REGULATION
Program of Graduate Studies
"Data and Computer Systems Engineering"

Department of Computer Science and Engineering
School of Engineering, University of Ioannina

Article 1.
General provisions

The Department of Computer Science and Engineering of the School of Engineering of the University of Ioannina has been running the Program of Graduate Studies (MSc Program) entitled "Data and Computer Systems Engineering" since the academic year 2018-2019, according to the provisions of Law 4485/2017, as in force, and the Senate's decision No.14430/4-5-2018 (Official Government Gazette No.1862, Issue B'), entitled "Re-establishment of the Graduate Program of the Department of Computer Science and Engineering under a new title 'Data and Computer Systems Engineering' along with the Approval of the Operating Regulations". The present regulation defines the structure, the organization, and the operating regulations of the MSc Program "Data and Computer Systems Engineering", as modified at the meeting No.418/7-10-2020 of the Assembly of the Department of Computer Science and Engineering of the School of Engineering of the University of Ioannina.

Article 2.
Subject - Purpose

The MSc Program concerns Data and Computer Systems Engineering, which constitute core subjects of Computer Science and Engineering, covering both their theoretical and technological parts. The purpose of the program is to educate engineers by providing specialized knowledge that can help them acquire additional skills on applying contemporary computer and information technologies in their professional field, and become more competitive in it.

Article 3.
Awarded titles - Specializations

The MSc Program awards the Graduate Diploma (MSc Diploma) in "Data and Computer Systems Engineering", with specialization in either "Data Science and Engineering" or in "Advanced Computer Systems".

The MSc Diploma certificate is issued by the Secretariat of the Department. The certificate indicates the issue date, the title of the MSc Program and the specialization, the details of the graduate student and the grade class, which results from the final grade of the MSc Program according to Article 10.4 of the present regulation, as follows: Good (grades ranging from 6 to 6.49), Very Good (grades ranging from 6.50 to 8.49), Excellent (grades ranging from 8.50 to 10). A certificate of successful attendance and completion can be issued to the graduate students of the MSc Program before the graduation day.

In addition to the MSc Diploma, a Diploma Supplement is granted, in accordance with Article 15 of Law 3374/2005, as in force, and of Ministerial Decision No.Φ5/89656/B3/13-8-2007 (Official Government Gazette 1466, Issue B). The Diploma Supplement is an explanatory document that provides information on the nature, level, general framework of education, content and status of studies that have been successfully completed and does not replace the official degree title or the transcript of records awarded by the Institutions.

Article 4.
Administrative bodies of the MSc Program

The bodies responsible for the organization and operation of the MSc Program, with the duties and responsibilities defined in Article 31 of Law 4485/2017, as in force, are the following:

a) The Senate of the Institution.
b) The Assembly of the Department.
c) The Coordinating Committee of the MSc Program.
d) The Graduate Studies Committee of the Institution.
e) The Director of the MSc Program.

The Director of the MSc Program is a member of the Coordinating Committee and is appointed together with the Deputy Director by the Assembly of the Department for a two-year term in accordance with the conditions of Article 31 Section 8 of Law 4485/2017, as in force. The Director cannot have more than two (2) consecutive terms and is not entitled to additional remuneration for administrative work.

Article 5.
Admission of students to the MSc Program

The Department announces graduate student positions twice per academic year, with application deadlines in early May and November of each year. The selection process is completed by mid-May and mid-November, respectively. The results are announced by the end of May and November, respectively.

The program admits graduates of Departments of Schools of Engineering, Departments of Computer Science, Faculties of Science, Faculties of Science and Technology, as well as Faculties of Economics and Business of Greek Universities or equivalent Departments abroad, Higher Military Schools of Scientific Education equivalent to Universities, as well as former Departments of Computer Engineering of Technological Education, Electronic Engineering of Technological Education and Electrical Engineering of Technological Education. Finalist students of the above Departments are also eligible to apply and, if admitted, they can enroll in the MSc Program strictly on the condition that they have completed their studies in September or February, respectively.

Those interested shall submit the following supporting documents to the Secretariat of the Department:

1. Application form
2. Copy of diploma or degree (for graduates). Finalist students can participate in the selection process but are only accepted if they obtain their diploma or degree in the examination period of September or February, respectively.
3. Certificate of recognition of degree equivalence from the Hellenic National Academic Recognition and Information Center (DOATAP) (for university graduates abroad)
4. Copy of official transcript of records
5. Certificate of knowledge of the English language of at least B2 level (Good Knowledge). When there is no certificate, the knowledge is certified by an examination, which consists of a translation of a technical text into English.
6. Detailed CV
7. At least two (2) letters of recommendation
8. Evidence of research activity (if any)
9. Statement of purpose that reports scientific and professional interests, including the candidate's reasons for pursuing graduate studies
10. Any other information that, in the opinion of the candidates, could contribute to their complete evaluation.

Candidates shall have the required background in Computer Science and Engineering. If this is not deduced from their detailed transcript, the successful attendance of up to five (5) courses of the undergraduate program of the Department may be required on a case-by-case basis.

Admission is decided based on the candidate's assessment by the following criteria:

- The overall impression of the candidate and his/her training in key areas of Computer Engineering and Informatics, which is evaluated in an interview where all candidates are invited.

- Grade point average (G.P.A.) of the candidate's degree or diploma

- Grades of undergraduate courses relevant to the MSc Program, as well as of the undergraduate diploma thesis, if available

- Recommendation letters

- Research activity, if any

- Any other information related to the candidate's qualifications as evidenced by the supporting documents submitted

Candidates, who have been awarded academic graduate scholarships, are admitted by priority, provided they meet the formal entry qualifications of the MSc Program.

Graduates of Computer Engineering or related subjects, with diploma degree G.P.A. of 8.5 (out of 10) or higher are admitted by priority, provided they meet the formal entry qualifications of the MSc Program.

Candidates are invited by the Department to an interview-examination conducted by a five-member

admissions committee, which is appointed by the Assembly of the Department following a proposal of the Coordinating Committee of the MSc Program. The members of the admissions committee are members of the Faculty, selected in a circular manner. Faculty members cannot serve in the admissions committee for more than two consecutive terms.

For each academic semester, a faculty member is appointed on a rotating basis, as the consultant for the new graduate students who are admitted to the MSc Program in that semester. The consultant and the Coordinating Committee have the responsibility of monitoring the progress of the graduate students.

Article 6.
Number of admitted graduate students

Up to forty (40) students can be admitted to the MSc Program in each academic year. For reasons of quality assurance of all cycles of study, the number of active graduate students shall not exceed the number of faculty members by five or the number of the Department's undergraduate students by a quarter (¼).

Article 7.
Duration of graduate studies

The minimum duration of studies for the MSc Program is three (3) semesters and the maximum is five (5) semesters, without any possibility for extension. For graduate students who were compelled to undertake undergraduate-level courses as a condition of their admission, the maximum allowed duration of studies is increased by one (1) semester. In exceptional and justified circumstances, a student may apply for the temporary suspension of his/her studies for up to two (2) semesters. The time of suspension of studies does not count in the provided maximum duration of regular study. The MSc Program cannot be undertaken part-time.

Article 8.
Graduate courses

All graduate taught courses are semester-long and run for at least thirteen (13) weeks. Graduate courses attended by foreign graduate students are taught in English. The courses are organized in the following four (4) Modules, depending on the corresponding specialization, as follows:

Specialization in "Data Science and Engineering"

- Module A: Algorithm and Information Technologies
- Module D: Data Analysis and Processing

Specialization in "Advanced Computer Systems"

- Module S: Software Systems
- Module H: Hardware Systems

Graduate courses are classified as core courses (CC), elective courses (EC) and compulsory courses (CMC). The current list of courses is provided in the table below.

List of graduate courses

Code	Course title	Module	Type	ECTS
A0	Introduction to Algorithm and Information Technologies	A	**CC**	7
A1	Algorithmic Graph Theory	A	EC	7
A2	Algorithms for Data Science	A	EC	7
A3	Computational Complexity	A	EC	7
A4	Computational Geometry	A	EC	7
A5	Parallel Computation Models and Algorithms	A	EC	7
A6	Algorithmic Game Theory	A	EC	7
A7	Cryptography and Information Security	A	EC	7
A8	Information and Coding Theory	A	EC	7
D0	Introduction to Data Analysis And Processing	D	**CC**	7
D1	Machine Learning	D	EC	7
D2	Data Mining	D	EC	7
D3	Optimization	D	EC	7
D4	Video Processing and Compression	D	EC	7
D5	Computer Vision	D	EC	7
D6	Online Social Networks and Media	D	EC	7
D7	Management of Non-traditional Data	D	EC	7
D8	Biomedical data analysis	D	EC	7
S0	Introduction to Software Systems	S	**CC**	7
S1	Software and Data Evolution	S	EC	7
S2	Data Warehouses	S	EC	7
S3	Cloud Computing Systems	S	EC	7
S4	Computer Systems Security	S	EC	7
S5	Mobile and Wireless Networks	S	EC	7
S6	Distributed Systems	S	EC	7
S7	Computer Graphics and Game Development	S	EC	7
S8	High Performance Systems and Software	S	EC	7
H0	Introduction to Computer Hardware Systems	H	**CC**	7
H1	Modern Computer Architecture	H	EC	7
H2	Reliable Integrated Systems	H	EC	7
H3	3D Systems on Chip	H	EC	7
H4	Embedded Systems for IoT Applications	H	EC	7
H5	Robotic Systems	H	EC	7
H6	Advanced Network Architectures	H	EC	7
X1	Supervised study	-	EC	7
X2	Special topics	*	EC	7
X3	Teaching practice I	-	**CMC**	6
X4	Teaching practice II	-	**CMC**	2
X5	Seminar I	-	**CMC**	3

X6	Seminar II	-	EC	3
X7	Research Methodology	-	EC	3,5
X8	Summer School	-	EC	3,5
X9	Internship	-	EC	3,5

In each academic semester, one (1) core course (CC) is offered for each specialization. Moreover, at least two (2) elective courses (EC) from each module are offered in each academic year.

Courses with code X (except X2) are not included in any of the four (4) modules and the corresponding ECTS credits can be obtained at most once for each graduate student.

X1 ("Supervised study") is offered both during the academic year and during the summer period from the 1st of July to the 20th of September. In the context of this course, the graduate student shall prepare an independent study or assignment under the supervision of the instructor (any professor of the Department). At the end of the course, a study report, a student evaluation report and the grade are submitted to the Coordinating Committee of the program.

X2 ("Special topics") concerns specialized topics that are relevant to the specializations of the MSc Program and are not covered by the list of the graduate courses. This course can be offered at most once in each academic year. Depending on the respective subject, it is included in one of the modules, after the suggestion of the Coordinating Committee and the final decision of the Assembly of the Department.

X3 and X4 ("Teaching practice I/II") concern the participation of the graduate student in the training process of undergraduate students of the Department for at least two (2) academic semesters.

X5 and X6 ("Seminar I/II") concern the participation of the graduate student in the organized seminars of the Department. For each course, the presence of the student is obligatory in at least five (5) seminars.

X7 ("Research Methodology") deals with the general methodological approaches, methods, techniques, means and processes that can be used to conduct research.

X8 ("Summer School"), when offered by the Department, consists of twenty-six (26) teaching hours and lasts three (3) weeks, during July. In the context of X8, it is also possible to attend a summer school on issues related to the MSc Program in another national or foreign educational institution or research center, after the approval of the Assembly of the Department.

X9 ("Internship") concerns the internship of graduate students and can take place in a local or foreign institution following a decision of the Assembly of the Department.

Article 9.
Obligations of graduate students

9.1. Semester registration

Graduate students must enroll in the selected program courses in each semester during their studies. During the first two (2) weeks of the semester, each graduate student enrolls by declaring the core

courses (CC) and elective courses (EC) that she/he will attend in the specific semester. During the same period of two weeks, the initial registration or re-registration to the graduate diploma thesis must take place, given that the student meets the conditions of Article 10 of the present regulation. The total number of core courses (CC) and elective courses (EC) in which a graduate student enrolls shall not exceed four (4) per academic semester.

During the sixth (6th) week of the courses, the Coordinating Committee may allow a graduate student to resign from one (1) of the courses she/he has selected. This course is removed from the student record. Those who have registered in a course and have not resigned within the predetermined period are obligatorily graded in the specific course and the grades are included in their graduate transcript record by the Secretariat of the Department.

9.2. Minimum workload

For each semester until the enrollment in the graduate thesis, the minimum required workload of a graduate student is determined as the successful attendance of at least two (2) courses, in addition to the compulsory courses. The minimum workload constraint does not apply from the enrollment in graduate thesis and beyond, as well as for the semesters that the student is on internship (course X9).

9.3. Attendance and examination of courses

All the obligations of the graduate students for the graduate courses (delivery of exercises, assignments, etc.) must be fulfilled within the duration of the semester in which the course is taught and until the end of the examinations. The final examinations of the graduate courses are conducted only once, within a period of two (2) weeks immediately after the end of the teaching time of the semester. The final grades shall be announced no later than one (1) week after the examinations. Especially for the winter semester, the grades must be announced before the beginning of the spring semester courses.

The performance of graduate students in their selected courses is graded on a scale of 0-10, based on assignments, laboratory exercises, written and oral examinations or a combination of all the above, with weighting factors set by the course instructor. The rules of the examinations and the conditions for successful completion of each course are announced to the graduate students in the first lecture of the course.

The systematic attendance of the graduate courses and the participation of the graduate students in activities relevant to the courses or required by the present regulation are obligatory. Replacement lectures that were missed within the semester are determined by the instructor in consultation with the graduate students and they are announced in a timely manner. In any case, the start and end dates of the courses must be preserved, as they are defined in the curriculum of the respective semester.

The courses in which a graduate student fails are not considered for granting the MSc diploma. Issues of students who, due to health or force majeure, are unable to participate in the educational process and meet their obligations, are individually addressed by the Assembly of the Department.

9.4. Course evaluation

At the end of each academic semester, on specific dates announced for each course, an internal evaluation of the courses and instructors is conducted. The evaluation process follows the procedures determined in Article 44 of Law 4485/2017, and includes evaluation of each course and each instructor by the graduate students, using a questionnaire regarding the content of the course, teaching quality, and the general satisfaction of the graduate students from the course. As part of the evaluation, graduate students also have the opportunity to suggest ways to improve the quality of the courses. In addition to the above procedure, any further form of evaluation provided in the current legislation is closely followed.

Article 10
Award of Graduate Diploma (MSc Diploma)

10.1 Recognition of specialization

The MSc Diploma is awarded with specialization in either "Data Science and Engineering" or in "Advanced Computer Systems". The successful recognition of specialization requires all of the following conditions:

1. Successful completion of the graduate diploma thesis in a topic that belongs in one of the two Modules of the specialization, as they are defined in Article 8 of the present regulation.
2. Successful completion of at least one (1) elective course (EC) that belongs in the same Module as the graduate diploma thesis with a grade of seven (7) or higher.
3. Successful completion of at least two (2) elective courses (EC) of the specialization with a grade of six (6) or higher.

10.2 Course requirements

The successful completion of courses that correspond to a total of sixty (60) ECTS credits is required, such that a specialization is recognized (as defined in Article 10.1 of the present regulation) and the following requirements are met:

1. *General requirement* (concerns the core courses (CC) and elective courses (EC): forty-nine (49) ECTS credits):
   - Successful completion of core courses (CC) and elective courses (EC) that correspond to a total of forty-nine (49) ECTS credits. The G.P.A. should be at least six and a half (6.5).
   - From the courses that count towards these forty-nine (49) ECTS credits, at least two (2) and no more than three (3) should be core courses (CC), such that both specializations of the MSc Program are covered.

2. *Compulsory courses* (concerns the compulsory courses (CMC): eleven (11) ECTS credits):

   - In courses X3 and X4 ("Teaching Practice I/II"), the successful completion of teaching assistance in undergraduate courses of the Department is required for at least two (2) semesters. The successful completion is verified by a document from the instructor of each course, according to Article 12 of the present regulation.
   - The successful completion of course X5 ("Seminar I") is verified by the attendance of at least five (5) seminars organized by the Department in the corresponding academic semester.

10.3 Completion of graduate diploma thesis

The graduate diploma thesis is either of research or technical orientation and must be sufficiently novel or prove in-depth knowledge of a specific topic. The graduate diploma thesis corresponds to thirty (30) ECTS credits and is carried out under the supervision of the research advisor, who is a member of the Department faculty.

Only students who have successfully completed at least four (4) courses of the general requirement (as defined in Article 10.2 above) with a G.P.A. of at least six and a half (6.5) can enroll for the graduate diploma thesis.

The research advisor is appointed by the Assembly of the Department, following a proposal of the interested graduate student to the Coordinating Committee of the MSc Program.

The duration of carrying out and writing the graduate diploma thesis shall be at least one (1) academic semester. During the carrying out of the thesis, the advisor must assess the performance of the student at the end of each academic semester as "Satisfactory" or "Unsatisfactory". The assessment is a prerequisite for the registration of the student in the subsequent semester.

The graduate diploma thesis can be written in either Greek or English. In the latter case, a summary in Greek is required. The thesis must conform to the styling format prescribed by the Department.

After the completion of the graduate diploma thesis and the concurring opinion of the research advisor, the graduate student applies for her/his defense and submits three (3) copies of the thesis to the Coordinating Committee of the MSc Program. The thesis is evaluated by a three-member committee consisting of the research advisor and two more faculty members that are appointed by the Assembly of the Department, in accordance with the research advisor's suggestion and the recommendation of the Coordinating Committee. After the appointment of the three-member examination committee, the Coordinating Committee forwards the copies of the thesis to the examination committee.

The three-member examination committee submits its approval recommendation for the graduate diploma thesis within one month of its appointment. In case of positive recommendation, the corresponding grade is also submitted to the Coordinating Committee. Within this one-month period, the graduate student shall present the results of the thesis in an open lecture in the Department. The lecture is announced in the Department at least seven (7) days earlier. Finally, the Coordinating Committee notifies the Department and the graduate student regarding the approval recommendation.

In case the graduate diploma thesis is not approved, or the recommendation is not submitted within the one-month period, the examination is considered unsuccessful. The student is notified of the comments of the three-member examination committee regarding the thesis. The student is also allowed to resubmit the thesis for a second and last evaluation, provided the maximum duration of study in the MSc Program is not exceeded.

In case of a positive evaluation, the student must incorporate in the thesis text any comments of the examination committee and then submit to the Coordinating Committee four (4) copies of the final version of the thesis.

The final version of the thesis is also approved by the research advisor, the Coordinating Committee and the relevant office of the Department that maintains the repository of the graduate diploma theses.

10.4 Grade of the graduate diploma (MSc diploma)

The grade of the MSc diploma is computed according to current legislation from the weighted grades of the core courses (CC) and elective courses (EC) that cover the general requirement of the graduate program (as defined in Article 10.2 of the present regulation), and the weighted grade of the graduate diploma thesis. The weighted grades are obtained by multiplying the grade of each course in the MSc program and the grade of the graduate diploma thesis by the corresponding number of ECTS credits, and the sum of the individual products is divided by the sum of the ECTS credits.

Article 11.
Scholarships - Funded positions

Scholarships and externally funded positions are awarded with priority to PhD candidates followed by graduate students, unless otherwise required by the funding source. Funded positions awarded for academic assistance refer to services assigned in addition to the mandatory service for fulfilling the requirements of the MSc Program. The required application-supporting documents are determined by the funding source. The selection criteria for graduate students are given below; restrictions imposed by the funding source may additionally apply.

Graduate students who have completed at least one (1) and no more than four (4) academic semesters and have fulfilled their obligations to the Department are awarded scholarships according to their evaluation score, which is based on the highest grade earned in their successfully examined courses so far in the MSc Program.

In order to determine the corresponding evaluation score for each graduate student, the Normalized Semester Grade (N.S.G.) is calculated for the courses successfully examined at each semester, as follows:

N.S.G. = (average grade of successfully examined semester courses) x (semester difficulty rate)

The semester difficulty rate is equal to 0.8 if, at the specific semester, the graduate student was successfully examined in two (2) graduate courses; 1.0 for three (3) graduate courses; and 1.2 for four (4) graduate courses.

For a graduate student who has completed one (1) semester in the MSc Program, the evaluation score is equal to the N.S.G. value for that semester. For a student who has completed two (2) semesters, the evaluation score is the average of the N.S.G.s of the two semesters. For students who have completed three (3) or four (4) semesters, the evaluation score is defined as the simple (non-normalized) average of the six (6) successfully examined core courses (CC) or elective courses (EC) with the highest grades. Scholarships and funded positions are awarded to graduate students that have attained the highest evaluation scores. The tie-breaking criterion is the highest grade of the undergraduate diploma.

Article 12.
Provision of teaching assistance services by graduate students

Graduate students are required to offer teaching assistance such as in-class tutorial support or laboratory supervision of undergraduate students at the Department. In addition, during their studies in the MSc Program, graduate students are required to offer invigilation service during the written and laboratory examinations of undergraduate students.

The assignment of teaching assistance services takes place at the beginning of each academic year in accordance with the decision of the Assembly of the Department, which is based on the joint proposal of the Committee of Undergraduate Studies and of the Coordinating Committee of the MSc Program.

During the academic semesters with assigned service tasks, graduate students must:

- Provide a minimum of six (6) hours of weekly service, at the discretion of the course instructors and during the necessary time intervals.
- Ask the instructors for approval in case of absence from the Department.

Also, graduate students are obligated to maintain and monitor their academic email daily, throughout the whole academic year.

The teaching assistance service of graduate students is assessed at the end of each academic semester by the instructors of the corresponding courses. The instructors grade the graduate student's performance as "Satisfactory" or "Unsatisfactory".

Article 13.
Code of ethics for graduate students

Graduate students must adhere to the basic code of academic ethics.

It is strictly prohibited to:

- Plagiarize in any form.
- Use source code or text that is freely distributed, neglecting to include the corresponding references.
- Assign either partially or totally their obligatory work (graduate thesis, course work, dissertations, etc.) to third parties.
- Undertake academic assignments (course assignments, diploma theses, programming assignments, etc.) for undergraduate students of the Department, with or without remuneration.
- Provide tutoring services to undergraduate students of the Department, which lie out of the context of their assigned teaching assistance services.

Any misconduct that falls into the above cases results in the temporary suspension of the graduate student status for at least one (1) academic semester while, in case of severe or repetitive misconduct, it can result in the immediate and permanent loss of the student status of the graduate student.

Article 14.
Expulsion of graduate students

A graduate student is permanently expelled from the MSc Program, if at least one of the following reasons hold:

- She/he has not fulfilled the obligatory conditions for the award of the MSc Diploma, while exceeding the maximum duration of study.
- She/he has not registered for a semester (excluding graduate students who are under temporary suspension of studies).

- She/he does not meet the minimum semester workload requirement as referred in Article 9.2 of the present regulation (excluding semesters in which the graduate student has received a temporary suspension of studies).
- She/he has evidently violated the code of conduct of Article 13 of the present regulation.

In any case, it is the Assembly of the Department that is responsible for the final decision to expel the graduate student based on the recommendation of the Coordinating Committee of the MSc Program.