COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering
DEPARTMENT	Electrical and Computer Engineering
LEVEL OF STUDY	Undergraduate
COURSE UNIT CODE	8.021 **SEMESTER OF STUDY** 8th
COURSE TITLE	Multimedia Communications

COURSEWORK BREAKDOWN	**TEACHING WEEKLY HOURS**	**ECTS Credits**
Theory (Lectures)	3	2
Tutorial/Project	1	1
Laboratory	1	1
TOTAL	5	4

COURSE UNIT TYPE	Specialized background/Core course
PREREQUISITES	Recommended knowledge on Networks
LANGUAGE OF INSTRUCTION/EXAMS	Greek/English
COURSE DELIVERED TO ERASMUS STUDENTS	Yes
WEB PAGE (URL)	https://eclass.hmu.gr/courses/ECE171/

(2) LEARNING OUTCOMES

Learning Outcomes
The course "Multimedia Communications" aims to give students specialized knowledge in the design and development of telecommunications multimedia services. The course covers in theory and practice the modern technology of protocols related to the exchange of multimedia information in real time and the possibilities offered by the current network and server architectures as well as in the cloud computing. In the laboratory part of the course there is an internship in programming in multimedia communication environments but also examples of deepening in technologies and flow control platforms and providing quality service in real-time audio-visual services. We also study streaming technologies in various network cases.   Upon successful completion of the course the student: 1. Knows the methodologies of designing and developing internet applications.   2. Handles cutting-edge technologies and tools used to develop both user-level and server-level applications.   3. Search, analyze and synthesize multimedia, telecommunications and internet technologies.   4. To develop innovative applications   5. To design complex applications required to serve the specialized needs of companies operating in telecommunications.

General Skills
• Search, analysis and synthesis of data and information, using the necessary technologies   • Decision making   • Autonomous work   • Promoting creative and inductive/deductive thinking   • Creation of new research ideas

(3) SYLLABUS

Theory Lecture Units
- Network protocols. Implementing protocols, standardization and standardization of multimedia
- Video compression, color degradation, H261, H263 / MPEG4 / H264 / H265 / VP8 / VP9
- Image -streaming protocols
- Audio and video technology through communication networks
- Multimedia communication platforms
- Quality of service and experience in multimedia communications
- Flow control and quality control implementation protocols
- Teleconferencing via communications network

Laboratory Exercise Modules
- Application layer protocols
- Audio and video coding technologies
- Design and development of video applications (streaming) through networks
- Teleconferencing and digital telecommunications over networks

(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 ORGANISATION	*Method description / Activity*	*Semester Workload*
	Lectures	52
	Exercises	13
	Project preparation	20
	Non-guided personal study	35
	Total Contact Hours	**120**
ASSESSMENT METHODS	1. In classroom tests (10%) 2. Individual laboratory exercises that require completion of concepts and combination of techniques taught (30%) 3. Written mid-term with short answer questions and problem solving (20%) 4. Written final exam with short answer questions and problem solving (40 %) Current course assessment details are posted in eclass.	

(5) RECOMMENDED BIBLIOGRAPHY

- *"Fundamentals of Multimedia," Li & Drew, Pearson Educational International.*
- *"Internetworking multimedia,"Crowcroft, Hanbdley, Wakerman UCL Press.*
- *"Introduction to multimedia communications : applications, middleware, networking,"K.R. Rao, Z.S. Bojkovic, and D.A. Milovanovic, Wiley Interscience.*
- *www.w3.org*
- *https://webrtc.org/*
- *International Journal of Mobile Computing and Multimedia Communications, IGI Editor.*
- *Multimedia Tools and Applications, Springer Editor.*
- *International Journal of Interactive Multimedia and Artificial Intelligence (UNIR).*