COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering		
DEPARTMENT	Electrical and Computer Engineering		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	8.026	**SEMESTER**	8th
COURSE TITLE	Web Application Evaluation Systems		

COURSEWORK BREAKDOWN	**TEACHING WEEKLY HOURS**	**ECTS Credits**
Theory (Lectures)	4	3
Tutorial/Exercises	1	1
TOTAL	**5**	**4**

COURSE UNIT TYPE	Specialized general knowledge/Skills development
PREREQUISITES	
LANGUAGE OF INSTRUCTION/EXAMS	Greek / English / German
COURSE DELIVERED TO ERASMUS STUDENTS	YES
WEB PAGE (URL)	https://eclass.hmu.gr/courses/ECE193/

(2) LEARNING OUTCOMES

Learning Outcomes

Analytics systems provide measurements of performance, response times and details on load and activity over time periods, exact actions and usage history of web based applications. They are complex multilayer software components, responsible for collecting information and operational data from log files and databases of systems in local or remote locations, storing it in their dedicated database, processing it and providing reports and visualizations with high accuracy, running on dedicated machines.

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

- Comprehend the complexity of web applications architecture.
- Gain understanding of the goals of Web Analytics.
- Setup and customize Web Servers and generate and use access log files.
- Design and comprehend the architecture of the various Analytics application types.
- Visualize and present measurements
- Use both internal and external measuring applications.
- Setup and use of Page Tagging systems
- Transfer data from the source to the Analyzer using middleware and brokers.

General Skills

- Autonomous & Independent work
- Teamwork
- Search, analysis and synthesis of data and information, using the necessary technologies.
- Decision making
- Promoting liberal, creative, and inductive/deductive thinking

- Work in an interdisciplinary environment
- Adapt to new situations.
- Project Planning and Management

(3) SYLLABUS

Theoretical Lecture Units

- **Introduction to Web Analytics** and explanation of its importance. Definition of the basic terms and goals.
- **Web Servers:** Types, iP-Ports, how communication is established. Setting up and configuration of Apache24 and Apache Tomcat.
- **XML files** and Document Object Model.
- **Evaluation Criteria:** Concordance and Discordance sets.
- **Customer Behaviour Graph:** Probabilities and Analysis of visitor types
- **Key Performance Indicators:** Performance testing, Modelling tests
- **Load Stress and Endurance Test:** How can JMeter provide measurements.
- **Rich Internet Applications:** Impact of AJAX and RIAs on the access log file and how to remedy the situation.
- **Google Analytics:** How Tagged Systems operate, how to set it up and how to receive measurements, statistics, and real time feedback.
- **Loading Log file data to Databases**
- **Near Real Time Extensions**
- **Using a Message Broker**
- **Architecture of Log File Analysers**
- **Rabbit MQ**: Setting up and exchanging messages.
- **Google Web Toolkit**: Introduction and RPC call flow
- **Integrating Retail and e-Commerce** using Web Analytics and Intelligent Sensors
- **Visualization Software**

Laboratory Exercises

- In the laboratory part of the course students can practice the concepts of theory by using exercises that cover the material extensively and cultivate correct skills for the using and implementing analytics software systems.

(4) TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	In-Class Face-to-Face
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	▪ Use of ICTs in lecturing ▪ Use of ICTs for the communication with students via the e-class platform
TEACHING ORGANIZATION	

Method description/Activity	Semester Workload
Lectures	56
Tutoring	14
Small individual exercises	20
Teamwork Project with case study	50
Non-guided personal study	40
Total Contact Hours	**180**

ASSESSMENT METHODS	**Assessment Language: Greek** All announcements for the course regulations and complementary reading material are permanently posted in the course web page. The course grade incorporates the following evaluation procedures: **Theory:** Final written examination in the whole material

	(100%). The exam includes theory questions (from 3 to 5) and practice exercises (from 1 to 2). **Laboratory:** The final grade consists of written laboratory work (10%), project preparation (50%) and final exam (40%) The evaluation criteria are announced to the students at the beginning of each semester and are posted on the course website in the open e-class LMS.

(5) RECOMMENDED BIBLIOGRAPHY

-Recommended Bibliography:

- *Scaling for E-business – Daniel Menasce, Virgilio Almeida – Prentice Hall*
- *Apache Jmeter – Emily Halili – PACKT*
- *Servers και Server Pages in JAVA – Marty Hall, Larry Brownς*

Relevant Scientific Journals:

- *Publications and Papers will be uploaded to the e-class*
- *Advances in Engineering Software - Journal – Elsevier*
- *Journal of Software Engineering Research and Development, Springer*
- *IEEE Transactions on Software Engineering*