DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

Department of Midwifery
University of Western Macedonia

INTERNAL OPERATING REGULATION

INTERDEPARTMENTAL POSTGRADUATE PROGRAM

"Digital Health & Health Services Management"

(MSc in Digital Health and Health Management)

COLLABORATING DEPARTMENTS

Department of Electrical and Computer Engineering

School of Engineering

University of Western Macedonia

Department of Midwifery

School of Health Sciences

University of Western Macedonia

Kozani, May 2025

Article 1
General Provisions

The Department of Electrical and Computer Engineering (coordinating department) of the School of Engineering based in Kozani, in collaboration with the Department of Midwifery of the School of Health Sciences, based in Ptolemaida, at the University of Western Macedonia, offer the Interdepartmental Postgraduate Program (MSc) entitled "Digital Health and Health Services Management" (MSc in Digital Health and Health Management).The program commences in the academic year 2025–2026 and operates in accordance with the provisions of Law 4957/2022 (Government Gazette 141/A'), as amended and currently in force.

The administrative support of the program is provided by the Department of Electrical and Computer Engineering, School of Engineering, University of Western Macedonia.

Article 2
Master's Degree Title

The Interdepartmental Postgraduate Program confers a Master's Degree (MSc) entitled: **«Ψηφιακή Υγεία και Διοίκηση Υπηρεσιών Υγείας»** in Greek and "MSc in Digital Health and Health Management" in English.

The Degree is issued and awarded by the Department of Electrical and Computer Engineering (the coordinating department) and is signed by the Rector of the University of Western Macedonia and the Director of the Interdepartmental Postgraduate Program. A Diploma Supplement is also provided, in accordance with Article 15 of Law 3374/2005 and Ministerial Decision Φ5/89656/BE/13-8-2007 (Government Gazette 1466/B'). This explanatory document does not replace the official degree or the transcript of academic records issued by the university.

Article 3

Program Scope and Objectives

The Interdepartmental Postgraduate Program **"Digital Health and Health Management"** operates entirely through state-of-the-art distance learning methods, in compliance with Law 4957/2022, and is designed to provide advanced postgraduate education, research, and training in Digital Health and Health Services Management.

The program aspires to become a center of excellence in education and research—both at the national and international levels.

More specifically, a Postgraduate Program in Digital Health and Health Services Management should equip its graduates with both the necessary technological expertise and a comprehensive understanding of the modern field of Health Services Administration.

The curriculum should enable students to understand the functioning of new technological products, to evaluate their safety and usefulness, and to contribute to the effective management of healthcare units, aiming at the more efficient utilization of resources and the improvement of healthcare delivery.

Graduates of the Program will:

- Critically apply advanced theoretical knowledge, methods, and concepts related to digital health technologies and health services management.
- Acquire specialized technical knowledge and practical skills for design, implementation, and management of digital health systems and healthcare resources.
- Gain transferable professional skills to enhance career prospects in the Digital Health and Health Management sectors.
- Develop advanced research competencies, as independent researchers or as professional consultants within their areas of expertise, to conduct independent or collaborative research, develop innovative digital health solutions, and enhance administrative practices using cutting-edge tools and methodologies.

Specifically, the program aims to:

- offer in-depth knowledge and skills in Digital Health and Health Services Management, enabling graduates to be fully prepared for roles in public and private healthcare organizations.
- promote research excellence and innovation in the broader field of Health Sciences through the preparation of theses, studies, scientific publications, textbooks, and participation in European and national research projects.
- foster collaboration and partnerships with healthcare organizations within the region of Western Macedonia, across Greece, and internationally.

The ultimate goal of the participating Departments is to ensure the quality and continuous improvement of all aspects of the Program, including its educational and research processes, as well as to promote collaborations with related Programs and Centers both in Greece and abroad.

Article 4
Program Governance
(articles 81& 82 of Law 4957/2022)

The competent bodies responsible for the establishment, revision, organization, and operation of the program are the following:

a) The University Senate

b) The Study Program Committee: Specifically, for interdepartmental, interinstitutional, and joint postgraduate programs, the responsibilities of the Department Assembly are exercised by the Study Program Committee.
c) The Coordinating Committee
d) The Interdepartmental Postgraduate Program Director

4.1. The **University Senate** holds ultimate authority over the program, exercising powers in accordance with Article 82 paragraph 1 of Greek law. Its responsibilities include:

a) Approving the establishment of the program or modifications to its founding decision.
b) Authorizing extensions of the program's operational duration.
c) Approving the termination of the program if necessary.
d) Exercising any other responsibilities not delegated by law to other governing bodies.

4.2. The **Study Program Committee** consists of five (5) Academic Staff members from the collaborating Departments, including at least: a) two (2) members from the Department of Midwifery of UoWM, and b) two (2) members from the Department of Electrical and Computer Engineering of UoWM. The Committee is established by the decision of the Senate of UoWM, which undertakes the administrative support of the Interdepartmental Postgraduate Program, following the recommendation of the Assemblies of the collaborating Departments (Article 81, paragraph 5).

Emeriti Professors of the Department or the collaborating Departments may also participate in the Study Program Committee, provided they undertake teaching duties within the Interdepartmental Postgraduate Program.

The Study Program Committee is responsible for the organization, administration, and management of the Interdepartmental Postgraduate Program, and in particular:

a) establishes committees for the evaluation of applications from prospective postgraduate students and approves their admission to the Interdepartmental Postgraduate Program
b) assigns teaching duties to the instructors of the Interdepartmental Postgraduate Program
c) submits proposals to the Senate regarding modifications to the founding decision of the Interdepartmental Postgraduate Program and any extension of its duration
d) establishes examination committees for the assessment of postgraduate theses and appoints supervisors for each project
e) certifies the successful completion of studies for the award of the Interdepartmental Postgraduate Program degree
f) approves the program's annual report following a proposal by the Coordinating Committee

g) may, following a justified proposal from the Coordinating Committee, decide to suspend the operation of the Interdepartmental Postgraduate Program for one academic year.

4.3. The **Coordinating Committee** is appointed by the Study Program Committee for a two-year term and consists of the Program Director and four (4) Academic Staff members from the collaborating Departments with relevant academic expertise, engaged in the Program teaching activities. The Coordinating Committee supervises the operational coordination and monitoring of the program and in particular:

a) prepares the initial annual budget of the Program and any revisions thereto (when the program has resources in accordance with Article 84), and submits it to the Research Committee of the Special Account for Research Funds (E.L.K.E.) for approval
b) reviews the program's annual report and submits it to the Study Program Committee for approval
c) approves program-related expenditures
d) approves the awarding of scholarships, remunerated or otherwise, in accordance with the Program and the Postgraduate and Doctoral Studies Regulation
e) submits recommendations to the Study Program Committee regarding the allocation of teaching duties and the assignment of teaching tasks in accordance with Article 83
f) proposes to the Study Program Committee the invitation of Visiting Professors to meet teaching needs of the Program
g) proposes modifications of the study program to the Study Program Committee
h) recommends to the Study Program Committee reallocation of courses across academic semesters and other measures aimed at the qualitative enhancement of the curriculum.

4.4. The **Director of the Interdepartmental Postgraduate Program** is elected by the Study Program Committee during its first session. He/She must be an Academic Staff member, preferably a professor from the coordinating department, serves a two-year term, renewable with unlimited renewal, and chairs the Study Program Committee.

The Director has the following responsibilities:

a) presides over the Study Program Committee, in the case of interdepartmental, interinstitutional, or joint programs, prepares the agenda and convenes meetings (Article 82, paragraph 4a)
b) submits to the Study Program Committee proposals related to the effective operation of the Program
c) serves as the Scientific Coordinator of the program in accordance with Article

234a and exercises the relevant duties (Article 82, paragraph 4d),

d) monitors the implementation of the decisions made by the program's governing bodies and ensures compliance with the Internal Regulation for Postgraduate and Doctoral Studies, as well as the execution of the program's budget,

e) performs any other duty defined in the founding decision of the Program

f) The Director as well as the members of the Study Program Committee are not entitled to any remuneration or compensation for executing their administrative and academic duties.

Article 5

Postgraduate Students' Admission

5.1. Eligible Candidates

The Postgraduate Program is addressed to graduates of Electrical Engineering, Computer Engineering, Schools of Health Professionals (Medical, Paramedical, Nursing, Obstetrics) and other Health Scientists as well as to graduates of Departments of Physics, Mathematics, Pharmacy, Dentistry, Economics and Biology, who wish to staff Nursing Institutions. Candidates should be graduates of Higher Education Institutions in Greece and/or recognized equivalent institutions abroad and should hold a degree with "Good" as a minimum grade.

The maximum number of admitted students is set at sixty (60) per study cycle, divided into two groups of thirty (30) students each. In the event of a tie among candidates, all those with the same final score as the last successful candidate will be admitted as additional students. The number of admitted students may be modified by decision of the Study Program Committee. The number of groups per study cycle is determined in accordance with the Postgraduate Studies Regulation of the University of Western Macedonia.

5.2. Admission criteria and procedure

By decision of the Study Program Committee, an announcement/call for expressions of interest for admission to the Interdepartmental Postgraduate Program "Digital Health and Health Services Management" is published on the Program's official website.

The announcement specifies the following:

- Categories of eligible applicants/graduates
- Required formal and substantive qualifications of candidates
- The procedure and criteria for the evaluation of candidates
- The deadlines for submission of applications and supporting documents

The deadline set in the announcement may be extended by decision of the Study Program Committee.

Applications are submitted exclusively online. A candidacy is considered valid only if the electronic application and the required supporting documents are submitted within the specified deadline. Applications that are incomplete or submitted after the deadline will not be considered in the evaluation process.

The evaluation process is completed within a reasonable period after the submission deadline.

Required Documents

Each candidate must submit the following supporting documents electronically to the Administrative Support of the Program.

1. Application form and Curriculum Vitae (CV) – submitted electronically. Upon submission, each applicant receives a unique application reference number.

2. Copy of undergraduate degree from a Higher Education Institution (University or former Technological Educational Institute – T.E.I.) in Greece or from an equivalent institution abroad. In the case of a foreign degree for which a Hellenic National Academic Recognition and information Center (DOATAP) recognition decision has not yet been issued, the provisions of Article 304(4) of Law 4957/2022 apply. Graduates prior to the implementation of Law 4957/2022 must submit a certified and officially translated copy of their degree and the corresponding DOATAP recognition decision. Applicants who have completed their studies but have not yet participated in a graduation ceremony must provide: a. Certificate of completion of studies, and b. Official transcript showing all completed courses, clearly stating that only the graduation ceremony is pending.

3. Official Transcript of Records, indicating the exact grade point average (GPA).

4. Proof of English language proficiency, at a minimum level of B2 or higher. Certificates of language proficiency are evaluated according to the Supreme Council for Civil Personnel Selection (ASEP) language equivalency table.

5. Copy of identity card/ military ID, or passport.

<u>Additional Criteria for Consideration:</u>

6. Additional university degree
7. Master's degree
8. Doctoral degree
9. Publications in peer-reviewed journals, conference proceedings, etc.
10. Continuing education or training seminars (at least six months in duration) related to the field of the Program

Degrees from foreign universities of equivalent categories are acceptable, provided that the university is listed in the National Register of Recognized Foreign Higher Education

Institutions and the degree is listed in the National Register of Degree Types of Recognized Foreign Institutions, both maintained by Hellenic National Academic Recognition and information Center (DOATAP).

Adequate knowledge of the Greek language for foreign applicants is demonstrated if: a) The applicant has completed secondary education in Greece or at a Greek-speaking school abroad, b) Holds a degree in Greek Philology or Greek Studies from an equivalent foreign university, c) Has completed an undergraduate program at a Greek university or T.E.I., or has attended a Greek higher education institution for at least two (2) years, d) Holds a certificate of Greek language proficiency issued by a recognized public institution.

Adequate knowledge of the English language may also be certified through examinations conducted under the responsibility of the Coordinating Committee.

The Study Program Committee may determine additional admission requirements, if deemed necessary.

Supporting documents submitted in person or by post will not be returned.

Finally, the evaluation of the candidate's application file is carried out based on the following scoring criteria (as defined in the detailed program regulations).

Scoring Criteria	**Weighting Factor**	**Maximum Score**
Undergraduate Degree Grade	2	20
Undergraduate Thesis relevant to the field of the Postgraduate Program / Grades in courses related to the subject area of the Program	5	5
Professional Experience relevant to the subject of the Program	5	5
Second University Degree	3	3
Master's Degree	5	5
Doctoral Degree (Ph.D.)	7	7
Published Scientific Papers in peer-reviewed journals or proceedings of scientific conferences	1,5 (maximum of two papers considered)	3

Continuing Education or Training Seminars of at least six (6) months' duration, related to the field of the Postgraduate Program	1 (maximum of two seminars considered)	2

5.3. Evaluation of Applicants' Submissions

The verification and evaluation of application documents are conducted by the Selection/Examination Committee, which is appointed by the Study Program Committee. The Selection/Examination Committee submits its recommendations to the Coordinating Committee of the Postgraduate Program.

The evaluation of applicants is implemented as follows:

A. First Phase:
Verification of the applicants' formal and required qualifications. Only those meeting all minimum criteria proceed to the next stage.

B. Second Phase:
Scoring of supporting documents based on predefined criteria in order to establish the ranking list of applicants according to their total evaluation score

Upon completion of the process, the Coordinating Committee receives the ranking list from the Selection/Examination Committee, performs the final review, and makes the final decision on admission. The final ranking list of successful and alternate candidates is approved by the Study Program Committee and published on the official website of the Postgraduate Program. In compliance with the General Data Protection Regulation (EU) 2016/679, the published ranking lists do not include applicants' full names but only their unique application identification number, which was provided to them upon submission of their application.

Objections and Appeals:

An objection or request for review concerning an applicant's evaluation score may be submitted only within the deadlines and in the manner specified in the official publication of results. Late submissions are not considered. After all objections have been examined by the Coordinating Committee, the final list of admitted candidates is approved by the Study program Committee and posted on the program's website.

Enrollment of Successful Candidates:

Successful applicants must confirm their enrollment in the Postgraduate Program within five (5) working days. If an admitted candidate does not accept the offer of admission, he/she must notify the Administrative Support of the Program in writing. Subsequently, candidates from the waiting list are invited to enroll, according to their ranking order.

By completing their registration, students acknowledge and accept the terms and conditions governing the operation of the Postgraduate Program. They are also required to pay the tuition fees, with the first installment due within five (5) days of receiving notification and accepting participation in the program. All tuition payments are made to the designated ELKE (Special Account for Research Funds) bank account of the University of Western Macedonia, as specified by the Program Administrative Support.

Article 6

Duration of Study

The duration of the Interdepartmental Postgraduate Program is three (3) semesters. During the first two semesters, lectures are delivered, whereas the third semester focuses on the preparation and completion of a Master's Thesis. Each semester includes four compulsory courses, with three teaching hours per week per course (a total of 12 contact hours per week).

The Program offers the possibility of part-time study, if it does not exceed twice the time of the regular study, following a reasonable application by the postgraduate students and approval by the Study Program Committee. The terms and conditions for part-time study apply as for the First Cycle of Studies (Undergraduate Studies).

The following are eligible to apply for part-time study:

- students proven to work at least twenty (20) hours per week
- students with disabilities and special educational needs
- parents of children with disabilities and single-parent families

In exceptional cases, suspension of studies may be granted by the Study Program Committee for a period that may not exceed two (2) consecutive semesters. The time of suspension of studies is not counted in the maximum duration of study. After the end of the suspension of studies, the postgraduate student is obliged to attend all courses, seminars, practical exercises, etc. in which he/she has not been successfully evaluated before his/her suspension of studies.

Article 7

Program Structure and Curriculum

The curriculum of the Interdepartmental Postgraduate Program (MSc) must be approved by the General Assemblies of the collaborating Departments and formulated in accordance with Greek legislation. To be conferred a Master's Degree in Digital Health and Health Services Management, students must successfully complete eight (8) courses during the first and second semesters. The third semester concerns thesis preparation, provided that students have fulfilled both their academic and financial obligations from the previous semesters.

All courses are graded on a 10-point scale, with 10 being the highest grade, and carry 7.5 ECTS credits each, corresponding to a total of 30 ECTS per semester. The Master's Thesis

is also graded on a 10-point scale and carries 30 ECTS credits. A Master's Degree (MSc) is conferred upon the successful completion of 90 ECTS credits in total.

The structure of the Program is as follows:

1st Semester			
S/N	Course Title	ECTS credits	Hours/ Week
1	Digital Health – Principles of Health Information Systems	7,5	3
2	Fundamental Principles of Management in Health Services	7,5	3
3	Management of Personal Health Data – Bioethics in Healthcare	7,5	3
4	Health Data Processing Algorithms	7,5	3
	Total	**30**	**12**

2nd Semester			
S/N	Course Title	ECTS credits	Hours/ Week
1	Elective Course A'	7,5	3
2	Elective Course B'	7,5	3
3	Elective Course C'	7,5	3
4	Elective Course D'	7,5	3
	Total	**30**	**12**
3rd Semester			
1	Master's Thesis	30	-

In the 2nd semester, students are required to select a total of four (4) elective courses as follows:

- ✓ **Option 1: Three** (3) courses from **Group A** and one course (1) from **Group B**.

- ✓ **Option 2: Three** (3) courses from **Group B** and one course (1) from **Group A**.
- ✓ **Option 3: Two** (2) courses from **Group A** and two (2) courses from **Group B**.

Students must choose one of the above combinations to ensure a balanced distribution between the subject areas of the two groups.

S/N	**Elective Courses - Group A'**
1	Diagnostic, Sensory, and Imaging Technologies
2	Introduction to Artificial Intelligence
3	UX in Digital Health: Methodologies and Applications

S/N	**Elective Courses – Group B'**
1	Evaluation of Economic Efficiency of Health Services and Technologies
2	Fundamental Principles of Data Collection and Evaluation of Epidemiological Studies
3	Bioethics and Health Law in Public Health Policies
4	Administration and Quality Management in Healthcare Services

General Information

7.1. Each semester consists of thirteen (13) full weeks of instruction. All Compulsory courses have a total duration of 39 teaching hours per semester.

7.2. The languages of instruction are Greek and/or English. Courses may be offered in English following a decision by the Study Program Committee. For this to be considered, at least twenty (20) students must submit a formal request.

7.3. Supervision of the theses will be allocated among the teaching staff members of the teaching staff of the Program based on each member's total teaching hours.

7.4. The maximum duration for completing the Program is three (3) years. Students may request a study leave of up to one (1) year for personal, subject to approval by the Study Program Committee.

7.5. Each course involves three (3) teaching hours per week for 13 weeks per semester. Every course concludes with a final examination.

Article 8
Postgraduate Students' Assessment

Students are evaluated for each course by the instructor according to the method established prior to the start of the course (examination/written assignment/ or both). Performance is graded on a 1-10 scale, with 5 as the passing grade. Students who fail a course exam/written assignment submission repeat the examination or resubmit the project in September. If a student fails to meet the requirements of one or more courses to the extent that they have not successfully completed the Program according to the Postgraduate Program Regulations, they may request a re-examination by a three-member faculty committee. Committee members must have the expertise in the same or a closely related field as the course being evaluated and are appointed by the Department Assembly. The course instructor is excluded from the committee.

Instructors are required to release exam/written assignments results within thirty (30) days of the examination or submission date. Postgraduate students are required to attend all lectures and associated activities for each course. The maximum allowable absence is one third (1/3) of total teaching hours (13 hours per course), regardless of whether absences are justified or not. Exceeding this limit may result in the student being required to repeat the course or may lead to the exclusion from the Postgraduate Program as determined by the Interdepartmental Committee for Postgraduate Studies.

Article 9
Students' Rights and Obligations

Postgraduate students admitted to the Interdepartmental Postgraduate Program "Digital Health Services Management" are required to:

- ✓ Attend all courses and scheduled academic activities of the approved curriculum without interruption. The maximum number of permitted absences for each student is one third (1/3) of the total teaching hours, regardless of whether the absences are excused or unexcused.
- ✓ Submit all required course assignments on time and within the specified deadlines.
- ✓ Comply with the decisions of the governing bodies of the Program and uphold the standards of academic ethics.
- ✓ Submit to the Administration Office, prior to the evaluation of their Master's thesis, a signed declaration stating that the thesis was completed independently and does not contain any plagiarized material.

- ✓ Participate in educational activities, conferences, workshops, symposia, and other academic events organized by the Postgraduate Program.
- ✓ Fulfill their financial obligations by the deadlines set by the Administration Office. Tuition fees amount to a total of €3,900, payable in three equal installments of €1,300 each — upon registration and before the beginning of the second and third semesters, respectively. Tuition fees must be paid on the specified dates announced in advance. In the event of withdrawal from the program, any fees already paid are non-refundable.
- ✓ Register on the Postgraduate Program alumni platform upon completion of their studies.

Postgraduate students are entitled to:

- An academic identity card.
- A university email account at the University of Western Macedonia (UoWM).
- Access to UoWM library network.
- Access to electronic databases subscribed to by UoWM (Hellenic Academic Libraries Link – HEAL-Link).

The coordinating department must provide appropriate accommodations for postgraduate students with disabilities or special educational needs.

Article 10

Course and Instructor Evaluation

At the end of each semester, students can evaluate the teaching process electronically within a specified period, by completing online questionnaires available through the Quality Assurance Unit (MODIP) of the University: https://qau.uowm.gr.

Article 11

Master's Thesis

11.1. During the third semester, students undertake a Master's Thesis, which is a core and compulsory component of the program. Successful completion under the supervision of an Academic Staff member is a prerequisite for the award of the Master's Degree in Digital Health and Health Services Management. In the beginning of the third semester, students apply to the Department Assembly for approval of a proposed thesis topic, after consultation with a proposed supervisor. The application must be accompanied by a summary of the proposed research assignment. The supervisor must be a member of the teaching staff assigned partially or fully to teach a course in the program. The supervisor

is responsible for monitoring and evaluating the progress of the thesis, ensuring that the research objectives and requirements are met. The supervisor may be an Academic Staff Member (DEP) of UoWM, the Democritus University of Thrace, or another higher education institution in Greece or abroad. Members of Special Teaching Staff (EDIP), Laboratory Teaching Staff (EEP), or Special Technical Staff (ETEP) holding a doctoral degree may also act as supervisors.

11.2. Members of the Three-Member Examination Committee must possess expertise in the scientific field of the postgraduate program and may belong to either the collaborating department or other university departments, provided they have the appropriate specialization.

11.3. Theses may be written in a foreign language, upon agreement with the supervisor.

11.4. A change of thesis topic is permitted only following a justified request by the student and approval by the Program Committee. Such a change does not constitute grounds for extending the submission deadline. In exceptional circumstances, and for justified reasons, replacement of the supervisor or a member of the Examination Committee may be approved by the Department Assembly.

11.5. Upon thesis completion and approval by the supervisor, the final evaluation is scheduled within a specified timeframe and includes an oral defense before a three-member Examination Committee.

11.6. Students are solely responsible for the originality and authorship of their thesis. Plagiarism—defined as the partial or complete copying or use of another person's work, published or not, without proper citation—is a serious academic offense. Proven cases of plagiarism may lead, upon recommendation of the supervisor, to permanent expulsion from the postgraduate program.

11.7. The maximum period for a Master's Thesis submission is 18 months from the approval date. In exceptional cases, and upon justified request, the period may be extended for up to two additional semesters with approval from the Program Committee.

11.8. The final grade of the Master's Degree is calculated on a 10-point scale as the weighted average of the grades obtained in all individual courses and the Master's Thesis, according to their respective weighting factors. The grading scale is as follows: Excellent: (8.5–10), Very Good: (6.5–8.49), Good: (5–6.49).

Article 12
Teaching Staff
(article 83 of Law 4957/2022)

The selection of the teaching staff for the Postgraduate Program is determined by the Study Program Committee. The criteria for the selection of instructors include the relevance of their

field of expertise, their professional experience, and their teaching and research activity in relation to the subject matter of the Postgraduate Program.

The teaching of courses in the Program may be undertaken by:

1. Professors and Lecturers of the collaborating Departments.

2. Special Educational Staff members (EEP), Special Teaching Staff members (EDIP) , and Special Technical Laboratory Staff ones (ETEP) of the collaborating Departments, provided they hold a doctoral degree, unless the subject area is of exceptional and indisputable specificity for which the preparation of a doctoral dissertation is not possible or customary.

3.Teaching staff members appointed in accordance with Presidential Decree 407/80 of the collaborating Departments.

4. Emeriti and retired Academic Staff members of the collaborating Departments, following a decision of the Department Assembly and with a documented justification.

5. Academic Staff members from other Departments of the same Higher Education Institution or from other Universities, as well as researchers from research centers referred to in Article 13A of Law 4310/2014 (Government Gazette A' 258).

6.By decision of the Department Assembly, and upon recommendation of the Director, distinguished scientists who hold a professorial or research position in a research center, artists, or scientists of recognized standing with specialized knowledge or relevant experience in the subject area of the Postgraduate Program may be invited as visiting lecturers from Greece or abroad, in accordance with paragraph 5 of Article 36. Additionally, by decision of the Department Assembly, PhD holders may be employed to assist in teaching and conducting laboratory exercises.

Article 13

Language of Instruction and Thesis Writing

The language of instruction and Thesis writing is Greek. Courses may be offered in English following a decision by the Study Program Committee. For this to be considered, at least twenty (20) students must submit a formal request.

Article 14

Tuition Fee Exceptions and Scholarships

(article 86 of Law 4957/2022)

Enrolled students may be exempted from tuition fees provided they meet the criteria defined in Article 86 of Law 4957/2022. In addition, the Interdepartmental Program by decision of the Study Program Committee, may award merit-based scholarships based on academic

performance to students who have successfully completed the first year of study. Depending on the number of students admitted in each academic cycle up to two (2) scholarships may be awarded when the total number of students is 40 or fewer, and up to three (3) scholarships when the number exceeds 40.

Up to 30% of students may be exempted from tuition fees if their individual and household equivalent disposable income do not exceed, respectively, 100% and 70% of the national median equivalent disposable income, according to the most recent data published by the Hellenic Statistical Authority (ELSTAT).

Article 15
Educational Process

15.1. The educational process is conducted entirely through synchronous and asynchronous distance learning methods, in accordance with Article 88 of Law 4957/2022 and the Joint Ministerial Decision (Government Gazette 1079/B΄/28.02.2023, Article 5, Paragraph 3).

15.2. Specifically, the integrated system of both synchronous and asynchronous distance learning will be utilized, as described in detail in Chapter 2: Organization of the Educational Process through Distance Learning Methods of the Regulation of Postgraduate and Doctoral Studies of the University of Western Macedonia.

The University of Western Macedonia employs an integrated distance learning system comprising the following components:

a) Moodle

The online learning process takes place via the Moodle platform (Modular Object-Oriented Developmental Learning Environment), which provides a comprehensive environment for asynchronous e-learning.

b)Eclass της GuNET

The Open eClass platform, developed by the Greek Universities Network (GUnet), is a complete Learning Management System supporting asynchronous education. It is open-source software designed to enhance teaching and learning, accessible freely through any web browser without requiring advanced technical knowledge.

c)Zoom

UoWM holds an institutional Zoom subscription, offering 250 virtual classrooms and one webinar room with a capacity of 1,000 participants. Zoom enables real-time communication

through audio and video, allowing instructors and students to interact from different locations using standard equipment (computers, cameras, microphones, speakers, headsets, high-speed internet connection, and videoconferencing software).

d) UniverSIS Student Information System

The UniverSIS platform serves three main user groups — students, academic staff, and administrative staff — at both departmental and institutional levels.

Students are required to have access to a computer (desktop or laptop), camera (built-in or external), speakers, and a reliable internet connection. They must attend all online classes, submit assignments on time, comply with academic regulations, and maintain ethical standards.

Student assessment will be carried out through written or oral examinations conducted via distance-learning methods, as well as through alternative forms of evaluation such as assignments or practical tests, depending on the nature of each course and the instructor's chosen assessment method.

Article 16
Teaching Staff
(article 83 of Law 4957/2022)

16.1. The Interdepartmental Postgraduate Program will employ members of the Academic Staff (DEP), Special Educational Staff (EEP), Special Teaching Staff (EDIP), and Special Technical Laboratory Staff (ETEP), as well as Emeriti Professors or retired faculty members of the collaborating Institutions and other categories of teaching staff, in accordance with the provisions of Article 83 of Law 4957/2022 (Government Gazette A' 141).

16.2. The teaching staff of the program will:

- define the content of the courses within their specific subject area,
- upload the detailed teaching syllabus, up-to-date bibliography, and scientific articles on the electronic platform,
- provide all relevant educational and informational material through the electronic platform,
- ensure the systematic linkage between the theoretical part of the teaching and its high-level practical application,
- provide postgraduate students with all necessary information regarding their studies, the preparation of the diploma thesis, and other related matters.

16.3. The teaching assignments within the Postgraduate Program will be made by decision of the competent governing body, following a recommendation by the Coordinating Committee of the Postgraduate Program, where such a committee exists, or otherwise

by the Director of the Postgraduate Program. Specific conditions concerning the assignment of teaching duties may be set forth in the decision establishing the Postgraduate Program.

16.4. The supervision of postgraduate master's theses may be undertaken by the teaching staff listed in cases (a) to (f) of paragraph 1, provided that they hold a doctoral degree.

16.5. By decision of the Study Program Committee auxiliary teaching duties may be assigned to PhD candidates of the participating Departments, under the supervision of a teaching staff member of the Postgraduate Program.

Article 17
Administration Support Service

The administrative support of the Postgraduate Program will be undertaken by the coordinating Department of Electrical and Computer Engineering of the University of Western Macedonia. The Administration Office of the Department of Electrical and Computer Engineering will maintain and manage the relevant administrative records, handle matters related to the operational support of the program (registrations, applications, certifications, official documents, graduation ceremonies, correspondence, etc.) and ensure effective communication and coordination with all parties involved in the Postgraduate Program.

Article 18
Supplementary Educational and Research Activities

Postgraduate students may assist academic staff in various activities, such as supervising undergraduate examinations or helping organize conferences. In addition to regular coursework, parallel educational and research activities (seminars, lectures, workshops, etc.) may take place during the program. Participants will receive certificates of attendance for these activities.

Article 19
Financial Resources of the Program

A. Sources of Funding

19.1 The tuition fees are set at €3,900 for each study cycle. Following a justified recommendation by the Director of the Postgraduate Program and the corresponding approval by the Study Program Committee tuition fees may be adjusted annually depending on the economic situation and the operational needs of the Program. The Program may operate with a minimum number of students, as determined by the Study Program Committee. Tuition fees must be paid by the students to the Special Account for Research Funds (ELKE) of the University of Western Macedonia, which is responsible for the overall financial management of the Program. A percentage of 30% of the tuition fees will be

retained by the ELKE of the University of Western Macedonia, in accordance with the provisions of the Law and the University Internal Regulation. Up to 30% of the students may be exempted from tuition fees, provided that both their individual income and their family's equivalent disposable income do not separately exceed — the individual income by 100%, and the family income by 70% — of the national median equivalent disposable income, according to the most recently published data by the Hellenic Statistical Authority (ELSTAT).

19.2. Student registration in the program takes place after payment of the tuition fees for the first semester (for those students required to pay). Registration for subsequent semesters is completed after successful completion of the academic requirements and payment of the fees for the next semester. The decision regarding student registration is taken by the Study Program Committee, following a written recommendation from the Program Director.

19.3. The amount of tuition fees, the compensation of teaching and administrative staff, and other program-related expenses are determined by the Study Program Committee, following a proposal by the Program Director.

B. Compensation for the Implementation of the Postgraduate Program

19.5. The compensation for each instructor participating in the program must meet internationally competitive standards, provided that the necessary funds to cover these expenses are available.

19.6. The payment of instructors' compensation will be made by the ELKE of the University of Western Macedonia, through the transfer of the corresponding amounts.

19.7. The compensations include:a) remuneration of PhD candidates for supporting educational and administrative/operational activities of the Program, b) remuneration of external collaborators for supporting both the operation (e-learning, financial management) and the educational process of the Program, c) remuneration for Secretarial and Administrative Support of the Program.

19.8. The Study Program Committee may modify the financial policy and the distribution of expenses following a proposal by the Program Director, and always in accordance with the Government Gazette (FEK) establishing the postgraduate program and the Postgraduate Studies Regulations of the University of Western Macedonia.

C. Various Other Operating Expenses of the Postgraduate Program

1. Instructors' and invited lecturers'/speakers' travel and accommodation compensation.

2. Travel, accommodation, and participation fee compensation for conferences in Greece or abroad related to the academic fields covered by the Program, where research work of the Program's faculty and students is presented.
3. Financial coverage for organizing Workshops, Seminars, Symposia, Conferences, and International Conferences with the participation of scholars from Greece and abroad.
4. Financial coverage for publishing activities (Conference Proceedings, promotional and advertising materials of the Program, honorary plaques/ plaques of recognition or volumes, scientific/educational manuals related to the field of study, etc.).
5. Purchase of books and other appropriate printed and digital materials to establish a specialized library covering the Program's specific needs.
6. Purchase of educational materials to support the Program's courses.
7. Sponsorships (in cash or educational materials) to institutions related to the Program (University departments, Institutes, Foundations, etc.) based in Greece or abroad.
8. Purchase of consumables for secretarial and educational purposes.
9. Purchase of materials and equipment (computers, etc.) used for the proper conduct of courses.
10. Expenses for Secretarial Support, editing, and support of the Program's educational activities, as well as expenses for editing and publishing yearbooks.
11. Subscriptions to scientific journals relevant to the Program.
12. Compensation of the scientific supervisor or a faculty member for participating in conferences related to the academic fields of the Program.
13. Promotion and publicity expenses of the Program.

The level of all the above compensations is determined by the Study Program Committee, following a recommendation from the Program's Coordinating Committee, taking into account the financial capacity of the Program.

D. Indicative Detailed Budget for the Academic Year 2024/2025

The revenue section lists the sources of funding, in accordance with Article 80 of Law 4957/2022, and the corresponding amounts/expected inflows from each source of funding.

TABLE 1 - INFLOWS

	SOURCE OF FUNDING	Amount in €
1	Budget of the Higher Education Institution (H.E.I.) and the collaborating bodies for its organization, in accordance with Article 80 of Law 4957/2022	0€
2	Donations, grants, bequests, and any kind of sponsorships from public sector bodies, as defined in	0€

	point (a) of paragraph 1 of Article 14 of Law 4270/2014 (Government Gazette A' 143), or from the private sector	
3	Funding from research programs	0€
4	Funding from European Union programs or other international organizations	0€
5	Revenues of the Special Accounts for Research Funds (E.L.K.E.) of the H.E.I.	0€
6	Any other lawful source (tuition fees)	223.860,00 €
TOTAL		**223.860,00 €**

The operating cost of the program, which corresponds to 70% of the total operating expenses, in accordance with Article 84, paragraph 4 of Law 4957/2022, amounts to €156,702.00 and is broken down into categories of expenditure as follows:

TABLE 2 – OUTFLOWS

No.	EXPENDITURE	BUDGET
1	Teaching fees for regular staff of Higher Education Institutions and research centers and institutes participating in the organization of the Postgraduate Program (Article 83 of Law 4957/2022, Government Gazette A 141/21.7.2022). - Hourly compensation: €80 - Total teaching hours (Faculty): 252 - Total remuneration of faculty members: €80 × 252 = €20,160 × 2 departments = €40,320 - Compensation for faculty supervision of theses: 60 × €200 per thesis = €12,000	52.320,00 €
2	Teaching fees for other teaching staff - Hourly compensation: €80 - Total hours: 120 - Total remuneration: €80 × 120 = €9,600	9.600,00 €
3	Administrative and technical support fees	30.000,00 €
4	Scholarships for postgraduate students	2.000,00 €
5	Equipment and software expenses	15.200,00 €
6	Consumables expenses	12.000,00 €

7	Travel expenses for teaching staff of the Postgraduate Program	11.500,00 €
8	Travel expenses for students of the Postgraduate Program for educational purposes	3.082,00 €
9	Other expenses, such as publicity and promotion costs, purchase of educational materials, organization of conferences, and fieldwork expenses	21.000,00 €
SUBTOTAL (70%)		**156.702,00 €**
10	Institutional operating expenses (30%), with priority given to covering the needs of postgraduate programs operating without tuition fees	67.158,00 €
TOTAL		**223.860,00 €**

** The revenue and expenditure budget of the Interdepartmental Postgraduate Program remains the same each year for the first five (5) years of the program's operation.*

The outflows are estimated based on the following data:

- The budget of the Postgraduate Program remains unchanged per cycle until the academic year 2029/2030.
- Equipment and specialized software expenses: €15,200.
- Scholarship expenses for postgraduate students: €2,000.
- Consumables expenses: €12,000.
- Travel and accommodation expenses for distinguished scholars and faculty members from other institutions (mostly traveling from Athens or Thessaloniki) are estimated at €11,500.
- Student travel expenses for educational purposes: €3,082.
- Teaching fees for regular staff of Higher Education Institutions and Research Centers/Institutes:13 instructors × 24 hours = 312 teaching hours, at €80 per hour, resulting in €80 × 252 = €20,160 × 2 departments = €40,320.
- Teaching fees for other teaching staff:
  Hourly compensation €80 × 120 hours = €9,600.
- Supervision fees for dissertations:
  60 dissertations × €200 each = €12,000, as 60 students are expected and the fee per dissertation is €200.
- Other expenses (publicity and promotion costs, purchase of educational materials, textbooks, organization of conferences/seminars, fieldwork expenses, hospitality, etc.): €21,000.
- Administrative and technical support of the Program requires expenditure of €30,000.

- Institutional operating expenses: €67,158, calculated as 30% of the total budget (€223,860).

Article 20

Special Justification for the Imposition of Tuition Fees and the Determination of Their Amount in Proportion to the Benefits Provided to Students

The Departments of Midwifery (Ptolemaida) and Electrical and Computer Engineering of the University of Western Macedonia propose the imposition of tuition fees for this Postgraduate Program for the following reasons:

- Members of the academic staff of the Departments will teach in the Program, despite already having undergraduate teaching obligations of at least ten (10) hours per week. Moreover, classes are conducted during Fridays, Saturdays, and Sundays, further increasing the workload of instructors, thus justifying the payment of compensation.
- The Program will also employ and compensate distinguished scientists with specialized knowledge and relevant experience in Digital Health and Health Services Management. Specifically, professionals and executives with substantial practical experience will be invited to teach in the Program, which is designed to prepare students for high-level positions in both the public and private sectors. Students are expected to benefit greatly from interaction with these distinguished experts, as their participation:
    - enhances the connection between education and the real professional environment,
    - provides networking opportunities between students and professionals in the field,
    - strengthens students' career orientation,
    - transfers practical and up-to-date scientific knowledge and experience to students.
- The Program will also include faculty members from other universities, who must be compensated not only for contributing their specialized expertise and bringing academic diversity to the Program but also for fostering research collaboration and promoting the development of joint research projects in cutting-edge areas.
- The comprehensive administrative and technical support required by the Program—operating on Fridays, Saturdays, and Sundays, outside normal university hours—necessitates additional compensation for the staff involved.
  This expenditure directly benefits students, as the administrative and technical staff will assist in:
    - processing course registrations and certificate applications,
    - providing timely and detailed information about courses, grades, and academic obligations,
    - managing electronic announcements (schedules, notices, etc.), and
    - handling and processing data for statistical and other reports.

The University of Western Macedonia provides the facilities and infrastructure for the Program, which entail significant operational costs (heating, lighting, water supply, cleaning, security). The Program's operation on weekends and outside normal hours further increases these expenses. Given the reduced institutional budgets and the resulting inability to cover such costs, funding through tuition fees is deemed necessary. The tuition fee of €3,900 is among the lowest for postgraduate programs in this field. Moreover, the range of benefits provided to students (as previously detailed), along with the Program's contribution to meeting regional needs for specialized professionals in Digital Health and Health Services Management—areas of high strategic importance—renders the operation of this Postgraduate Program, with the specified tuition fee, particularly justified and significant.

Άρθρο 21
Duration of the Program

The Postgraduate Program will operate until the academic year 2029–2030, subject to the provisions of Article 80, paragraph 11a of Law 4009/2011 (Government Gazette 195, Part A'), as amended and currently in force under Law 4957/2022.

Article 22
Award of Degrees

The Master's Degree Award Ceremony is held in the presence of the Rector (or their representative) and the Director of the Interdepartmental Postgraduate Program.

Article 23
Amendments to the Regulation

The provisions of this Regulation governing the operation of the Postgraduate Program may be amended, following a substantiated proposal and a decision by the competent bodies, in accordance with the applicable legislation.

Article 24
Other issues regulation

Any issues not provided for in this Postgraduate Studies Regulation shall be addressed by the Department Assembly.

Article 25

Course Outlines

1st Semester			
S/N	Course Title	ECTS credits	Hours/Week
1	Digital Health – Principles of Health Information Systems	7,5	3
2	Fundamental Principles of Management in Health Services	7,5	3
3	Management of Personal Health Data – Bioethics in Healthcare	7,5	3
4	Health Data Processing Algorithms	7,5	3
	Total	30	12

2nd Semester			
S/N	Course Title	ECTS	Hours/Week

		credits	
1	Elective Course A’	7,5	3
2	Elective Course B’	7,5	3
3	Elective Course C’	7,5	3
4	Elective Course D’	7,5	3
	Total	30	12
3rd Semester			
1	Master’s Thesis	30	-

In the 2nd semester, students are required to select a total of four (4) elective courses as follows:

- ✓ **Option 1: Three** (3) courses from **Group A** and one course (1) from **Group B**.
- ✓ **Option 2: Three** (3) courses from **Group B** and one course (1) from **Group A**.
- ✓ **Option 3: Two** (2) courses from **Group A** and two (2) courses from **Group B**.

Students must choose one of the above combinations to ensure a balanced distribution between the subject areas of the two groups.

S/N	**Elective Courses – Group A’**
1	Diagnostic, Sensory, and Imaging Technologies
2	Introduction to Artificial Intelligence
3	UX in Digital Health: Methodologies and Applications
S/N	**Elective Courses – Group B’**
1	Evaluation of Economic Efficiency of Health Services and Technologies

2	Fundamental Principles of Data Collection and Evaluation of Epidemiological Studies
3	Bioethics and Health Law in Public Health Policies
4	Administration and Quality Management in Healthcare Services

Course Outlines

1. DIGITAL HEALTH – PRINCIPLES OF HEALTH INFORMATION SYSTEMS

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	A’
COURSE TITLE	Digital Health – Principles of Health Information Systems		

INDEPENDENT TEACHING ACTIVITIES	**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
	3	7,5

COURSE UNIT TYPE	General Background
PREREQUISITES:	-
LANGUAGE OF INSTRUCTION / EXAMS:	Greek
COURSE DELIVERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	Moodle

Learning Outcomes
The aim of the course is to familiarize students with the rapidly evolving and interdisciplinary field of Digital Health which is the application of the principles of information technology and telecommunications to provide solutions to problems and

address the challenges of Prevention, Treatment and Quality of Health. Due to the interdisciplinary nature of the course, students explore different scientific fields, such as biology, medicine as well as the use of appropriate devices and software for the study and analysis of their problems. The course covers all modern trends, such as ewellness, independent living, Health 2.0, MedSocApps

Upon successful completion of the course, students will be able to:

- Understand the basic concepts, role, and functions of Health Information Systems (HIS).
- Identify the basic elements of Digital Health and its applications in the prevention, diagnosis, treatment and health monitoring.
- Understand the importance of interoperability, HL7/FHIR standards, and the fundamentals of medical informatics.
- Describe the architecture, operation and specific requirements of a health information system (HIS, EHR, LIS, RIS, PACS).
- Analyze the challenges related to the adoption of ICT in the health sector, including privacy, security, ethics and data management issues.
- Implement basic tools and techniques for the management and utilization of health data.
- Compare and evaluate digital solutions and health technologies based on the needs of health service delivery systems.
- Design digital intervention scenarios in prevention, wellness, and remote patient monitoring contexts.

General Competences

- Familiarization with e-Health and the application of cutting-edge technologies in healthcare and Primary Health Care.
- Collection, analysis, and synthesis of data and information using appropriate technological tools.
- Support evidence-based decision-making in healthcare contexts.
- Ability to work and collaborate effectively within interdisciplinary contexts.
- Generation of innovative research ideas in the field of Digital Health.
- Capacity to work independently and responsibly.

COURSE CONTENT

Week	Unit Title
1	Introduction to Digital Health
2	Digital Health

3	Technological Framework of Electronic Services in Primary Health Care
4	Management of Chronic Patients through Telematics Systems
5	Basic Principles of Internet of Things (IoT)
6	Man: the oldest IoT system in operation
7	Biosignals
8	Mobile Health (mHealth)
9	Mobile Health (mHealth)
10	Standards, Standardization, Organizations
11	Hospital Digitization
12	Telemedicine

TEACHING / LEARNING METHODS - ASSESSMENT

<table>
<tr><td>MODE OF DELIVERY
Face-to Face, Distance Learning etc.</td><td>Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)</td><td>Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.</td></tr>
<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Method Description</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td>52</td></tr>
<tr><td>Lab Exercises</td><td>52</td></tr>
<tr><td>Self-study</td><td>121</td></tr>
<tr><td>Total</td><td>225</td></tr>
</table>
</td></tr>
<tr><td>ASSESSMENT METHODS</td><td>Final Exam: 30%
Lab Exam: 30%
Writing Assignment: 40%</td></tr>
</table>

RESOURCES- RECOMMENDED BOOK RESOURCES

[1] Παντελης Αγγελιδης, Ιατρική Πληροφορική τόμος Α, "σοφία", 2011.

[2] Αθηνά Λαζακίδου, Προηγμένα Συστήματα και Υπηρεσίες Πληροφορικής στο Χώρο της Υγείας, Αθηνα Λαζακιδου, 2009.

2. FUNDAMENTAL PRINCIPLES OF MANAGEMENT IN HEALTH SERVICES

FACULTY/SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	**-**	**SEMESTER OF STUDY**	A’
COURSE TITLE	Fundamental Principles of Management in Health Services		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	**7,5**
COURSE UNIT TYPE	General Background		
PREREQUISITES:	-		
LANGUAGE OF INSTRUCTION / EXAMS:	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	Moodle		

Learning Outcomes
Purpose The purpose of the course "Basic Principles of Management in Health Services" is to familiarize students with the basic principles of management sciences and to provide specialized knowledge on how to exercise the management of Health Service Units as well as the management of their health resources. It also aims to equip students with the appropriate background for the evaluation of health programs and services.

Through the course students will acquire knowledge concerning:

- the factors determining Health Units Management
- the factors determining the most effective organization and management of Health Services using information technologies
- the planning, organization and management of their human resources

Upon successful completion of the course, students will be able to:

- Understand the distinctive nature of management in healthcare settings, in which professionals not only produce but also deliver services.
- Comprehend the institutional and regulatory framework governing health service administration.
- Recognize the necessity of public intervention in the provision and governance of healthcare services.
- Understand the principles of social and health policy.
- Describe the historical development of the National Health System, identifying Its weaknesses and potential for improvement in relation to social and economic conditions.
- Analyze how health outcomes are shaped by both the organization of the health system and broader social and economic determinants.
- Apply methods and techniques of economic evaluation and resource allocation to maximize healthcare effectiveness.
- Examine behavioral models of healthcare utilization and the dynamics of the doctor–patient relationship.
- Understand models of preventive health behavior and their application to public health strategies.
- Recognize the importance of interventions aimed at reducing occupational burnout among healthcare professionals.
- Appreciate the significance of diversity and inclusion in healthcare teams.
- Understand the lived experience of chronic illness and its psychosocial impacts.
- Identify and evaluate frameworks for interventions designed to improve healthcare quality and enhance patient satisfaction.
- Apply basic principles of research methodology and select appropriate research designs based on study objectives.

General Competences

- Search, analysis and synthesis of data and information, using the necessary technologies
- Adapting to new situations
- Decision-making
- Independent work
- Teamwork
- Working in an international environment
- Working in an interdisciplinary environment
- Generating new research ideas
- Promoting free, creative and inductive thinking

COURSE CONTENT

Week	Unit Title
Course Structure – Units **Unit 1: The Health Sector** 1.1: Health Systems. Features and International Trends 1.2: Healthcare 1.3: Health Services 1.4: The Health sector in Greece. Institutional Framework: Public and Private Health 1.5: The Social Security System 1.6: Trends and Prospects in the Healthcare Sector in Greece **Unit 2. Management & Leadership in Health Services** 2.1: Basic Management Theories. The Management of an Organization 2.2: Health Services Management 2.3: Modern Models of Health Service Management 2.4: Leadership and Management in the Health Sector **Unit 3. Decision-Making Process** 3.1: Decision Making and Management 3.2: The Healthcare Decision-Making Process 3.3: Operational Planning of Health Services 3.4: Quantitative Analysis in Decision Making 3.5: Linear Planning and Management **Unit 4. Human Resource Management** 4.1: Human Resources in Health Services 4.2: The Management of Culture and Change in Health Services	

4.3: Organizational Behavior and Communication.
4.4: Motivation and Performance. The Role of Leadership.
4.5: Training, Education and Specialization.
4.6: Health and Safety of Health Services Workers

Unit 5. Total Quality Management in Health Services
5.1: The concept of Quality in Health Services
5.2: Quality Management in Health Services
5.3: Systems and Quality Assessment. Quality Awards
5.4: Statistical Testing and Reliability Analysis
5.5: Trends in Total Quality Management. Internal Service Quality.

TEACHING/LEARNING METHODS - ASSESSMENT

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<tr><td>ASSESSMENT METHODS</td><td>I. End Semester Final Exam (70%) including:
- Multiple Choice Questions
- Comparison/Evaluation Questions
II. Writing and presentation of group work assignment (30%)</td></tr>
</table>

RESOURCES- RECOMMENDED BOOK RESOURCES

- Διοίκηση και οργάνωση υπηρεσιών υγείας. Νίκος Πολύζος, Εκδόσεις Παπαζήση , 2014 Αθήνα.
- Υπηρεσίες Υγείας: Συστήματα και Πολιτικές. Σαράφης και συν., Εκδόσεις Βασιλειάδης, 2020
- Οργανωσιακή κουλτούρα υπηρεσιών υγείας. Γούλα, Εκδόσεις Παπαζήση , 2014 Αθήνα.
- Εισαγωγή στη Νοσηλευτική Διοίκηση και Ηγεσία. Russell C. Swansburg, Richard J. Swansburg. Επιμέλεια Αποστόλου Ελένη. Εκδόσεις ΛΑΓΟΣ, 1999, Αθήνα.
- Διοίκηση Ανθρωπίνων Πόρων. Ξηροτύρη – Κουφίδου Σ. Εκδόσεις Ανίκουλα, 1997, Θεσ/νίκη..
- Wolper L.(2001), Διοίκηση Υπηρεσιών Υγείας, Το Νοσοκομείο στα Πλαίσια ενός Συστήματος Οργανωμένης Παροχής Φροντίδας, Τόμος Β', εκδ. Mediforce, Αθήνα.
- Κυριόπουλος Γ, Οικονόμου Χ., Σουλιώτης Κ, (2003): Υγεία και Υπηρεσίες Υγείας στα Βαλκάνια, εκδ. Παπαζήσης Αθήνα.
- Κυριόπουλος Γ., Γκρέγκορυ Σ., Οικονόμου Χ., (2003): Υγεία και Υπηρεσίες Υγείας στον Ελληνικό Πληθυσμό, εκδ. Παπαζήση, Αθήνα.
- Σουλιώτης Κ., (2000): Ο ρόλος του Ιδιωτικού Τομέα στο Ελληνικό Σύστημα Υγείας, εκδ. Παπαζήση, Αθήνα.
- Γ. Δημολιάτης κ.ά (2002): Η δημόσια υγεία στην Ελλάδα, εκδ. Θεμέλιο / Κοινωνία και Υγεία, Αθήνα.
- Διοίκηση Ολικής Ποιότητας. Τσιότρας. 2016 Εκδόσεις Broken Hill.2016
- Reddy, S., & Tavares, A. I. (Eds.). (2020). Evaluation of Health Services. BoD–Books on Demand.
- Schulz, Rockwell, and Alton Cornelius Johnson. Management of hospitals and health services: strategic issues and performance. Beard Books, 2003.
- Soulis S., and others (2003), Health Economics and Health Management, Proceedings of the First International Conference, εκδ. Παπαζήσης, Αθήνα.
- Wilkinson R., Marmot M., (2003): Social Determinants of Health: The Solid Facts, ed.W.H.O. EURO Nonserial Publication.
- Dumolin J., Kaddar M., Velásquez G., (2003) : Guide d'analyse économique du circuit du médicament, W.H.O. Documents et autres références.
- Martin Mckee and Judith Healy (2001): Hospitals in a changing Europe (ed.), Open University Press.
- Peter M. Ginter, Linda E. Swayne, W. Jack Duncan, (2002): Strategic Management of Health Care Organizations, Blackwell Publishers, 8th edition.
- John R. Griffith, Kenneth R. White (2002): The Well-Managed Healthcare Organization, Health Administration Press/Ache, 9th edition.

- Charles J. Austin, Stuart B. Boxerman (2002): Information Systems for Healthcare Management, 8th Edition, Health Administration Press, 6th edition.
- Reinhardt, U. & Cheng, T. (2000). The world health report 2000 – Health systems: improving performance.. Bulletin of the World Health Organization, 78 (8), 1064. World Health Organization. https://apps.who.int/iris/handle/10665/268209
- OECD (2021), Health at a Glance 2021: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en.
- World health statistics 2021: monitoring health for the SDGs, sustainable development goals. Geneva: World Health Organization; 2021.

3. MANAGEMENT OF PERSONAL HEALTH DATA – BIOETHICS IN HEALTHCARE

FACULTY/SCHOOL	SCHOOL OF ENGINEERING		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	A’
COURSE TITLE	Management of Personal Health Data – Bioethics In Healthcare		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	7,5
COURSE UNIT TYPE	General Background		
PREREQUISITES:	-		
LANGUAGE OF INSTRUCTION / EXAMS:	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	Moodle		

Learning Outcomes
This course concerns the relationship between law, ethics and technological development in the field of health, and its purpose is to explore basic concepts of Health Law as well as developing the ability to critically analyze and approach the ethical dilemmas created by the progress of biomedical science and technology and its application in Public Health. The critical ethical, social and legal issues emerging in this regard, in areas such as transplantation, assisted reproduction, stem cell banks,

clinical drug trials, genetic testing, patents in biotechnology, render bioethics a field that must be constantly updated and monitored by modern developments.

Upon successful completion of the course, students will be able to:

1. Recognize the basic concepts of Health Law and the fundamental issues of Bioethics.
2. Understand the legal and ethical framework that governs the management of personal data in the health sector.
3. Analyze critical issues arising from advances in technology and biomedical science, such as genetics, clinical trials, and the use of big data.
4. Distinguish the conflicts between individual rights and the general interest in Public Health by applying the principle of proportionality.
5. Apply basic principles of ethics and privacy protection when analyzing and managing sensitive health data.
6. Develop critical thinking skills regarding ethical dilemmas and complex cases in the field of health.

General Competences

- Data and information search, analysis, and synthesis, using the necessary technologies
- Adapting to new situations
- Decision-making
- Independent work
- Working in an interdisciplinary environment
- Project planning and management
- Demonstration of social, professional and moral responsibility
- Exercise of criticism and self-criticism
- Promoting free, creative and inductive thinking

COURSE CONTENT

Week	Unit Title
Course Units -INTRODUCTION TO BIOETHICS -THE CONCEPT OF HEALTH LAW – THE RELATIONSHIP BETWEEN ETHICS LAW AND TECHNOLOGY	

- HEALTH PROFESSIONALS' RESPONSIBILITY – RESPONSIBILITY IN PUBLIC HEALTH
-SCIENTIFIC RESEARCH AND BIOETHICS
-ARTIFICIAL ASSISTED REPRODUCTION AND PUBLIC HEALTH- BIOETHICAL DILEMMAS
-TISSUE AND ORGAN TRANSPLANTS
-EUTHANASIA
-ARTIFICIAL INTELLIGENCE: CHALLENGES AND CONSIDERATIONS
-PRENATAL SCREENING
-FROM CONCEPTION TO DELIVERY
-BIOETHICS IN NEONATOLOGY

TEACHING METHODS - ASSESSMENT

<table>
<tr><td>MODE OF DELIVERY
Face-to Face, Distance Learning etc..</td><td>Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)</td><td>Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.</td></tr>
<tr><td>TEACHING METHODS</td><td><table><tr><th>Method Description</th><th>Semester Workload</th></tr><tr><td>Lectures</td><td>52</td></tr><tr><td>Lab Exercises</td><td>52</td></tr><tr><td>Self-study</td><td>121</td></tr><tr><td>Total</td><td>225</td></tr></table></td></tr>
<tr><td>ASSESSMENT METHODS</td><td>I. End Semester Final Exam (70%) including:
- Multiple Choice Questions
- Comparison/Evaluation Questions
II. Writing and presentation of group work assignment (30%)</td></tr>
</table>

RESOURCES- RECOMMENDED BOOK RESOURCES

1. Κριάρη-Κατράνη Ισμήνη (1994): Βιοϊατρικές Εξελίξεις και Συνταγματικό Δίκαιο, Εκδόσεις Σάκκουλα, Θεσσαλονίκη
2. Αλεξιάδης Α.Δ.(1996): Εισαγωγή στο ιατρικό Δίκαιο. Εκδοτικός Οίκος Μ.Δημόπουλου. Θεσσαλονίκη.
3. RS Downie, KC Calman (1997): Υγιής Σεβασμός: Η ηθική στη φροντίδα υγείας, Ιατρικές Εκδόσεις Λίτσας, Αθήνα
4. S.Reith: ENCYCLOPAEDIA OF BIOETHICS, Volume 3
5. The Data Protection Directive and Medical Research across Europe (2004). Eds: D.Beyleveld, D.Townend, S.Rouille-Mirza, J.Wright. Ashgate Publishing, Aldershot.
6. Philosophy and Practice of Medical Ethics. British Medical Association 1988. 7.Health, Ethics and Human Rights: The Council of Europe meeting the challenge Eds: H.Roscam-Abbing, K-F.Bopp. Council of Europe 2004.
7. Beauchamp T., (2007). Ευθανασία, Αρχιπέλαγος
8. McEwan I. (2014).The children act: a novel. New York : Nan A. Talese/Doubleday.
9. Garasic, Mirko Daniel (2011) Freedom, Consent and Autonomy in Bioethics: justifications for Enforced Medical Treatment and its Refusal (Thesis)
10. O'NeillO., (2011). Αυτονομία και εμπιστοσύνη στη βιοηθική, Αρσενίδης 5. Stuart J. Youngner, Gerrit K. Kimsma (ed). Physician-assisted death in perspective : assessing the Dutch experience, New York : Cambridge University Press, 2012
11. Βιδάλης Τ., (2007). Βιοδίκαιο, Σακούλας ΑΕ. 7. Καϊάφα-Γκμπάντι, Κουνουγέρη-Μανωλεδάκη Ε., Συμεωνίδου-Καστανίδη (2013). Ιατρική Υποβοήθηση στην Ανθρώπινη Αναπαραγωγή, Σάκκουλας 8. Μάλλιος Ε. (2004). Γενετικές εξετάσεις και δίκαιο, Σάκκουλας ΑΕ
12. MitrossiliM., DinouA., GkiokaV. andStavropoulos-GiokaC., RegulationacrosstheGlobe (2014) inCatherineStavropoulos-Giokas, DominiqueCharron, CristinaNavarrete (ed). Cord Blood Stem Cells Medicine, Elsevier.
13. Μητροσύλη Μ., (2009), Δίκαιο της Υγείας, Παπαζήσης
14. Μητροσύλη Μ., (2008), Από τη βιοηθική στο βιοδίκαιο, Επιστήμη και κοινωνία, Σάκκουλας 16. Παπαδημητρίου Ι., Δρακοπούλου Μ., (2010). Βιοηθική και Ανθρώπινα Δικαιώματα, Αντ. Ν. Σάκκουλα
15. Σαρειδάκης Ε., (2008). Βιοηθική, Ηθικά προβλήματα των νέων βιοϊατρικών τεχνολογιών, Παπαζήσης

Συναφή επιστημονικά περιοδικά:

- Bioethics
- Journal of Medical Ethics
- The American Journal of Law and Medicine
- Ιατρικό Δίκαιο και Βιοηθική (Δελτίο)

- Επιθεώρηση Βιοηθικής

4. HEALTH DATA PROCESSING ALGORITHMS

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	A’
COURSE TITLE	Health Data Processing Algorithms		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	7,5
COURSE UNIT TYPE	General Background		
PREREQUISITES:	-		
LANGUAGE OF INSTRUCTION / EXAMS:	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	Moodle		

LEARNING OUTCOMES

The course studies Health Data Analysis and Management as an important aspect of the Postgraduate Curriculum.
Upon successful completion of the course, students will be able to:

- Describe the basic concepts of health data
- Explain the different aspects of health data representation
- Organize, store and retrieve health data and information
- Describe the health data management process, its components and systems
- Understand Big Data and its use in health
- Recognize Machine Learning applications in Medicine
- Design Smart Environments in Health Implementation Scenarios

GENERAL COMPETENCES

- Search, analysis and synthesis of health data and information, using the necessary technologies
- Comparison and evaluation of techniques and decision-making support
- Independent work
- Healthcare project planning and management

COURSE SYLLABUS

Basic and Advanced Topics in Health Data Acquisition, Analysis, and Management. Big Data in Health: Data Collection, Processing, Storage, Interoperability and Analysis. Machine Learning Applications and Data Management in Healthcare. Case Study in Health Services.

COURSE CONTENTS

WEEK	UNIT TITLE
1	Course Overview-Introduction
2	Medical Data & Standards
3	Databases in Medicine
4	Data Preprocessing
5	Data Processing Algorithms
6	Biomedical Signals & Analysis (Electrocardiogram)
7	Biomedical Signals & Analysis (Electroencephalogram)
8	Data Mining & Machine Learning
9	Neural Networks & Deep Learning
10	Predictive Modeling & Predictive Models
11	Big Data Tools in Healthcare
12	Intelligent Applications and Healthcare Services

TEACHING/LEARNING METHODS - ASSESSMENT

MODE OF DELIVERY *Face-to Face, Distance Learning etc.*	Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)
USE OF INFORMATION AND COMMUNICATION	Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital

<table>
<tr><td>TECHNOLOGIES (ICT)</td><td>libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.</td></tr>
<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Method Description</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td>36</td></tr>
<tr><td>Writing Assignments (2)</td><td>97</td></tr>
<tr><td>Self-study</td><td>92</td></tr>
<tr><td>Total</td><td>225</td></tr>
</table>
</td></tr>
<tr><td>ASSESSMENT METHODS</td><td>• Writing Assignments (50%)
• Oral Examination (50%)</td></tr>
</table>

RESOURCES- RECOMMENDED BOOK RESOURCES

[1] Τσιπούρας, Μ., Γιαννακέας, Ν., Καρβούνης, Ε., & Τζάλλας, Α. (2015). Ιατρική πληροφορική. Κάλλιπος, Ανοικτές Ακαδημαϊκές Εκδόσεις. http://dx.doi.org/10.57713/kallipos-733

[2] Hwaiyu, G., & McKeeth, J. (2016). Internet of things and data analytics handbook. Wiley Online Library.

5. DIAGNOSTIC, SENSORY, AND IMAGING TECHNOLOGIES

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	B’
COURSE TITLE	Diagnostic, Sensory, and Imaging Technologies		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	7,5
COURSE UNIT TYPE	General Background		
PREREQUISITES:	-		
LANGUAGE OF INSTRUCTION / EXAMS:	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	Moodle		

LEARNING OUTCOMES

Learning Outcomes
The course aims to familiarize students with the modern diagnostic methods employed by the diagnostic approach of pathologies in the sensory organs and the processing of signals and images with automated procedures. The learning objectives of the course are summarized as follows: • Definition, analysis and processing of biosignals

- Familiarization with the representation and nature of the grayscale image of the multi-channel color image.
- Understanding image as a multidimensional signal and the assignment of the concepts of signal theory to the multidimensional spaces of image.
- Learning image enhancement techniques, filtering and spatial transformations.
- Familiarization with techniques of segmentation and locating objects (from conventional to cutting-edge ones used nowadays)
- Application of enhancement and segmentation techniques to images of various fields.
- Presentation of the new trends in the field of image processing. Machine Learning and Medical Image Processing
- Calculation of quantified values from classified objects and the extraction of local and holistic characteristics.

General Competences

- Search, analysis and synthesis of health data and information, using the required technologies
- Comparison and evaluation of techniques and decision-making support
- Independent work
- Teamwork
- Working in an interdisciplinary environment
- Generating new research ideas

COURSE CONTENTS

The course specializes in signal processing techniques in the field of images and addresses a wide range of research questions. The applications of image processing extend across multiple domains, from microscopy and medical imaging to astrophysics.

The basic stages of image processing concern:

a) Image enhancement, performed either as an end or with the aim of the image transformation into a form that can be easily utilized in subsequent processing and analysis b) Segmentation, during which the pixels of the image with similar characteristics are grouped together, forming distinct findings and objects c) Extraction of quantitative values from the results of segmentation. The aim of the course is to familiarize students with the fundamental concepts of image processing and analysis, as well as to introduce them to relevant techniques and algorithms. It addresses specific enhancement techniques using filters and geometric transformations, as well as various types of segmentation methods. Computers advancement, access to computational resources, and the spread of parallel processing systems have given significant dynamics to the field in recent years, through the direct application of machine

learning methods at the pixel level. Nowadays, the semantic approach to object detection using advanced classification techniques is steadily evolving. The structure of the course places particular emphasis on the chronological development of the field and concludes with the emerging trends recently shaping imaging diagnostics.

Week	Unit Title
1	**Introduction to Image:** Basic image concepts, optical and electromagnetic spectrum, the image as a multidimensional concept, signal theory and systems.
2	**Digital image:** Image digitization, pixels, neighborhood and coherence, depth of brightness, dimensions, image resolution. Binary image, gray layer image and multichannel image, key features, color, frequency, texture.
3	**Color spaces:** Different color spaces and representations of a multi-channel image. Color spaces RGB, CMYK, YSV and YUV, features and conversions.
4	**Image Frequency:** Discrete Fourier Transform (DFT), Discrete Cosine Transform (DCT), Lossless and Lossy Image Compression.
5	**Enhancement via Image Filters:** Image Noise, Mean Filter, Median Filter, Variance Filter. Convolution in an image and convolutional filters, smoothing filters, edge enhancement filters, wiener filters, multi-channel filters. Evaluation Measures.
6	**Image Enhancement with Geometric Transformations:** Scaling, translation, transfer, rotation, reflection, Affine transformation. Hough transform and distance transform. Radon transform.
7	**Histogram-Based Segmentation:** Brightness frequency, Image histogram, brightness threshold, histogram equalization, Otsu's method, multi-threshold methods.
8	**Morphology-Based Segmentation:** Mathematical morphology, morphological erosion and dilation, morphological opening and closing, template matching technique, watershed transform.
9	**Edge-Based Segmentation:** Image differentiation, Sobel filters, Laplacian filters, edge detection with morphological operations, active contours and snakes, region-growing methods.
10	**Feature Extraction:** Pixel-level and neighborhood features, Color features, Statistical features and interpretation, Texture features, Geometric features, Feature selection

11	**Clustering-Based Segmentation:** Pixel clustering based on features, K-means and Fuzzy K-means algorithms, cluster-to-class matching.
12	**Classification-Based Segmentation:** Object labeling, classification methods, semantic segmentation, Deep learning, Convolutional Neural Networks (CNNs), evaluation measures.
13	**Applications and Quantification:** Processing and object detection across different imaging domains using various segmentation techniques, extraction of quantitative values.

TEACHING AND LEARNING METHODS - ASSESSMENT

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<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Method Description</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td>39 hours</td></tr>
<tr><td>Tutorials</td><td>26 hours</td></tr>
<tr><td>Lab Exercises</td><td>13 hours</td></tr>
<tr><td>Writing Assignments</td><td>60 hours</td></tr>
<tr><td>Self-study</td><td>87 hours</td></tr>
<tr><td>Total</td><td>225 hours</td></tr>
</table>
</td></tr>
<tr><td>ASSESSMENT METHODS</td><td>Course assessment will be based on a combination of the students' performance in the following components:
Two midterm exams conducted during the semester, including multiple-choice questions as well as problem-solving exercises — 20/100.
Written assignments, including the analysis of the laboratory exercises performed — 20/100.</td></tr>
</table>

	• **End semester final examination**, consisting of problem-solving exercises — **60/100**. In the problem-solving section, assessment will be based on correct problem-solving methodology (50/100), understanding of operations and concepts (30/100), accuracy of numerical results and conclusions (20/100) All relevant material will be available on the course website, including many exercises of equivalent difficulty for each learning unit, as well as sample written assignments and laboratory reports.

RESOURCES

- *Recommended Book Resources:*

1. R. Gonzalez and R. Woods. Ψηφική Επεξεργασία Εικόνας, Εκδόσεις Α. ΤΖΙΟΛΑ & ΥΙΟΙ Α.Ε., 2010, ISBN: 978-960-418-2.
2. Ν. Παπαμάρκος, Ψηφιακή επεξεργασία και ανάλυση εικόνας. Β. Γκιούρδας Εκδοτική. 2010, ISBN: 978-960-92731.

- *Relevant Scientific Journals:*

1. IEEE transactions on Image Processing, IEEE.
2. International Journal of Computer Vision, Springer.
3. Image and Vision Computing
4. Computer Vision and Image Understanding

Eurasip Journal on Image and Video Processing

6. INTRODUCTION TO ARTIFICIAL INTELLIGENCE

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	A’
COURSE TITLE	Introduction to Artificial Intelligence		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	7,5
COURSE UNIT TYPE		Specific Background	
PREREQUISITES:		-	
LANGUAGE OF INSTRUCTION / EXAMS:		Greek	
COURSE DELIVERED TO ERASMUS STUDENTS		No	
COURSE WEBSITE (URL)		Moodle	

LEARNING OUTCOMES

This course introduces students to the fundamental concepts and techniques of Artificial Intelligence (AI), with a focus on applications in healthcare.

Upon successful completion of the course, students will be able to:

- Understand the core concepts of intelligent systems
- Explain fundamental principles of Artificial Intelligence
- Apply AI techniques to address healthcare-related problems
- Understand the basics of machine learning and its role in medical applications
- Identify practical applications of machine learning in medicine

- Comprehend the fundamentals of data mining and knowledge discovery in health data

GENERAL COMPETENCIES

- Search, analysis and synthesis of health data and information, using the required technologies
- Adapting to new situations
- Decision-making
- Independent work
- Generating new research ideas

COURSE CURRICULUM

Introduction to Artificial Intelligence. Intelligent agents. Blind Search, Heuristic Search, Local Search, Propositional Logic, Predicate Logic, Machine Learning, Data Mining, Decision Trees, Support Vector Engines, Neural Networks, Clustering Algorithms, Rule Mining Algorithms, and Applications in Health.

COURSE CONTENTS

WEEK	UNIT TITLE
1	Introduction & Overview
2	Introduction to Artificial Intelligence
3	Artificial Intelligence Algorithms
4	Applications of Artificial Intelligence in Healthcare
5	Machine Learning
6	Data Mining Algorithms
7	Classification Algorithms
8	Regression Techniques
9	Health Repositories & Databases
10	Health Data Mining
11	Artificial Neural Networks
12	Deep Learning

TEACHING/LEARNING METHODS - ASSESSMENT

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<tr><td>Writing Assignments (2)</td><td>97</td></tr>
<tr><td>Self-Study</td><td>92</td></tr>
<tr><td>Total</td><td>225</td></tr>
</table></td></tr>
<tr><td>ASSESSMENT METHODS</td><td>Writing Assignments (50%)
Oral Examination (50%)</td></tr>
</table>

RESOURCES- RECOMMENDED BOOK RESOURCES

[1] Russell & Norvig (2004). Τεχνητή Νοημοσύνη: Μια Σύγχρονη Προσέγγιση, Κλειδάριθμος.

[2] Βλαχάβας, Κεφαλάς, Βασιλειάδης, Κόκκορας, Σακελλαρίου (2005). Τεχνητή Νοημοσύνη, Εκδόσεις Γαρταγάνης.

7. UX IN DIGITAL HEALTH: METHODOLOGIES AND APPLICATIONS

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	B’
COURSE TITLE	UX in Digital Health: Methodologies and Applications		

INDEPENDENT TEACHING ACTIVITIES	**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
	3	7,5

COURSE UNIT TYPE	Specific Background
PREREQUISITES:	-
LANGUAGE OF INSTRUCTION / EXAMS:	Greek
COURSE DELIVERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	Moodle

Learning Outcomes

The course focuses on usability and user experience (UX) in health technologies, highlighting the importance of human-centered design (UCD). Students will learn to evaluate usability through methods such as Think-Aloud and heuristic evaluation, analyzing and reporting their findings. The goal is to improve the effectiveness and user satisfaction of digital health technologies.

Upon completion of the course, students will be able to:

- Understand the importance of the design and evaluation of Health Information Technologies (HIT) and Digital Health Technologies (DHT).
- Explain the fundamental concepts of Human Factors Engineering, Human–Computer Interaction (HCI), and User Experience (UX).

- Describe the role of User-Centered Design (UCD) in the development of health technologies.
- Explain the concept of usability and identify the main categories of usability issues.
- Understand how to conduct usability evaluations through:
    - Heuristic evaluation
    - User testing using the Think-Aloud protocol.
- Evaluate the usability of health technologies using the Think-Aloud method.
- Apply appropriate analytical methods for processing and interpreting data from usability tests.
- Compose and present their findings in clear and concise reports.

General Competencies

The course aims to develop the following general competences:

- Search, analysis, and synthesis of data and information, with emphasis on the use of usability and UX evaluation methods.
- Adaptation to new situations, enhancing the ability to assess and improve digital health technologies.
- Decision-making, based on evidence from usability data and user feedback.
- Independent work, through individual analyses and usability evaluation reports.
- Teamwork, as students collaborate in conducting UX tests and analyzing results.
- Working in an interdisciplinary environment, fostering collaboration between healthcare professionals and software developers.
- Generation of new research ideas, promoting innovative approaches to improving user experience in health technologies.
- Project design and management, through the execution and evaluation of research activities in the field of usability.
- Critical and self-critical thinking, aimed at improving design decisions and continuously refining UX methods.
- Promotion of free, creative, and inductive thinking, enhancing problem-solving and innovation skills in UX design.

COURSE CONTENTS

This course focuses on the principles of User-Centered Design (UCD) and usability in health technologies. Students will explore key concepts such as Human-Computer Interaction (HCI), User Experience (UX), and Human Factors Engineering, while gaining practical experience

in usability evaluation methods, including Think-Aloud testing and heuristic evaluation. Combining theoretical instruction, workshops, and hands-on exercises, the course aims to equip students with the skills to analyze and enhance user experience in digital health technologies.

Week	Unit Title
1	Introduction to UX and Usability in Health Technologies
2	Human-Centered Design (UCD) and Human Factors in Healthcare
3	Basic Principles of Usability and UX in Digital Health
4	Usability Evaluation Methods: Heuristic Evaluation
5	Usability Evaluation Methods: User Testing (Think-Aloud Protocol)
6	Analysis and Interpretation of UX Data from Think-Aloud Tests
7	Laboratory Session: Conducting and Observing UX Tests in Practice
8	Development and Use of UX Tools for the Evaluation of Health Technologies
9	Design and Adaptation of UX in Specific Healthcare Contexts
10	Presentation and Documentation of UX Findings: Report Writing
11	Case Studies: Successful and Unsuccessful UX Examples in Healthcare
12	Conclusions and Final Evaluation: Challenges and Future Trends in Healthcare

TEACHING AND LEARNING METHODS - ASSESSMENT

MODE OF DELIVERY *Face-to Face, Distance Learning etc.*	Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)	Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.
TEACHING METHODS	

Method Description	***Semester Workload***
Lectures	39

	Lab Exercises	126
	Self-study	60
	Total	225
ASSESSMENT METHODS	30% from the Public Presentation of the semester project. 20% from Weekly Reports (related to the progress of each deliverable of the semester project). 40% from the Semester Project itself.	

RESOURCES- RECOMMENDED BOOK RESOURCES

[1] "The Design of Everyday Things" by Don Norman

[2] “Don’t make me think” by Steve Krug.

[3] “Sprint” by Jacob Knapp

[4] “Meet my HUBBI: he's an expert on eHealth usability” by Marijke Broekhuis

[5] “Introducing User-Centred Design: a Longitudinal Study of a Healthcare Informatics Organisation” by Jessica Wardlaw

[6] “Usability for the masses” by Jacob Nielsen

8. EVALUATION OF ECONOMIC EFFICIENCY OF HEALTH SERVICES AND TECHNOLOGIES

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	B’
COURSE TITLE	Evaluation of Economic Efficiency of Health Services and Technologies		

INDEPENDENT TEACHING ACTIVITIES	**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
	3	7,5

COURSE UNIT TYPE	Specific Background
PREREQUISITES:	-
LANGUAGE OF INSTRUCTION / EXAMS:	Greek
COURSE DELIVERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	Moodle

Learning Outcomes
The course “Health Services Quality Management & Administration” aims to equip students with knowledge particularly useful in organizing, managing, and coordinating quality assurance activities in healthcare units, ensuring their effective, efficient, and high-quality operation. Upon completing the course, students will have

a comprehensive understanding of designing, organizing, and evaluating the quality of healthcare services.

Students will acquire knowledge upon:

- the factors determining the object of Productivity and Efficiency of Health Units
- the necessity of studying the Health Economics and the Evaluation of modern Technologies
- the identification and evaluation of the factors determining the most effective organization of Health Services by utilizing information technologies,
- the planning, organization, and management of the resources and the services produced
- understanding the results of reports, studies and surveys on the economic evaluation of health services and technologies

This course aims to equip students with specialized knowledge in the organization, management, and coordination of healthcare services, ensuring their effective and efficient operation. Upon completion, students will have a comprehensive understanding of the design, organization, and evaluation of inputs and outputs within a healthcare service unit.

Upon successful completion, students will be able to:

- Understand the unique characteristics of healthcare as a commodity and the challenges of applying market rules to service demand and delivery.
- Comprehend the principles of Health Economics and methods for assessing the efficiency of healthcare services and technologies.
- Identify funding methods for healthcare services and the factors influencing the financial sustainability of health systems.
- Apply methods and techniques for economic evaluation and resource allocation aimed at maximizing healthcare outcomes
- Understand the use of tools for measuring the efficiency and productivity of services
- Integrate relevant medical, economic, social, and ethical information related to the use of health technologies.
- Analyze the properties, effects, and implications of health technologies on service delivery and adopt strategies to ensure economic efficiency.
- Know the basic principles of research methodology and be able to choose the appropriate one depending on the subject.

General Competences
• Data and information search, analysis, and synthesis, using the necessary technologies • Adapting to new situations • Decision-making • Independent work • Teamwork • Working in an international environment • Working in an interdisciplinary environment • Generating new research Knowledge • Promoting free, creative and inductive thinking

COURSE CONTENT

1. INTRODUCTION TO HEALTH ECONOMICS
2. BASIC TYPES OF ECONOMIC EVALUATION
3. SOURCES AND TYPES OF COSTS
4. ASSESSMENT OF EFFECTIVENESS AND BENEFIT
5. DISCOUNTING AND TIME HORIZONS IN EVALUATION
6. SENSITIVITY AND UNCERTAINTY ANALYSIS
7. INTERPRETATION AND PRESENTATION OF RESULTS
8. HEALTH POLICIES AND PRACTICAL APPLICATIONS

TEACHING / LEARNING METHODS - ASSESSMENT

MODE OF DELIVERY *Face-to Face, Distance Learning etc.*	Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)	Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.

TEACHING METHODS	***Method Description***	***Semester Workload***
	Lectures	52
	Lab Exercises	52
	Self-study	121
	Total	225
ASSESSMENT METHODS	I. End Semester Final Exam (70%) including: - Multiple Choice Questions - Comparison/Evaluation Questions II. Writing and presentation of group work assignment (30%)	

RESOURCES- RECOMMENDED BOOK RESOURCES

- Rice Tomas. Τα Οικονομικά της Υγείας. Εκδόσεις Κριτική,2006, Αθήνα
- Οικονομική της Υγείας. Σούλης Σ. Εκδόσεις Παπαζήση, 1999, Αθήνα.
- Συλλογικό. Επιμέλεια Κυριόπουλος Γ., Σουλιώτης Κ. Οι Δαπάνες Υγείας στην Ελλάδα, Μεθοδολογικά προβλήματα στη μέτρηση και συνέπειες για τις πολιτικές υγείας,.Παπαζήση, 2002, Αθήνα.
- Οικονομικά της Υγείας. Χλέτσος . Εκδόσεις Παπαζήση ,2011
- Ποσοτική Ανάλυση στην Άσκηση της Διοίκησης. Καθαράκη, Εκδόσεις Σταμούλη, 2007
- Research Methodology on Data Envelopment Analysis (DEA), Jibendu Kumar Mantri. Universal Publisher ,2008
- Dumolin J., Kaddar M., Velásquez G. : Guide d'analyse économique du circuit du médicament, W.H.O. Documents et autres references,2003
- Sachs J.D. Macroéconomie et santé :investir dans la santé poy de dével économique, 2002
- Penner J S.Introduction to Health Care Economics and Financial Management., ed. Lippincott Williams and Wilkins, Philadephia,2003.
- Nord E., .Ανάλυση Κόστους-Αξίας στη Φροντίδα Υγείας, εκ. Mediforce, Cambridge, (Μετάφραση,2003
- Green A, Bennett S, eds. Sound choices: enhancing capacity for evidence-informed health policy. Geneva, World Health Organization, 2007
- HTA glossary. International Network of Agencies for Health Technology Assessment and Health Technology Assessment international (http://www.htaglossary.net/, accessed November 2010).

- Velasco-Garrido M, Busse R. Health technology assessment: an introduction to objectives, role of evidence, and structure in Europe. Copenhagen, World Health Organization Regional Office for Europe, on behalf of the European Observatory on Health Systems and Policies, 2005.
- Health technologies and decision making. Paris, Organisation for Economic Co- operation and Development (OECD), 2005.
- Børlum Kristensen F, Sigmund H, eds. Health technology assessment handbook. Copenhagen, National Board of Health, 2008 (http://www.sst.dk/publ/Publ2008/ MTV/Metode/HTA_Handbook_net_final.pdf, accessed November 2010)
- Resolution WHA60.29. Health technologies. In: Sixtieth World Health Assembly. Resolutions and decisions. Geneva, World Health Organization, 2007.
- Juzwishin D, Schneider W. Screening procedure for use when considering the implementation of health technology. Edmonton, Alberta Heritage Foundation for Medical Research, 2002
- Eucomed HTA Position Paper. Brussels, Eucomed, 2008.
- Frost L, Reich MR. Access: how do good health technologies get to poor people in poor countries? Harvard Center for Population and Development Studies, 2008
- Lewis M, Pettersson G, Bank W. Governance in health care delivery: raising performance. Washington, World Bank, 2009.
- EUnetHTA Joint Action 2010–12, EUnetHTA (http://www.eunethta.net/Public/ Work_Packages/EUnetHTA-Joint-Action-2010-12
- Health research: essential link to health equity. Cambridge, Commission on Health Research for Development, 1990.
- Hailey D. Elements of effectiveness for health technology assessment programs. Edmonton, Alberta Heritage Foundation for Medical Research, 2003.

9. FUNDAMENTAL PRINCIPLES OF DATA COLLECTION AND EVALUATION OF EPIDEMIOLOGICAL STUDIES

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	**-**	**SEMESTER OF STUDY**	B’
COURSE TITLE	Fundamental Principles of Data Collection and Evaluation of Epidemiological Studies		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	7,5
COURSE UNIT TYPE	Specific Background		
PREREQUISITES:	-		
LANGUAGE OF INSTRUCTION / EXAMS:	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	Moodle		

Learning Outcomes

The aim of this course is to develop an understanding of the principles and methods of Epidemiology, as well as the interpretation of epidemiological data in Public Health, Primary Health Care, and healthcare services in general. The course combines theoretical lectures with practical exercises conducted after each session, helping students translate theoretical knowledge into clinical practice. These exercises may include problem-solving, article discussions, or hands-on activities related to study design. The course also introduces students to the fundamental concepts of preventive medicine and evidence-based practice, with a focus on population health, disease surveillance, and data interpretation for health policy and planning.

Upon successful completion of the course, students will be able to:

- Understand the fundamental concepts and terminology used in Epidemiology and Public Health, including the concept of risk.
- Become familiar with the main methods of epidemiological research and describe the advantages and limitations of different study designs.
- Identify major sources of bias in epidemiological studies and apply basic methods to prevent or correct them.
- Define and use key epidemiological indicators such as morbidity, mortality, and association measures across population groups.
- Evaluate the quality of epidemiological data and studies, and apply findings to population and community health contexts.
- Interpret epidemiological data in clinical practice and research settings.
- Connect core concepts of Primary Health Care (PHC) and Public Health (as an extension of the course Society and Health and as an introduction to clinical PHC practice) with prevalence and incidence measures.
- Use diagnostic tests effectively, understanding their utility and necessity for evidence-based clinical decision-making (in connection with the course Evidence-Based Medicine and Clinical Decision-Making).
- Recognize population health needs and design intervention programs aimed at reducing disease burden and improving health outcomes.

Course objectives

The course aims to train students in the basic principles of Public Health and Epidemiology so that they can address issues of medical prevention and health promotion, as well as manage public health problems effectively. Students will consolidate their knowledge in Hygiene and Epidemiology, understand the core

principles of data collection and evaluation, and develop skills in the design of studies and research protocols.

By the end of the course, students will have:

- Consolidated knowledge in the fields of Hygiene and Preventive Medicine.
- Understood the key concepts of descriptive epidemiology.
- Learned the general principles of Preventive Medicine.
- Gained insight into the principles and application of Evidence-Based Medicine in clinical and public health practice.
- Become familiar with basic prognostic systems.
- Understood the fundamental principles of data collection and evaluation.
- Gained experience in designing studies and surveys, developing questionnaires, identifying biological markers, and applying surveillance methods.

General Competences

- Independent work
- Teamwork
- Working in an international environment
- Working in an interdisciplinary environment

COURSE CONTENT

- Definitions and concepts of Health and Disease, Prevention, and Protection
- Factors influencing Health, Disease Outcomes, and Consequences
- Measurement of health status. Sources and origins of causal factors
- Mechanisms of transmission of infectious agents. Analysis of disease characteristics
- General measures for the prevention of infectious diseases: limitation of pathogen spread, implementation of disinfection practices
- Control and restriction of pathogen hosts, isolation of infectious individuals.
- Basic principles of immunity and immunoprophylaxis — natural, acquired, and herd immunity

- Basic concepts of descriptive epidemiology. General principles of preventive medicine. Causality
- Evidence and indications in medical practice
- Measures of effect and association. Prognostic systems
- Characteristics and evaluation of diagnostic tests
- Evaluation of therapeutic interventions, measures of treatment effectiveness, and assessment of side effects
- Epidemics. Nutrition and physical activity. Counseling interventions
- Behaviors with significant public health impact (e.g., smoking, alcohol consumption, driving)
- Occupational hygiene. Recommended preventive measures by age group
- Vaccination and chemoprophylaxis. Recommended preventive measures for specific population groups
- Statistical concepts in epidemiology and clinical practice — hypotheses and probabilities
- Random errors, selection bias, confounding, and information bias
- Meta-analysis: principles, design, evaluation, and common errors
- Decision analysis. Quality-of-life assessments. Cost-effectiveness studies
- Health status and health services
- Disease burden. Global health forecasts and future trends

TEACHING / LEARNING METHODS - ASSESSMENT

<table>
<tr><td>MODE OF DELIVERY
Face-to Face, Distance Learning etc.</td><td>Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)</td><td>Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.</td></tr>
<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Method Description</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td>52</td></tr>
<tr><td>Lab Exercises</td><td>52</td></tr>
</table>
</td></tr>
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	Self-study	121
	Total	225
ASSESSMENT METHODS	I. End Semester Final Exam (70%) including: - Multiple Choice Questions - Comparison/Evaluation Questions II. Writing and presentation of group work assignment (30%)	

RESOURCES- RECOMMENDED BOOK RESOURCES

- Χαριζάνη Φ.Θ.(2004) Λοιμώξεις και προληπτικά μέτρα, Εκδ. Παπαζήση, Αθήνα.
- Δαρβίρη Χ. (2007) Προαγωγή Υγείας, Εκδ. Πασχαλίδης, Αθήνα.
- Παπαευαγγέλου Γ., Φαρμάκη Γ. (1998) Πρόληψη και έλεγχος λοιμωδών νοσημάτων, Εκδ. Ζήτα, Αθήνα.
- Τριχόπουλος Δ. (2002) Επιδημιολογία, αρχές, μέθοδοι, εφαρμογές, Εκδ. Παρισιάνος, Αθήνα.
- Τούντας Γ. (2001) Κοινωνία και Υγεία, Εκδ. Οδυσσέας/Νέα Υγεία, Αθήνα.
- Αρχές Αποδεικτικής Ιατρικής: Επιδημιολογία, Δημόσια Υγιεινή, Μέθοδοι Έρευνας, Ι. Ιωαννίδης. Εκδόσεις Λίτσας, Αθήνα 2000
- Εισαγωγή στη Σύγχρονη Επιδημιολογία, Ahlbom, S Norel, Εκδόσεις Λίτσας, Αθήνα 1992
- Epidemiology: An Introduction, Kenneth J. Rothman Oxford University Press, 2012
- Epidemiology: Beyond the Basics, Moyses Szklo, F. Javier Nieto Jones & Bartlett Publishers, 2012
- Applied Epidemiology: Theory to Practice, Ross C. Brownson, Diana B.
- Petitti Oxford University Press, 2006
- Basic Statistics and Epidemiology: A Practical Guide, Antony Stewart
- Τίτλος: iGenetics - μια Μεντελική Προσέγγιση, Συγγραφέας: Peter J. Russell, Εκδοτικός Οίκος: Ακαδημαϊκές Εκδόσεις, Τόπος & Χρόνος Έκδοσης: 2009, ISBN: 978-960-88412-7-7, Κωδικός ΕΥΔΟΞΟΣ: 2626
- Τίτλος: Thompson & Thompson ιατρική γενετική, Συγγραφείς: NUSSBAUM R., McINNES R.R., WILLARD H.F., Εκδοτικός Οίκος: BROKEN HILL PUBLISHERS LTD, Τόπος & Χρόνος Έκδοσης: 8η εκδ./2011, ISBN: 9789604890620, Κωδικός ΕΥΔΟΞΟΣ: 13256587
- Τίτλος: Εισαγωγή στη Γενετική, Δ΄ Έκδοση, Συγγραφέας: Σταμάτης Αλαχιώτης, Εκδοτικός Οίκος: Λιβάνη, Τόπος & Χρόνος Έκδοσης: 2011, ISBN: 978-960-442-024-7, Κωδικός ΕΥΔΟΞΟΣ: 12469325
- Αλαχιώτης, Σταμάτης Ν. Εισαγωγή στην εξέλιξη, Εκδοτικός Οίκος Α. Α. Λιβάνη, 2007

- Κορνάρου Ε ., Ρουμελιώτη Α. (2007) Η Δημόσια Υγεία στην Πρωτοβάθμια φροντίδα Υγείας. Θέματα Επιδημιολογίας Μεθοδολογίας της Έρευνας και Στατιστικής. Ενότητα: Μεθοδολογία Επιδημιολογικής Έρευνας, Εκδόσεις Παπαζήσης
- Μπάγκος Παντελής. Βιοπληροφορική. Πανεπιστήμιο Θεσσαλίας, 2015 7. Τριχόπουλος, Δ. (2002) Προοπτικές Έρευνες, Αναδρομικές Έρευνες. Στο: Τριχόπουλος Δ. Επιδημιολογία, Αρχές, Μέθοδοι και Εφαρμογές, Γρ. Παρισιάνος, Αθήνα, 176-195, 196-233 8. Borenstein Michael, Larry V. Hedges, Julian P. T. Higgins, Hannah R. Rothstein. Introduction to Meta-Analysis. Wiley, 2009
- Dorman Janice S., Massimo Trucco, Ronald E. LaPorte, and Lewis H. Kuller . Family Studies: The Key to Understanding the Genetic and Environmental Etiology of Chronic Diseases In Genetic Epidemiology 5:305-310 (1988
- Duncan C. Thomas,. Statistical Methods in Genetic Epidemiology. Oxford University Press, USA, 2004 11. Gelehrter T. Αρχές Ιατρικής Γενετικής. Εκδόσεις: Πασχαλίδης 2003
- Συναφή επιστημονικά περιοδικά:

1. https://www.journals.elsevier.com/cell/
2. http://emboj.embopress.org/
3. https://www.nature.com/ng/ 4. http://journals.plos.org/plosgenetics/

10. BIOETHICS AND HEALTH LAW IN PUBLIC HEALTH POLICIES

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	B’
COURSE TITLE	Bioethics in Public Health Policies		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	7,5
COURSE UNIT TYPE	Specific Background		

PREREQUISITES:	-
LANGUAGE OF INSTRUCTION / EXAMS:	Greek
LANGUAGE OF INSTRUCTION / EXAMS:	Greek
COURSE WEBSITE (URL)	Moodle

Learning Outcomes
Upon successful completion of the course, students will be able to: • Demonstrate knowledge of the main legal framework governing contemporary health issues. • Understand the ethical and deontological foundations of modern Public Health and the bioethical dimensions of healthcare delivery. • Identify and analyze bioethical dilemmas inherent in Public Health.
General Competences
• Data and information search, analysis, and synthesis, using the necessary technologies • Adapting to new situations • Decision-making • Independent work • Working in an interdisciplinary environment • Demonstrating social, professional, and ethical responsibility • Exercising critical thinking and self-assessment • Promoting free, creative, and inductive thinking • Showing respect for diversity and multiculturalism • Demonstrating respect for the natural environment (where related to public health)

COURSE CONTENT

1. Introduction to the basic concepts of Health Law. The relationship between Law, Ethics, and Technology
2. Theories and Principles of Bioethics
3. Public Health and Human Rights: individual benefit and community health
4. Public Health, personal data, and issues of power. The concept of individual autonomy in the field of Health
5. The Precautionary Principle in Health
6. Bioethical issues and pandemic preparedness
7. Bioethical issues in Epidemiology
8. Scientific research ethics
9. Genetics and Public Health
10. End-of-life as a Public Health issue
11. Special bioethical issues in Public Health
12. "Big Data" and Public Health
13. Mental Health and Bioethical concerns

TEACHING / LEARNING METHODS - ASSESSMENT

MODE OF DELIVERY *Face-to Face, Distance Learning etc.*	Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)	Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.

TEACHING METHODS	<table><tr><th>Method Description</th><th>Semester Workload</th></tr><tr><td>Lectures</td><td>39</td></tr><tr><td>Lab Exercises</td><td>90</td></tr><tr><td>Self-study</td><td>96</td></tr><tr><td>Total</td><td>225</td></tr></table>
ASSESSMENT METHODS	End semester final exam

RESOURCES- RECOMMENDED BOOK RESOURCES

1. Κριάρη-Κατράνη Ισμήνη (1994): Βιοϊατρικές Εξελίξεις και Συνταγματικό Δίκαιο, Εκδόσεις Σάκκουλα, Θεσσαλονίκη
2. Κριάρη-Κατράνη Ισμήνη (1999): Γενετική Τεχνολογία και Θεμελιώδη Δικαιώματα, Η συνταγματική προστασία των γενετικών δικαιωμάτων. Εκδόσεις Σάκκουλα , Αθήνα – Θεσσαλονίκη.
3. Γκαράνη-Παπαδάτου Τ, Ι.Κριάρη-Κατράνη (2012): Το Πρόσθετο Πρωτόκολλο στη Σύμβαση Βιοϊατρικής σχετικά με γενετικές εξετάσεις για σκοπούς υγείας. Δικαιώματα Του Ανθρώπου 53;53-79.
4. Laine Friedman Ross et al: Technical report: ethical and policy issues in genetic testing and screening of children. Genet Med 2013:15(3):234–245.
5. Βιδάλης Τ.Κ (2016): Βιοδίκαιο: Από τη βιοποικιλότητα στις έξυπνες μηχανές, Εκδόσεις: Σάκκουλα Α.Ε.
6. Schwartz JL & Caplan AL, editors (2018): Vaccination Ethics and Policy. An introduction with readings. The MIT Press,
7. Κανελλοπούλου-Μπότη Μ, Πρωτοπαπαδάκης Ευ., Παναγοπούλου-Κουτνατζή Φ. (επιμ): Βιοηθικοί

προβληματισμοί ΙΙ: Το παιδί. Εκδόσεις Παπαζήση, Αθήνα 2018

8. Χωριανοπούλου Μ.Κ. (2018): Βιοηθική και Δικαιώματα. Εκδόσεις Παπαζήση 2018.
9. Henk ten Have (2004): Ethical Perspectives on Health Technology Assessment. International Journal of Technology Assessment in Health Care, 20:1;1-6
10. How to Engage Men in Preconception Health?: A Scoping Review.
11. Agustina SA, Prabandari YS, Hakimi M, Hayati EN.Iran J Nurs Midwifery Res. 2024 Nov 20;29(6):660-668. doi: 10.4103/ijnmr.ijnmr_27_23. eCollection 2024 Nov-Dec.PMID: 39759910
12. Adolescent and parental proxy online record access: analysis of the empirical evidence based on four bioethical principles.
13. Hagström J, Hägglund M, Blease C.BMC Med Ethics. 2025 Feb 20;26(1):27. doi: 10.1186/s12910-025-01182-9.PMID: 39979965

Ηλεκτρονικές διευθύνσεις:

- Εθνική Επιτροπή Βιοηθικής
- Συμβούλιο της Ευρώπης
- Αρχή Προστασίας Δεδομένων
- European Network of Research Ethics and Integrity

11. ADMINISTRATION AND QUALITY MANAGEMENT IN HEALTHCARE SERVICES

FACULTY/SCHOOL	School of Engineering		
DEPARTMENT(S)	Electrical and Computer Engineering (Kozani) and Midwifery (Ptolemaida)		
LEVEL OF STUDY	POSTGRADUATE		
COURSE UNIT CODE	-	**SEMESTER OF STUDY**	B’
COURSE TITLE	Administration and Quality Management in Healthcare Services		
INDEPENDENT TEACHING ACTIVITIES		**TEACHING WEEKLY HOURS**	**ECTS CREDITS**
		3	7,5
COURSE UNIT TYPE	Specific Background		
PREREQUISITES:	-		
LANGUAGE OF INSTRUCTION / EXAMS:	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	Moodle		

Learning Outcomes
This course introduces postgraduate students to the critical role of quality in healthcare services, both for service users and providers (e.g., physicians, nurses and administrative staff). Students will develop practical skills in measuring, evaluating,

and managing healthcare service quality, with an emphasis on effective and efficient service delivery.

The course "Quality Management in Health Services" aims to equip students with essential knowledge and competencies in organizing, managing, and coordinating quality assurance activities within healthcare institutions. By the end of the course, students will have a comprehensive understanding of the principles and methods used in the design, implementation, and evaluation of quality systems in healthcare organizations. Students will also be able to effectively use quality measurement and assessment tools to ensure continuous improvement in service performance and patient satisfaction.

Learning Outcomes

Upon successful completion of the course, students will be able to:

- Understand the fundamental concepts of quality in healthcare delivery and recognize its impact on service performance and patient outcomes.
- Analyze quality systems in healthcare settings and evaluate their structure, processes, and results.
- Apply quality tools and techniques to improve healthcare services and organizational performance.
- Manage the satisfaction of internal and external clients, understanding the needs of both healthcare professionals and patients, and designing strategies to enhance satisfaction through quality improvement.
- Develop strategic and leadership skills in quality management, recognizing key approaches to fostering a culture of quality within healthcare organizations.
- Evaluate and ensure quality, using internal and external audits, certifications, and continuous improvement mechanisms.
- Identify, assess, and manage risks associated with quality in healthcare delivery.
- Design and implement quality policies and procedures that promote ongoing improvement and compliance with national and international standards.
- Evaluate and improve organizational processes, analyzing healthcare workflows and proposing targeted improvements for sustainable quality enhancement.

General Competences

- Data and information search, analysis, and synthesis, using the necessary technologies
- Adapting to new situations
- Decision-making
- Independent work
- Teamwork
- Working in an international environment
- Working in an interdisciplinary environment
- Generating new research knowledge
- Promoting free, creative and inductive thinking

COURSE CONTENT

Course Units – Unit Title

1. Quality of Services
2. Quality in Health Services
3. Quality Assessment Tools
4. Internal Service Quality
5. Total Quality Management (TQM)
6. Quality Standards and Tools in Healthcare

TEACHING / LEARNING METHODS - ASSESSMENT

MODE OF DELIVERY *Face-to Face, Distance Learning etc.*	Synchronous distance learning (zoom) and asynchronous distance learning (electronic platform Moodle)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)	Lectures will incorporate audiovisual media and the projection of digital course materials using the classroom projector. Internet resources will be employed during instruction to demonstrate methods for locating scientific literature and accessing digital libraries. In the case of distance learning, the Zoom platform will be utilized to support online teaching.
ASSESSMENT METHODS	I. End Semester Final Exam (70%) including: - Multiple Choice Questions

	- Comparison/Evaluation Questions II. Writing and presentation of group work assignment (30%)

RESOURCES- RECOMMENDED BOOK RESOURCES

Προτεινόμενη Βιβλιογραφία :

- Διοίκηση και οργάνωση υπηρεσιών υγείας. Νίκος Πολύζος, Εκδόσεις Παπαζήση , 2014 Αθήνα.
- Υπηρεσίες Υγείας: Συστήματα και Πολιτικές. Σαράφης και συν., Εκδόσεις Βασιλειάδης, 2020
- Οργανωσιακή κουλτούρα υπηρεσιών υγείας. Γούλα, Εκδόσεις Παπαζήση , 2014 Αθήνα.
- Εισαγωγή στη Νοσηλευτική Διοίκηση και Ηγεσία. Russell C. Swansburg, Richard J. Swansburg. Επιμέλεια Αποστόλου Ελένη. Εκδόσεις ΛΑΓΟΣ, 1999, Αθήνα.
- Διοίκηση Ανθρωπίνων Πόρων. Ξηροτύρη – Κουφίδου Σ. Εκδόσεις Ανίκουλα, 1997, Θεσ/νίκη..
- Wolper L.(2001), Διοίκηση Υπηρεσιών Υγείας, Το Νοσοκομείο στα Πλαίσια ενός Συστήματος Οργανωμένης Παροχής Φροντίδας, Τόμος Β', εκδ. Mediforce, Αθήνα.
- Κυριόπουλος Γ, Οικονόμου Χ., Σουλιώτης Κ, (2003): Υγεία και Υπηρεσίες Υγείας στα Βαλκάνια, εκδ. Παπαζήσης Αθήνα.
- Κυριόπουλος Γ., Γκρέγκορυ Σ., Οικονόμου Χ., (2003): Υγεία και Υπηρεσίες Υγείας στον Ελληνικό Πληθυσμό, εκδ. Παπαζήση, Αθήνα.
- Σουλιώτης Κ., (2000): Ο ρόλος του Ιδιωτικού Τομέα στο Ελληνικό Σύστημα Υγείας, εκδ. Παπαζήση, Αθήνα.
- Γ. Δημολιάτης κ.ά (2002): Η δημόσια υγεία στην Ελλάδα, εκδ. Θεμέλιο / Κοινωνία και Υγεία, Αθήνα.
- Διοίκηση Ολικής Ποιότητας. Τσιότρας. 2016 Εκδόσεις Broken Hill.2016
- Reddy, S., & Tavares, A. I. (Eds.). (2020). Evaluation of Health Services. BoD–Books on Demand.
- Schulz, Rockwell, and Alton Cornelius Johnson. Management of hospitals and health services: strategic issues and performance. Beard Books, 2003.
- Soulis S., and others (2003), Health Economics and Health Management, Proceedings of the First International Conference, εκδ. Παπαζήσης, Αθήνα.
- Wilkinson R., Marmot M., (2003): Social Determinants of Health: The Solid Facts, ed.W.H.O. EURO Nonserial Publication.
- Dumolin J., Kaddar M., Velásquez G., (2003) : Guide d'analyse économique du circuit du médicament, W.H.O. Documents et autres références.

- Martin Mckee and Judith Healy (2001): Hospitals in a changing Europe (ed.), Open University Press.
- Peter M. Ginter, Linda E. Swayne, W. Jack Duncan, (2002): Strategic Management of Health Care Organizations, Blackwell Publishers, 8th edition.
- John R. Griffith, Kenneth R. White (2002): The Well-Managed Healthcare Organization, Health Administration Press/Ache, 9th edition.
- Charles J. Austin, Stuart B. Boxerman (2002): Information Systems for Healthcare Management, 8th Edition, Health Administration Press, 6th edition.
- Reinhardt, U. & Cheng, T. (2000). The world health report 2000 – Health systems: improving performance.. Bulletin of the World Health Organization, 78 (8), 1064. World Health Organization. https://apps.who.int/iris/handle/10665/268209
- OECD (2021), Health at a Glance 2021: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en.
- orld health statistics 2021: monitoring health for the SDGs, sustainable development goals. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO