discern new / open issues or challenges when and where they arise.
7. Develop their personal research interests in order to proceed to the next grade of PhD studies in more focused / specialized areas within the field of Electrical and Electronics Engineering.

#### 1.4 MSc Degree

A call for applications is issued annually, after endorsement by the Assembly of DEEE. The call opens a number of places grouped under research areas of specialization within the field of Electrical and Electronics Engineering as these are proposed by the academic staff members willing to supervise research in the respective area. In addition to the area of specialization, each place is accompanied by a proposed research title, brief description, prerequisite knowledge and skills and expected research outcomes. Areas of specialization, as listed below, are mentioned on the MSc title conferred:

1. Energy
2. Telecommunications
3. Electronics
4. Computing Systems
5. Cross-disciplinary specialization in (*one of the following: Defense / Education / Biomedical / Marine / Industrial Automation*) Technologies

The above list is not exclusive: new specialization areas may be proposed by academic staff members to be included in future calls, upon approval by the Assembly of the Department.

Upon successful completion of all requirements of the program, DEEE confers the “Master of Science By Research in Electrical - Electronics Engineering” degree. The specialization area, as defined in the respective



call and selected by the graduate, is mentioned on the degree. Furthermore, the specific title of research is detailed in the Diploma Supplement issued upon graduation.

## **ARTICLE 2: PROGRAM ADMINISTRATION**

As designated by national legislation (Law 4957/2022, articles 81-82, and Law 5094/2024, as they stand) and UNIWA Regulation for Graduate Studies (Gov. Gazette 4681/B/2023, art. 3), the MSc program is hierarchically administered by

- the Senate of the UNIWA,
- the Assembly of the DEEE,
- the MSc Program Coordinating Committee (CC),
- the MSc Program Director, and
- the UNIWA Committee for Graduate Studies.

### **2.1 MSc Program Coordinating Committee**

The MSc Program Coordinating Committee (CC) is comprised of the MSc Program Director and 4 more academic staff members of DEEE whose areas of specialization are relevant to the MSc program subject and who are involved in the program as module instructors or MSc thesis supervisors. All 5 CC members are appointed by the Assembly of DEEE. Professors Emeriti may be appointed as CC members, on the condition that they undertake course module teaching or research supervision in the program.

### **2.2 MSc Program Director**

One of the CC members is appointed by the Assembly of DEEE as the MSc Program Director, for a 2-year term of office. The Director is chosen preferably among Professors or Associate Professors. Terms of office may be renewed for any number of times.

The Director and other CC members are not entitled to remuneration or reimbursement of any type against their administrative responsibilities and office duties.

### **2.3 MSc Program Administrative - Technical Support**

The MSc program administrative - technical support is given by the Secretariat of DEEE, aided by a special secretary organized within the MSc program and on its own resources.

## **ARTICLE 3: CANDIDATES AND ACADEMIC STAFF**

### **3.1 Candidates**

The annual call for applications opens 25 places maximum and 10 places minimum, per academic year. In case applications are less than 10, the Assembly of DEEE decides whether to proceed with this annual intake and on all practical issues regarding the operation of the program. Applications are accepted from candidates



who hold an academic degree of the 1<sup>st</sup> cycle, at Level 6 of the EQF or equivalent, from a Greek University or an academic institution abroad, accredited by Greek NARIC. Candidates may check the status of their degrees online in <https://www.doatap.gr/national-registry-of-foreign-recognized-higher-education-institutes/>. The ideal candidate should hold a degree/diploma in Electrical and/or Electronics and/or Computer and/or Energy Engineering. Degrees/diplomas in other Engineering Faculties or degrees in Sciences are also welcome. Applications of candidates who hold degrees in other disciplines are judged per case by the Candidate Evaluation Committee (CEC).

### 3.2 Teaching

Teaching duties in the MSc program are assigned yearly to academic staff members by the Assembly of DEEE. The following classes of academic staff members may get a teaching assignment:

1. Professors of the Department or of other Departments of the same or other Greek University,
2. Professors Emeriti or retired professors of the Department or of other Departments of the same or other Greek University,
3. Adjunct professors,
4. On-contract professors,
5. Visiting professors or Visiting researchers,
6. Researchers and other scientists tenured in the research and technology institutions described in Greek Law 4310/2014 (A 258) or in any other Research Center or Institute, in Greece or abroad,
7. Renowned scientists with specialized knowledge and experience in the MSc program subject.

### 3.3 MSc Thesis Supervision

MSc thesis supervision duties may be assigned to any academic staff member of the first 6 categories enumerated in paragraph 3.2, provided they hold a PhD in a relevant field. MSc thesis supervision duties are assigned yearly by the Assembly of DEEE. The same body may assign such duties to academic staff members or EDIP members of DEEE that do not teach in the MSc program but hold a PhD in a relevant field.

### 3.4 Renumeration

All academic staff members involved in teaching or supervision are entitled to renumeration against the MSc program budget, according to the provision of Greek Law 4957/2022, article 83, as it stands.

Remuneration against public grants to UNIWA or against the Greek Public Investments Program is not allowed. The amount payable to each instructor is decided by the Assembly of the DEEE. Instructors who are academic staff members in DEEE may receive extra payment for teaching in the MSc program upon the condition that they have fulfilled their obligations in teaching, as detailed in Greek Law 4957/2022, article 155, paragraph 2. This last provision applies to EDIP, ETEP and EEP members of the DEEE, who have fulfilled their respective legal obligations.

The obligations of an MSc course module instructor include: Course module definition and description, compilation of relevant bibliography, definition of all details regarding student evaluation/examination and grading as well as the announcement of the means and schedule for contact with students.





### 3.5 Teaching Assistantships

The Assembly of DEEE may assign Teaching Assistantship (TA) duties to PhD candidates enrolled in the Departmental PhD program of studies. In these cases, PhD candidates offer ancillary work in the MSc program courses and laboratories under the supervision of an academic staff member.

## ARTICLE 4: APPLICATION AND SELECTION PROCEDURES

Application and selection procedures follow Greek Law 4957/2022 as it stands, the UNIWA Regulation for Graduate Studies and the present MSc Program Internal Regulation. Procedures are detailed in the following paragraphs.

### 4.1 Call for applications

The call for applications for studies starting in the fall semester of a given academic year is issued during the spring semester of the previous academic year. The call is prepared by the MSc program CC, endorsed by the Assembly of DEEE and published online in the website of the MSc program, the website of DEEE and the website of UNIWA. The MSc program Director takes care to advertise the annual call as widely as possible, at the national and the international level.

The call includes:

- Minimum requirements for an acceptable application,
- Necessary documents that should accompany the application form,
- Deadline for filing of application forms and accompanying documents as well as ways and address of filing (in paper or in electronic form, etc.),
- Selection procedure and criteria,
- Interview dates, in case interviews are to be held,
- Any other detailed deemed necessary or helpful for a successful application and merit selection.

Applications are filed with the Secretariat of the Department, as detailed in the annual call and within the deadline set therein. If necessary, the deadline may be extended by the Assembly of the Department.

In order to prepare the annual call, CC issues a call to all departmental Research Labs to contribute Research Proposals in their specialization area, each Research Proposal accompanied by a number of places to be opened in the current call. Academic staff members that do not belong to a Research Lab may also contribute Research Proposals individually, directly to the CC. The final contribution from each Research Lab may be the result of an internal discussion, evaluation and selection process.

A Research Proposal should include

- a) the academic staff member willing to supervise this research and the hosting Research Lab,
- b) one of the specialization areas as defined in Article 1 herein; the specialization area is mentioned on the MSc degree,
- c) the specific title of the proposed research; the research title is also the title of the MSc thesis to be carried out in the 3<sup>rd</sup> semester of study,
- d) a brief description of the research proposed, prerequisite knowledge and skills and expected research outcomes.





Candidates may apply for 1 up to 3 Research Proposals, in order of preference.

The CEC is appointed by the CC. It consists of the Directors of the Research Labs that participate with Research Proposals in the current call and that have received at least one application, or any professor - Lab member that the Lab Director appoints to act in his/her place.

#### 4.2 Application and accompanying documents

A complete application 'portfolio' is comprised of

1. A completed and signed application form, along with the following documents:
2. Curriculum Vitae detailing studies and (if applicable) any professional/teaching/research experience. In that case, a digital copy of all relevant documentation and possible research publications should be submitted (see nr. 5 and nr. 6 below). In case undergraduate studies included a dissertation or thesis, this should also be submitted in digital form,
3. A copy of the degree of 1<sup>st</sup> cycle studies or a graduation certificate, stating the degree GPA and accompanied by the corresponding Diploma Supplement or Transcripts,
4. A copy of the degree of 2<sup>nd</sup> cycle studies or a graduation certificate, stating the degree GPA and accompanied by the corresponding Diploma Supplement or Transcripts, where applicable,
5. Publications in scientific journals or conference proceedings, (co-)authored by the candidate, where applicable,
6. Professional or research experience certificates, where applicable,
7. A photocopy of identification document (an ID or a valid passport, for foreign candidates),
8. Two confidential recommendation letters from academic teachers/supervisors or professional superiors,
9. Letter of intent for the specific MSc program (max 500 words),
10. English language certification at level C1 of the CERF or equivalent (minimum; ideal candidates should hold C2 level certificates or equivalent), or equivalently a degree of 1<sup>st</sup> or 2<sup>nd</sup> cycle of studies completed in an English-speaking program.

Validity of the academic degrees of candidates obtained in academic institutions not in Greece is checked by the Secretariat of DEEE through the Greek NARIC, according to the procedure defined in Greek Law 4957/2022, Chapter A, Article 304.

Applications are also accepted from candidates that are senior undergraduate students in Level 6 EQF/NQF study programs, provided they will be able to submit a Certificate of Completion of Studies before the endorsement of the list of successful candidates by the Assembly of DEEE. In case such a candidate is selected, in order to complete his/her enrollment in the MSc program, he/she will have to submit the degree/diploma to the Secretariat by the date that 1<sup>st</sup> semester course teaching commences.

Applications are also accepted from applicants who hold degrees from (or who are senior undergraduate students in – see previous paragraph) a EQF/NQF level 6 program of study of a University abroad that has not yet been listed in the National Registry of Approved Foreign Academic Institutions, maintained by the Hellenic NARIC. In that case, the DEEE follows the procedure of Greek Law 4957/2022, article 304, paragraph 5, as it stands. In case of a negative outcome, the student is unenrolled; in case the student has already paid installments of fees, reimbursement claims are not accepted.

#### 4.3 Selection Criteria



Selection criteria applied by the CEC are defined in order to promote candidates who preferably

- Hold a university degree in Electrical and/or Electronics and/or Computer and/or Energy Engineering (Degrees in other Engineering Faculties or degrees in Sciences are also welcome; degrees in other disciplines are evaluated on a per case basis),
- Have a GPA with 'Very Good' (B+) or higher mention on their degree from studies of the 1<sup>st</sup> cycle,
- English language certified at C1 level of the CERF or equivalent, or higher.

Qualifications that are highly graded in the selection process are

- Participation in research activities, such as research projects, proportionally to duration and task assignment,
- (Co-)authorship of research publications, proportionally to their impact as measured by the Impact Factor or any other similar index. Candidates who have (co-)authored publications of Impact Factor IF  $\geq 1.0$  are given top priority in the selection process.

During the selection process, all qualifications required and submitted along with the application form (see previous section) are marked, and specifically:

| nr. | CRITERION  | MARKS (max) |
|-----|--|-------------|
| C1  | Letter of intent for the specific MSc program  | 20          |
| C2  | GPA in the Study Program of 1 <sup>st</sup> Cycle (scaled to 0-10 and multiplied by 2.5)                         | 25          |
| C3  | Grade in Degree/Diploma thesis, if included in the Study Program of the 1 <sup>st</sup> Cycle (scaled to 0 - 10) | 10          |
| C4  | Certified knowledge of foreign languages beyond English  | 5           |
| C5  | Holder of additional degrees/diplomas of the 1 <sup>st</sup> , 2 <sup>nd</sup> or 3 <sup>rd</sup> Cycle          | 15          |
| C6  | Research Activities - Publications   | 20          |
| C7  | Professional Activities  | 5           |
|     | TOTAL  | 100         |

The candidate portfolio total mark G1 is calculated as:

$$G_1 = (\text{mark in C1} \times 20 + \text{mark in C2} \times 25 + \text{mark in C3} \times 10 + \text{mark in C4} \times 5 + \text{mark in C5} \times 15 + \text{mark in C6} \times 20 + \text{mark in C7} \times 5) / 100$$

#### 4.4 Candidate evaluation and selection procedure

As already stated, this is a merit selection procedure completed in two phases:

- a) evaluation of the application and the accompanying documents that certify qualifications, and
- b) a personal interview of the candidate held with the CEC.

During application evaluation phase, the Secretariat of DEEE (i) checks all received applications for completeness, (ii) validates all accompanying documentation (especially, candidates' degrees) and (iii) compiles an alphabetic list of applicants and forwards it to the CEC along with all accompanying documentation. The CEC picks out and rejects any out of time applications or any applications lacking the minimum requirements and then marks the rest of the applications and orders them by merit (mark G1 for candidate portfolio).

On the basis of the marks G1 obtained in this first phase, a number of high-ranking applicants are invited to a personal interview with the CEC. Their number cannot exceed the double of the places opened in the current call. The rest of the candidates are excluded from further evaluation steps.

#### 4.5 Interview

The second phase of the selection process is a personal interview to be held between the CEC and candidates who ranked high in the first phase. In the interview, the candidate is expected to be able to discuss topics on his/her selected area of specialization as well as topics of broader scientific interest. The discussion aims to evaluate:

| nr. | CRITERION   | MARKS (max) |
|-----|---|-------------|
| IC1 | The general composure and scientific adequacy of the candidate regarding the subject studied in the MSc program, as well as the correspondence of the candidate's profile to that outlined in the reference letters | 20          |
| IC2 | The motivation and interest of the candidate in the program   | 20          |
| IC3 | Previous experience in activities relevant to the program subject   | 20          |
| IC4 | Communication and other social skills of the candidate  | 10          |
| IC5 | The capacity of the candidate to carry out research, as perceived by the CEC  | 30          |
|     | <b>TOTAL</b>  | <b>100</b>  |

Interviews are graded individually by each member of the CEC, as follows:

$$G_2 = (\text{mark in IC1} \times 20 + \text{mark in IC2} \times 20 + \text{mark in IC3} \times 20 + \text{mark in IC4} \times 10 + \text{mark in IC5} \times 30) / 100$$

The final grade received by a candidate is the average of the grades given by the CEC members. Candidates who are invited to an interview but do not participate are excluded from further evaluation steps.

As already clearly stated, research work is an essential part of this program. Consequently, both the selection process and the selection criteria are stricter than in a typical MSc program. The successful candidate is expected to carry out innovative research, i.e., research that generates or employs new information/data (scientific measurements, publications or other material) or develops a novel approach or solution as compared to existing / conventional ones. This research is expected to produce a publication of its results. The requirement for at least 1 publication before graduation is set to support the general aim of the MSc thesis that is the development of advanced skills in research, in expression/communication, in the formulation of scientific hypotheses and in the interpretation and presentation of research results. Therefore, the CEC may decide to reject an application if the applicant is judged not to fulfill the research criterion, even if he/she fulfills all other criteria.

#### 4.6 Final evaluation and announcement of selection results

The CEC scores all candidates who were invited and who did participate in the interview, according to the criteria mentioned in the call and compiles a list sorted by merit. In particular, candidates receive 2 scores, one through their portfolio and one through their interview.

The final score G of a candidate is in the 0 to 100 scale and is the average of 2 scores with equal weights:



- a)  $G_1$ : the score gained from the portfolio (application and accompanying documents certifying the qualifications claimed) x 50% and
- b)  $G_2$ : the score gained from the personal interview of the candidate held with the CEC x 50%.

The merit list of candidates is formed in descending order of the final score  $G$ . Candidates above 50 / 100 are considered successful and may be offered a place, depending on the availability of their 3 preferences. Successful candidates not granted a place due to exhaustion of their 3 preferences (assigned to candidates who scored higher) are considered runners-up. The list of successful candidates and the list of runners-up, if any, are announced by the CEC with respect to personal data.

Candidates can appeal against the results regarding their personal case, within 5 working days from the announcement of the results. Appeals must contain a justification, are submitted in written to the Secretariat of DEEE and are judged finally by the CEC. Subsequently, the CEC forms the final list of successful candidates and runners-up and forwards it to the Assembly of DEEE for endorsement. Results are then publicly announced through the MSc program website.

#### **4.7 Enrollment in the program**

Successful candidates are invited to enroll in the program within ten (10) days of the announcement of the final results. In doing so they must file with the Secretariat of DEEE all necessary registration documents along with a receipt of payment of the first instalment of the semester tuition fees.

If one or more successful candidates do not enroll, the runners-up, if any, are invited to enroll within 3 days from notification, in the order of their ranking on the approved merit list.

Following enrollment, the list of enrolled students is forwarded by the Secretariat to the Assembly of DEEE, the CC and the Research Laboratories or individual academic staff members that had contributed Research Proposals. CC appoints a tripartite examination committee for each new student. The academic staff member who had contributed the specific Research Proposal in the call is appointed as research supervisor for the student and automatically becomes a member of the committee. Furthermore, at least one of the 3 members comes from a Research Laboratory different than that of the supervisor. Replacement of an appointed examination committee member is possible in cases of leave of absence, paid or not, sick leave, resign or major force reasons.

Depending on the annual budget availability of each Research Laboratory and/or of DEEE, Teaching Assistantships may be offered to MSc students, in order to aid faculty members of DEEE in their undergraduate teaching duties. In this case, the student signs a contract with DEEE, for up to 10 hours per week work, paid per hour depending on the available resources.

## **ARTICLE 5: DURATION OF STUDY**

### **5.1 Full-time studies**

The program is offered only in full-time study mode. Classes start in the Fall Semester of every academic year. The typical length of studies to graduation is three (3) academic semester; the 3<sup>rd</sup> one is dedicated to the preparation and public defense of a MSc thesis. Each academic semester lasts for 13 weeks and corresponds



to 30 ECTS in full-time study mode. Mandatory course modules are taught for no less than 39 hours per academic semester.

Students may need to prolong their studies due to unforeseen reasons; in that case, they have to apply for extension of studies and provide documentation to support their application. Extensions are granted by the CC for whole academic semesters only. The maximum duration of studies including any extensions is five (5) academic semesters. This means that a student may get up to a maximum of two (2) academic semesters of extension. If program requirements are not all completed at the end of the 2<sup>nd</sup> semester of extension, the Assembly of DEEE automatically expels the student from the program, following a relevant proposition by the CC.

Upon completion of the program of study, the DEEE confers to the graduate the Master of Science by Research in Electrical – Electronics Engineering, a degree of Level 7 of the EQF/NQF, according to Greek Law 4763/2020, article 47.

## 5.2 Study break

Students may apply for a break of studies, for a serious reason. In their application, they have to state and document the need for a break. Study breaks are granted by the CC for whole academic semesters only. Regardless of the time of application, a study break starts in the beginning of the following academic semester. A student is not entitled to more than two (2) breaks overall. Study breaks are not considered in the maximum duration of studies. During a study break, student privileges are suspended. Students who return from a study break retain the mode of study they had before the break.

## ARTICLE 6: CURRICULUM

The MSc program curriculum corresponds to 90 ECTS units and is structured in academic semesters. All modules and educational activities correspond to a number of ECTS units gained within the semester they are offered. In order to graduate, a student must have successfully completed the following:

1. Attend and get a passing grade in six (6) taught course modules (5 mandatory modules and 1 elective module),
2. Carry out, submit and successfully defend a MSc thesis,
3. Publish the results of their research in a scientific journal or conference, as deemed suitable by the research supervisor.

The list of course modules and other academic activities is given in the following Table 6.1:

**TABLE 6.1: THE MSC PROGRAM CURRICULUM**

(\*) M/E: Mandatory / Elective

| Module Code | Module Title                              | M/E* | ECTS | STUDENT EFFORT in HOURS |
|-------------|---|------|------|-------------------------|
| MRES.A.01   | Research Methodology – Scientific Writing | M    | 6    | 180                     |



|   |  |   |         |     |
|---|--|---|---------|-----|
| MRES.A.02   | Scientific Computing and Mathematical Modeling   | M | 6       | 180 |
| MRES.A.03   | Supervised Research I<br><i>Students carry out research in their specific research topic, supervised by an academic staff member. Technical Report I, including intermediate research results obtained in the 1<sup>st</sup> semester, is prepared and turned in by the student at the end of the semester. Technical Reports are presented by the students to their respective examination committees and are graded. They can be used as parts (chapters) of the final MSc thesis.</i>   | M | 18      | 540 |
| MRES.B.01   | Science, Technology, Society: From History to Policy   | M | 6       | 180 |
| MRES.B.02   | A series of 3 out of 8 Mini Modules  | E | 2X3 = 6 | 180 |
| MRES.B.03   | Supervised Research II<br><i>Students carry out research in their specific research topic, supervised by an academic staff member. Technical report II, including intermediate research results obtained in the 2<sup>nd</sup> semester, is prepared and turned in by the student at the end of the semester. Technical Reports are presented by the students to their respective examination committees and are graded. They can be used as parts (chapters) of the final MSc thesis.</i> | M | 18      | 540 |
| MRES.C.01   | MSc Thesis<br><i>Completion of supervised research and preparation of the MSc thesis that includes intermediate and final results. The MSc thesis is written, turned in and defended by the student to the respective examination committee. Presentation is in public. The MSc thesis is graded.</i>  | M | 30      | 900 |
| MRES.C.02   | Publication of research results<br><i>Research results have to be published in an international refereed scientific journal or international refereed scientific conference with proceedings, as deemed suitable by the supervisor. A copy of the publication or an acceptance letter has to be filed for graduation. At least one such publication is required.</i>   | M | 0       | 0   |
| <b>MRES.B.02 ELECTIVES (MINI-MODULES: students select a series of 3 out of 8)</b> |  |   |         |     |
| MRES.B.02.01  | Selected Topics in image Processing and Computer Vision  | E | 2       | 60  |
| MRES.B.02.02  | Multifunctional materials and Wearable Devices   | E | 2       | 60  |
| MRES.B.02.03  | Multilayer structures in Organic Optoelectronic Devices  | E | 2       | 60  |
| MRES.B.02.04  | Fiber Bragg Gratings in optical fiber communications and sensing applications  | E | 2       | 60  |
| MRES.B.02.05  | Advanced topics in Antennas and 5G Communications  | E | 2       | 60  |
| MRES.B.02.06  | Special Control Schemes in Wireless Sensor Networks  | E | 2       | 60  |
| MRES.B.02.07  | Selected topics in Small Hydroelectric Power Plants  | E | 2       | 60  |
| MRES.B.02.08  | E-learning: Mining, Analytics and Visualization of Educational Data  | E | 2       | 60  |

Any 3 out of the 8 elective Mini Modules, listed above as MRES.B.02.01 – MRES.B.02.08, may be selected by the student. Three such electives constitute one course module of 6 ECTS. Electives are taught intensively and are scheduled serially to cover the length of the 2<sup>nd</sup> semester of studies.



The Syllabus of the MSc program, organized in three (3) academic semesters, is given in the following Table 6.2:

**TABLE 6.2: THE MSC PROGRAM SYLLABUS**

| Module Code                 | Module Title   | Contact Hours per Week | ECTS      | Student Effort in hours |
|-----------------------------|--|------------------------|-----------|-------------------------|
| <b>SEMESTER A (30 ECTS)</b> |  |                        |           |                         |
| MRES.A.01                   | Research Methodology – Scientific Writing            | 3                      | 6         | 180                     |
| MRES.A.02                   | Scientific Computing and Mathematical Modeling       | 3                      | 6         | 180                     |
| MRES.A.03                   | Supervised Research I                                | N/A                    | 18        | 540                     |
| <b>SEMESTER B (30 ECTS)</b> |  |                        |           |                         |
| MRES.B.01                   | Science, Technology, Society: From History to Policy | 3                      | 6         | 180                     |
| MRES.B.02.a                 | Elective A (out of 8 modules B.02.01 – B.02.08)      | 1                      | 2         | 60                      |
| MRES.B.02.b                 | Elective B (out of 8 modules B.02.01 – B.02.08)      | 1                      | 2         | 60                      |
| MRES.B.02.c                 | Elective C (out of 8 modules B.02.01 – B.02.08)      | 1                      | 2         | 60                      |
| MRES.B.03                   | Supervised Research II                               | N/A                    | 18        | 540                     |
| <b>SEMESTER C (30 ECTS)</b> |  |                        |           |                         |
| MRES.C.01                   | MSc Thesis   | N/A                    | 30        | 900                     |
| MRES.C.02                   | Publication of Research Results                      | N/A                    | (-)       | (-)                     |
| <b>TOTAL</b>                |  |                        | <b>90</b> | <b>2,700</b>            |

Course module descriptions, as detailed in **Appendix I**, are an integral part of this Regulation.

### 6.1 Intensive instruction options

Upon approval from the Assembly of DEEE, a course module may be taught intensively in a one- or two-week period. In that case, the class schedule is announced in the beginning of the semester, before student enrollment. Intensive mode of instruction may not apply to more than one module in a given semester.

### 6.2 Instruction mode

Classes are taught and examined either face-to-face in class or online through teleconferencing or in a blend of these two modes, the second one participating up to 75%. The specific teaching mode is announced in the beginning of every new academic semester, before student enrollment. In the case of teleconferencing, the UNIWA-endorsed teleconferencing platforms are used. Furthermore, UNIWA-endorsed e-learning platforms, such as *Open E-class* or *moodle*, may be used by the class instructors to upload learning content in digital form, such as material for study, class notes, presentations, videos, proposed bibliography, tests/exams, etc.

MSc Program course modules are organized and taught according to the national legislation on graduate studies (Law 4957/2022, as it stands), the UNIWA Regulation for Graduate Studies (Gov. Gazette 4861/B/02-08-2023, article 9) and the Joint Ministerial Decree nr. 18137/Z1/16-2-2023 (Gov. Gazette 1079/B/28-02-2023).

This MSc program does not offer any course module in asynchronous e-learning mode.

### 6.3 MSc program language



The MSc program uses the English language as the sole working language for instruction, examinations and all other educational activities and events.

#### **6.4 Supervised Research Modules and Technical Reports**

In order to gain the 18 ECTS corresponding to each of the course modules MRES.A.03 “Supervised Research I” and MRES.B.03 “Supervised Research II”, the student has to carry out research in his/her specific research topic, supervised by an academic staff member. A Technical Report including intermediate research results obtained in the current semester, is prepared and turned in by the student at the end of the semester (Technical Report I or II, respectively). Technical Reports are prepared by the student according to the respective template of the program. They are presented to the examination committees and are graded. The final grade is the average of the grades given individually by each committee member. Technical Report contents can be used as parts (chapters) of the final MSc thesis.

Supervised research in the selected research area and title is carried out by the students either in the hosting Research Laboratory or in an external institution, industry, company or Research Center that collaborates with the hosting Research Laboratory, under joint supervision. In that case, the supervisor from the side of UNIWA is held responsible by the MSc program regarding the student progress.

#### **6.5 MSc thesis**

In order to gain the 30 ECTS corresponding to the course module MRES.C.01 “MSc thesis”, the student has to complete and conclude his/her supervised research and preparation of the MSc thesis that collectively presents all obtained results, intermediate and final. The MSc thesis is written by the student according to the respective template of the program. MSc thesis is turned in and orally defended by the student to the respective examination committee. The procedure is held in public. The examination committee may (i) accept the MSc thesis as it is, (ii) return the thesis to the student along with comments for improvement and set a new deadline for defense, or (iii) reject the thesis. An accepted MSc thesis is graded by the examination committee on the basis of the set of defined evaluation criteria and grade breakdown, as detailed in this Regulation. The final grade is the average of the grades given individually by each committee member. After the committee files the MSc thesis grading form with the Secretariat, the student has to upload the thesis in full text in the UNIWA repository POLYNOE, under the MSc program partition, for the grade to become final and the 30 ECTS to be delivered.

#### **6.6 Publication of research results**

A final requirement for graduation is the publication of research results, as in course module MRES.C.02 “Publication of research results”. The publication must be co-authored by the student and his/her research supervisor at least - and possibly by other researchers that contributed to this research, as decided by the supervisor. Acceptable publications are those in international refereed scientific journals or international refereed scientific conferences with proceedings and review in the full text of the paper. Publication sources must be accessible and renowned (indexed in Web of Science – Science Citation Index and Science Citation Index Expanded, Scopus, PubMed). For the student to meet this requirement, either a full copy of the publication or a copy of the full and exact submitted manuscript along with the letter of acceptance, must be filed with the Secretariat by the supervisor.

### **ARTICLE 7: TEACHING – EXAMINATIONS – EVALUATION and GRADING**



#### 7.1 Teaching

Teaching is organized in two academic semesters, Winter and Spring, each extending to 13 weeks of lectures followed by 2 weeks of examinations (examination period of January for course modules taught in the Winter semester and examination period of June for course modules taught in the Spring semester). Furthermore, in the examination period of September, students may re-sit in any course module exam, either of the Winter or of the Spring semester.

Students enroll in a number of modules in the beginning of each new academic semester. Attendance of classes for these modules is mandatory, as is the participation in all other educational activities of the program as detailed in the Curriculum and the Syllabus. In particular, it is important that students participate in all research-related events organized by the MSc program, the respective Research Labs or the Department.

Classes are taught according to the announced schedule. Delays beyond 15 minutes are considered as missed class; the student, however, may still attend the class. Students who have missed more than two (2) of the scheduled classes, automatically fail the module and are not allowed to participate either in the regular exam period or the September exam period. Student attendance is recorded by the class instructor who evaluates their participation and progress continuously.

If a class is cancelled for any reason, it is rescheduled by the class instructor who announces the new date and time in the website. Students have to closely follow the MSc program website, to keep updated on announcements, news and events.

#### 7.2 Examinations

Student progress and performance may be assessed by written or oral exams, by projects and presentation, by tests and quizzes or in any other way detailed in the course module description tab along with the corresponding grade breakdown. Assessment may take place at midterm, at the end of the term, at both time points or continuously, throughout the semester.

In the beginning of every academic year and before the commencement of classes, the Academic Calendar is decided by the Assembly of DEEE, following a proposal by the MSc CC. Dates of class instruction commencement and completion as well as dates for the 3 examination periods (2 regular ones and a re-sit one) are set in the Academic Calendar, along with all official holidays.

The specific examination program for each examination period is scheduled by the MSc CC in time and not later than 10 days before exams start.

For the evaluation of students with special needs / disabilities (SN/SD), class instructors may adopt alternative forms such as the option for oral examination, the offer of extra examination time, the use of a Sign Language Interpreter, if available, the use of a writing aid, if available, as well as the provision for a separate examination room with the appropriate proctoring. Such alternatives are decided by the MSc CC per case of SN/SD, depending on the available diagnosis certificate provided by the student, and in collaboration with the CC and the departmental SN/SD Counsellor

Re-sitting a passed exam for a higher grade is not possible for any course module or other graded educational activity of this MSc.

If a student fails in a given course for 3 times, he/she may apply to the MSc program Director for a personal examination by a tripartite committee of professors of this or other UNIWA Department, whose specialization is relevant to the course module examined. The course module instructor cannot be one of the committee



members. If the MSc Program Director delays the appointment of such a committee beyond 1 month, the students may direct his/her application to the Head of the Department.

### 7.3 Evaluation and Grading

Grades are given in the 0.0 – 10.0 scale, with accuracy of one decimal digit. Passing grade is 5.0 for all modules. For graduation, however, a GPA of 6.0 or above is required. GPA is computed as the average of the final grades obtained by the student in all gradable course modules, each weighted by the corresponding ECTS units. GPA is calculated with accuracy of two decimal digits, as follows:

$$\text{GPA} = (\text{Grade in A.01} \times 6 + \text{Grade in A.02} \times 6 + \text{Grade in A.03} \times 18 + \text{Grade in B.01} \times 6 + \text{Grade in B.02} \times 6 + \text{Grade in B.03} \times 18 + \text{Grade in C.01} \times 30) / 90$$

GPA is accompanied by performance ranking as follows:

- 8.50 – 10.00: Excellent
- 6.50 – 8.49: Very Good
- 6.00 – 6.49: Good
- 5.00 – 5.99: Unsatisfactory
- 0.00 – 4.99: Fail

In the case of an 'Unsatisfactory' or a 'Fail' result (GPA less than 6.00), the Department does not confer the MSc degree and title. Instead, the student receives a Certificate of Attendance stating all successfully completed modules or other educational activities, along with their grades and ECTS units.

Instructors file examination results and grades with the Secretariat within two (2) weeks after the end of the corresponding examination period. They also file with the Secretariat all documentation for the grade given, such as written exam sheets, technical reports, project reports, presentations, etc. All these are kept in record by the Secretariat.

### 7.4 MSc thesis preparation and evaluation

The MSc thesis is written and submitted by the student under the research area and research title defined in the respective call. In the case that a modification of the research title (within the same research area) is deemed necessary, so that the new title describes more accurately the research work, an application along with a brief justification has to be filed with the Secretariat by the supervisor. Applications can be filed at any time before the MSc thesis examination procedure. They are forwarded to the Assembly of the Department for consent and become effective immediately afterwards.

As stated in paragraph 6.5 of this regulation, an MSc thesis is undertaken and carried out strictly on an individual basis. The MSc thesis text should extend to up to 20,000 words approximately. In case of theses that include the development of novel audiovisual or of other digital material or software application, the thesis text can be reduced to 10,000 words approximately. The thesis preparation must follow the plan, stages and schedule agreed between the student and the supervisor.

MSc theses are submitted for examination within the deadline announced by the Secretariat, at the end of each academic semester. Thesis preparation extensions are granted for exceptional reasons such as health issues. Thesis preparation extensions are granted by the CC for whole academic semesters only, after a written justified and documented application of the student.



MSc theses are submitted for examination along with a form signed by the supervisor who states that the thesis is completed and ready for evaluation. The thesis is submitted in digital form, along with any supplemental digital material. A single printed and bound copy is given to the Secretariat for MSc records, after examination, acceptance and grading of the thesis. Thesis text formatting should strictly follow the instructions and template of the MSc program, which is decided by the CC and made available online in the program website. The text should be preceded by an abstract of 300-400 words approximately, along with a set of 4-6 keywords.

An MSc thesis is examined by the tripartite examination committee that includes the supervisor. The student presents and orally defends the thesis to the committee. The procedure is held in public and the date and place are announced in time by the Secretariat. The committee may (i) accept the MSc thesis as it is, (ii) return the thesis to the student along with comments for improvement and set a new deadline for defense, or (iii) reject the thesis.

1. In the first case, the thesis is graded by the examination committee on the basis of the set of defined evaluation criteria and grade breakdown, as detailed in Appendix II of this Regulation. The final grade is the average of the grades given individually by each committee member.
2. In the second case, the whole procedure is repeated for the defense and acceptance of the improved thesis version.
3. In the third case, the Department does not confer the Master of Science degree and title. Instead, the student receives a Certificate of Attendance stating all successfully completed modules or other educational activities, along with their grades and ECTS units.

Accepted and graded MSc theses must be uploaded by the student in the digital repository of UNIWA Library POLYNOE, in full text. After the examination committee files the MSc thesis grading form with the Secretariat, the student has to upload the thesis in full text in POLYNOE, under the MSc program partition, for the grade to take effect and the 30 ECTS to be delivered.

## 7.5 Anti-plagiarism rules

Students should clearly and meticulously cite any external sources of material(s) used in the text of the MSc thesis or in any other text(s) they submit during their studies to fulfill the requirements of the MSc program. In addition, students who have used the aid and services of an Artificial Intelligence (AI) software tool in the preparation of their MSc thesis or other project or deliverable within this MSc program, should include in the preamble the “Statement regarding the use of generative AI and AI-supported technologies during text preparation”, where they have to state which tool they have used, in which part of the thesis or project or other deliverable text and for what reason.

In case students need to quote already published text, they take special care to place quoted text in quotation marks, so as to differentiate it from their own original text. Quoted text coming from external sources or text similar to already published text(s) of the same or other author(s) should not exceed 20% of the total thesis text, excluding bibliographic references and cover pages. Observation of the above limit is checked by the supervisor on the final thesis text, prior to submission of the text for examination, using the UNIWA-endorsed software tool (*turnitin*<sup>®</sup> or other). In the case of Technical Reports I and II and of the MSc thesis, the resulting percentage of similarity is forwarded by the supervisor to the other two members of the examination committee.

Plagiarism is considered a grave academic offense. The term covers all cases of





- appropriation or use of the work(s) or part of work(s) of others, either published or not, without the due reference,
- re-use of previous work(s) or parts of work(s) by the same author that have already been submitted and evaluated within a different framework, without clearly stating so,
- quotation of any documentation material without the due reference to its source.

In the unfortunate case that a student commits any of the above academic offenses and after a documented proposition by the CC, the Assembly of the Department may decide to expel of the student. The expelled student does not receive a degree; instead, he/she receives a Certificate of Attendance stating all successfully completed modules or other educational activities, along with their grades and ECTS units.

## ARTICLE 8: STUDENT RIGHTS AND OBLIGATIONS

### 8.1 Student Support – Academic counsellors – Counsellors for students with disabilities

MSc students have all the rights and are entitled to all support activities and means that are offered to undergraduate students in UNIWA, with the exception of the right to receive a free copy of each textbook for the MSc course modules. In particular, the supervisor of a student acts as his/her academic counsellor and remains in close collaboration with the student throughout his/her study program. The counsellor for MSc students with special needs / disabilities (SN/SD) is the same academic staff member that is appointed to this role for undergraduate students of the Department. The Department and UNIWA have to ensure that students with disabilities are given equitable access to the university premises, the learning material and the instruction.

(a) Regarding their rights, students:

1. may use UNIWA infrastructure and equipment, including suitably equipped instruction classrooms with teaching aids and computers, the Libraries, and the premises of DEEE and of its Research Laboratories;
2. enjoy full medical and hospital care covered by the Greek National Health System (NHS), with expenses covered by EOPYY, as per Greek Law 4368/2016, article 33 (Greek Gov. Gazette 83/A/2016), in case they are not already covered through another body;
3. are entitled to free meals, depending on the family and personal financial status and their residence;
4. may pursue external funding of their studies from Institutions or public or private bodies and Research Institutes;
5. may receive payment for working in funded research projects. Relevant details are defined by the CC following a proposal by the MSc program Director;
6. may participate in student exchange programs (e.g., ERASMUS+) organized by UNIWA or in research programs of Universities abroad, under international agreements between DEEE/UNIWA and peer institutions. They may enroll in the foreign institutions as guest/visiting students;
7. may receive academic support by the faculty member appointed as the departmental or personal Academic Counselor. For the students of this MSc Program, this role is assigned to the academic staff member who supervises the research subject of the student. The student is expected to maintain a close collaboration with his/her supervisor and academic counselor throughout the study program;



8. with SN/SD are entitled to equitable access to all UNIWA premises, study material, teaching and examinations ensured by the DEEE and UNIWA;
9. with SN/SD are entitled to personalized support by the academic staff member appointed as the SN/SD counsellor for undergraduate students of the DEEE.

(b) Regarding their responsibilities, students:

1. attend all classes they are enrolled in, within each semester;
2. prepare and turn in all assignments and projects in time;
3. participate in the scheduled examination / evaluation activities;
4. avoid plagiarism and sign the statement on plagiarism included in their MSc thesis preamble, regarding their thesis in total or in part (see section on Plagiarism);
5. cover all due tuition and fees, as detailed in the present Regulation;
6. abide by the present Regulation, by the UNIWA Regulation for Graduate Studies, the decisions of the competent bodies of the MSc Program, of the DEEE and of UNIWA, and conform with academic ethics;
7. take part in / attend seminars, discussions, conferences, workshops, lectures, talks or other scientific activities of the MSc on subjects relevant to their research topic;
8. act as teaching assistants in courses of the Undergraduate Curriculum of the DEEE, as decided by the Assembly of the DEEE;
9. issue an Academic ID through the relevant online service of the Greek Ministry of Education.

## 8.2 Keeping updated and participating

MSc students are welcome to participate in all research-related or other, general interest events and activities organized by the MSc program, the Department, the Faculty or other units of UNIWA, to the extent that such participation supports and positively affects their studies. In particular, they are welcome to participate in research group seminars, focus groups and discussions, bibliographic updates seminars or presentation, lab tours and visits, workshops or conferences on subjects related to the MSc, lectures or any other scientific event.

## 8.3 Financial administration – Student Fees – Scholarships

Financial administration of the MSc program is undertaken by UNIWA Special Account for Research Grants (SARG) (<https://elke.uniwa.gr/en/home/>).

The tuition and fees for this MSc program may be differentiated between students from other EU countries and students from third countries (Greek Law 5094/2024). In case of such a differentiation, the decision on the level of tuition and fees per student category is made by the Assembly of DEEE following a proposal by the MSc Program CC. The decision is clearly stated in the relevant call for applications and takes effect from the following intake.

Tuition and fees for this MSc Program are set to 1,000 euros per academic semester or 3,000 euros for the total study program. These are paid per semester, in two equal installments at the beginning and in the middle of the term, upon notification from the Secretariat, except for the tuition and fees for the 1<sup>st</sup> semester which are payable in a single installment before enrollment, in order to register in the program. Semesters of



extension incur tuition and fees at 50% of the nominal semester rate. No tuition and fees are payable during break of study semesters.

In the case of students who drop out or are expelled from the MSc program, the amount paid for tuition and fees so far is not refunded.

Tuition and fees waivers are available, as provisioned in the national legislation in effect.

Students should have covered all due tuition and fees in order to receive their MSc degree and graduate.

#### 8.4 Scholarships

By a decision of the Assembly of the DEEE, following a proposal by the CC, the MSc Program may offer financial support to graduate students, either on merit or in the form of assistantships. Support is granted on the basis of objective criteria of the academic and of the social and/or financial type.

- Regarding social and/or financial criteria, up to the 30% of MSc incoming students may receive a tuition and fees waiver, provided they meet the social and/or financial criteria detailed in Greek Law 4957/2022, article 86, and Ministerial Decree nr. 108990/Z1/8-9-2022 (Greek Gov. Gazette 4899/B/2022), as they stand. Selection procedure follows the relevant legislation.

Financial support of this type cannot be granted to a student who already receives a grant from another source or has already received a tuition and fee waiver upon enrollment in the MSc Program.

- Regarding academic merit, the MSc Program offers yearly one (1) merit scholarship for the top performing student, in the form of a tuition and fees waiver for the 3<sup>rd</sup> semester of studies, decided on the basis of performance in the 1<sup>st</sup> and 2<sup>nd</sup> semester of studies. In case of a tie, the scholarship is granted to all students who have attained the same top performance, calculated to the 2<sup>nd</sup> decimal digit. This scholarship is proposed by the CC and granted by the Assembly of DEEE without a call or an application. Students who have applied for and received extension(s) of study are not eligible for the merit scholarship.

#### 8.5 Evaluation of the MSc program and instructors by the students

Evaluation of every MSc course module as well as of every class instructor takes place by the end of instruction period of each semester. Evaluation procedure and forms are defined by legislation, UNIWA Internal Regulation and the directives of the UNIWA Quality Assurance Unit (<https://modip.uniwa.gr/en/home/>). In particular, students complete an anonymous online questionnaire for each course module they are enrolled in during the current semester. The questions refer to the course module content, the instruction process and the efficiency of the instructor. Evaluation results are treated as confidential and are forwarded to the corresponding class instructor(s) as feedback for their personal update and improvement. Within the following semester, evaluation statistics, anonymized and free of any personal / identification data, are discussed in the CC, are published on the MSc website and are forwarded to the Assembly of DEEE to support decision making.

#### 8.6 Teaching Assistantships

Grants in the form of Teaching Assistantships (TA) may be offered to MSc students, in order to assist faculty members of DEEE in their undergraduate teaching duties. Assistantship is defined as the aid to faculty members in the form of student practice, delivery of drill and practice sessions, supervision of student



practicum, proctoring in exams and grading. For these tasks, UNIWA may offer reciprocal grants to graduate students.

TAs are granted by the Assembly of DEEE, after a proposition by the CC. Selected students sign a contract with DEEE, for up to 10 hours per week work, paid per hour according to the availability of funds.

#### **8.7 Participation in ERASMUS+**

MSc students are entitled to participate in mobility programs within the ERASMUS+ framework, to a peer academic or research institution abroad. To qualify for mobility, students should have successfully completed all requirements of the 1<sup>st</sup> semester of study. Incoming students from peer institutions at the MSc level (EQF 7) are also welcome in the program.

#### **8.8 Graduation**

The graduation ceremony is scheduled upon the endorsement of the list of graduating students by the Assembly of the DEEE. The graduation ceremony takes place during a regular meeting of the Assembly of the DEEE, in the premises of the DEEE or the Faculty of Engineering and in the presence of the MSc Program Director, the Head or Deputy Head of the DEEE, the Dean or Deputy Dean of the Faculty of Engineering and a representative of UNIWA Rectorate when available. All other details of the ceremony are defined by the Faculty of Engineering Regulation for all the MSc programs offered by the Faculty of Engineering Departments. In the graduation ceremony, graduates receive the original Master of Science title along with the Diploma Supplement (in English).

A point that should be stressed is that a Master of Science degree cannot be conferred to a student who does not hold and has not submitted to the Secretariat a degree for studies of the 1<sup>st</sup> cycle (Level 6 of the EQF or equivalent) from a university or equivalent academic institution that is accredited by the Greek NARIC.

#### **8.9 Discontinuation of studies – Expulsion of students**

The Assembly of the Department may decide to discontinue the study (i.e., to expel a student) following:

1. an application from the student who wishes to discontinue his/her studies,
2. a documented proposition of the CC, in case one of the following holds true:
  - a) the student has exceeded the maximum length of study, as set in this Regulation, either because he/she abstained from required activities or because of poor performance and failure in examinations or other evaluation processes so that it has become impossible for the student to complete all program requirements within the maximum time allowed,
  - b) the student has committed offenses that have violated the MSc Program Internal Regulation, or the UNIWA Internal Regulation, or the UNIWA Regulation for Graduate Studies, or other legislation, as this is verified by the competent body,
  - c) while preparing an MSc thesis or other deliverable required by the MSc program, the student has violated the regulations on Intellectual Property Rights (Greek Law 2121/1993, as it holds) as this is verified by the competent body,
  - d) the students has not covered due tuition and fees; all extensions the student may have applied for and received for this purpose have expired.

The student is notified in writing and with a receipt of a discontinuation/expulsion decision of the Assembly within 15 days of the date of issue. The student has the right to file a written objection to the decision, within



15 days of the notification. The objection is judged finally by the Assembly of DEEE.

An expelled student does not receive a degree; instead, he/she receives a Certificate of Attendance stating all so far successfully completed modules or other educational activities, along with their grades and ECTS units.

In case of an expulsion because of due tuition and fees, the student does not receive the Certificate of Attendance.

In case of a discontinuation/expulsion decision, and irrespectively of the reason for that, already paid tuition and fees are not refundable.

## **ARTICLE 9: MSC PROGRAM INFRASTRUCTURE, EQUIPMENT and RESOURCES**

### **9.1 Infrastructure – Laboratories – Libraries**

Students are given access to the classrooms and laboratories of the Department as well as to the printed and online material and collections of the UNIWA Libraries. For the needs of their research, students are given access to the following Research Laboratories of the Department, as they currently stand or as they may be reconfigured by the relevant competent bodies:

1. Power Systems, Measuring Systems, Environment and Reverse Engineering Laboratory
2. High Voltage and Energy Systems Lab
3. Building and Industrial Energy Systems Lab
4. Electronics and Computer Technologies (ECTLab)
5. Wireless and Optical Devices and Communication Networks (WAVECOM)
6. Smart Technologies, RES and Power Quality (STRESQ)
7. Electronic Devices and Materials (EDML)
8. Telecommunications, Signal Processing and Intelligent Systems (TelSiP)
9. Microsystems, Sensors, Embedded Systems and Automations (microSENSES)
10. Energy Applications and Energy Saving Systems
11. Computer Networks & Services (CONSERT)

Students use the premises and equipment of the hosting Laboratory under the supervision of the lab personnel and observe at all times the Laboratory Regulation and especially the safety regulations included therein.

### **9.2 Operation costs**

MSc program costs are covered primarily by tuition and fees paid by students. These are payable either by the student in person, or by a third party or body acting of the student's behalf. Additional funding may come from the budget of the hosting Laboratories (see previous paragraph), from grants, donations or any other financial support, from bequests, from research projects, and from UNIWA, either directly against own university income or indirectly, against the annual state allowance and/or the state Public Investments Program for UNIWA.

Financial administration of the MSc Program budget is through the UNIWA Special Account for Research Grants (SARG).

In addition, as provisioned by the relevant legislation and defined by UNIWA Senate, 30% of the total MSc revenues from student tuition and fees is withheld by SARG to cover SARG and UNIWA expenses, while the rest 70% is broken down into the various categories of expenses for the operation of the MSc program. SARG also withholds the legal percentage on MSc Program revenues for all other categories.

Accordingly, the MSc Program budget for a full cycle of operation (3 academic semesters) is outlined in the two following Tables (Revenues and Expenditure, respectively):

| <b>TABLE 1 - REVENUES (funding and tuition-fees)</b> |   |               |
|--|---|---------------|
| 1  | Tuition and fees (25 students X 3,000 euros)        | 75,000        |
| 2  | Grants, donations, any other financial support      | -             |
| 3  | Bequests  | -             |
| 4  | Revenues from research projects / grants            | -             |
| 5  | UNIWA own grants                                    | -             |
| 6  | UNIWA State Allowance or Public Investments Program | -             |
| <b>Total</b>   |   | <b>75,000</b> |

| <b>TABLE 2 – EXPENDITURE (expenses per category)</b> |   |               |
|--|---|---------------|
| 1  | Salaries for administrative-technical assistance    | 10,000        |
| 2  | Salaries for teaching                               | 35,000        |
| 3  | Travel Expenses                                     | 2,000         |
| 4  | Equipment and infrastructure expenses               | 1,500         |
| 5  | Scholarships  | 3,000         |
| 6  | Other expenses for the operation of the MSc Program | 1,000         |
| <b>Partial Total (70%)</b>                           |   | <b>52,500</b> |
| 7  | Percentage withheld by SARG / UNIWA (30%)           | 22,500        |
| <b>Total</b>   |   | <b>75,000</b> |

According to Greek Law 4957/2022, article 85, paragraph 2, the upper limit of the total annual MSc Program Revenues that may be allocated to one of the Projects of article 85, paragraph 1, is set to 2%.

### 9.3 Term-closing Report

Upon completion of an administrative term of office, the outgoing Director coordinates the preparation and submission of a detailed Term-closing Report that covers all educational, research and financial aspects of the MSc program during the outgoing administration's term of office. The report is submitted to the Assembly of DEEE for discussion and approval.

## ARTICLE 10: EVALUATION AND ACCREDITATION OF THE PROGRAM

### 10.1 Internal Evaluation





As already stated in the student rights and obligations article, internal evaluation of every course module as well as of every class instructor takes place by the end of instruction period of each semester. Internal evaluation procedures and forms are defined by legislation, UNIWA Internal Regulation, the directives of the UNIWA Quality Assurance Unit (<https://modip.uniwa.gr/en/home/>) and the current MSc program study Regulation.

Detailed evaluation results are treated as confidential and are promptly forwarded to the corresponding class instructor(s) as feedback for their personal update and improvement. Within the following semester, evaluation statistics, anonymized and free of any personal / identification data, are published on the MSc website and are forwarded to the Assembly of the Department to support decision making.

On the basis of the evaluation results obtained in the two academic semesters of an academic year, the CC prepares an annual Internal Evaluation Report, typically right after the completion of the September examination period. The Report along with the annual statistical results, carefully anonymized and free of any personal / identification data, is forwarded by the CC to the Assembly of the Department, to all academic staff members involved in the MSc program, to the students through the MSc program website and to the UNIWA Graduate Study Programs Committee.

Furthermore, the CC discusses the results and proposes a set of measures or actions to be undertaken in order to fill gaps or remedy weak points revealed by the internal evaluation, in order to improve the MSc program. The proposal is addressed to the Assembly of DEEE for decision making on the MSc Program regulation and operation.

#### **10.2 External Evaluation and Accreditation**

External evaluation and accreditation of the MSc program is regulated by Greek Legislation, EU legislation and the procedures and forms set by the Hellenic Authority for Higher Education (H.A.H.E., <https://www.ethaae.gr/en/>). Accreditation by this national body is mandatory for all academic study programs offered in Greece. Furthermore, in order to enhance the quality of the studies offered, the MSc program regularly files a portfolio for evaluation and accreditation by independent international (European) authorities.

#### **ARTICLE 11: MSc PROGRAM WEBSITE**

The official website of the MSc Program is published in English. The website is regularly update to reflect all current information, announcements and news regarding the MSc Program and its activities. The MSc website is the space where students find all necessary official information.

#### **ARTICLE 12: CLOSING TERMS**

Any issue that may arise which is not covered by the relevant standing legislation or the present Regulation, will be addressed through decisions of the competent bodies or through an amendment of the present Regulation where necessary.



## APPENDIX I: Course Modules Description

### A.1 “Research Methodology – Scientific Writing”

This course module primarily aims at student skills development at the graduate level, on the issues of (a) research methodology and (b) scientific writing. These are ‘horizontal’ or across-areas subjects; as such, they are expected to be of value and immediate usefulness to all students, regardless of the specific specialization area selected by each student.

#### **Course module outline:**

1. Introduction to research terminology, basic and applied research, research design and implementation issues, support – explanatory material development, publication and dissemination of research results.
2. Quantitative and qualitative research methods overview.
3. Research ethics, intellectual property rights, avoidance of plagiarism.
4. International scope of research results publication (journals, conferences, workshops), prestige and renown of publication sources and means, access to published material (membership / open-access), publication review process and publications management.
5. Bibliographic databases, search and retrieval of information through modern web tools.
6. Formal referencing and citation styles (Chicago, Harvard, APA, etc.)
7. Scientific text writing (reports, articles, abstracts, presentations). Structure, contents, formatting, terminology, use of language and expression. Practice on examples from the field of Electrical and Electronics Engineering.
8. Software tools (text editors, such as LaTeX, etc.) for scientific text preparation and formatting (text, tables, mathematical formulas, etc.). Collaborative editing, versioning and commenting methods and tools.

### A.2 “Scientific Computing and Mathematical Modeling”

This course module offers advanced knowledge and skills in the ‘horizontal’ or across-areas subject of scientific computing and mathematical modeling. Such methods and tools are expected to be of value and immediate usefulness to all students, regardless of the specific specialization area selected by each student.

#### **Course module outline:**

Mathematical Modeling.

- Deterministic and stochastic mathematical models.
- Mathematical modeling with dynamic systems and differential equations.

Introduction to Scientific Programming (S.P.), Modern S.P. Environments. Computer Errors.

- Solving mathematical problems in scientific programming environments (Matlab, Mathematica, Python, Fortran). Numerical and symbolic calculations on a computer. Double, quadruple and higher precision calculations.
- Numerical calculation errors on the computer.

Numerical Linear Algebra in S.P. environments

- Numerical Linear Algebra Methodologies in an S.P. environment. (solving linear systems, factorizations of matrices, calculation of eigenvalues, SVD).

Methodologies of approximation of functions and scientific data in S.P. environments.

- Interpolation and Approximation of functions and data.
- Interpolatory Procedures.
- Least Squares Approximation.
- Statistical processing and data analysis methodologies.

Optimization Methodologies in S.P. Environments.

- Optimization Methodologies with or without conditions.
- Finding minimum of cost functions with classical or differential-evolutionary algorithms.
- Solving equations of non-linear systems.

Differentiation, Integration, Differential Equations.

- Numerical Integration and Differentiation.
- Numerical Solution of Ordinary Differential Equations.
- Methodologies of solving Partial Differential Equations.

Introduction of parallel computation in modern S.P. Environments.

### A.3 “Supervised Research I”

Supervised Research I is the first part of research on the topic selected by the student upon enrollment.

1. Typically, this first part involves a literature review of the field, so as to get acquainted with the state of the art, and to compare, contrast and critique published solutions/approaches in an attempt to discern a gap in knowledge and/or technology that is worth addressing at the MSc level.
2. Further on, the student analyzes the problem(s) or issue(s) related to this gap, sets relevant hypotheses and plans and organizes an experimental plan to verify or reject them.
3. By the end of the semester, the student prepares a detailed Technical Report including all progress made during the semester, as well as the schedule of next semester research steps.
4. Technical Report I is written according to the respective template, is submitted by the student and is orally presented and defended in front of the supervising committee who grades it.

### B.1 “Science, Technology, Society: From History to Policy”

This course module introduces students to the Science, Technology and Society (STS) interdisciplinary field. First, students are introduced to select concepts such as the Social Construction of Technology, Technopolitics, and Sociotechnical Imaginaries. Then these concepts are applied to selected case studies that pertain to concrete aspects of the relation between society and technological and scientific change.

Such aspects include:

- (a) Production technologies.
- (b) Environmental technologies.
- (c) Transport technologies.
- (d) Energy technologies.
- (e) Information Computation and Telecommunication Technologies.
- (f) Biotechnologies.

The lectures are also based on 19th and 20th century Greek and international history. Students are introduced to select narratives and debates from labour history, economic history, social history and diplomatic history.

All lectures are designed to produce debates on current problems and challenges. This includes the discussion of topics such as

- (a) Geopolitics and International relations
- (b) Class, Racial and Gender discrimination
- (c) State policy
- (d) Emigration.

Such topics come to the fore in every lecture via selected abstracts taken from the daily press, and are discussed in conjunction with their often obscured technical aspects.

#### **Course module outline:**

- Introduction
- First industrial revolution
- Second Industrial Revolution
- Third Industrial Revolution
- Towards a fourth industrial revolution?
- ‘Wasn’t the future wonderful?’: History, technology and futurism in times of crises
- Course contents overview. Past and future of the relation between society and technology

#### **B.2.1 “Selected topics in computer vision”**

Computer vision is perhaps one of the most thrilling fields which combines the concepts of data-driven Machine Learning and image processing. Computer vision exists in numerous applications ranging from Navigation, e.g., by any type of an autonomous vehicle; document analysis and understanding, mixed reality etc. This course module contains selected topics in computer vision and pattern recognition.

#### **Course module outline:**

- A review on image processing and computer vision methods. Image transforms, image compression & morphological transformations.
- Feature detection and extraction. Edge detection: Lines, edges and ridges with the Sobel, Prewitt, Roberts and Canny operators.
- Feature detection and extraction. Corner detection: the role of Hessian and the Harris operator.
- Feature detection and extraction. Blob detection with Laplacian of Gaussian (LoG) and Difference of Gaussian (DoG).
- Data-driven feature detection and extraction. Identification and coding of Regions of Interest (ROI). Key-point detection and visual descriptor with the Scale-invariant feature transform (SIFT). Local correspondence and the RANSAC algorithm.
- Image matching and recognition by considering image features as words. The Bag-of-visual-words model.
- Special topic: Dictionary learning (DL) and sparse representation (SR) methods: The K-SVD & OMP pairs of algorithms.

### B.2.2 “Multifunctional materials and Wearable Devices”

This course module focuses on a multidisciplinary field of the electronic devices and the clothing items used for the operation of the sensors, the actuators and the communication devices for the acquisition of biological signals, process and transmission of the respective information, the operation of actuators etc. The textile based electrical energy harvesting is also an important function of the wearable systems.

Among the multifunctional materials, the most interesting ones are those which can be found or transformed in fibrous form, permitting their integration in the textile materials of the clothing items. Consequently, the course covers both fields and enables the analysis and the design of wearable electronic systems based on textile substrates on the human body.

#### **Course module outline:**

1. Principles of wearable technology
2. Principles of clothing technology
3. Properties of multifunctional materials
4. Sensors and textile-based components
5. Connectivity of distributed units
6. Communication of wearable systems

Mini project:

Short project for the analysis of the performance of multifunctional materials and basic wearable systems.

### B.2.3 “Multilayer structures in organic optoelectronic devices”

This course module aims to provide students with an in-depth understanding of the organic optoelectronic devices' multilayer structure which covers organic light emitting diodes (OLED) and organic photovoltaics (OPV). These devices have opened novel applications in both display applications and solar cells. The characteristic of these devices is their multilayer structure which is crucial for both the outcoupling efficiency for the OLEDs and the external quantum efficiency for the OPVs. The module will cover topics such as the structure of OLEDs and OPVs, the involved organic semiconducting and conducting materials, the methods of simulating their operation based on the electromagnetic theory and the respective modelling for optimization purposes.

#### **Course module outline:**

1. Multilayer structure of OLEDs
  - Transparent conducting materials
  - Hole and electron injection organic materials
  - Spectral refractive indices for the visible spectrum
2. Calculation models for OLEDs
  - Dipole antenna modeling of the excited states
  - Ray tracing calculation scheme
  - Transmission lines modeling
3. Multilayer structure of OPVs
  - Organic photovoltaic materials
  - Single and bulk heterojunctions

- Planar and cylindrical geometries
  - Spectral refractive index and extinction coefficient
  - Perovskite solar cells
4. Calculation models for OPVs
- Transfer matrix modeling
  - Transmission lines modeling
  - Normal and inclined illumination
  - Anisotropy, and interface roughness

**Mini project: Short circuit photocurrent calculation for an OPV structure.**

Groups of 2-3 students will analyse the structure of an OPV for its external quantum efficiency and thus its respective short circuit photocurrent. The materials of the OPV's multilayer structure will be followed by the respective spectral refractive indices and extinction coefficients. Through this project, students will have the opportunity to develop a simple software code based on an OPV's structure modelling method.

#### **B.2.4 “Fiber Bragg gratings in optical fiber communications and sensing applications”**

This course module aims to provide students with an in-depth understanding of a crucial component that is applied not only in optical fiber communication systems but also proves to have an extensive application as a sensor with several advantages in comparison with the traditional electrical ones. This component is based on the fiber Bragg gratings and may be used in optical communications as an optical filter for optical “Add and Drop” multiplexers in a WDM system; as a superstructure FBG for spectral filtering; or as chirped FBG for dispersion compensation. Moreover, it may be an excellent fiber optic sensor when used in a variety of different forms, and is able to cover a broad area of sensing applications. The module will cover topics such as the fundamental theory of FBG operation, the FBG types, the inscription techniques, the interrogation methods, the applications in optical communications and sensing applications.

**Course module outline:**

1. Fundamental theory of FBG operation
2. Different types of FBG
3. Inscription Techniques
4. FBG interrogation methods
5. Applications in fiber optic communications
6. Sensing applications
7. Lab project

#### **B.2.5 “Advanced Antenna Design for 5G/6G telecommunication Systems”**

This course module aims to provide students with an in-depth understanding of advanced antenna design techniques for 5G/6G telecommunication systems. The module will cover topics such as antenna arrays, MIMO systems, millimeter-wave antennas, beamforming, and mmWave propagation models. The course will also include practical design projects that will allow students to apply the concepts learned in class.

**Course module outline:**

1. Introduction to 5G/6G Telecommunication Systems
  - Overview of 5G/6G technology
  - Antenna requirements for 5G/6G systems
  - Challenges in antenna design for 5G/6G systems
2. Antenna Fundamentals
  - Introduction to antennas
  - Antenna parameters
  - Antenna types and characteristics
  - Antenna radiation pattern and polarization
3. Antenna Arrays
  - Array geometries and configurations
  - Linear and planar arrays
  - Beamforming techniques
  - Adaptive beamforming
4. MIMO Systems
  - Introduction to MIMO systems
  - MIMO antenna design
  - Diversity techniques
  - Spatial multiplexing
5. Millimeter-Wave Antennas
  - Introduction to millimeter-wave technology
  - Millimeter-wave antenna design
  - Substrate-integrated waveguide antennas
  - Dielectric resonator antennas
6. Propagation Models for mmWave Systems
  - Introduction to mmWave propagation
  - Propagation models for mmWave systems
  - Path loss models
  - Channel models
7. Practical Design Projects (mini group project)
  - Design and simulation of antenna arrays for 5G/6G systems
  - Design and simulation of millimeter-wave antennas
  - Beamforming simulation and analysis
  - Performance evaluation of MIMO systems

For the mini group project, students will work in groups of 3-4 to design and analyze an advanced antenna system for a 5G/6G telecommunication application. Each group will be assigned a specific problem statement related to antenna design and will be expected to use simulation tools and techniques to propose a solution that meets the specified performance requirements.



The project will consist of the following key components:

- Problem statement: Each group will be assigned a specific problem statement related to antenna design for 5G/6G systems.
- Antenna design: Students will use simulation tools and techniques to design and optimize an advanced antenna system that meets the specified performance requirements.
- Analysis: Students will analyze the performance of their antenna system and evaluate its impact on overall network performance.
- Report: Each group will be required to submit a report detailing their design methodology, analysis results, and conclusions.
- Presentation: Each group will give a short presentation to the class summarizing their project and highlighting key findings.

Through this project, students will have the opportunity to apply the theoretical concepts they have learned in class to a real-world antenna design problem. They will also develop critical thinking skills and the ability to work collaboratively in a group setting.

### **B.2.6 “Special Control Schemes in Wireless Sensor Networks”**

This course module is related to the study of Wireless Sensor Networks (WSNs) that, thanks to their ever-increasing number of applications, are among the most important areas of Science and Technology. In particular, the course focuses on the methodologies that have been proposed to solve the problems that hinder the operation of WSNs.

#### **Course module outline:**

First of all, the appropriate theoretical background is created, regarding:

- Structural and functional characteristics of wireless sensor nodes.
- Structural and functional characteristics of Wireless Sensor Networks (WSNs).
- Comparison of WSNs with conventional wired networks.
- Usage and applications of WSNs.
- Problems of WSNs.
- Implementation and simulation platforms for WSNs.

The course then focuses on control schemes that have been proposed for WSNs for:

- Schemes for energy sustainability.
- Algorithms for coverage maximization.
- Connectivity maintenance protocols.
- Protocols for congestion avoidance and congestion control.
- Methodologies for the maximization of the Quality of Service.
- Security maintenance methodologies.
- Multi-objective optimization algorithms in WSNs.

### B.2.7 “Small Hydro-electric Power Plant”

This course module focuses on the analysis of the operation of a Small Hydro-electric Power Plant.

#### **Course module outline:**

- General introduction to hydro-electric power plant (Basic operation principles, categorization, differences between small and large hydro-electric power plant, definition of small hydropower, site configurations (Run-of-river, at the base of a dam, within an irrigation canal, in a water abstraction system), planning)
- Fundamental of Hydraulic Engineering (introduction, water flow in pipes (head losses due to friction, local head losses, transient flow, hydraulic hammer), water flow in open channels (Classification of open channel flows, uniform flow, efficient cross-section & principles of energy in open channel flows))
- Evaluating stream flow (introduction, stream flow records, evaluating stream flows by discharge measurements (with velocity-area, weir, slope-area methods), stream flow characteristics (hydrograph, flow duration curves, standardised flow duration curves, water pressure)), residual, reserved or compensation flow, estimation of plant capacity and energy output (influence of flow variation and head variation on the turbine capacity, peaking operation, firm energy, floods (flood control design, statistical analysis of flood data, hydrological modelling of the catchment area))
- Site evaluating methodologies (cartography, geochemical studies, practical cases, learning from failures)
- Hydraulic structures (dams (types: embankment, concrete, other; loads and stability, dam safety), weirs and spillways (gated, ungated), energy dissipating structures, intake structures (types, head losses, trashracks, vorticity), sediment traps (efficiency, design), gates and valves, open channels (design and dimensioning, excavation and stability), forebay tanks, penstocks, tailraces)
- Electromechanical structures (powerhouse, hydraulic turbines ( types and configuration, specific speed and similitude, preliminary design, selection criteria, efficiency), speed increasers (types, design, maintenance), generators (configurations, synchronous- asynchronous –dc generators, exciters, voltage regulation and synchronization, special specifications), turbine control, switchgear equipment, automatic control (governor – automatic voltage regulator – case of autonomous operation), ancillary electrical equipment (plant service transformer, DC control power supply, headwater and tailwater recorders, outdoor substation))
- Connection of hydro-power plant with grid through transmission / distribution lines: steady state and transient state current analysis for different operation modes, faults, power quality issues, power stability
- Environmental impact and its mitigation ((introduction, burdens and impacts identification, impacts in the construction phase (reservoirs, water intakes, open canals, penstocks, tailraces), impacts arising from the operation of the scheme (sonic, landscape, biological impacts), impacts from transmission lines (visual, health)))
- Economic analysis (basic considerations, time value of money, methods of economic evaluation (payback time period, net present value, benefit-cost ratio, internal rate of return), tariffs and incentives)
- Administrative procedures (types of procedures (energy regulation – water rights, environmental procedures, public inquiry, construction requirements, connection to the grid, others), examples)

- Special issues: Small hydropower plant in the modern electricity market, possibility for pump hydropower plants, etc.

#### **B.2.8 “E-learning: Mining, Analytics and Visualization of Educational Data”**

This course module focuses on E-Learning technologies as implemented in modern e-learning platforms that support synchronous and/or asynchronous education events and activities. The core content of the module is Educational Data Mining (EDM) a topic that covers the collection, retrieval, analysis and visualization of educational data produced in digital form. Such data is automatically collected by an e-learning platform (an LMS or a VLE, such as moodle) during the interaction of learners with the platform and the learning content as well as the collaboration of learners who work in teams over a platform. Educational data is subsequently analyzed in order to answer specific research questions that aim to provide feedback to learners, instructors and decision-making parties in Education, in an attempt to improve the learning outcomes as well as the learning experience. The later field is known as Learning Analytics (LA). Data analysis is performed by artificial intelligence / machine learning algorithms, methods and tools. Data visualization is performed using modern relevant tools and visualization environments.

##### **Course module outline:**

- Introduction to Big Data, Data Mining and Educational Data Mining
- Educational Data Mining and Learning Analytics nomenclature – EDM or LA or both?
- Overview of current research and open questions
- Types of problems EDM addresses and the corresponding Machine Learning methods employed
- Classification, Prediction, Clustering: worked examples and case studies
- From Data Visualization to Visual Analytics: current state, gaps and potentials

#### **B.3 “Supervised Research II”**

Supervised Research II is the second part of research on the topic selected by the student upon enrollment.

1. Typically, this second part continues on the path set during the previous MRES.A.03 module and builds on the progresses made in it.
2. The student proceeds to implement his/her experimental study plan and get / measure / collect data to answer research questions.
3. By the end of the semester, the student prepares a detailed Technical Report including all progress made during the semester, as well as the schedule of next semester research steps.
4. The Technical Report II is written according to the respective template, is submitted by the student and is orally presented and defended in front of the supervising committee who grades it.

#### **C.1 “MSc Thesis”**

MSc Thesis is the final outcome a research study on a specific topic within the broad field of Electrical and Electronics Engineering. In the present MSc Program, the topic is defined upon enrollment of the MSc student and research on it is carried out throughout the duration of the program (typically, 3 academic semesters).

The major objective of the MSc Thesis is to lead the student to delve into the selected topic of research within the broad field of Electrical and Electronics Engineering, to develop novel approaches, methods, solutions or designs and thus contribute to the advancement of science and technology in the field. In doing so, the student is gradually brought to the state of the art in science and technology of the field.

An equally important objective is the introduction and initiation of students to research methodology and procedures, the cultivation of their scientific and research interests, the familiarization of students to the rules and ethics of research and the development of their research skills.

**Course module outline:**

A typical MSc thesis comprises

- an initial literature review,
- the definition of research questions that should bear elements of novelty,
- theoretic study of the problem at hand and results, as well as – where applicable –
- practical implementation or construction of a prototype and measurements or data analysis to verify the results of the theoretic study.

The students are guided to adopt and implement a carefully chosen methodology in order to systematically address and answer their research problems or questions.

Results are used to compose answers to the research questions, followed by discussion and critical appraisal of the whole research study and conclusions.

## C.2 “Publication of Research Results”

Course module MRES.C.02 “Publication of Research Results” is an obligation for graduation rather than a regular course module. This is why it does not contribute any ECTS units or grades to the student record. The outcome is a binary YES/NO that masks the final grade calculated from all the rest of the modules that carry ECTS units.

As stated in the MSc Program Study Regulation, research work towards the MSc thesis starts from day one, proceeds along all 3 academic semesters of the program and is culminated by the (required) publication of the results in relevant, internationally renowned journals or conference proceedings, as deemed suitable by the supervisor.

Students are expected to carry out innovative research, i.e., research that generates or employs new information/data (scientific measurements, publications or other material) or develops a novel approach or solution as compared to existing / conventional ones. This research is expected to produce a publication of its results. The requirement for at least one publication before graduation is set to support the general aim of the MSc program that is the development of advanced skills in research, in expression/communication, in the formulation of scientific hypotheses and in the interpretation and presentation of research results.

The publication must be co-authored by the student and his/her supervisor at least – and possibly by other researchers that contributed to this research, as decided by the supervisor. Acceptable publications are those in international refereed scientific journals or international refereed scientific conferences with proceedings and review in the full text of the paper. Publication sources must be accessible and renowned (indexed in Web of Science – Science Citation Index and Science Citation Index Expanded, Scopus, PubMed). For the student to meet this requirement, either a full copy of the



# ΠΑΝΕΠΙΣΤΗΜΙΟ ΔΥΤΙΚΗΣ ΑΤΤΙΚΗΣ

ΣΧΟΛΗ ΜΗΧΑΝΙΚΩΝ

ΤΜΗΜΑ ΗΛΕΚΤΡΟΛΟΓΩΝ & ΗΛΕΚΤΡΟΝΙΚΩΝ ΜΗΧΑΝΙΚΩΝ

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publication or a full copy of the submitted manuscript along with the letter of acceptance, must be filed with the Secretariat by the supervisor.

#### APPENDIX II: MSc thesis evaluation criteria and grade breakdown

| MSc Thesis Evaluation Criteria                                       |   | Grade Breakdown (Max Points) | Evaluator 1 (Name)                | Evaluator 2 (Name) | Evaluator 3 (Name) |
|--|---|------------------------------|-----------------------------------|--------------------|--------------------|
|  |   |                              | Grade (G1)                        | Grade (G2)         | Grade (G3)         |
| <b>Text Evaluation Criteria</b>                                      |   | TOTAL (75)                   |                                   |                    |                    |
| <b>A</b>   | Aims and objectives, structure and literature review of the field: <ul style="list-style-type: none"> <li>• Definition and documentation of the aims and objectives of the MSc Thesis</li> <li>• Satisfactory bibliographic search and literature review of the field</li> <li>• Research design and planning, selection of a suitable research methodology and justification for this selection</li> </ul>   | <b>25</b>                    |                                   |                    |                    |
| <b>B</b>   | Quality and quantity of original contribution – degree of novelty: <ul style="list-style-type: none"> <li>• Qualitative and quantitative adequacy of the personal contribution of the student</li> <li>• Critical analysis of research within the framework of the adopted methodology (points of uncertainty, strong points and limitations of the methodology)</li> <li>• Degree of novelty and documentation of the contribution of the thesis to the broader scientific area it falls into</li> </ul> | <b>30</b>                    |                                   |                    |                    |
| <b>C</b>   | Structure, quality and format of MSc Thesis text: <ul style="list-style-type: none"> <li>• Text structure and clarity in the analysis of methodology and argumentation</li> <li>• Use of language</li> <li>• Quality and format of the text (reports, tables, images)</li> </ul>  | <b>20</b>                    |                                   |                    |                    |
| <b>Evaluation Criteria for MSc Thesis Presentation &amp; Defense</b> |   | TOTAL (25)                   |                                   |                    |                    |
| <b>D</b>   | MSc Thesis Presentation: <ul style="list-style-type: none"> <li>• Presentation contents – thesis subject coverage</li> <li>• Structure and clarity of the presentation</li> <li>• Presentation style and mode</li> <li>• Presentation time management</li> </ul>  | <b>15</b>                    |                                   |                    |                    |
| <b>E</b>   | MSc Thesis Defense: <ul style="list-style-type: none"> <li>• Ability to answer questions following presentation</li> </ul>  | <b>10</b>                    |                                   |                    |                    |
| <b>Evaluators' Grades</b>  |   | TOTAL (100)                  |                                   |                    |                    |
| <b>Average MSc Thesis Grade</b>                                      |   | $\frac{G1 + G2 + G3}{30}$    | (Numerical) _____<br>(Text) _____ |                    |                    |