

COURSE OUTLINE: HEALTH INFORMATICS – E-HEALTH

1. GENERAL

SCHOOL	SCHOOL OF HEALTH SCIENCES		
ACADEMIC INIT	PHYSIOTHERAPY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	PHH2	SEMESTER	8th
COURSE TITLE	HEALTH INFORMATICS – E-HEALTH		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
LECTURES	2	3,5	
LABS	1	0,5	
		4	
COURSE TYPE	CMGKB <i>Compulsory Modules of General Knowledge Background (CMGKB), Compulsory Modules of Specific Knowledge Background (CMSKB), Compulsory Specialisation Modules (CSM), Optional Modules (OM)</i>		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION & EXAMINATIONS:	GREEK		
IS THE COURSE OFFED TO ERASMUS STUDENTS?	NO		
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/PHYSIO_U_142/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

Learning Outcomes of the Theoretical Part:

The student, upon completion of the course, will be able to:

1. Knows the fundamental concepts of computer science and the evolutionary progress of computer technology.
2. Understands the basic functions of the electronic health record.
3. Understands the basic principles of operation of fundamental biomedical technology.
4. Can use the World Wide Web to search for and find health-related information.
5. Develops critical thinking about the use of computers in the healthcare field.

Learning Outcomes of the Laboratory Part:

The student, upon completion of the course, will be able to:

1. Searches for valid information through various links on the World Wide Web.
2. Creates and edits a text document using Microsoft Word.
3. Presents a project using graphics and effects with Microsoft PowerPoint.

4. Solves basic biostatistics problems using Microsoft Excel.
5. Structures and edits a database using Microsoft Access.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas

Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others ...

- Search, analyze, and synthesize data and information using the necessary technologies.
- Decision-making.
- Exercise of critical and self-critical thinking.
- Independent work.
- Work in an interdisciplinary environment.
- Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues.
- Generation of new research ideas.
- Promotion of free, creative, and inductive thinking.

3. SYLLABUS

A. THEORETICAL PART:

Unit 1. Health Informatics Through Time

- Historical evolution and key branches of medical informatics.
- Relationship with other scientific fields such as computer science, biostatistics, biomedical engineering, and public health.
- Historical evolution of the internet.
- Important scientific communities, medical journals, conferences, and exhibitions.

Unit 2. Introductory Topics in Health Informatics

- Health informatics terminology, classification systems, and coding.
- Standards used in informatics.
- Various types of knowledge sources available in the health sector.

Unit 3. Structure and Functions of Health Information Systems

- Representation of patient health data in health information systems.
- The concept of information systems – integrated information systems.
- Structure and functions of hospital information systems.
- Standards for hospital information systems.
- Artificial intelligence systems.

Unit 4. Structure and Functions of the Electronic Health Record

- Evolution and levels of the patient record, health record terminology.
- Structure and functions of the electronic health record.
- Security issues.
- Standards for electronic health records.

Unit 5. Applied Electronic Patient Records

- Applications at the national and international level.
- New trends in electronic health records.

Unit 6. Support for Diagnostic Medical Decisions

- Basic approaches developed to support diagnostic medical decisions.

Unit 7. Electronic Prescribing

- Applications at the national and international level.

Unit 8. Electronic Medical-Economic Decision Making

- Principles of activity-based financing.
- Applications of DRGs (Diagnosis Related Groups).
- Greek application.

Unit 9. Public Health Decision Support

- Health factors affecting the health status of individuals and populations.
- Concepts of health security, surveillance, alertness, and notification.

Unit 10. Assessment of Proprioception, Sensitivity, and Stereognosis

- Introduction to digital image processing and biosignals.
- Modeling and visualization of health data.
- Image and signal management.
- Recent developments in imaging methods.

Unit 11. Basic Human Body Imaging Methods

- Historical evolution of imaging systems.
- Principles of imaging.
- The necessity of these methods.
- Computed tomography.
- Magnetic resonance imaging applications.

Unit 12. Telehealth (Telemedicine, Telecare, etc.)

- Historical evolution.
- Necessary equipment.
- Applications of internet-based health services at the national and international level.
- Tele-education.

Unit 13. Enhanced Medical Intervention: Surgery and Robotics

- Improvement of surgical intervention quality.
- Robotic assistance systems.
- The key role of information in enhanced medical interventions.
- Virtual reality applications in disease diagnosis and treatment.

Unit 14: Final Student Assessment - Examination

- The overall performance of students is assessed according to the institution's academic regulations and the evaluation criteria of the course as described below.

B. LABORATORY PART:

Unit 1. Introduction to Searching and Finding Health Information on the World Wide Web

- Investigating the validity of various online sources related to health topics.
- Major medical informatics conferences.
- Sources of research funding in medical informatics.
- Searching for medical informatics applications in physiotherapy.
- Student assessment.

Unit 2. Special Topics in Searching and Finding Health Information on the World Wide Web

- Exploring online sources specifically related to health informatics.
- Searching for terms in SNOMED CT, etc.
- Student assessment.

Unit 3. Demonstration of a Standard Electronic-Online Health Record

- Analysis of operation, future capabilities, and benefits.
- Student assessment.

Unit 4. Application of Main Functions in Microsoft Word

- Basic tab functions: Home, Insert, Page Layout, View.
- Writing a scientific report, article for a scientific conference, etc.
- Student assessment through a scientific report on a medical informatics topic.

Unit 5. Application of Main Functions in Microsoft PowerPoint

- Basic tab functions: Home, Insert, Design, Transitions, Slideshow, View.
- Creating and presenting a medical informatics topic.
- Student assessment.

Unit 6. Application of Functions in Microsoft Excel Worksheet – Central Tab

- Simple and advanced cell formatting.
- Student assessment.

Unit 7. Detailed Application of Functions in Microsoft Excel Worksheet – Data Tab

- Creating simple and complex charts, inserting objects.
- Health data analysis using Excel.
- Student assessment.

Unit 8. Detailed Application of Functions in Microsoft Excel Worksheet – Formulas Tab

- Simple and advanced calculations with or without using functions.
- Student assessment.

Unit 9. Detailed Application of Functions in Microsoft Excel Worksheet – Data and Review Tabs

- Issues related to special processing and worksheet security.
- Student assessment.

Unit 10. Database Management System Access. Table Design

- Creating tables in Design View, creating tables using templates, data types, primary key, creating relationships.
- Student assessment.

Unit 11. Database Management System Access. Creating Queries

- Creating a new query, creating queries using the Query Wizard.
- Student assessment.

Unit 12. Database Management System Access. Designing Forms

- Designing and formatting forms.
- Student assessment.

Unit 13. Database Management System Access. Creating Reports

- Creating a blank report, creating a report using templates.
- Application of health data collection and visualization.
- Student assessment.

Unit 14: Final Student Assessment - Examination

- Overall student performance is assessed according to the institution's academic regulations and the evaluation criteria of the course described below.

4. TEACHING and LEARNING METHODS – EVALUATION

<p style="text-align: center;">DELIVERY</p> <p style="text-align: center;"><i>Face-to-face, Distance learning, etc.</i></p>	<p>Face-to-Face Instruction</p> <p>The teaching methods for the theoretical part of the course include a variety of instructional approaches and tools, such as:</p> <ul style="list-style-type: none"> • Lectures and presentations using a whiteboard, overhead projector, fixed projection system, video, and television. • Classroom discussions and feedback. • Work in small groups or individually. • Student presentations. • Use of Information and Communication Technologies (Internet, Multimedia, online discussions via asynchronous learning platforms, and email). <p>The laboratory part of the course is taught using the following methods and tools:</p> <ul style="list-style-type: none"> • Demonstration and application of the tools and software programs of the course.
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	<ul style="list-style-type: none"> • Use of Information and Communication Technologies (Internet, Multimedia, online discussions via asynchronous learning platforms, and email). • Work in small groups or individually. • Student presentations. 														
<p>USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<p>Use of ICT in Teaching, Laboratory Training, and Student Communication</p> <p>Theoretical Part:</p> <ul style="list-style-type: none"> • Utilization of Information and Communication Technologies (ICT), including the Internet, multimedia, electronic discussions via an asynchronous learning platform, and email. <p>Laboratory Part:</p> <ul style="list-style-type: none"> • Utilization of Information and Communication Technologies (ICT), including the Internet, multimedia, electronic discussions via an asynchronous learning platform, and email. 														
<p>TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS.</i></p>	<table border="1" data-bbox="703 891 1345 1189"> <thead> <tr> <th>Activity</th> <th>Semester workload</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>30</td> </tr> <tr> <td>Laboratory Exercises</td> <td>15</td> </tr> <tr> <td>Independent Study</td> <td>55</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>Couse Total</td> <td>100</td> </tr> </tbody> </table>	Activity	Semester workload	Lectures	30	Laboratory Exercises	15	Independent Study	55					Couse Total	100
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<p>STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Student Performance Assessment</p> <p>The assessment criteria for student performance are available on the course website and are specified as follows:</p> <p>Theoretical Part: Evaluation is conducted either through a final written examination (or an oral examination in the presence of two professors) or in combination with an intermediate assessment (progress test). The final course assessment takes place after the end of the teaching semester and covers the entire syllabus taught. Students are required to answer questions (essay-type or multiple-choice) that evenly cover all course units, as well as questions requiring critical thinking. The final grade for the theoretical part is on a scale of 0-10 and is determined by the final examination or, in the case of an intermediate assessment, by a predetermined weighting coefficient set at the beginning of the semester.</p> <p>Laboratory Part: In each laboratory session, student participation and ability to address assigned problems are assessed by the instructor. The successful resolution of the given instructional example, under the instructor's guidance, is evaluated. Students must have</p>														

	<p>successfully completed at least 80% of the assigned exercises to be eligible for the final examination. The final exams are oral, in the presence of two instructors, where the student is asked to solve practical problems and perform the required tasks (e.g., history taking, objective assessment, etc.). The topics assessed evenly cover all course units. The final laboratory grade is on a scale of 0-10 and is determined by the final examination.</p> <p>Student performance is assessed according to the institution's regulations, based on the combined evaluation of the theoretical and laboratory parts. The weighting factors for each part sum to 1 and depend on the credit allocation of each section. Successful completion of both the theoretical and laboratory parts is a prerequisite for passing the course. The final grade is recorded on a ten-point scale (0-10), with a minimum passing grade of 5.</p>
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5. ATTACHED BIBLIOGRAPHY

<ol style="list-style-type: none"> 1) Curtis FryeJoan Lambert. <i>Microsoft Office 2016 Step by Step</i>. Εκδόσεις Β. Γκιούρδας, Αθήνα 2016. 2) Coiera E. <i>Guide to Health Informatics</i>. 2nd Edition. 3) Cox J, Frye C, Lambert S, Preppernau J, Murray K. <i>Ελληνικό Office 2007 βήμα – βήμα</i>. Εκδόσεις Κλειδάριθμος, Αθήνα 2008. 4) Cox J, Preppernau J. <i>Χρήση Microsoft Office Access 2007</i>. Εκδόσεις Β. Γκιούρδας, Αθήνα 2008. 5) Mantas J. / Hasman A. <i>Πληροφορική της Υγείας</i>. Εκδόσεις Π.Χ. Πασχαλίδης, Αθήνα 2007. 6) Αποστολάκης Ι. <i>Πληροφοριακά συστήματα υγείας</i>. Εκδόσεις Παπαζήσης, Αθήνα 2007. 7) Γκορτζής Ελευθέριος. <i>Υπηρεσίες ιατρικής πληροφορικής και τηλεϊατρικής</i>. Εκδόσεις Γκιούρδας Β, Αθήνα 2005. 8) Διαδικτυακή υποστήριξη από την εταιρεία Microsoft http://office.microsoft.com/el-gr/default.aspx 9) Λαζακίδου Αθηνά Α. <i>Πληροφοριακά συστήματα νοσοκομείων & Ηλεκτρονικές Υπηρεσίες Υγείας</i>. Εκδόσεις Κλειδάριθμος, Αθήνα 2005. 10) Ιωάννης Μαντάς, <i>Εισαγωγή στη πληροφορική, Ιατρικές Εκδόσεις Π. Χ. Πασχαλίδης, 2007</i> 11) Μπότσης Ταξιάρχης, Χαλκιώτης Στέλιος. <i>Πληροφορική υγείας Η εφαρμογή της πληροφορικής στο χώρο της υγείας</i>. Εκδόσεις Δίαυλος, Αθήνα 2005. 12) Ξαρχάκος Κ, Καρολίδης Δ. <i>Μαθαίνετε εύκολα Microsoft Office 2007</i> Εκδόσεις Άβακας, Αθήνα 2008. Τόκης Ι. / Τόκη Ε. <i>Πληροφορική Υγείας</i>. Εκδόσεις Τζιόλας, Αθήνα 2005.
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