ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Α .Δ Ι .Π .
ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ & ΠΙΣΤΟΠΟΙΗΣΗΣ
ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC
H .Q .A .
HELLENIC QUALITY ASSURANCE
AND ACCREDITATION AGENCY

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ ΚΑΙ ΘΡΑΚΗΣ
ΜΟΝΑΔΑ ΔΙΑΣΦΑΛΙΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΕΙ ΑΜΘ

Quality Assurance in Higher Education
Course Data Collection Form

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ
ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ & ΘΡΑΚΗΣ
ΑΓΙΟΣ ΛΟΥΚΑΣ,
65404 ΚΑΒΑΛΑ

EASTERN MACEDONIA AND THRACE INSTITUTE
OF TECHNOLOGY
AGIOS LOUKAS
65404 KAVALA

COURSE OUTLINE

1. GENERAL

SCHOOL	School of Technological Applications		
ACADEMIC UNIT	Department of Electrical Engineering		
DEGREE LEVEL	Undergraduate		
COURSE CODE	ZN7	**SEMESTER**	7ο
COURSE TITLE	Grid technology		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4,5

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special background
Required passed courses:	None
TEACHING AND EXAMS LANGUAGE:	Greek / English
THE COURSE IS OFFERED TO ERASMUS STUDENTS:	Yes
COURSE WEBPAGE (URL)	

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*

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

- Understand the fundamentals of distributed computing systems and how their development has enabled the growth of grid and cloud technologies.
- Describe, analyze and compare grid and cloud technologies.
- Describe and assess the role of cloud computing and grid in electrical and computer engineering, and in general their usefulness in the fields of business, industry and scientific research.

Keywords: Distributed Processing, grid, middleware, cluster, cloud.

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
Team work
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…
…….

- Research, analysis and synthesis of data and information with the usage of the necessary technology
- Decision-making
- Autonomous work
- Teamwork
- Work in a scientific environment
- Respect for the natural environment
- Production of free, creative and inductive thinking

3. COURSE CONTENT

The course consists of eight (8) sessions:	
1	**Introduction to Distributed Systems - Internet and new technological applications.** • **What is a distributed system - distributed processing.** • **Case studies of distributed systems.** • **Software Layers of distributed systems.**
2	**Operating System - middleware.** • **What is the middleware.** • **Examples of Middleware.** • **Client - server applications - examples.**
3	**Computer clustering.** • **What is a computer clustering?** • **Cluster architecture.** • **Cluster software functions.** • **Computer cluster deployment.**
4	**Introduction to Grid technology.** • **The characteristics and the basic principles of grid technology.** • **Clustering vs grid technology.** • **Grid classification.**
5	**Architecture and topologies of grid technology.** • **The main layers of grid technology.** • **Protocols, Topologies.**
6	**Grid applications.** • **Services.** • **Applications.** • **Examples.**
7	**Cloud technology, concepts, characteristics.** • **The characteristics and the basic principles of cloud technology.** • **Cloud technology vs grid.** • **Costs and benefits of cloud technology.**
8	**Cloud architecture - Services and development models.** • **The service models in the Cloud computing.** • **Cloud computing development models.** • **Applications development models.**

4. TEACHING AND LEARNING METHODS – ASSESSMENT

TEACHING METHOD *Face-to-face, Distance learning, etc.*	• Face to face lectures in class
UTILISATIONS OF INFORMATION AND COMMUNICATION TECNOLOGIES *Use of ICT in teaching, laboratory education, communication with students*	**Using ICT to Enhance Active Learning in the Classroom:** • Use of electronic presentation with multimedia content, • Student support through the course webpage and the e-class platform,
The manner and methods of teaching are described in detail. *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.* *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*	**Lectures, practice, homework assignments / project, study.** ***Activity*** | ***Semester workload (hours)*** Lectures | 39 Study lecture material | 30 Homework assignments or project and report (individual or group) | 36 Study and preparation for the exams | 30 **Course Total** | **135**
STUDENT ASSESSMENT *Description of the evaluation procedure* *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* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Students are evaluated on the basis of both written and oral examinations, including personal reports and homework assignments on the work done in their practice session. ▪ Homework assignments / project reports and presentations (40%) ▪ Final written exam (60%)

5. RECCOMENDED READING

- Suggested bibliography:

1. Grid Computing: Techniques and Applications, Barry Wilkinson, (Chapman & Hall/CRC Computational Science), 2010.
2. Cloud Computing: Implementation, Management, and Security, John W. Rittinghouse, James F. Ransome, CRC Press, 2010.
3. Distributed Systems: Principles and Paradigms, Andrew S. Tanenbaum, Vrije University, Amsterdam, The Netherlands Maarten Van Steen, 2nd Edition, 2007.

- Related academic journals:

- *International Journal of Grid and High Performance Computing (IJGHPC)*
- *International Journal of Grid and Utility Computing*
- *Journal of Grid Computing*