



POSTGRADUATE PROGRAM
**INFORMATICS
AND NETWORKS**
UNIVERSITY OF IOANNINA



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Department of Informatics and Telecommunications

Master in Informatics and Networks

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Introduction

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1. General

The Department of Informatics and Telecommunications of the School of Informatics and Telecommunications at the University of Ioannina organizes and operates the Postgraduate Program (P.M.S.) titled "Master in Informatics and Networks" and awards a Master of Science (M.Sc.) degree in accordance with applicable legislation.

2. Graduate Degree

The Postgraduate Program awards a Master of Science (M.Sc.) degree titled "Master in Informatics and Networks" (Master of Science in Informatics and Networks).

3. 'Administrative Bodies of the Master

1. The responsible bodies for the organization and operation of the Master (P.M.S.) are as follows:

- α. The Assembly of the School of Informatics and Telecommunications,
- β. The Coordinating Committee (S.E.), and
- γ. The Director of the Master

2. The Coordinating Committee (S.E.) consists of the Director of the Master (P.M.S.) and four (4) members of the Academic Research Staff (D.E.P.) of the Department, whose academic expertise aligns with the subject area of the Master and who undertake teaching responsibilities within it. The members of the S.E. and the Director of the Master are appointed by decision of the Assembly of the School in accordance with applicable legislation.

4. Responsibilities of the Administrative Bodies of the Master

1. The Assembly of the School is responsible for the organization, administration, and management of the Master (P.M.S.), and specifically:

- α. Approves the enrollment of graduate students in the P.M.S., following a recommendation by the S.E.,
- β. Assigns teaching responsibilities to the instructors of the P.M.S.,
- γ. Recommends to the Senate modifications to the decision establishing the P.M.S., as well as extensions to its duration,
- δ. Appoints supervisors for graduate students' theses and establishes examination committees for thesis evaluation,
- ε. Confirms the successful completion of studies for the awarding of the P.M.S. degree,
- σ. Approves the P.M.S. report, following a recommendation by the Coordinating Committee (S.E.).

2. The Coordinating Committee (S.E.) is responsible for overseeing and coordinating the operation of the program, and specifically:

- α. Evaluates applications from prospective graduate students and makes recommendations to the Assembly of the School
- β. Prepares the initial annual budget of the P.M.S. and its amendments, and submits them for approval to the Research Committee of the Special Account for Research Funds (E.L.K.E.),
- γ. Prepares the program's report and recommends its approval to the Assembly of the School.,
- δ. Approves the expenditures of the P.M.S.,
- ε. Recommends to the Assembly of the School the distribution of teaching duties and the assignment of teaching responsibilities.
- σ. Proposes to the Assembly of the School the invitation of Visiting Professors to meet the teaching needs of the P.M.S.,

- ζ. Drafts a plan for amending the curriculum and submits it to the Assembly of the School.
- η. Recommends to the Assembly of the School the redistribution of courses among academic semesters, as well as issues related to the qualitative improvement of the curriculum.

3. The Director of the Master (P.M.S.) has the following responsibilities:

- α. Chairs the Coordinating Committee (S.E.), prepares the agenda, and convenes its meetings.,
- β. Proposes matters related to the organization and operation of the P.M.S. to the Assembly of the School..
- γ. Submits recommendations to the S.E. and other bodies of the P.M.S. and the university concerning the effective operation of the P.M.S.,
- δ. Serves as the Scientific Coordinator of the program in accordance with Article 234 and carries out the corresponding responsibilities.
- ε. Oversees the implementation of decisions made by the P.M.S. bodies and the Internal Regulation for graduate and doctoral programs, as well as monitors the execution of the P.M.S. budget.

5. Program Objective

The Master (P.M.S.) provides students with significant opportunities for specialization as well as elective courses, which is a fundamental design principle of the program. This approach enhances the educational goals of the P.M.S. while allowing students to personalize their studies and maximize the educational benefits they receive. The program focuses on the Science of Informatics, Telecommunications, and Networks, encompassing both theoretical and technological aspects. Its purpose is to provide specialized knowledge in the fields of Informatics, Telecommunications, and Networks, enabling graduates to acquire additional skills and expertise in applying modern technologies in these areas to their professional fields, thereby increasing their competitiveness. The design of the program includes both the teaching of theoretical modules/courses and specialized laboratory exercises, as well as additional forms of education for graduate students (seminar presentations by specialized professors/researchers, research projects, etc.), aiming to:

- Expand the knowledge base of graduates and develop their research skills in scientific fields related to Informatics, Telecommunications, and Networks.
- Update and enhance the knowledge and skills of professionals already working in the fields of Informatics, Telecommunications, and Networks, enabling them to address the challenges of a constantly evolving sector.

6. Detailed Study Program

Graduate students are required to submit an electronic course declaration before the start of each academic semester. The electronic declaration also includes the registration for the thesis in the corresponding semester. During their studies, graduate students are required to attend ten (10) courses. Additionally, students must complete a thesis. To obtain the Master of Science (M.Sc.) degree, a total of ninety (90) ECTS credits are required, of which 60 ECTS credits are earned through the attendance and successful completion of the 10 courses, and the remaining 30 ECTS credits are earned through the completion of the thesis. The curriculum is structured as follows:

First Semester - Core Knowledge

Mandatory Courses

Code	ECTS	Title
101	6	Advanced Signal Processing Techniques

103	6	Advanced Network Technologies
105	6	Algorithms and Advanced Data Structures
106	6	Advanced Computational Intelligence Techniques
107	6	Next-Generation Telecommunication Networks
Total	30	

In the first semester, the student enrolls in five (5) courses, all mandatory, with a total of thirty (30) ECTS credits (5 courses x 6 ECTS per course = 30 ECTS).

Second Semester

Elective Mandatory Courses

5 courses are selected from the available options.

Code	ECTS	Title
201	6	Cloud Computing
204	6	Cryptography and Security of Computing Systems
205	6	Functional and Logical Programming
208	6	Big Data Mining
209	6	Operations Research
210	6	Medical Informatics
213	6	Internet of Things and Edge Computing
216	6	Core Networks and Access Networks
217	6	Telecommunications Systems Modeling
218	6	Advanced VLSI Digital Design Techniques
219	6	High-Speed Integrated Circuits
221	6	Virtual and Augmented Reality
222	6	Special Topics in Software Technology
223	6	Artificial Intelligence Applications for Industry 4.0
224	6	Gamification in Business and Educational Environments
225	6	Machine Learning for Data Analysis

In the second semester, the student enrolls in five (5) courses, with a total of thirty (30) ECTS credits (5 courses x 6 ECTS per course = 30 ECTS).

Third Semester

Code	ECTS	Title	
301	30	Thesis	
Total	30		

All the offered courses are organized into a semester-long duration and take place on a weekly basis. Teaching is primarily in-person; however, lectures may also be conducted through electronic methods of synchronous and asynchronous learning in accordance with current legislation. If deemed necessary by the Assembly of the School, based on a recommendation from the Coordinating Committee of the Master, some courses in the curriculum may be taught using the methodology of synchronous distance learning. The percentage of courses conducted this way cannot exceed thirty percent (30%) of the total ECTS credits of the P.M.S. It is also possible for part of the in-person lectures to be conducted via synchronous distance learning, with the percentage not exceeding fifty percent (50%). The assignment of teaching duties is made by the Department's General Assembly following a recommendation from the S.E. before the start of each course. The responsibility for making up missed courses due to unforeseen circumstances lies with the instructor of each course, who must ensure that make-up lessons are held in a timely manner, always taking into account the current course schedule.

7. Thesis

Graduate students undertake their thesis in the 3rd academic semester. They may begin working on their thesis once they have successfully completed at least 70% of the total courses. The Assembly of the School may approve the initiation of thesis work following the completion of the first examination period of the second semester. Specifically:

- α. Students select the topic of their thesis from a list of suggested topics and adapt it to their research interests. Students can choose between conducting an in-depth literature review on a topic, empirical research, or developing a theoretical model. In all cases, the thesis must be distinguished by its scientific rigor.
- β. The thesis presentations take place after the end of the 3rd semester on dates predetermined by the Coordinating Committee (S.E.).
- γ. The thesis defense is public and is evaluated by a three-member committee consisting of the supervisor and two instructors from the Master (P.M.S.).
- δ. The structure (word count, etc.), evaluation, and grading of the theses are determined by the thesis regulation.
- ε. The Coordinating Committee (S.E.) ensures that all students undertake a thesis topic.

8. Admissions, Number of Students, Categories of Degree Holders, and Admission Process

1. The number of admitted students per year to the Master (P.M.S.) is capped at thirty (30) graduate students. In cases where there are more applicants with equal quantitative evaluation for the last available spot, the number of admissions will be increased to include the last applicant with the higher evaluation.

2. The Master admits students through a selection process. Eligible candidates are degree holders in Informatics & Telecommunications, Informatics, Computer Engineering (T.E.), Electronics Engineering, Telecommunications and Networks Engineering, Electrical Engineering & Computer Engineering, Electronics and Computer Engineering, as well as degree holders in Physics, Mathematics, and other related fields. Additionally, degree holders from equivalent recognized foreign institutions may be admitted upon providing proof of equivalence from the National Academic Recognition Information Center (DOATAP). In exceptional cases, graduates from Higher Education Institutions (A.E.I.) may be admitted based on their proven professional and research experience in Informatics or Telecommunications.

3. Applicants to the Master must submit their application on time to the P.M.S. Secretariat. Late applications will not be accepted. Along with the application, applicants must submit copies of supporting documents that verify the information provided in their application.

The detailed selection criteria and the method of quantitative evaluation will be made available to the applicants through the Master announcement, and they briefly include:

- a. Relevant degree.
- b. Proven knowledge of the English language at least at a B2 level.
- c. Overall degree grade.
- d. Research experience.
- e. Writing experience.
- f. Experience presenting at scientific conferences.
- g. Work experience.
- h. Personal interview.

The first two (2) criteria, (a) Relevant degree and (b) Proven knowledge of the English language at least at a B2 level, are prerequisites for participation in the further selection process. Failure to meet these prerequisites will result in exclusion from further consideration for admission to the Master (P.M.S.). In exceptional cases, the relevant degree may be replaced by proven professional and research experience in the field of Informatics or Telecommunications and Networks (if the applicant is a graduate of a Higher Education Institution). Additionally, in exceptional cases, the B2 English certification can be substituted by proof that the applicant's native language is English or by proof that the applicant is a graduate of an English-speaking secondary or tertiary institution, or through a written English exam to be taken by the applicant and assessed by the P.M.S. Committee.

4. For international students, proficiency in the Greek language must be demonstrated with a language certificate from the Ministry of Education (Y.P.E.P.T.H.) or other recognized bodies approved by ASEP.

9. Faculty

1. The teaching of courses in the Master (P.M.S.) can be undertaken by those who have scientific and teaching work relevant to the subject area of the P.M.S,

- α. Members of the Teaching and Research Staff (D.E.P.), Special Educational Staff (E.E.P.), Laboratory Teaching Staff (E.D.I.P.), and Special Technical Laboratory Staff (E.T.E.P.) from the Department or other Departments of the same or another Higher Education Institution (A.E.I.) or Higher Military Educational Institution (A.S.E.I.),
- β. Emeritus Professors or retired members of the D.E.P. from the Department or other Departments of the same or another Higher Education Institution (A.E.I.),
- γ. Collaborating professors,
- δ. Appointed instructors,
- ε. Visiting professors or visiting researchers,
- σ. Researchers and specialized operational scientists from research and technological organizations under Article 13A of Law 4310/2014 (A' 258) or other research centers and institutes in Greece or abroad,
- ζ. Scientists of recognized stature who possess specialized knowledge and relevant experience in the subject area of the Master (P.M.S.).

2. The right to supervise theses is granted to instructors from paragraphs a) to f) of section 1, provided they hold a doctoral degree. By decision of the relevant body of the Master (P.M.S.), the supervision of theses may also be assigned to members of the D.E.P., E.E.P., and E.D.I.P. from the Department who have not taken on teaching duties within the P.M.S.

3. For each course, following a recommendation from the S.E. of the P.M.S., the Assembly appoints the Course Responsible Professor, who is responsible for the design, updating, supervision, teaching, and conducting of the course evaluation, as well as for the assignment of other instructors for the course. Before the start of each new cycle, the S.E. prepares the list of courses to be taught. In the selection of instructors, priority is given to serving members of the Department, provided that their expertise is relevant to the subject matter of the course.

The final responsibility for the allocation of courses lies with the Assembly of the School, following a recommendation from the S.E. of the P.M.S.

10. Student Performance Evaluation

1. Student evaluation for each course is carried out by the instructors based on assignments and/or the final (written or oral) exam. The method of examination, grading, the weight of assignments in the final grade, and all related matters are decided by the instructors. However, every effort is made to ensure transparency, consistency, and objectivity. If a final exam is required for a course, it is held twice a year: at the end of the semester during which the course was taught and in the September examination period. In case of failure, the graduate student is required to retake and attend the course in the next period it is offered, within the maximum allowable duration of study. In case of failure on the second retake of the course, the Coordinating Committee, after considering the student's overall academic progress, may recommend the student's dismissal to the Assembly. The maximum number of attempts a student can make to pass a course is four (4).

2. Instructors are required to release the exam results within 30 days from the exam date. If the instructor is unable to announce the grades within 30 days for justified reasons, they must promptly inform, in writing and before the 30-day period ends, both the P.M.S. Secretariat and the students. The instructor must also specify the date by which the grades will be submitted, which cannot exceed an additional 20 days.

3. The grading scale for evaluating the performance of graduate students (courses and thesis) ranges from zero to ten, with grades expressed up to the first decimal place. The passing grade ranges from five to ten. The grading scale for success is as follows: 8.50 - 10: Excellent, 7 - 8.49: Very Good, 5 - 6.99: Good.

4. The diploma grade is calculated as the sum of the products of the grade of each course and its corresponding ECTS credits, divided by the total number of ECTS credits. The concept of a course includes all types of research and educational activities to which ECTS credits are assigned.

11. Obligations of Graduate Students

1. Graduate students are required to attend the lectures according to the timetable, signing the attendance sheet before and after each class, submit the required assignments for each course within the specified deadlines, attend exams, and generally adhere to the rules of the Master (P.M.S.) and academic ethics. Failure to comply with these obligations may lead, by decision of the Assembly of the School, to the student's exclusion from the P.M.S.

2. Attendance in each course is considered sufficient if the student has missed less than 20% of the course's teaching hours during a semester. Otherwise, it is considered that the student has not sufficiently attended the course and will be excluded from the course exams.
3. In the re-examination period, students who have failed no more than four (4) courses in total across both semesters are eligible to participate.
4. Students may proceed with their thesis after completing at least 70% of the total courses. The Assembly of the School may approve the initiation of thesis work after the completion of the first examination period of the second semester.
5. In case of unsuccessful attendance in a course, the student may retake the course and be examined in it, no more than once, and be examined no more than twice per study period.
6. By decision of the Assembly of the School, the suspension or extension of a student's studies may be allowed, provided there is sufficient justification and following the student's request. Suspension/extension is permitted only once for each graduate student, with a maximum duration of one (1) year. During the suspension period, the student's rights are revoked, and this time is not counted towards the total study duration.
7. Students in the P.M.S. are required to participate in all educational and research activities (seminars, conferences, workshops, educational trips, supervision of undergraduate students, etc.) of the Department of Informatics and Telecommunications.
8. In the case of plagiarism in assignments or cheating in exams, the involved student will be excluded from the specific course. In case of recurrence, the student will be dismissed from the P.M.S.

12. Obligations of Instructors

The obligations of instructors include, in particular:

- Teaching the courses
- Evaluating students through appropriate examination procedures
- Supervising theses
- Providing advisory support to students
- Participating in meetings of the P.M.S. bodies and official ceremonies
- Adhering to the course timetable and monitoring attendance
- Defining the content of the course within the framework of academic freedom and contemporary scientific developments
- Keeping office hours for effective collaboration with students
- Preparing a detailed course syllabus, including weekly content, literature, exercises, assignments, and grades for each examination period
- Respecting the decisions of the bodies and academic ethics

The instructor may invite guest speakers with specialized knowledge in a specific field of study. In any case, this option should not lead to systematic teaching of the course by the guest speakers or other collaborators.

Additionally, the instructor is obligated to:

1. To understand the fundamental principle that the focus of a modern Master is the development of the candidate scientist's personality, and to respect it unconditionally and without discrimination.
2. To uphold the value and prestige of the scientific and research process by clearly defining the appropriate path for acquiring scientific knowledge through diligent inquiry and study.

3. To continuously expand their cognitive abilities in related scientific fields in order to offer complex and interdisciplinary contemporary knowledge.
4. To be approachable, calm, and cooperative with graduate students, and to provide, without discrimination, their knowledge and experience to support the successful progress of the emerging young scientists in their studies.
5. To present a clear course plan with instructions, literature, and an enriched syllabus according to international practice, ensuring that the curriculum adequately covers the scientific requirements of the subject matter.
6. To facilitate graduate students' communication with all instructors and, if possible, with their research activities, so that students gain additional multifaceted experiences from scientists in different fields of study.
7. To emphasize the necessity of methodical preparation and the design of scientific research required by the program, with a focus on successful outcomes and the potential to produce high-quality results.
8. To actively participate as a supervising professor in organizing the presentation of each graduate student's research proposal/protocol, aiming to assess the potential and prospects of the research and improve its methodological requirements.
9. To organize discussions of exam or assignment results, aiming to maximize learning through the identification of mistakes and the exemplary presentation of excellent performances.
10. To allow for self-assessment and peer assessment to cultivate objectivity in judgment and provide experiences of shared responsibility and self-criticism.
11. To announce exam, assignment, and other evaluation results within 30 working days from the day of their conduct and to allow each graduate student access to their written work after correction.
12. To have final responsibility for selecting the research topic for each graduate student under their supervision and to exhaust all possibilities for its successful completion, regardless of their other workload.

13. Course and Instructor Evaluation in the Master (P.M.S.)

During the semester, after the 9th week of classes, graduate students evaluate both the course content and the instructor based on questionnaires they complete. The relevant questionnaire covers the course in terms of its content, teaching method, and its alignment with the principles, practices, and goals of the Master (P.M.S.).

The evaluation is carried out under the responsibility of the Coordinating Committee, ensuring anonymity. If there are multiple instructors for a course, the evaluation for each course (each week) must be done separately to evaluate each instructor individually.

The questionnaire results are processed by the Coordinating Committee after the exams, and the results are announced to both the instructors and the students of the P.M.S. in the form of a summary report of the evaluation. The Director of the P.M.S. is responsible for the overall evaluation of the instructors, which includes both student evaluations and the instructors' performance based on agreed-upon criteria, such as teaching/research goals, teaching hours, and days.

In case of the instructor's underperformance in several evaluation criteria, the data will be presented to the Coordinating Committee, which will propose appropriate actions to the Assembly of the School, which is responsible for the final decision.

The Coordinating Committee monitors student progress indicators and identifies signs of stagnation or dysfunction, which are discussed with the Assembly of the School. The quantitative data considered includes, among other things, student participation and success in exams, grade distribution for each course, the number of graduates, grade distribution, and more.

14. Administrative, Technical, and Financial Support Issues

The administrative and technical support of the Master is the responsibility of the administrative, technical, and other staff of the Department of Informatics and Telecommunications. The Coordinating Committee (S.E.) ensures the smooth operation of the Master and is responsible for allocating the P.M.S. budget to actions required for its efficient functioning.

15. Transitional Provisions

Students who registered and began their studies in the Master (P.M.S.) up to and including the academic year 2022-2023 will continue and complete the Program according to the applicable provisions of Law 4957/2022.

The operation of the Master "P.M.S. in Informatics and Networks" is governed by the provisions of the Graduate Studies Regulation and the applicable legislation.

Any issues not addressed by the P.M.S. Regulation are regulated, by delegation, by the competent bodies, primarily by the Assembly of the School, following a recommendation from the Coordinating Committee (S.E.) of the P.M.S., where applicable.