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ATHENA

European University

IRO-ACADEMY

The International Relations Office IRO-Academy, is the Academic Part of the office that offers Modules in English with Scientific and Cultural Research Topics to ***ALL Erasmus*** Students.

Students from **ALL Departments** could choose one or more of the lessons provided by our Office that they find interesting and/or important in order to satisfy completion of the studies and in order to complete the number of ECTS required for the Erasmus Program.

We are also pleased to offer lessons available online from our Partners in the ATHENA European University

The lessons provided by the HMU IRO-Academy are:

1) Soft and Research Skills Development

Course Code	**ER0001**
Course Title	**Soft and Research Skills Development**
ECTS	**5**
Tutor	Dr. Konstantinos Petridis cpetridis@hmu.gr
Prerequisite/ Corequisite	--
Semester	It is offered in both of the semesters
Objectives	Soft skills are a combination of people skills, social skills, communication skills, character or personality traits, attitudes, career attributes, social intelligence, and emotional intelligence that enable people to navigate their environment, work well with others, perform well, and achieve their goals with complementing hard skills. The Collins English Dictionary

	defines the term “soft skills” as “desirable qualities for certain forms of employment that do not depend on acquired knowledge: they include common sense, the ability to deal with people, and a positive flexible attitude. Research skills like Bibliographic research, Academic Writing, Poster Presentation, Promotion of your Research, Grant Writing, Interview Tips and Digital Skills are also important to be taught from the final undergraduate year of any discipline. The **objectives** of the course (offered for undergraduate and postgraduate students) are the following: Develop an understanding of the importance of soft & research skills including how soft & Research skills are: • Connected to technical or hard skills • Raise awareness amongst students, teachers, and professionals • Identify necessary soft skills depending on expertise • Assess how soft skills can be improved • Clarify and apply effective communication skills • Define and outline effective leadership skills including best practices • Examine and develop sense of self and culture • What are the Soft Skills a Scientist should have (Time Management, Problem Solving and Communication Skills) • How Research Skills are connected with your research and professional career
Intended Learning Outcomes	The Learning Outcomes of the Soft & Research Skills Development Module are the following: • to be able to provide an overview of the most wanted soft skills the labor market requires • to be able to apply the presented soft & research skills in her daily academic and research life • to be able to cope successfully in an interview process • to be able to analyze a complex problem into smaller units • to be able to present, negotiate and convince of her claims • to be able to write, submit and evaluate her work • to be able to communicate digitally and face to face communication • to be able to come back from fall back • to be able to adapt in any new professional or social environment

Indicative Syllabus	An indicative syllabus of the course follows: 1. Definition of Soft Skills & their Importance for Professional Development and Survival 2. Building Your Oral Presentation Skills 3. Building Your Time Management Skills 4. Building Your Stress Management Skills 5. Building Your Critical Thinking Skills 6. Building Your Problem Solving Skills 7. Building Your Resilience Skills 8. Building Your Collaboration Skills 9. Building Your Adaptability Skills 10. Building Your Leadership Skills 11. Building Your Academic Writing Skills 12. How to Promote Your Research 13. How to Build Your Network and Write a Proposal 14. Building Your Interview Skills 15. Building Your Digital Skills 16. Building Your Digital Profile 17. How to use LinkedIn for your Career Development 18. Building Your Negotiation Skills 19. Building Your Motivation Skills 20. Building Your Emotional Intelligence Skills
Teaching/Learning Methodology	**Lectures (online, face to face):** Every week three hours **Seminars:** One seminar per two weeks where an external speaker interacts with our students in one of the aforementioned topics **Workshops**: Where students practice the soft skills are taught
Assessment Methods in Alignment with	Final Test (70% of the overall grade) Presentations during the course (30% of the overall grade)

Intended Learning Outcomes	
Students' Working Load	Lectures: 36 hrs Homework/Study Time 108 hrs Seminars: 12 hrs In total 156 hours → 5ECTS
Reading List and References	• Lecture's Notes • Mindtools (https://www.mindtools.com/) • Harvard Business Review Journal (https://hbr.org/) • Coursera (https://www.coursera.org/) • EdX (https://www.edx.org/)

2) Introduction to Research Methods

Course Code	**ER 0002**
Course Title	**Introduction to Research Methods**
ECTS	5
Level of Studies	Undergraduate
Tutor	Dr. George Kritsotakis
E-mail	gkritis@hmu.gr
Learning Outcomes / Description	**:** In this course the students will have the opportunity to establish or advance their understanding of the research process. We will begin by establishing which are the reliable scientific resources and how to review the existing literature. This will be helpful in identifying significant gaps, coming up with novel and important research questions to investigate, and

	preparing a research proposal. We will also discuss different research methodologies within quantitative and qualitative paradigms including, among others, interviews, focus groups, diaries, and surveys. An important issue will be to debate on the ethical principles and challenges of the research activity and the relevant approval processes.
Prerequisites	None
Assessment	During the semester students will be asked to present and critically analyze published research and present a small research proposal.
Teaching / Learning Methodology	lectures, case-studies, individual and group assignments.
Recommended Literature	Belias, D., Rossidis, I., Papademetriou, C., & Mantas, C. (2021). Job Satisfaction as Affected by Types of Leadership: A Case Study of Greek Tourism Sector. Journal of Quality Assurance in Hospitality & Tourism, 1-19. Blumberg, B., Cooper, D. R., & Schindler, P. S. (2008). Business research methods. London: McGraw-Hill Higher Education. Chang, H. Y., Chu, T. L., Liao, Y. N., Chang, Y. T., & Teng, C. I. (2019). How do career barriers and supports impact nurse professional commitment and professional turnover intention? Journal of Nursing Management, 27(2), 347-356.

3) PROJECT MANAGEMENT

Course Code	**ER 0007**
Course Title	**Project Management**
ECTS	**5**
Prerequisite/ Corequisite	--
Semester	2nd (spring)
Tutor	Dr. Tomaz Aljaz from University FINI Slovenia
Objectives	The **Project management** aims to utilize understanding the principles and practices of project management in the area of digitalization. The students will learn and understand the strengths and drawbacks of project management. The main goal is to improve the effectiveness of the students in project management: from initiation to day-to-day activities, including skills and competences of the project manager, to manage, plan, monitor, and control projects of various types.
Intended Learning Outcomes	Knowledge and understanding: • Foundations of project management and its importance to the success of projects • Understand the process of managing projects, including project plan, human behavior, interdependencies, rules and measurement. • Effectively apply learned concepts (e.g., CCPM, Scrum) in day-to-day environment.
Indicative Syllabus	• Introduction of Project management • Traditional way of managing projects / V-model • Limitation of traditional project management principles • Ensuring stability, predictability and reliability of deliverables • Reducing time needed for finishing tasks and work in progress • Agile Project management • Critical Chain Project Management • Scrum • Project lifecycle • Case study
Teaching/Learning Methodology	• Lectures with active student participation (explanation, discussions, questions, examples and problem-solving). • Homework related to personal or working environment (reflecting personal experience, project work, teamwork, methods of critical judgement, discussions, giving feedback, and educational games).

	• Experimental exercises that are based on experience, cooperation and problem learning (independent study, discussions, explanation, observation, teamwork, case study, method of critical reading and writing, role play, collaborative learning, evaluation, self-evaluation).
Assessment Methods in Alignment with Intended Learning Outcomes	Weekly homework: 100%
Students' Working Load	Tutorials 36 hrs Homework 36 hrs Self study 72 hrs In total 144 hours → 5ECTS
Reading List and References	• Meredith, R. J. in Mantel, S. J. (2000): Project Management, 4th ed, John Wiley & Sons, Inc. • Lewis, J. P. (2006): Fundamentals of Project Management. American Management Association. • Eliyahu M. Goldratt. The Goal: A Process of Ongoing Improvement, Gower Publishing Ltd; 30th Anniversary Edition, 2012 • Eliyahu M. Goldratt. Critical Chain. 1997 • Rob Newbold. Project Management in the Fast Lane, 1998 • Eliyahu M. Goldratt. Production the TOC Way with CD simulator • Kent Beck, Cynthia Andreas. Extreme Programming Explained: Embrace Change 2nd Edition, 2004 • Ken Schwaber and Jeff Sutherland: The Scrum Guide,2020

4) Introduction to History of Crete and GREECE

Course Code	ER 0003
Course Title	**INTRODUCTION TO HISTORY OF CRETE & GREECE**
ECTS	3
Level of Studies	Undergraduate
Tutor	Dr. Gareth Owens
E-mail	ogareth@hmu.gr
Brief Description	a) Cretan and Hellenic Mythology, b) Cretan History – Minoan, c) Cretan History – Hellenic, Roman, Byzantine, Arabic, Venetian, Turkish and 20th Century. d) Hellenic History e.g. Classical Athens and Democracy, Delphi and Religion, Epidaurus and Theatre, Olympic Games, Macedonia and Alexander the Great etc. and Roman, Byzantine, Turkish and 19th-20th Century. e) Cretan Culture and Tradition. f) Study Trips to Museums, Archaeological Sites and Places of Interest.
Learning Outcomes	To acquaint the visiting European Students (ERASMUS+) with the rich history, language, culture and civilization of Crete and Hellas
Prerequisites	Students could manage to obtain ENGLISH LANGUAGE B2
Assessment	Written Assignment (3000 Words in English) on a mutually agreed research project on an aspect of Cretan Culture, or a Certificate of Attendance will be awarded.

Recommended Literature	http://history.heraklion.gr/background.php?url=index&id=&cat=&open=&lang=441&chron= and https://www.teicrete.gr/daidalika/ and Supplementary Material

5) Introduction to Philosophy-Past Present Future

Course Code	ER 0004
Course Title	**INTRODUCTION TO PHILOSOPHY – PAST PRESENT FUTURE**
ECTS	3
Level of Studies	Undergraduate
Tutor	Dr. Gareth Owens
E-mail	ogareth@hmu.gr
Brief Description	Our age has raised expectations and dangers to the limit. In our everyday life we make decisions and choices that may influence society far beyond our perception. This lesson, in the form of series of discussions, aims at presenting views on problems essential for the totality of life. Ecology, economy, geopolitics, religion, policy in general, art, education and the bright side of life, are presented and discussed freely. There is no "correct" view or dominant ideology. Arguments can be of logical, scientific, historical, or even emotional origin, they cannot be self-centered or irrational.
Learning Outcomes	What would it be like to be in a school in ancient Athens with Socrates-Plato-Aristotle? You certainly would not have to write long essays because you would not have paper. Nor would it be required to remember names and theories, as they were not

	in books yet. Now, having the internet, a group of students, can equally well do their search for a personal truth by using logic & common sense. Expression, communication, discussion, freedom of constraints can be so fruitful in acquiring the individual personal way of thinking.
Prerequisites	ENGLISH LANGUAGE B2
Assessment	Written Assignments (3000 words) on mutually agreed projects etc. and Class Contribution and Lesson Participation. After the introductory lecture, students are asked to choose from a list of subjects and they present the material to the group and set the intro for the discussion that follows **From Odysseus and Aristotle to Harari and Ithaki – General Bibliography** Inspired by Stephen Fry, Mythos, the Greek Myths Retold (2017), and Heroes, Mortals and Monsters, Quests and Adventures (2018); Daniel Mendelsohn, An Odyssey, A Father, a Son, and An Epic (2017) and The Bad Boy of Athens, Classics from the Greeks to Game of Thrones (2019); Edith Hall, The Ancient Greeks: Ten Ways They Shaped the Modern World (2016) & Aristotle's Way, Ten Ways Ancient Wisdom Can Change Your Life (2018); Anthony Gottlieb, The Dream of Reason, A History of Western Philosophy from the Greeks to the Renaissance, (2000) & The Dream of Enlightenment, The Rise of Modern Philosophy (2016); Yuval Noah Harari, Sapiens, A Brief History of Humankind (2011), which explores the past, Homo Deus, A Brief History of Tomorrow (2015), which explores the future, & 21 Lessons for the 21st Century (2018) and Lewis Dartnell, Origins: How the Earth Shaped Human History (2019); as well as Garry Kasparov, Deep Thinking, Where Machine Intelligence Ends and Human Creativity Begins (2017) and Jonathan Rowson, The Moves that Matter, A Chess Grandmaster on the Game of Life (2019); Charles Darwin, The Origin of Species, 1859, Penguin 1985 and Aristotle, 384-322 BC, Metaphysics, Penguin 1998. Lord Byron, Selected Poems, 1996; James Joyce, Ulysses, 1922, Penguin 2000; Sun-Tzu, The Art of War, 2002; George Orwell 1984 and Animal Farm (20) Πάντες ἄνθρωποι τοῦ εἰδέναι ὀρέγονται φύσει **'By nature, all men long to know'** **'All humans, by nature, desire knowledge'** **'All human beings by nature yearn for knowledge'** **Penguin Books in Translation** Who's Who in the Ancient World, Greek Literature – An Anthology; Homer – The Iliad & The Odyssey, The Homeric Hymns, The World of Odysseus; Hesiod and Theognis, Theogony, Works and days, Elegies; Aesop, The Complete Fables; Aeschylus – The Oresteia, Sophocles – The Theban Plays; Euripides – Medea and Other Plays, Bacchae and Other Plays; Aristophanes – Lysistrata and Other Plays; Plato – The Republic, The Laws, The Last Days of Socrates, The Symposium; Aristotle – Metaphysics, Art of Rhetoric, On the Soul, Poetics, Athenian Constitution, Politics; Sappho – Stung with Love, Poems and

	Fragments; The Hippocratic Writings, The Greek Sophists, Early Greek Philosophy; Pausanias – Guide to Greece, Herodotus – The Histories, Plutarch – The Age of Alexander, Arrian – The Campaigns of Alexander, Apollonius of Rhodes – the Voyage of Argo; The Penguin Book of Greek Verse (33) Comics/Graphic Novels, Sapiens, Harari; 300 Spartans, Miller & Varley; Erotokritos, Kornaros; Alki Zei, Peter's Long Walk; History of Crete, Sifis and Company, Democracy, Logicomix, Dune, and, Biography of George Orwell. (10) Nikos Kazantzakis, At the Palaces of Knossos & Alexander the Great Tales of Troy and Greece, Andrew Lang, 1978 (66)
e	
Recommended Literature	Inspired by Stephen Fry, Mythos, the Greek Myths Retold (2017), and Heroes, Mortals and Monsters, Quests and Adventures (2018); Daniel Mendelsohn, An Odyssey, A Father, a Son, and An Epic (2017) and The Bad Boy of Athens, Classics from the Greeks to Game of Thrones (2019); Edith Hall, The Ancient Greeks: Ten Ways They Shaped the Modern world (2016) & Aristotle's Way, Ten Ways Ancient Wisdom Can Change your Life (2018); Anthony Gottlieb, The Dream of Reason, A History of Western Philosophy from the Greeks to the Renaissance, (2000) & The Dream of Enlightenment, The Rise of Modern Philosophy (2016); Yuval Noah Harari, Sapiens, A Brief History of Humankind (2011), which explores the past, Homo Deus, A Brief History of Tomorrow (2015), which explores the future, & 21 Lessons for the 21st Century (2018) and Lewis Dartnell, Origins: How the Earth Shaped Human History (2019); as well as Garry Kasparov, Deep Thinking, Where Machine Intelligence Ends and Human Creativity Begins (2017) and Jonathan Rowson, The Moves that Matter, A Chess Grandmaster on the Game of Life (2019); Charles Darwin, The Origin of Species, 1859, Penguin 1985 and Aristotle, 384-322 BC, Metaphysics, Penguin 1998. Lord Byron, Selected Poems, 1996; James Joyce, Ulysses, 1922, Penguin 2000; Sun-Tzu, The Art of War, 2002; George Orwell 1984 and Animal Farm (20), and Supplementary Material.

6) English for Academic Purposes

Course Code	ER 0005
Course Title	**ENGLISH FOR ACADEMIC PURPOSES**
ECTS	2
Level of Studies	Undergraduate
Tutor	Dr. Gareth Owens
E-mail	ogareth@hmu.gr
Brief Description	• Can understand a wide range of demanding, longer clauses, and recognize implicit meaning. • Can express ideas fluently and spontaneously without much obvious searching for expressions. • Can use language flexibly and effectively for social, academic and professional purposes. • Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.
Learning Outcomes	Students could manage to obtain C1 Effective Operational Advanced English
Prerequisites	ENGLISH LANGUAGE B2
Assessment	Written Assignments and Class Contribution and Lesson Participation
Recommended Literature	Zoe Kantaridou, English for Academic Purposes, Reading and Vocabulary, Student's Book, 2nd Revised Edition, University of Macedonia Press Thessaloniki 2011 Ruth Spack, Tufts University, Guidelines, a Cross-Cultural Reading/Writing Text, Second Edition, Cambridge University Press, 1998, and Supplementary Material.

7) Greek Language

Course Code	ER 0006
Course Title	**GREEK LANGUAGE**
ECTS	2
Level of Studies	Undergraduate
Tutor	Dr. Gareth Owens
E-mail	ogareth@hmu.gr
Brief Description	• Can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. • Can introduce themselves and others and can ask and answer questions about personal details such as where they live, people they know and things they have. • Can interact in a simple way provided the other person talks slowly and clearly and is prepared to help.
Learning Outcomes	Students could manage to obtain A1 Breakthrough or beginner
Prerequisites	ENGLISH LANGUAGE B2
Assessment	Written Examination and Class Contribution and Lesson Participation

Recommended Literature	Kleanthes & Frossos Arvantakis, Communicate in Greek for Beginners, Course Book + Audio CD, Deltos Publishing, First Edition July 2010, Reprinted September 2014. Kleanthes & Frossos Arvantakis, Communicate in Greek for Beginners, Workbook One, Deltos Publishing, First Edition July 2010, and Supplementary Material

8) Resilience and Global Transformation-International Online Courses

GENERAL INFORMATION			
SCHOOL	School of Health Sciences		
DEPARTMENT	Social Work		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE		**Semester**	7th WINTER
COURSE TITLE	**RESILIENCE AND GLOBAL TRANSFORMATION International Online Course**		
TEACHING ACTIVITIES		**HOURS PER WEEK**	**CREDITS**
	Lectures	2	3
TYPE OF COURSE	Optional		
PREREQUISITE COURSE	No		
TEACHING LANGUAGE	English, B1		
OFFERED TO ERASMUS STUDENTS	Yes		
ONLINE COURSE PAGE (URL)			
LEARNING OUTCOMES			

The main goal of this online exchange course is that students in a first phase become familiar with the concept of resilience and explore it in a second phase what the contribution of a social worker can be in building resilience as catalysator of transformation (related to different topics). “The Resilience theory is interested in understanding and enhancing the ways people and systems respond to, recover from, overcome and often thrive in the wake of adversity. Rather than investing in the many way’s adversity breaks down, resilience focuses on the surprisingly common ways people bounce back from adversity. Resilience theory has been torn at times by the tension between agency (i.e. freedom of choice) and structure, which is sometimes referred to in the sociological literature as micro and macro (Van Breda, 2018). As a respond to concerns about climate and global environmental changes, extreme events and increasing social, economic and political shocks, the concept of resilience has proved popular. It is a new way of thinking about innovation and the capacity for transformation, necessary to thrive in contexts of uncertainty and change (Earth, 2018). The strengths perspective in social work (Saleebey, 2008) is central here, with its rejection of a focus on people’s problems and deficits and an investment in and championing of the capabilities, talents and natural resources of individuals, families and communities (Breda,2018).

Partner involved in this course:

- PROTESTANT UNIVERSITY OF APPLIED SCIENCES LUDWIGBURG, GERMANY.
- ISL INSTITUTE SOCIAL DE LILLE, LILLLE, FRANCE.
- HELLENIC MEDITERRANEAN UNIVERSITY, CRETE, GREECE.
- UNIVERSITY OF PALERMO, PALERMO, ITALY.
- THOMAS MORE, GEEL, BELGIUM.
- WINDESHEIM UNIVERSITY, ZWOLLE, THE NETHERLANDS.
- NEWMAN UNIVERSITY BIRMINGHAM, UK.
- CENTRIA UNIVERSITY OF APPLIED SCIENCES, KOKKOLA, FINLAND.
- UNIVERSIDAD COMPLUTENSE DE MADRID, MADRID, SPAIN.
- VIVES UNIVERSITY OF APPLIED SOCIAL STUDIES, KORTRIJK, BELGIUM.

ADMISSION REQUIREMENTS

Each university is responsible, on the basis of its own criteria, for the selection of its own students in this course.

- Global admission requirements
- Social work students, second year bachelor or higher
- Adequate level of oral and written English language skills; minimally level B1 of the Common European Framework of Reference for Languages.
- Reliable internet connection.
- Laptop or smartphone with video-function.

General abilities

- This collaboration fits into the international framework of ICOM (Leuven, 2014):
- Language skills.

- Intercultural Competence.
- Global Engagement.
- Personal Growth.
- International disciplinary learning.

CONTENT OF THE COURSE

SDG 1 - End poverty in all its forms everywhere.
SDG 2 - End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
SDG 3 - Ensure healthy lives and promote well-being for all at all ages.
SDG 4 - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
SDG 5 - Achieve gender equality and empower all women and girls.
SDG 6 - Ensure availability and sustainable management of water and sanitation for all.
SDG 7 - Ensure access to affordable, reliable, sustainable and modern energy for all.
SDG 8 - Remote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
SDG 9 - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
SDG 10 - Reduce inequality within and among countries.
SDG 11 - Make cities and human settlements inclusive, safe, resilient and sustainable.
SDG 12 - Ensure sustainable consumption and production patterns.
SDG 13 - Take urgent action to combat climate change and its impacts.
SDG 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
SDG 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
SDG 16 - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
SDG 17 - Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

TEACHING and LEARNING METHODS – EVALUATION

DELIVERY METHODS	This course is designed according to the principles of e-learning. Throughout the course, students work online, on the TOLEDO platform.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	• TOLEDO platform. On Toledo, all the information for this course • is bundled, lectures can be followed (Blackboard Collaborate), tasks have to be submitted (assignments). • Every international group has a group page on toledo. On this group page documents can be exchanged, meetings with the group can take place (blackboard collaborate) • Video lectures. • Literature list and web links to relevant websites
WAYS OF TEACHING	

Activities	***Workload of semester***
Assignments (3X11)	33
Experiential activities	13
Homeworks	20

	Reading	54
	Overall	**120**
STUDENTS' EVALUATION	1. HomeWorks and class presentations of group projects 2. Group Discussions 3. Self-Assessments 4. Attendance and Participation 5. Assessment criteria are referred upon e-class. 6. .	

RECOMMENDED LITERATURE

- Adams, R., Dominelli, L. and Payne, M. (2009) Practising Social Work in a Complex World, London, Palgrave Macmillan.
- Beddoe, L., Davys, A. and Adamson, C. (2013) 'Educating resilient practitioners', Social Work Education, vol. 32, no. 1, pp. 100–117.
- British Association of Social Workers (BASW) (2011) Supervision Policy, BASW [online]. Available at https://www.basw.co.uk/policies/ (Accessed 15 April 2017).
- Collins, S. (2007) 'Social workers, resilience, positive emotions and optimism', Practice, vol. 19, No. 4, pp. 255–69.
- Collins, S. (2008) 'Statutory social workers: stress, job satisfaction, coping, social support and individual differences', British Journal of Social Work, vol. 38, no. 6, pp. 1173–1193.
- Collins, S., Coffey, M. and Morris, L. (2010) 'Social work students: Stress, support and well-being', British Journal of Social Work, vol. 40, No. 3, pp. 963–82.
- Community Care (2012) 'Four in ten social workers say homophobia is 'problem in the profession'', Community Care [online]. Available at http://www.communitycare.co.uk/ 2012/07/31/four-in-ten-social-workers-say-homophobia-is-problem-in-the-profession/ (Accessed 15 April 2017).
- Fairtlough, A., Bernard, C., Fletcher, J. and Ahmet, A. (2014) 'Black social work students' experiences of practice learning: understanding differential progression rates', Journal of Social Work, vol. 14, no. 6, pp. 605–624.
- Garrett, P. M. (2015) 'Questioning Tales of 'Ordinary Magic': 'Resilience' and Neo-Liberal Reasoning' British Journal of Social Work vol.46, no.7, pp. 1909–1925 [Online]. Available at https://bjsw-oxfordjournals-org.libezproxy.open.ac.uk/content/early/2015/04/15/bjsw.bcv017.full.pdf+html?sid=67ac9c71-c5b6-4bda-98db-13ff8d6dfbd6 (Accessed 7 June 2017).
- Gilligan, R. (2009) 'Promoting positive outcomes for children in need: the assessment of positive factors', in Horwath, J. (ed) The Child's World: The Comprehensive Guide to Assessing Children in Need , Second Edition, London, Jessica Kingsley.
- Grant, L. and Brewer, B. (2014) 'Critical reflection and reflective supervision' in L. Grant, and G. Kinman (eds) Developing Resilience for Social Work Practice, London, Palgrave Macmillan.
- Grant, L. and Kinman, G. (2012) 'Enhancing wellbeing in social work students: building resilience in the next generation', Social Work Education, vol. 31, no. 5, pp. 605–621.
- Grant, L. and Kinman, G. (2014) Developing Resilience for Social Work Practice, London, Palgrave Macmillan.

- Grant, L. and Kinman, G. (2015) 'Guide to developing emotional resilience', Community Care Inform [online]. Available at https://www.iasw.ie/attachments/Guide-to-emotional-resilience-download.pdf (Accessed 15 April 2017).

DEPARTMENT OF ELECTRONIC ENGINEERING

CHANIA

YEAR 2021-22

ELECTRONIC ENGINEERING - CHANIA					
COURSE TITLE	**INSTRUCTOR**	**STUDY LEVEL**	**PAGE #**	**SEMESTER**	**ECTS**
Structured Programming	N.Petrakis nik.s.petrakis@hmu.gr or new lecturer	Bachelor	26	W	5
Data Structures	N.Petrakis nik.s.petrakis@hmu.gr	Bachelor	28	S	5
Digital Image Processing	A. Konstantaras akonstantaras@hmu.gr	Bachelor	30	W/S	5
Power Electronics	I.Chatzakis jchatzakis@hmu.gr	Bachelor or Master	31	W/S	3
An Introduction to Laser Physics and Applications	K.Petridis cpetridis@hmu.gr	Bachelor	32	W/S	5
An Introduction to Nanoelectronics	K.Petridis cpetridis@hmu.gr	Bachelor	35	S	5
An Introduction to Optoelectronics & Optical Communications	K.Petridis cpetridis@hmu.gr	Bachelor	12	S	5

^Algorithms and Complexity	M. Zakynthinaki, marzak@hmu.gr	Bachelor or Master	40	W	5
^Differential Equations and Computational Algorithms	M. Zakynthinaki, marzak@hmu.gr	Bachelor	41	S	5
Introduction to Plasma Engineering	I.Fitilis fitilis@hmu.gr	3rd Year and above	42	W/S	3
Display Technologies	I.Kaliakatsos giankal@hmu.gr	$\geq 4^{th}$ semester	43	W/S	4
Organic Electronics Devices	I.Kaliakatsos giankal@hmu.gr	$\geq 4^{th}$ semester	46	W/S	4
Antennas and Wireless Communications	I.Vardiambasis ivardia@hmu.gr	3rd Year and above	48	W	3
Satellite Communications and Systems	I.Vardiambasis ivardia@hmu.gr	3rd Year and above	52	W	3
Scattering, Propagation & Radiation of Electromagnetic Waves	I.Vardiambasis ivardia@hmu.gr	4th Year and above	56	W	3
Electromagnetic Compatibility	I.Vardiambasis ivardia@hmu.gr	3rd Year and above	60	S	3
Microwave Communications	I.Vardiambasis ivardia@hmu.gr	3rd Year and above	64	S	3
Microwave-Millimeter Wave Communications & Antennas	I.Vardiambasis ivardia@hmu.gr	4th Year and above	70	S	3
^ These courses are provided from non-permanent personnel and may will not be offered (changes can be made the first week of the semester)					

Diploma Thesis (6 months)

Diploma Thesis Title	Positions	Study Level	Semester	Professor	Online
"Solving electromagnetic wave propagation, radiation and scattering problems using computational techniques"	3	Bachelor or Master	W/S	I.Vardiambasis ivardia@hmu.gr	
"Telecommunication systems design and development using FPGA technology"	2	Bachelor or Master	W/S	I.Vardiambasis ivardia@hmu.gr	

>>*Other diploma thesis could be suggested upon request*

Training/Practice (6 –months)

Description of Training/practice	Positions	Semester	Professor	Online
"Training in the Telecommunications and Electromagnetic Applications Laboratory (Mat lab programming, electromagnetic simulation software authoring, boundary value problems solving, electromagnetic field measurements, analysis, design and development of microwave devices and antennas)" (Needed :Adequate background in telecommunications and/or electromagnetics, Proficient use of Mat lab programming)	2	W/S	I.Vardiambasis ivardia@hmu.gr	

Structured Programming
Dr. Eng. Nikolaos Petrakis nik.s.petrakis@hmu.gr or new lecturer
Bachelor
5
None
The course is an introduction to structured programming using the C programming language, where the student will start with the basic concepts of variable, data type, loop and will continue learning to structure his code correctly in functions. Upon successful completion of the course the student will be able to: ✓ find/discover solutions to problems of moderate difficulty, to describe the algorithmic solutions in pseudo-code and / or in a flowchart, and of course to be able to encode them. ✓ evaluate algorithmic solutions. ✓ design and implement software applications that provide access to text files. ✓ design and write code for programs that require the use of vectors or arrays composed of structure type elements. ✓ use sorting and/or searching techniques as appropriate.

• Introduction to Informatics and Computers. • Computer parts (hardware). Computer programs (software). • Numbering systems and conversions from one system to another. • The concept of the algorithm. Algorithm structures. Flowcharts. • Programming in C language. Data types. Variables. Constants. Strings. • Control statements. Operators (arithmetic, relational, logical, bitwise, etc). • Loop control statements. Functions and building blocks of the program. • One-dimensional / multidimensional arrays. Pointers. Recursion and recursive functions. • Structures and unions (defining/accessing). • Introduction to searching (Sequential Search, Binary Search) and sorting techniques (Sort by Selection, Bubble Sort). • Using real files (text streams). • Learn basic program design and implementation principles in the Dev-C ++ or CODE :: BLOCKS or MS Visual Studio environment.
Weekly Lectures 5hr/week *(if the number of students is greater than 4), else project based*
Written exams, class contribution, delivery of small individual projects every two weeks

1. H.H.Tan, T.B. D'Orazio, C Programming for Engineering & Computer Science, McGraw-Hill, 2000.
2. H. M. Deitel, P. J. Deitel, C: How to program, (second edition), Prentice-Hall, 1999.
3. Brian Kernigham, Dennis Ritchie, The C Programming Language, (second edition), Prentice-Hall, 1988.
4. Herbert Schildt, C The Complete Reference, Osborn/McGraw-Hill, 1987.
5. A. Tenenbaum,Y. Langsam, M. Augenstein, Data Structures Using C, Prentice-Hall, 1990.
6. Herbert Schildt, C The Complete Reference, Osborn/McGraw-Hill, 1987.

Course Title	**Data Structures**
Instructor	Dr. Eng. Nikolaos Petrakis nik.s.petrakis@hmu.gr
Study level	Bachelor
ECTS	5
Prerequisite	Basic knowledge of Computer Programming using C.
Learning Outcomes	The course is an introduction to algorithms and data structures, using as a tool a programming language such as C / C ++, where the student will start with the basic concepts and terminology and will continue learning to design, implement and evaluate the solutions. Upon successful completion of the course the student will be able to: ✓ mention and describe the characteristics of the basic data structures. ✓ mention and describe the basic algorithms for searching and sorting data (internal and external). ✓ mention and describe binary trees traversal methods. ✓ mention basic algorithms in Graphs. ✓ analyze a complex problem and design the solution on an abstract level. ✓ analyze the quality of a solution in relation to the execution time of its individual procedures.

	✓ Tcompose the solution of a problem based on the individual parts of the solution. ✓ check the correctness of a solution and to evaluate the various alternative solutions to a problem. ✓ Eevaluate both the quality of the design and the implementation of the solution of a problem. ✓ modify known algorithms so that they can be better utilized in solving a problem. ✓ evaluate the algorithmic solutions in relation to the execution time of the respective algorithm. ✓ design and write code for programs that require the use of data structures. ✓ use the most appropriate sorting or searching technique taking into account the expected distribution of data. ✓ find solutions to complex problems, to describe its algorithmic solutions in pseudo-code and / or in a flowchart, and of course to be able to encode them.
Contents	• Introduction to the basic concepts of data structures and algorithms. • Accessing sequential files. Define new type or variable as a data union. • Arrays, linearization of multidimensional arrays. • Stacks. Define the most important operations that can be performed in a stack, implemented using either static or dynamic data types. • Queues and fundamental operations that can be defined in a queue. Queue implementation with circular array (static) and queue implementation with nodes (dynamic). • Singly linked lists. Doubly linked lists and function definitions for basic operations. • Two-way interconnection technique using just a single link. • Trees. Binary tree traversal methods. Binary search trees. Balanced search trees. • Design and implementation of appropriate data structures for specific programming problems. • Evaluation of different data structures. • Straight sorting methods: sort by selection, shaker sort and bubble sort. • Quick sort technique. Sort variable-length sequences. • Sorting files using natural merge sort. Sequential search. Binary search. • Performance and analysis of algorithms. Time complexity. Algorithm performance comparison. • Graphs. • Learn software design and implementation principles in the Dev-C ++ or CODE :: BLOCKS or MS Visual Studio environment.

Course type	Weekly Lectures 5hr/week *(if the number of students is greater than 4), else project based*
Assessment	Written exams, class contribution, delivery of small individual projects every two weeks.
Bibliography	1. Leendert Ammeraal, Programs and data structures in C, John Wiley & Sons Ltd, 1987. 2. H.H.Tan, T.B. D'Orazio, C Programming for Engineering & Computer Science, McGraw-Hill, 2000. 3. H. M. Deitel, P. J. Deitel, C: How to program, (second edition), Prentice-Hall, 1999. 4. A. Tenenbaum,Y. Langsam, M. Augenstein, Data Structures Using C, Prentice-Hall, 1990. 5. A. Aho, J. Hopcroft, J. Ullman, The Design and Analysis of Computer Algorithms", Addison-Wesley Publishing Company, 1974.

Course Title	**Digital Image Processing**
Instructor	Dr. Antonios Konstataras akonstantaras@hmu.gr
Study level	Bachelor
ECTS	5
Prerequisite	None
Learning Outcomes	The basic concepts and algorithms applied to image processing systems and graphics cards are presented, while providing examples that allow students to become familiar with them, as well as technical computing tools in Matlab and CUDA. Students who have successfully completed the course will have a good understanding and knowledge of the main concepts, algorithms, and tools in the field of digital image processing and will have implemented applications in actual systems.
Contents	Image fundamentals, image enhancement in the spatial and frequency domains, restoration, color image processing, wavelets, image compression, morphology, segmentation, image description, and the fundamentals of object recognition.
Course type	Weekly meetings, project and lecture based
Assessment	
Bibliography	1. Rafael C. Gonzalez and Richard E. Woods, "Digital Image Processing", Prentice Hall, 2008.

	2. Rafael C. Gonzalez, Richard E. Woods and Steven Eddins, “Digital Image Processing Using Matlab”, McGraw Hill Education, 2010.

Course Title	**Power Electronics**
Instructor	Dr. John Chatzakis, jchatzakis@hmu.gr
Study level	Bachelor
ECTS	3
Prerequisite	Fundamental Analog Electronics
Learning Outcomes	Knowledge: After completing the course, the student will: ✓ have an in-depth understanding of the role of Power Electronics to electrical energy conversion as AC/DC, DC/DC or DC/AC and AC/AC conversion. ✓ understand operating principles and modulation strategies for basic Power Electronics Topologies and the properties of several PWM techniques and their applications to switch-mode power electronic systems. ✓ be able to identify the most important design parameters and to recognize the impact of operating parameters on the design and use of power electronic devices Skills: After conclusion of the course, the student will be able to: ✓ recognize, define, and analyze power electronic converters that perform AC/DC, DC/DC, DC/AC and AC/AC conversions ✓ design power electronic converters exhibiting high-performance operation ✓ analyse the operating principles and modulation for power electronic systems Competences: After completing the course, the candidate has increased: ✓ skills in cooperation - ability to communicate effectively about the Power Electronic Systems ✓ ability to contribute to innovation and innovation processes
Contents	• Definition of "Power Electronics", Semiconductors (Si, SiC, GaN) and Power Semiconductor Devices and Components, (Diode, Thyristor, GTO, MCT, TRIAC, Power BJT, Power MOSFETs, SJ MOSFET, IGBT, HEMT, TRIAC), Circuits with switches and diodes (with load RC, RL, RLC), semiconductor protection, damping

	• oscillations - snubbers, MOVs, fuses, current sensing protection - protection through the drive circuit. Rectifiers, multiphase rectifiers, controlled rectifiers with thyristor. • RL and LC low-pass filters, Fourier analysis, harmonics spectrum use, ripple coefficient (K), total harmonic distortion factor (THD), harmonic coefficients (HF 1,2), power factor (PF). DC / DC conversion, buck converter, CCM and DCM operation, Boost converter, positive to negative converter. Duty Cycle Definition and Control using Pulse Width Modulation (PWM). • Switching Power Supplies, power factor correction (PFC), pulse transformer, Forward Converter, semi-bridge, Full Bridge, Push-Pull, coupled coils, Flyback converter. Inverters: Half Bridge, Bridge, PWM Technique, MPWM Technique, Technique PDM, Modulation Factor (Mf), SPWM Technique, Normal Carrier Frequency (Fnc), HF-Link, Three Phase Inverters, Inverters and Motor Drive, Class D amplifiers. • Class E, Cycloconverters. • MCUs, DSPs and Power Electronics, Digital PWM Units. • MPPT, PFC, Batteries and Battery Management.
Course type	Weekly Lectures 2hr/week
Assessment	Written exams, class contribution, short project presentation.
Bibliography	1. Ned Mohan, Tore M. Undeland, William P. Robbins, "Power Electronics: Converters, Applications, and Design", Whiley, 2002. 2. S. N. MANIAS, «POWER ELECTRONICS», SIMEON PUBLICATIONS, ATHENS 2012.

Course Title	**An Introduction to Laser Physics and Applications**
Instructor	Dr. Kostas Petridis cpetridis@hmu.gr
Study level	Bachelor
ECTS	5
Prerequisite	None
Objectives	**L**ight **A**mplification by **S**timulated **E**mission of **R**adiation – LASERS introduced to the scientific community in 1958 (as a theoretical concept) and in 1960's as an operational device. Since then more than 33 Nobel Prizes in Physics have been awarded for works directly related to LASER Technology (with the last one in 2018). Today there is no activity that does not involve Laser light

	The **objectives** of the course (offered for undergraduate and postgraduate students) are the following: • Develop an understanding of the special properties of laser light; monochromaticity, directionality, spatial & temporal coherence • To offer the understanding of the building blocks of a laser device • Develop the understanding of the operational principles of a laser device: (a) Threshold Level; (b)Small Gain Coefficient; (c) Gain Saturation; (d) Steady State Condition Operation; (e) Spectral Broadening; (f) Laser Beam Propagation through vacuum and through optical elements; and (g) Pulsed Operation • The Introduction of various Laser Systems • The Introduction of various Laser Applications
Intended Learning Outcomes	The Learning Outcomes of the module 'An Introduction to Laser Physics and Applications' are the following: • to be able to explain how does a laser device operate • to be able to design a laser system • to be able to calculate various parameters related to a laser configuration: laser beam size, laser intensity, tunning range
Indicative Syllabus	An indicative syllabus of the course follows: 21. An Introduction of Lasers & Applications 22. The Light Matter Interaction Processes, the Einstein Rate Equations and the requested Population Inversion 23. The Electron Harmonic Oscillator Model 24. The Small Gain Coefficient & Related Losses 25. The Pumping Schemes 26. The Role of the Optical Oscillator 27. The Broadening Mechanisms: Homogeneous and Inhomogeneous Broadening 28. Longitudinal & Transverse Laser Modes 29. The Gain Saturation (Spatial Hole Burning and the Lamb Deep) 30. Tunable Laser Systems 31. Gaussian Beams and the ABCD Matrix Method 32. Generation of Laser Pulses: The Q-Switching Method 33. Generation of Laser Pulses: The Mode Locking Technique

	34. Modern Laser Systems I 35. Modern Laser Systems II 36. Laser Applications in Medicine 37. Laser Applications in Nanoelectronics 38. Laser Applications in Energy Generation: Laser Fusion 39. Laser Applications in Engineering: Laser 3D Printing and Laser Biomimetics 40. Laser Applications in Optical Communications
Teaching/Learning Methodology	**Lectures (online, face to face):** Every week three hours **Seminars:** One seminar per two weeks where an external/invited speakers interacts with our students in Laser Applications
Assessment Methods in Alignment with Intended Learning Outcomes	Final Test (70% of the overall grade) Presentations during the course (30% of the overall grade)
Students' Working Load	Lectures: 36 hrs Homework/Study Time 108 hrs Seminars: 12 hrs In total 156 hours → 5ECTS
Reading List and References	• Lecture's Notes • Principles of Lasers by O. Svelto • Fundamentals of LASERS by Silfast

Course Title	**An Introduction to Nanoelectronics**
Instructor	Dr. Kostas Petridis cpetridis@hmu.gr
Study level	Bachelor
ECTS	5
Prerequisite	None
Objectives	The modern smartphone is enabled by a billion-plus nano-transistors, each having an active region that is barely a few hundred atoms long. Interestingly the same amazing technology has also led to a deeper understanding of the nature of current flow on an atomic scale and my aim is to make these lessons from nanoelectronics accessible to anyone in any branch of science or engineering. The course also will present the nanoelectronics from the materials point of view with a special focus in Graphene & 2D Materials based devices. Various production and characterization processes will be presented such as Atomic Frequency Microscopy (AFM), Transverse Electron Microscopy (TEM), Scanning Electron Microscopy (SEM), X-Ray Diffraction, UV-VIS Absorption Spectroscopy I will assume very little background beyond linear algebra and differential equations, although we will be discussing advanced concepts in non-equilibrium statistical mechanics that should be of interest even to specialists. The **objectives** of the course (offered for undergraduate and postgraduate students) are the following: • Develop an understanding of the Quantum Physics Concepts • Facilitate the impact of Quantum Mechanics into the nano-devices and more particular nano-electronics • To develop an appreciation for the conceptual foundations underlying the operation of nanoelectronic devices. • The realization of the impact of nanoelectronics to the development of the field of electronics and the market in general • The awareness of the role of new materials in the field of nanoelectronics such as layered materials e.g. Graphene and 2D materials
Intended Learning Outcomes	The Learning Outcomes of the module ‘An Introduction to Laser Physics and Applications’ are the following: • to be able to understand the concept of the Quantum Mechanics in the field of nano-devices • to be able to understand the various fabrication, and characterization techniques using in nanoelectronics

	• to be able to understand and use the operational mechanisms of nano-electronic devices: field effect transistors, light emitting diodes & lasers, quantum dot devices, organic & perovskite solar cells • to be able to understand the special properties of graphene and 2D (Transitional Metal Chalcogenides – TMDs) material based devices
Indicative Syllabus	An indicative syllabus of the course follows: 41. Particles and Waves 42. Wave Mechanics 43. Materials for Nanoelectronics: Semiconductors, Organic Semiconductors, Graphene and TMDs 44. Growth and Fabrication Processes 45. Electron Transport Mechanisms 46. Electrons in low dimensional structures: Graphene, TMDs and Quantum Dots 47. Examples of Nanostructured Devices a. Field- Effect Transistors b. Solar Cells c. Emitting Devices: LEDs and Lasers
Teaching/Learning Methodology	**Lectures (online, face to face):** Every week three hours **Seminars:** One seminar per two weeks where an external/invited speakers interacts with our students in Nanotechnology Applications
Assessment Methods in Alignment with Intended Learning Outcomes	Final Test (70% of the overall grade) Presentations during the course (30% of the overall grade)
Students' Working Load	Lectures: 36 hrs Homework/Study Time 108 hrs Seminars: 12 hrs

	In total 156 hours → 5ECTS
Reading List and References	• Lecture's Notes • An Introduction to Graphene and 2D Materials – the CRETE Project (crete2020.hmu.gr) • Introduction to Nanoelectronics by V. Mitin, Cambridge University Press

Course Title	**An Introduction to Optoelectronics & Optical Communications**
Instructor	Dr. Kostas Petridis cpetridis@hmu.gr
Study level	Bachelor
ECTS	5
Prerequisite	None
Objectives	**Optical communications** are the dominant means of information transmission in the world. Even though the physical limitations of electrical cable prevent speeds in excess of 10 Gigabits per second, the physical limitations of fiber optics have not yet been reached. Everyday life applications such as broadband internet, cable HD TV, telemedicine, YouTube, online gaming and cloud based services like e-banking, Facebook and Twitter, owe their existence to the vast bandwidth capacity of the currently deployed global optical communication system. Optical communications to address limitations of radio frequency (RF) communications, including: bandwidth, spectrum and overall size of frequency packages and power used. **Optical spectrum** uses light as a means of transmitting information via lasers. **Optical communications** benefits include being faster, more secure, lighter and more flexible. The **objectives** of the course (offered for undergraduate and postgraduate students) are the following:

	• Realise the different technologies involved within the Optical Communication Technologies • Understand the operational principles of the various optoelectronic systems are involved in an optical communications network • To be aware of the new concepts of optical communications in the fields of optical networking and 5G Communications
Intended Learning Outcomes	The Learning Outcomes of the module 'An Introduction to Optoelectronics and Optical Communications' are the following: • to be able to understand the concepts of laser operation • to be able to understand the concepts of laser pulsed operation • to be able to understand the various laser pulses modulation schemes • to be able to explain the operation of an optical fiber • to be able to calculate the dispersion of a laser pulse within an optical fiber • to be able to calculate the various losses within a waveguide • to be able to design an optical network system
Indicative Syllabus	An indicative syllabus of the course follows: 48. An Introduction to Lasers 49. The Lorentz Principle 50. The Einstein Rate Equations 51. Broadening Mechanisms 52. The Resonator Principle 53. Gaussian Optics 54. The Semiconductor Laser Systems 55. Generation of Laser Pulses 56. Characterization of Laser Pulses 57. Frequency and Amplitude Modulation of Laser Pulses 58. The Fiber Optic Concept 59. The Wave Propagation in vacuum and in waveguides 60. The EDFA concept 61. Optoelectronic Devices for Optical Communications

	62. The Dispersion issue within optical fibers – solutions 63. Wavelength Dispersion Multiplexing 64. Optical Technologies for networking 65. Optical Technologies for Access Network 66. Optical Technologies for 5G Networking 67. Optical Technologies for Data Center Networking
Teaching/Learning Methodology	**Lectures (online, face to face):** Every week three hours **Seminars:** One seminar per two weeks where an external/invited speakers interacts with our students in Optical Communications
Assessment Methods in Alignment with Intended Learning Outcomes	Final Test (70% of the overall grade) Presentations during the course (30% of the overall grade)
Students' Working Load	Lectures: 36 hrs Homework/Study Time 108 hrs Seminars: 12 hrs In total 156 hours → 5ECTS
Reading List and References	• Lecture's Notes • Suggested Bibliography

Course Title	**Algorithms and Complexity**
Instructor	Dr. Maria Zakynthinaki marzak@hmu.gr
Study level	Bachelor or Master
ECTS	5
Prerequisite	Basic knowledge of the mathematical method of reduction. Knowledge of programming.
Learning Outcomes	The course provides an introduction to differential equations, specially designed for electronic engineers. Topics also include numerical techniques for the solution of initial value problems.
Contents	• What is an algorithm? The concept of complexity. • Iterative and recursive algorithms • Greedy algorithms • Divide and Conquer • Sorting • Searching • Random number generation • Linear programming • Dynamic programming • NP completeness. Reductions
Course type	Weekly Lectures 4hr/week (3 theory, 1 programming)
Assessment	Written exams, weekly assessments, final project in Python.
Bibliography	1. The Algorithm Design Manual, S.S. Skiena, 2nd ed., Springer-Verlag,2008 2. Introduction to the Design and Analysis of Algorithms (3rd Edition) 3rd Edition, 3. Anany Levitin, 2012 4. Introduction to Algorithms, T. H. Cormen, C. E. Leiserson, R. L. Rivest, C. Stein, S.S. Skiena, 3rd ed., The MIT Press, 2009

Course Title	**Differential Equations and Computational Algorithms**
Instructor	Dr. Maria Zakynthinaki marzak@hmu.gr
Study level	Bachelor
ECTS	5
Prerequisite	Basic knowledge of differentiation and integration techniques.
Learning Outcomes	The course provides an introduction to differential equations, specially designed for electronic engineers. Topics also include numerical techniques for the solution of initial value problems.
Contents	• First order ODEs, method of variable separation • Gradient, divergence and curl. Laplacian • First order nonhomogeneous ODEs. Method of undetermined coefficients • Applications of first order ODEs to practical problems in mechanical and electrical engineering • ODEs of order >1, method of variable separation • Second order linear homogeneous ODEs with constant coefficients • Second order nonhomogeneous ODEs with constant coefficients. Method of undetermined coefficients • Applications of second order ODEs with constant coefficients to practical problems • N-th order linear homogeneous and nonhomogeneous ODEs with constant coefficients • Second order linear homogeneous ODEs with constant coefficients - The Laplace transform method • Numerical solution of first order initial value problems. Euler, and RK methods
Course type	Weekly Lectures 4hr/week (3 theory, 1 tutorial)
Assessment	Written exams, weekly assessments.
Bibliography	1. C.H. Edwards, Jr., David E. Penney, *Elementary Dfifferential Equations with Applications (Third Edition)*, Prentice-Hall, Englewood Cliffs, NJ, 1996. 2. Chapra, S. C., & Canale, R. P. (2006). *Numerical methods for engineers*. Boston: McGraw-Hill Higher Education.

Course Title	**Introduction to Plasma Engineering**
Instructor	Dr. Ioannis Fitilis fitilis@hmu.gr
Study level	Bachelor 3nd year or Master
ECTS	3
Prerequisite	Basic knowledge of electromagnetism and optics (Lorentz force, e/m waves formalism, Maxwell equations, dielectric\magnetic constant, refractive index, refraction, etc.)
Learning Outcomes	The course introduces the students to the fundamental of plasma and the applications of plasma technology. After completing the course, the student will be able to: ✓ understand the plasma phase of the matter, the unique properties it has and the different types of plasmas. ✓ calculate/evaluate basic plasma parameters ✓ mention the different formulations of plasma description and where could be applied ✓ recognize the different type of waves that could develop/propagate in plasmas and their properties ✓ have knowledge of the different technologies of plasma sources and their properties ✓ describe various plasma applications and choose the proper plasma sources ✓ use proper diagnostics for plasma sources characterization ✓ mention and describe the various type of dense plasma generators and their applications.
Contents	• Introduction to plasma: definitions, properties, Debye shielding, temperatures- densities, types of plasmas, plasma frequency. • Plasma descriptions: particle motion, kinetic description, two-fluid description, magneto-hydrodynamic (MHD) description, ideal-MHD, plasma conductivity. • Waves in plasma: waves in non-magnetized plasma, phase velocity, refractive index, critical density. Waves in magnetized plasma, cutoff-resonance, MHD waves. • Plasma sources: electric discharge tubes, plasma torch, corona discharge, Dielectric Barrier discharge, RF discharge, Microwave discharge. Electron beam plasmas. Laser plasmas. • Plasma applications: Material processing, nanolithography, plasma antennas, plasma monitor, plasma thrusters, spectroscopy, sterilization, • Plasma diagnostics: diagnostics of magnetic field, current, particle flow, refractive index, spectroscopy. Diagnostics with X-rays, ion beam. • Dense plasma & applications: pulsed power plasma devices. Z-pinch, plasma instabilities, X-pinch & other pinch configurations, Dense Plasma Focus, Tokamak, Stellarator. high photon energy sources, particle acceleration, fusion energy.

Course type	Weekly Lectures 2hr/week
Assessment	Written exams 60%, class contribution 20%, short project presentation 20%.
Bibliography	1. Introduction to Plasma Technology: Science, Engineering and Applications Dr. John Ernest Harry, 2010, Wiley-VCH ISBN Print:9783527327638 Online:9783527632169 2. Plasma Physics and Engineering, A. Fridman, L. A. Kennedy, 2011, CRC Press ISBN 9781439812280 3. Plasma Engineering: Applications from Aerospace to Bio and Nanotechnology, 1st edition (or 2nd edition), M. Keidar , I. Beilis, 2013 (2018), Academic Press ISBN: 978-0123859778 (978-0128137024) 4. Principles of Plasma Physics for Engineers and Scientists, U. S. Inan, M. Gołkowski, 2011, Cambridge University Press ISBN 13:9780521193726

Course Title	**Display Technologies**
Instructor	Dr. Ioannis.Kaliakatsos giankal@hmu.gr
Study level	≥4 semester
ECTS	4
Prerequisite	Electronic Devices and Circuits
Objectives	The class examines the fundamentals of 2D and 3D display technologies (e.g. human visual system, color and depth perception, color theory and metrology, and state-of-the-art display technologies), display performance evaluation and calibration, and display research frontiers. The class is suited for both graduate and undergraduate students. You are encouraged to talk to the Instructor to find out if this is the right course for you.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: ✓ Understand Anatomy of Eye, Light Detection and Sensitivity, Spatial Vision and Pattern Perception, Binocular Vision and Depth Perception.

	✓ Understand Photolithography for Thin Film LCD, Wet Etching, Dry Etching; Flexible Displays. ✓ Understand Thin Film Electroluminescent Displays, AC Powder Electroluminescent Displays; Organic Electroluminescent Displays: OLEDs, Active Matrix for OLED Displays ✓ Be aware of Colorant Transposition Displays, MEMs Based Displays, 3-D Displays, 3-D Cinema Technology, Autostereoscopic 3-D Technology ✓ Understand Liquid Crystals on Silicon Reflective Micro-display, Trans missive Liquid Crystal Micro-display, MEMs Micro-display, DLP Projection Technology.
Indicative Syllabus	1.Introduction (2 hours) o How applications have been driving display developments? o Evolution of display technology 2. Human visual system (8 hours) o Eye anatomy and eye optics o Visual performance of the eye o Models of visual performance and photometry 3. Color vision and colorimetry (12 hours) o Color vision basics o Color matching experiments and color matching functions o Color systems and spaces o Colorimetry 4. 2D display technology and operation (16 hours) o Display system interfaces and performance parameters o CRT displays o Flat panel displays: AMLCD, LCOS, Plasma, OLED, o Projection systems o New display technologies: high dynamic range display, enriched color display 5.Display metrology: display performance measurement and calibration (6 hours) o General principles of display evaluation o Evaluation of 2D displays o Color management and calibration 6. Binocular vision and 3D display technology (6 hours)

	○ Binocular vision and perception basics ○ 3D display principles and techniques ○ head-mounted displays ○ Spatially immersive displays
Teaching/Learning Methodology	**Lecture:** the fundamentals of physics, chemistry, design, manufacturing processes and various applications of displays will be described using ppt presentations, demonstrating videos, Internet. The students are free to request help. The students are encouraged to solve problems and to use their own knowledge to verify their solutions before seeking assistance. **Tutorial:** a set of problems and group discussion topics will be arranged in the tutorial classes. Students are encouraged to solve problems before having solutions.
Assessment Methods	Continuous assessment: 40% Written Report 20% Oral Presentation 40% Continuous assessment consists of assignments, laboratory reports and mid-term test. The continuous assessment will assess the students' understanding of basic concepts and principles in materials science.
Students' Working Load - ECTS	Lectures 50 hours Written Report 8 hours Oral Presentation 2 hours Homework 60 hours In total 120 hours → **4ECTS**
Reading List and References	1. Organic Electronics: Materials, Manufacturing, and Applications: Hagen Klauk 2. Organic Electronics II: More Materials and Applications: Wiley, Hagen Klauk 3. Color vision and colorimetry: theory and applications (by Daniel Malacara) 4. Electronic image display (by Jon C. Leachtenauer)

Course Title	**Organic Electronics Devices**
Instructor	Dr. Ioannis.Kaliakatsos giankal@hmu.gr
Study level	≥4 semester
ECTS	4
Prerequisite	None
Objectives	The aim of this subject is to provide a course treating the emerging field of Organic Electronics from basics. Organic Semiconductors are an important introductory part of this course. The theory and practice of fabricating discrete and integrated molecular electronic devices and their applications in diverse fields is covered. Means of achieving various electronics functionalities such us memory, logic, etc. by the molecules are treating. Lessons from biological molecular behavior for organic electronics is also examined. An introduction to nano-photonics and nano-FET is also included
Intended Learning Outcomes	Upon completion of the subject, students will be able to: ✓ Understand the physics behind organic semiconductors ✓ Calculate transport properties in the mesoscopic systems. ✓ Identify the molecules that can be used for different functions in organic electronics ✓ Chose a proper method (or different methods) for fabricating particular component ✓ Exploit the behavior of biomolecules for organic electronics ✓ Gain an introductory knowledge on nano-photonics and nanodevices
Indicative Syllabus	• Introduction to Organic Electronic • Electronic transport in crystalline organic materials and conductive polymers • Conducting Polymers, small molecules organic semiconductors, • Polymer organic semiconductor, • Electrical and optical properties of organic semiconductors. • Basic Organic LED structure, thin film layers: Hole injection, hole transport, emissive, electron transport and electron injection layers used in organic LEDs. • Fabrication and characterization techniques. • Recent advances in organic LEDs • Applications of OLEDs • History of Organic TFTs

	• Device design of OTFT, device preparation and characterization • Applications of OTFTs • Optically-pumped organic semiconductor lasers • Electrically-driven organic lasers • Recent advances in solid-state organic lasers • NanoFETs • Fabrication of different types of sensors using organic semiconductors, • Study of different sensors using conjugated polymers.
Teaching/Learning Methodology	**Lecture:** the fundamentals of organic semiconductors physics and various applications in organic electronics devices will be described using ppt presentations, demonstrating videos, Internet. The students are free to request help. The students are encouraged to solve problems and to use their own knowledge to verify their solutions before seeking assistance. **Tutorial:** a set of problems and group discussion topics will be arranged in the tutorial classes. Students are encouraged to solve problems before having solutions.
Assessment Methods	Continuous assessment: 40% Written Report 20% Oral Presentation 40% Continuous assessment consists of assignments, laboratory reports and mid-term test. The continuous assessment will assess the students' understanding of basic concepts and principles in materials science.
Students' Working Load - ECTS	Lectures 50 hours Written Report 8 hours Oral Presentation 2 hours Homework 60 hours In total 120 hours → **4ECTS**
Reading List and References	1. Handbook of Organic electronics and Photonics: Hari Singh Nalwa 2. Organic Electronics: Materials, Manufacturing, and Applications: Hagen Klauk 3. Organic Electronics II: More Materials and Applications: Wiley, Hagen Klauk

Course Title	**Antennas & Wireless Communications**
Instructor	Asc. Professor **Ioannis Vardiambasis**, Director of the Laboratory of Telecommunications & Electromagnetic Applications, Directors of the Division of Telecommunications & Networks, Director of the MSc in "Telecommunication & Automation Systems" at the Department of Electronic Engineering of the Hellenic Mediterranean University, ivardia@hmu.gr
Study level	3rd Year and above
ECTS	3-ECTS* * Based on the 5-year undergraduate curriculum of the Electronic Engineering Department of HMU (Course 502), but modified according to the actual workload of the Erasmus students.
Prerequisite	Basic knowledge of engineering electromagnetics (electromagnetic fields and waves, Maxwell equations, boundary conditions, boundary value problems, etc.)
Learning Outcomes	The explosive growth and continuous development of the wireless and personal telecommunication systems creates a growing demand for telecommunication engineers with (a) very good background on the theory of antennas and electromagnetic wave propagation, and (b) special knowledge and experience in modern wireless systems. This course prepares students for a career in the rapidly evolving telecommunications industry, because the antenna is the interface between any telecommunication system and the transmission means in wireless communications. This course aims to get students acquainted with the principles of antenna theory and electromagnetic wave propagation, in order to use them during analysis and design of wireless telecommunication links. Upon successful completion of the course, students will have acquired knowledge, skills, appropriate tools for dealing with practical applications related to antennas and propagation models, as well as experience in designing and optimizing real antennas. More specifically students will be able to: + understand electromagnetic theory and its applications to antennas and transmission of electromagnetic signals carrying information,

	+ understand the theory of antennas and electromagnetic wave propagation in a uniform way, in order to use them in the analysis and design of wireless telecommunications, + describe the basic mechanisms of radio wave propagation and understand the interaction of electromagnetic waves with the environment, + be aware of the wave propagation phenomena caused in the real environment and the measurement methods used in practice, + calculate and measure the basic antenna parameters and characteristics (eg radiated power, radiation intensity, directivity, gain, radiation resistance), + compare antenna characteristics (advantages/disadvantages), deciding which is the most suitable antenna for each practical application, + perform antenna and electromagnetic radiation measurements, + familiarize with various practical antenna devices, + calculate the radiation diagram of an antenna, when its current distribution is known, + evaluate propagation models and select the appropriate model for calculating losses in a telecommunications link, + prepare radio coverage studies, + be informed about the latest developments in the field of wireless and personal communication systems, + analyze and design wireless telecommunication systems according to the respective needs, + be ready to supervise and maintain wireless telecommunications systems. The course is at the core of the Electronic Engineer curriculum. **Note:** The project-based version of the course will help the Erasmus students to get many of the above mentioned learning outcomes.
Contents	The project-based version of the course will cover many of the following subjects: Review on telecommunications and electromagnetic theory. Electric, magnetic, electromagnetic field. Electrical signals. Telecommunication systems. Wireless telecommunications. Frequency spectrum (HF, VHF, UHF, microwaves). Maxwell Equations. Wave equations. Boundary conditions. Scalar and vector potentials. Fields of sinusoidal time change. Electromagnetic radiation and power. Poynting vector. Planar electromagnetic waves [polarization, wave propagation in conductive and non-conductive media, phase and group velocities, reciprocity]. Reflection and refraction of planar waves [Snell's law, Fresnel equations, reflection and transmission coefficients, normal and oblique incidence on perfect dielectric and lossy media, standing waves, incidence on dielectric plates, scattering]. Transmission lines [complex and characteristic line resistance, wave reflection, transmitted power, adjustment, standing wave, Smith diagram]. Microwave waveguides [parallel plated, rectangular, circular, coaxial, microstrip, dielectric]. Optical waveguides. TE, TM and

	TEM propagation modes. Power and losses. Rectangular and cylindrical cavities. Electromagnetic waves in free space. Introduction to antenna theory. Antenna and transmission line matching. Radiation mechanisms. Antenna characteristics, radiation diagrams, gain, bandwidth, quality factor. Theory of simple linear antennas. Analysis of antennas with assumed current distributions. Hertz dipole. Applications of electrically small antennas. Linear dipole antennas. Field and radiation pattern, directivity, gain, radiation resistance, active antenna height. Dipole λ/2. Traveling wave antennas. Loop antennas. Antennas above perfect ground. Mirroring and image theory. General analysis of the radiation field of any antenna. Applications. Antenna arrays. Rhombic antenna. Principles of antenna design. Applications. Linear arrays. Uniform linear arrays with small and large number of elements. Polynomial theory of linear arrays. Applications. Superdirective antennas. Phase detection. Methods of radiation pattern synthesis. Dolph-Chebyshev linear arrays. Composition of linear arrays with Fourier sums. Applications and examples of antenna analysis and synthesis. Antenna applications and measurements. Aperture antennas. Radiation from flat surfaces. Radiation from rectangular surfaces. Horn antennas. Parabolic reflector antennas. Horn-reflector antennas. Lens antennas. Passive reflectors. Input antenna resistance. Equivalent sources. Magnetic charges and currents. Voltage and current sources. Reciprocity theorem. Self-impedance of conductive antennas. Voltage induced on open-ended antenna by an incident field. Induced electromotive force method. Transmission and reception equivalent circuits. Dipole near field. Bandwidth. Receiving antennas. Antenna polarization. Noise in telecommunication systems and antenna noise temperature. Dipole self-impedance. Antenna as terminal impedance. Asymmetric excitation of dipoles. Matching conditions and maximum transmitted power. Matching using stubs. Folded dipole. Mutual complex resistance between dipoles. Antenna array excitation impedance. Impedance of dipoles above perfect ground. Antenna feeding with appropriate currents. Yagi-Uda antennas. The antenna as a receiver. Equality of mutual complex resistances. Equality of transmission and reception radiation patterns. Equality of transmission and reception self-impedances. Equality of transmission and reception antenna active heights. Active antenna surface. Received to transmitted power ratio.

	Transmission of waves in free space. Friis equation. Losses and maximum transmission distance. Radar equation. Propagation of electromagnetic waves in the earth environment. Ground reflection of obliquely incident plane waves with vertical or parallel polarization. Brewster angles. Ground wave. Space wave. Surface wave. Antennas elevated above ground level. Approximate relationship for propagation at very high frequencies. Near ground surface wave tilt and polarization. Spherical earth. Effects of the earth's curvature. Line-of-sight condition. Barrier effects in wave propagation. Diffraction links. Tropospheric refractive index. Tropospheric propagation, refraction, waveguiding, scattering. Radio horizon. Multiple routes. Intervals. Differential reception systems. Atmosphere attenuation. Critical frequency and ionosphere changes. Ionospheric propagation, refraction, reflection, scattering. Applications. Calculation of radio links. Over sharp obstacle links. Line-of-sight links. Above perfect ground links. Technical characteristics and practical applications of wireless links.
Course type	Project-based (exclusively)
Assessment	Final project evaluation. Blended learning using synchronous and asynchronous methods.
Bibliography	• C. Parini, S. Gregson, J. McCormick, D.J. van Rensburg, and T. Eibert, *Theory and Practice of Modern Antenna Range Measurements*, SciTech Publishing, 2021 (2nd Edition), ISBN-10: 1839531282. • ARRL, *The ARRL Antenna Book for Radio Communications,* American Radio Relay League, 2019 (24th edition), ISBN-10: 1625951116. • J. Volakis, *Antenna Engineering Handbook,* Mc Graw Hill, 2018 (5th edition), ISBN-10: 1259644693. • J.D. Kraus, R.J. Marhefka, and A.S. Khan, *Antennas and Wave Propagation*, Mc-Graw Hill India, 2017 (5th edition), ISBN-10: 9352606183. • R.J. Mailloux, *Phased Array Antenna Handbook*, Artech House, 2017 (3rd Edition), ISBN-10: 1630810290. • C.A. Balanis, *Antenna Theory: Analysis and Design*, Wiley, 2016 (4th edition), ISBN-10: 1118642066. • W.L. Stutzman and G.A. Thiele, *Antenna Theory and Design*, Wiley, 2012 (3rd edition), ISBN-10: 0470576642. • S.K. Das and A. Das, *Antenna and Wave Propagation*, Tata Mc-Graw Hill Education, 2012, ISBN-10: 1259097587. • J. Carr and G. Hippisley, *Practical Antenna Handbook,* Mc Graw Hill, 2011 (5th edition), ISBN-10: 9780071639583. • R.E. Collin, *Antennas and Radiowave Propagation*, Mc-Graw Hill, 1985, ISBN-10: 0070118086. ***Related to Wireless Communications***

	• R.L. Haupt, *Wireless Communication Systems: An Introduction*, Wiley-IEEE Press, 2019, ISBN-10: 1119419174. • R.W. Heath and A. Lozano, *Foundations of MIMO Communication*, Cambridge University Press, 2018, ISBN-10: 0521762286. • C. Beard and W. Stallings, *Wireless Communication Networks and Systems*, Pearson, 2015, ISBN-10: 9780133594171. • D. Tse and P. Viswanath, *Fundamentals of Wireless Communication*, Cambridge University Press, 2005, ISBN-10: 0521845270. • A. Goldsmith, *Wireless Communications*, Cambridge University Press, 2005, ISBN-10: 0521837162. • W. Stallings, *Wireless Communications and Networks*, Pearson, 2004 (2nd Edition), ISBN-10: 9788132231561. • T. Rappaport, *Wireless Communications: Principles and Practice*, Prentice Hall, 2002 (2nd Edition), ISBN-10: 0130422320.

Course Title	**Satellite Communications and Systems**
Instructor	Asc. Professor **Ioannis Vardiambasis**, Director of the Laboratory of Telecommunications & Electromagnetic Applications, Directors of the Division of Telecommunications & Networks, Director of the MSc in "Telecommunication & Automation Systems" at the Department of Electronic Engineering of the Hellenic Mediterranean University, ivardia@hmu.gr
Study level	3rd Year and above
ECTS	3-ECTS* * Based on the 5-year undergraduate curriculum of the Electronic Engineering Department of HMU (Course 712), but modified according to the actual workload of the Erasmus students
Prerequisite	Basic knowledge of telecommunication systems.
Learning Outcomes	Satellites have the unique ability to provide coverage in large geographic areas and to connect remote and inaccessible telecommunication nodes. Thus satellite networks are now an integral part of most telecommunications systems. In recent decades the technology of satellite systems is advancing constantly and the use of all kind of satellites for long distance communications is developing rapidly.

	Today, electronic engineers face the absolute necessity to have in depth knowledge of the satellite technology, communications and links, because satellite communications play an ever-increasing role in modern telecommunication systems. This course properly prepares students for a career in the rapidly evolving telecommunications industry. The aim of this course is to familiarize tomorrow's electronics/telecommunications engineers with the analysis of satellite communication systems and the design of satellite links. The course covers the total of the required theoretical and practical background. Upon successful completion of the course, students will have acquired the necessary knowledge and skills to: + understand the structure of any satellite communications system, + understand the basic principles and concepts governing satellite communications, + understand the operation of satellite systems and the principles of modern telecommunications networks, + understand the design issues and options concerning satellite links, + have experience in the design and optimization of real telecommunication systems, which can be used for the analysis and design of new microwave and satellite radio links, + design and analyze satellite communication systems, + be familiar with various practical antenna devices, + have initial training in satellite link design, + be familiar with radio propagation models and modern techniques for digital modulation and voice-data information encoding, + be informed about the latest developments in the field of wireless and personal communication systems, + be familiar with the modern satellite technology, communications systems, assembly and subsystems, + supervise and maintain satellite communication systems, + understand the factors that degrade the quality of satellite wireless links and the methods to overcome this degradation, + evaluate the quality of services provided by satellite communications systems, + be familiar with the multiple access satellite networking techniques and the modern standards for satellite communications and mobile telephony systems. The course is at the core of the Electronic Engineer curriculum. **Note:** The project-based version of the course will help the Erasmus students to get many of the above mentioned learning outcomes.
Contents	The project-based version of the course will cover many of the following subjects:

	Configuration of a satellite communication system. Radio frequencies of satellite services. Motion, position and orbit of satellites. Satellite networks. Geosynchronous, geostatic, GEO, LEO satellites. Satellite segments. Basic features related to satellite link design [radio regulations, transmission/broadcasting types, line of sight, link power budget, refractive index, Fresnel zones, troposcatter links]. Electromagnetic wave propagation and the satellite radio channel. Radiation characteristics and types of satellite dishes. Parabolic antenna and targeting control. Noise measures. Signal noise in satellite systems. Space environment. Absorption, diffusion, refraction and depolarization of electromagnetic wave signals in the satellite channel. Effects of rainfall, noise and propagation medium on the satellite link power balance. Frequency reuse techniques. Channel configuration, modulation and coding. Analog techniques PM, FM. Digital communication techniques. Digital signal modulation. Custom filter analysis. Error possibility in digital communications. FSK, PSK, QPSK, DPSK, DQPSK, MSK modulations/encodings (with emphasis on demodulation, spectrum and error probability). Spectrum modulation techniques. Telecommunication satellite and ground station platform, configuration and subsystems (monitoring, control, position stabilization, orbit determination, propulsion, telemetry, communication, thermal control, power supply/generation). Satellite types. Earth stations. Receiver input. RF-filters and satellite signal frequency converters. Power amplifiers and low noise satellite signal amplifiers. Amplification non-linearity. Effects of noise, filtering, frequency conversion and amplification on satellite system design. Analysis of error possibility in satellite systems. Methods of coding, detection and error correction in satellite systems. Rectangular, semi-rectangular, linear (Hamming, Golay, BCH, Reed-Solomon), circular and convolutional codes. Error checking, parity check, syndromes. Error correction. Spectrum control. Satellite channel capacity. Coding gain. Channel discrete model. Coding error possibility. State diagrams. Coding trees. Trellis chart. Coding systems evaluation. Communication payload. Channel and modulation type performance. Bit error rate in digital data transmission systems. Noise factor. Noise models (white, pink, Gaussian). Factors affecting satellite link reliability and availability. Space differential reception. Effects of rainfall, depolarization and neighboring satellite interference on satellite system performance. Study of satellite communication systems. Satellite link design based on ITU's specifications and recommendations. Applications. Multiplexing techniques FDM, FDM/MA, TDM, TDM/MA, CDMA, Carrier Sense Multiple Access, CSMA/ Collision Avoidance, CSMA/Collision Detection (signal to noise ratios, multipath, jamming). Frequency Division Multiple Access System FDMA (with emphasis on nonlinear phenomena effects). Time Division Multiple Access System TDMA (with emphasis on synchronization, carrier

	retrieval, identity word detection and frame synchronization). Code division multiple access systems DS-CDMA and FH-CDMA (with emphasis on interpolation analysis). Satellite system protocols ALOHA, S-ALOHA, R-ALOHA. Services: telecommunication audio systems, telephony, analog TV, digital TV, direct to home broadcasts, SMATV, satellite news gathering, VSAT, meteorology, global atmospheric research program, geostationary meteorological satellites, sea navigation, Global Positioning System, differential GPS, mobile communications, Iridium, computer networks, fast internet, video on demand, multimedia services, video conferencing, telemedicine, geography, topography, GIS. Satellite installation and launch vehicles. Reliability of satellite communication systems.
Course type	Project-based (exclusively)
Assessment	Final project evaluation. Blended learning using synchronous and asynchronous methods.
Bibliography	• G. Maral, M. Bousquet, and Z. Sun, *Satellite Communications Systems: Systems, Techniques and Technologies*, Wiley, 2020 (6th Edition), ISBN-10: 1119382084. • T. Pratt and J.E. Allnut, *Satellite Communications*, Wiley, 2019 (3rd Edition), ISBN-10: 1119482178. • L.J. Ippolito, *Satellite Communications Systems Engineering: Atmospheric Effects, Satellite Link Design and System Performance*, Wiley, 2017 (2nd Edition), ISBN-10: 1119259371. • M.O. Kolawole, *Satellite Communications Engineering*, CRC Press, 2016 (2nd Edition), ISBN-10: 1138075353. • D. Minoli, *Innovations in Satellite Communications and Satellite Technology: The Industry Implications of DVB-S2X, High Throughput Satellites, Ultra HD, M2M, and IP*, Wiley, 2015, ISBN-10: 1118984056. • M. Richharia, *Mobile Satellite Communications: Principles and Trends*, Wiley, 2014 (2nd Edition), ISBN-10: 1119998867. • R. Cochetti, *Mobile Satellite Communications Handbook*, Wiley, 2014 (2nd Edition), ISBN-10: 1118357027. • K.N. Raja Rao, *Satellite Communication: Concepts and Applications*, PHI Learning, 2013 (2nd Edition), ISBN-10: 8120347250. • R.M. Gagliardi, *Satellite Communications*, Springer, 2012 (2nd Edition), ISBN-10: 9401097623. • T.M. Braun, *Satellite Communications Payload and System*, Wiley-IEEE Press, 2012, ISBN-10: 0470540842. • F. Gustrau, *RF and Microwave Engineering: Fundamentals of Wireless Communications*, Wiley, 2012, ISBN-10: 1119951712. • P. Fortescue, G. Swinerd, and J. Stark, *Spacecraft Systems Engineering*, Wiley, 2011 (4th Edition), ISBN-10: 047075012X. • D.R. Cheruku, *Satellite Communication*, IK International Publishing, 2009, ISBN-10: 9380026412. • D. Roddy, *Satellite Communications*, McGraw-Hill, 2006 (4th Edition), ISBN-10: 0071462988.

	• A. Fares, *Satellite Communications Engineering*, BookSurge Publishing, 2006, ISBN-10: 1419639056.

Course Title	**Scattering, Propagation & Radiation of Electromagnetic Waves**
Instructor	Asc. Professor **Ioannis Vardiambasis**, Director of the Laboratory of Telecommunications & Electromagnetic Applications, Directors of the Division of Telecommunications & Networks, Director of the MSc in "Telecommunication & Automation Systems" at the Department of Electronic Engineering of the Hellenic Mediterranean University, ivardia@hmu.gr
Study level	4th Year and above
ECTS	3-ECTS* * Based on the 5-year postgraduate curriculum of the Telecommunications & Automations Systems MSc of the Electronic Engineering Department of HMU (Course TeleAutoS-11), but modified according to the actual workload of the Erasmus students
Prerequisite	Basic knowledge of engineering electromagnetics (electromagnetic fields and waves, Maxwell equations, boundary conditions, boundary value problems, etc.)
Learning Outcomes	Aim of this course is the qualitative understanding and mathematical formalism of the concepts concerning the electromagnetic fields and the propagation, radiation and scattering of electromagnetic waves through their correlation with intelligible applications and phenomena, in order to create the necessary background, knowledge and experiences at the level of the advanced engineering electromagnetics and computing. Additional purpose is to develop the skills and abilities, which are necessary for the scientific and technical subject of the electronic and telecommunication engineer. Upon completion of the course the postgraduate students are expected to be able to: + understand the correlation between several types of sources and the corresponding fields' characteristics, + understand the concepts of vector field, electric field, Ampere's law, magnetic field, Faraday's law, Gauss' laws, induction, wave, interconnected existence of electric and magnetic field in case of time change, physical origin of electromagnetic waves, Maxwell's integral and differential equations for continuous and time-varying fields, propagation, radiation and scattering of electromagnetic waves and fields in space and time, + understand the electrical properties of materials (conductive/dielectric, isotropic/anisotropic, homogeneous/inhomogeneous,

	dispersive/nondispersive, linear/nonlinear, time-constant/time-varying, simple/metamaterials), + calculate differential (divergence, rotation) and integral quantities (flow, circulation) of fields in the main coordinate systems (Cartesian, cylindrical, spherical), as well as the electric and magnetic field, the corresponding potentials and the amounts of energy in given physical problems, + elaborate on electromagnetic theory and Maxwell's equations, + analyze and evaluate the technological applications concerning the broader field of electronic and telecommunication engineering, recognizing the presence and impact of electromagnetic field phenomena, + formulate given time-varying electromagnetic problems into mathematical expressions of boundary value problems, through differential equations with appropriate initial and/or boundary conditions, + handle simple and rather complex boundary value problems of electromagnetic field calculation using Maxwell equations, boundary conditions, auxiliary potentials and appropriate methods and techniques, + systematically deal with electromagnetic boundary value problems using analytical and computational methods, + understand the various phenomena of electromagnetic wave propagation, radiation and scattering, along with the corresponding quantities/concepts that characterize, distinguish and categorize them, + apply the taught methods and techniques for the analysis of electromagnetic problems, the composition of proper solutions and the evaluation of appropriate alternatives. The course is at the core of the Electronic/Telecommunications Engineer postgraduate curriculum. **Note:** The project-based version of the course will help the Erasmus students to get many of the above mentioned learning outcomes.
Contents	The project-based version of the course will cover many of the following subjects: Time-varying and time-harmonic electromagnetic fields (Maxwell's equations, constitutive parameters and relations, circuit-field relations, boundary conditions, power and energy, time-harmonic electromagnetic fields). Electrical properties of matter (dielectrics, polarization and permittivity; magnetics, magnetization and permeability; current, conductors and conductivity; semiconductors; superconductors; metamaterials; linear, homogeneous, isotropic and nondispersive media; AC variations in materials). Wave equation and its solutions (time-varying electromagnetic fields; time-harmonic electromagnetic fields; solutions to the wave equation in the rectangular, cylindrical and spherical coordinate systems). Wave propagation and polarization (Transverse Electromagnetic Modes; uniform plane waves in unbounded lossless and lossy media at

	principal axis and oblique angle; polarization). Reflection and transmission (Normal and oblique incidence in lossless media; lossy media; reflection and transmission of single slab, multiple layers and multiple interfaces; polarization characteristics on reflection; metamaterials). Auxiliary vector potentials; construction of solutions; radiation and scattering equations (vector potentials; construction of solutions; solution of the inhomogeneous vector potential wave equation; far-field radiation; radiation and scattering equations). Electromagnetic theorems and principles (duality theorem; uniqueness theorem; image theory; reciprocity theorem; reaction theorem; volume equivalence theorem; surface equivalence theorem (Huygens's principle); induction theorem; physical equivalent and physical optics equivalent; induction and physical equivalent approximations). Rectangular cross-section waveguides and cavities (rectangular waveguide; rectangular resonant cavities; hybrid LSE and LSM modes; partially filled waveguide; transverse resonance method; dielectric waveguide; artificial impedance surfaces; stripline; microstrip line; ridged waveguide). Circular cross-section waveguides and cavities (circular waveguide; circular cavity; radial waveguides; dielectric waveguides and resonators). Spherical transmission lines and cavities (construction of solutions; biconical transmission line; spherical cavity). Scattering (infinite line-source cylindrical wave radiation; plane wave scattering by planar surfaces; cylindrical wave transformations and theorems; scattering by circular cylinders; scattering by a conducting wedge; spherical wave orthogonalities, transformations, and theorems; scattering by a sphere). Integral equations and Method of Moments (integral equation method; electric and magnetic field integral equations; finite diameter wires; two-dimensional radiation and scattering; Pocklington's wire radiation and scattering; Numerical Electromagnetics Code). Geometrical theory of diffraction (geometrical optics; straight edge diffraction at normal and oblique incidence; curved edge diffraction at oblique incidence; equivalent currents in diffraction; slope diffraction; multiple diffractions). Diffraction by wedge with impedance surfaces (impedance surface boundary conditions and reflection coefficients; Maliuzhinets impedance wedge solution; geometrical optics; surface wave terms; diffracted fields; surface wave transition field; computations). Green's Functions (Green's functions in engineering; Sturm–Liouville problems; two-dimensional Green's function in rectangular coordinates; Green's identities and methods; Green's functions of the scalar Helmholtz equation; dyadic Green's functions).
Course type	Project-based (exclusively)
Assessment	Final project evaluation. Blended learning using synchronous and asynchronous methods.

Bibliography	• A.S. Khan and S.K. Mukerji, *Electromagnetic Fields: Theory and Applications*, CRC Press, 2020. • N. Ida, *Engineering Electromagnetics*, Springer, 2020 (4th Edition), ISBN-10: 3030155560. • S. Balaji, *Electromagnetics Made Easy*, Springer, 2020, ISBN-10: 9811526575. • M.-S. Kao and C.-F. Chang, *Understanding Electromagnetic Waves*, Springer, 2020, ISBN-10: 3030457079. • M. Sadiku, *Elements of Electromagnetics*, Oxford University Press, 2018 (7th Edition), ISBN-10: 0190698616. • M. Nahvi and J. Edminister, *Schaum's Outline of Electromagnetics*, McGraw-Hill, 2018 (5th Edition), ISBN-10: 126012097X. • A. Ishimaru, *Electromagnetic Wave Propagation, Radiation, and Scattering: From Fundamentals to Applications*, Wiley-IEEE Press, 2017 (2nd Edition), ISBN-10: 1118098811. • A.V. Osipov and S.A. Tretyakov, *Modern Electromagnetic Scattering Theory with Applications*, Wiley, 2017, ISBN-10: 0470512385. • D.H. Werner and Z.H. Jiang, *Electromagnetics of Body Area Networks: Antennas, Propagation, and RF Systems*, Wiley-IEEE Press, 2016, ISBN-10: 1119029465. • E.F. Kuester and D.C. Chang, *Electromagnetic Boundary Problems*, CRC Press, 2015, ISBN-10: 1498730264. • U. Inan, A. Inan, and R. Said, *Engineering Electromagnetics and Waves*, Pearson, 2014 (2nd Edition), ISBN-10: 0132662744. • F. Ulaby and U. Ravaioli, *Fundamentals of Applied Electromagnetics*, Pearson, 2014 (7th Edition), ISBN-10: 0133356817. • C.A. Balanis, *Advanced Engineering Electromagnetics*, Wiley, 2012 (2nd Edition), ISBN-10: 0470589485. • J.G. van Bladel, *Electromagnetic Fields*, Wiley-IEEE Press, 2007 (2nd Edition), ISBN-10: 0471263885. • S.M. Wentworth, *Applied Electromagnetics: Early Transmission Lines Approach*, Wiley, 2007, ISBN-10: 0470042575. • R.K. Wangsness, *Electromagnetic Fileds*, Wiley, 2007 (2nd Edition), ISBN-10: 0471811866. • S.M. Wentworth, *Fundamentals of Electromagnetics with Engineering Applications*, Wiley, 2006, ISBN-10: 9780470105757. • R.E. Collin, *Field Theory of Guided Waves*, Wiley-IEEE Press, 1990 (2nd Edition), ISBN-10: 0879422378. • D. Cheng, *Field and Wave Electromagnetics*, Addison-Wesley, 1989 (2nd Edition), ISBN-10: 0201128195. **<u>Related scientific journals</u>** • IEEE Transactions on Microwave Theory and Techniques (IF=3.176) • IEEE Microwave and Wireless Components Letters (IF=2.169) • IET Microwaves, Antennas and Propagation (IF=1.739) • Microwave and Optical Technology Letters, Wiley (IF=0.948)

	• IEEE Transactions on Antennas and Propagation (IF=4.13) • IEEE Antennas and Wireless Propagation Letters (IF=3.448) • IEEE Antennas and Propagation Magazine (IF=3.007) • International Journal of Antennas and Propagation (IF=1.378) • MDPI Electronics

Course Title	**Electromagnetic Compatibility**
Instructor	Asc. Professor **Ioannis Vardiambasis**, Director of the Laboratory of Telecommunications & Electromagnetic Applications, Directors of the Division of Telecommunications & Networks, Director of the MSc in "Telecommunication & Automation Systems" at the Department of Electronic Engineering of the Hellenic Mediterranean University, ivardia@hmu.gr
Study level	3rd Year and above
ECTS	3-ECTS* * Based on the 5-year undergraduate curriculum of the Electronic Engineering Department of HMU (Course 887), but modified according to the actual workload of the Erasmus students.
Prerequisite	Basic knowledge of electromagnetics.
Learning Outcomes	The course covers the theoretical and practical background required for: electromagnetic theory and its applications, electromagnetic compatibility (EMC) principles, electromagnetic interference (EMI) and methods for suppressing EMI effects, EMC measurements, analysis and design of electromagnetically compatible devices and systems. Upon successful completion of the course the students will be able to: + have in-depth knowledge of electromagnetic theory principles, + be able to present uniformly the theory of propagation, scattering and radiation of electromagnetic waves, so that the electromagnetic behavior of practical telecommunication systems can be understood, + explain and present in a comprehensive way the theory of electromagnetic compatibility, + be extremely familiar with possible electromagnetic effects-interference in devices and systems,

	+ be informed about the regulations and the electromagnetic compatibility standards currently applicable, + measure electromagnetic interference in various cases, + certify the electromagnetic compatibility of simple devices, + design circuits and devices free from electromagnetic interference. The course is at the core of the Electronic Engineer curriculum. **Note:** The project-based version of the course will help the Erasmus students to get many of the above mentioned learning outcomes.
Contents	The project-based version of the course will cover many of the following subjects: Electromagnetic Compatibility (EMC) overview. Definitions. Examples of EMC problems. Noise sources (natural and man-made sources). General methods for solving interference problems and complying with EMC requirements. EMC regulations and tests. Basic concepts of electromagnetism and their use in EMC (ferromagnetic materials). Maxwell's equations from the EMC point of view (Maxwell, Poisson and Laplace equations). Near and far field approaches and energy flow. The near field, the far field and the energy flow around small wire and small loop antennas. Fields of high and small impedance. Reaction fields. Electromagnetic waves in various media (refractive index, characteristic impedance of dielectrics). Near field impedance. The importance of the impedance concept. The impedance in front of a boundary surface (λ/2 dielectric windows, λ/4 and λ/2 layers). Plane waves in arbitrary media (propagation constant, penetration depth). Wave propagation in good conductors. Internal resistance of conductors. Diffusion. Maxwell's equations in integral form. Faraday and Ampere laws. Electric fields in conductors. Illustrative examples in EMC. Interference in small loops. Interpretation of measurements at various distances. Capacitive and inductive coupling. Transient switching phenomena (transformer feeding, transformer's power supply interruption, early time transitions). Input resistance of materials with losses. TEM wave incidence on boundary surfaces. TEM wave propagation. A first approximation of the transmission factor. Re-reflection effects. Shielding efficiency. Decibels and Nepers. Multi-layer media reflection coefficient. Absorber design and affecting factors. Absorber performance at various frequencies. Real absorber examples. Transmission lines and waveguides. Impedance and phase shift of ideal lines. Characteristic impedance of lines with losses. Voltage and current reflection coefficients. Short-circuited transmission line input impedance. Coupling between transmission lines. Inductively coupled directional couplers. Short-length line coupling. Transmission line coupling and the corresponding mathematical framework.

	Coupling of shielding currents with signal wires. Waveguides and resonators. Cutoff frequency and attenuation constant. Effectiveness of apertures'/openings' shielding. Resonator tuning. Shielding theory and practical applications. Static or almost static field protection. Magnetostatic protection. Superconductive materials shielding. Electrostatic shielding. Equivalent shielding circuit models. Electric field shielding. Almost static magnetic field shielding. Plane wave or transmission line shielding models. Extensions of plane wave theory to non-ideal situations. Shielding theories relationship with practical applications. Apertures, windows and thin conductive films. Alternative ways to describe shielding quality. Cables and connectors. Conclusions and comments about earthing/grounding. Spectral analysis and antenna theory in EMC. Basic principles. Harmonic distortion. Intermodulation distortion or mixing. Spectral analysis. Fourier series. Fourier series of pulse trains. Fourier transforms. Fast Fourier transforms. Spectrum analyzers. Finite rise time effect. Coil voltage noise. Fourier spectrum approach. Interference bandwidth. Antennas and radiation. Differential-mode and common-mode radiation. Antenna general characteristics (field, radiation and power patterns, directivity, gain, radiation resistance, effective area). Slot antennas and apertures. Radiation field estimation and measurement. Loop radiation (loops with Z<Zo or Z>Zo impedance). Radiated field estimation (basic calculation, intensity calculation spreadsheet). Common-mode cable radiation. Computer codes for radiation estimation. Broadband antennas. Electromagnetic field generation for EMC tests. Crawford cell. GTEM cell. Reverberation chambers. Coupling calculation examples. Earthing, security and signal grounding. Cable grounding and pigtails. Single and multiple shielding housings' grounding. Passive components (conductors, resistors, capacitors and coils). Filters. Isolation and supression. Isolation techniques (balanced or compensated circuits, transformers, common-mode suppression coils, optical isolators and optical fibers. Suppression techniques. Design of electromagnetically compatible circuits. EMC system design.
Course type	Project-based (exclusively)
Assessment	Final project evaluation. Blended learning using synchronous and asynchronous methods.
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- P. Chatterton and M. Houlden, "*EMC: Electromagnetic Theory to Practical Design*", Wiley, 1992, ISBN-10: 047192878X.

Course Title	**Microwave Communications**
Instructor	Asc. Professor **Ioannis Vardiambasis**, Director of the Laboratory of Telecommunications & Electromagnetic Applications, Directors of the Division of Telecommunications & Networks, Director of the MSc in "Telecommunication & Automation Systems" at the Department of Electronic Engineering of the Hellenic Mediterranean University, ivardia@hmu.gr
Study level	3rd Year and above
ECTS	3-ECTS* * Based on the 5-year undergraduate curriculum of the Electronic Engineering Department of HMU (Course 811), but modified according to the actual workload of the Erasmus students.
Prerequisite	Basic knowledge of engineering electromagnetics (electromagnetic fields and waves, Maxwell equations, boundary conditions, boundary value problems, etc.)
Learning Outcomes	Microwaves are widely used in radar (shipping, meteorology, air traffic control), terrestrial and satellite telecommunication links, medicine (tomography, hyperthermia), astrophysics (star observation), physics (spectroscopy, acceleration), industry, in everyday life (microwave ovens, antennas, vehicle speed measurement). On the other hand, the future of wireless communications (5G, MIMO) is based on millimeter waves. Therefore, familiarity of the electronic/telecommunication engineers with microwave theory, millimeter waves and their applications is necessary. This course properly prepares students for a career in the rapidly evolving telecommunications industry. The aim of this course is to familiarize electronic/telecommunication engineers with the technology of microwave and millimeter waves and their applications, in order to fully understand the operation of wired and wireless telecommunication systems. Upon completion of this course students will have acquired the necessary knowledge and skills, the appropriate tools for dealing with practical applications related to waveguides and antennas, as well as the experience to design and optimize real telecommunication systems, in order to: + select the most appropriate propagation mean and spectrum part for each telecommunication system, + analyze any transmission line and propagation mean, + evaluate the performance of telecommunication systems based on the propagation means it is using, + analyze and design wired and wireless telecommunication systems according to the needs, + be able to supervise and maintain wired and wireless telecommunication systems, and + design telecommunication systems using different transmission lines. Upon successful completion of the course, the students will: + understand the theory of microwaves and electromagnetic wave propagation in a unified manner, in order to use them for the analysis and design of wireless telecommunications links, + familiarize with the various phenomena at microwave and millimeter-wave frequencies,

	+ understand the behavior of any waveguide and of the microwave energy transmission over distance (point-to-point transmission and reception), + understand the operation of various elements, circuits and devices at microwave and millimeter frequencies, + familiarize with active and passive microwave components of modern telecommunication systems, + gain experience in measuring the basic characteristics and parameters of microwave devices, + familiarize with various waveguiding and propagation layouts of practical interest, in order to compare their characteristics (advantages/disadvantages), deciding which is the most appropriate for each practical application, + be informed about the latest developments in the field of wired and wireless telecommunications, + gain experience in the design of components (transmission lines, waveguides, power generators, amplifiers), circuits and systems, + gain experience in the analysis of microwave networks, + gain experience in designing and optimizing real telecommunication systems, which can be used in the analysis and design of new microwave, millimeter and optical systems. The course is at the core of the Electronic Engineer curriculum. **Note:** The project-based version of the course will help the Erasmus students to get many of the above mentioned learning outcomes.
Contents	The project-based version of the course will cover many of the following subjects: Review of electromagnetic theory (description of electromagnetic phenomena, Maxwell equations, boundary conditions, electromagnetic field power and energy, planar electromagnetic waves, propagation and attenuation of electromagnetic waves, polarization). Wired and wireless communications. Transmission line theory. Transverse and sinusoidal time-varying waves in transmission lines. Characteristic impedance and complex resistance in transmission lines. Smith chart. Standing waves in transmission lines without losses. Propagation constant and speed in transmission lines. Load matching in transmission lines using $\lambda/4$ transformers, one or two short-circuited stubs, or non-uniform transmission lines. Non-periodic phenomena in transmission lines. Coupled transmission line analysis. Wired transmission line types (two-wire or coaxial lines). Phase and amplitude distortion. Balanced and unbalanced lines. Phone network. Phase instability, cross-talk, impact noise, structured cabling.

	Waveguiding. Guided waves and waveguide modes. Parallel-plate waveguide. Description of waves. Separation of variables method. TE, TM, TEM modes. Radial description of wave propagation. Propagation and waveguide losses. Waveguides of rectangular cross section. Wave equation solution. Cutoff conditions. Boundary conditions. Field components in Cartesian coordinates. TM and TE modes. Excitation, characteristic resistance and attenuation of rectangular waveguide modes. Rectangular waveguide resonator. Waveguides of circular cross section. Wave equation solution. Cutoff conditions. Boundary conditions. Field components in cylindrical coordinates. TM and TE modes. Excitation, characteristic resistance and attenuation of circular waveguide modes. Polarization. Circular waveguide resonator. Coaxial waveguide. TEM, TM and TE modes. Microstrip and stripline. Radial and field description of a dielectric layer waveguide. Dielectric layer and dielectric strip. Graded-index strips. Uniform and non-uniform circular optical fiber. Special types of waveguides. Propagation in lines of parallel conductors. Mode excitation. Dielectric and magnetic materials. Electron motion in ferrites. Magnetization equation. Magnetic susceptibility tensor. Wave propagation in ferrites. Faraday rotation. Ferritic microwave elements. Gyrotron. Isolator. Circulator. YIG filter. Mixing materials with different ε, μ. Waveguiding in rectangular waveguides containing strips of material (ε, μ). Non-linear waveguides and waveguides with discontinuities [propagation in a circular section of a rectangular waveguide, propagation in a rectangular waveguide with helical twist, cylindrical small poles with inductive or capacitive behavior in rectangular waveguides, probes]. Waveguide technical characteristics [metal waveguides, optical fibers, flanges, additional elements of waveguide structures, excitation, resonators, filters]. Analysis of microwave circuits [S-parameters, power, efficiency]. Description of signals in microwave circuits. Microwave multiport networks. Scattering matrices. Bidirectional and symmetrical multiport networks. Magic T coupler. Multiport networks without losses. Directional couplers. Power dividers. Other couplers. Methods of microwave network analysis. Microwave resonant circuits. Microwave filters. Integrated microwave circuits [striplines, microstrips, slotlines, coplanar lines, hybrid MICs]. Passive microwave components [design of lumped resistors-capacitors-inductors, circuits

	with lumped loads]. Waveguide matching [waveguide resistance, measurement of line resistance at any point, load resistance computation]. Electron beam interaction with electromagnetic waves. High-power microwave sources [vacuum tubes, operating limits, klystron, magnetron, traveling-wave tube (TWT), gyrotron]. Low-power microwave sources. Semiconductor and solid-state devices [bipolar transistors, microwave transistors, field-effect transistors (FETs), semiconductor oscillators, oscillator modes with electron transfer effects]. Microwave mixing diodes. Tunnel diodes. Gunn diodes. IMPATT diodes. Masers. Microwave communications [microwave circuits, terminal equipment, filters, terminal transceivers and repeaters]. Microwave applications [diagnostic and therapeutic medicine, industrial measurements, speed measurements, ovens and thermal devices]. Biological effects of microwaves [radiation limits, biological phenomena, dielectric properties of the human body, electromagnetic environment]. Millimeter wave communications and applications.
Course type	Project-based (exclusively)
Assessment	Final project evaluation. Blended learning using synchronous and asynchronous methods.
Bibliography	• A.S. Khan and S.K. Mukerji, *Electromagnetic Fields: Theory and Applications*, CRC Press, 2020. • J.P. Dunsmore, *Handbook of Microwave Component Measurements: With Advanced VNA Techniques*, Wiley, 2020 (2nd Edition), ISBN-10: 1119477131. • K. Kuang and R. Sturdivant, *RF and Microwave Microelectronics Packaging II*, Springer, 2017, ISBN-10: 3319516965. • I. Robertson, N. Somjit, and M. Chongcheawchamnan, *Microwave and Millimetre-Wave Design for Wireless Communications*, Wiley, 2016, ISBN-10: 1118917219. • S. Mumtaz, J. Rodriguez, and L. Dai, *mmWave Massive MIMO: A Paradigm for 5G*, Academic Press, 2016, ISBN-10: 0128044187. • K.-W. Yeom, *Microwave Circuit Design: A Practical Approach Using ADS*, Pearson, 2015.

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N. Marcuvitz, *Waveguide Handbook*, IET, 1986, ISBN-10: 0863410588.

Course Title	**Microwave-Millimeter Wave Communications & Antennas**
Instructor	Asc. Professor **Ioannis Vardiambasis**, Director of the Laboratory of Telecommunications & Electromagnetic Applications, Directors of the Division of Telecommunications & Networks, Director of the MSc in "Telecommunication & Automation Systems" at the Department of Electronic Engineering of the Hellenic Mediterranean University, ivardia@hmu.gr
Study level	4th Year and above
ECTS	3-ECTS* * Based on the postgraduate curriculum of the Telecommunications & Automations Systems MSc of the Electronic Engineering Department of HMU (Course TeleAutoS-12), but modified according to the actual workload of the Erasmus students..
Prerequisite	Basic knowledge of engineering electromagnetics (electromagnetic fields and waves, Maxwell equations, boundary conditions, boundary value problems, etc.)
Learning Outcomes	Microwaves are widely used in radar (shipping, meteorology, air traffic control), terrestrial and satellite telecommunication links, medicine (tomography, hyperthermia), astrophysics (star observation), physics (spectroscopy, acceleration), industry, in everyday life (microwave ovens, antennas, vehicle speed measurement). On the other hand, the future of wireless communications (5G, MIMO) is based on millimeter waves. Therefore, familiarity of the electronic/telecommunication engineers with microwave theory, millimeter waves and their applications is necessary. The explosive growth and continuous development of the wireless and personal telecommunication systems creates a growing demand for telecommunication engineers with (a) very good background on the theory of antennas and electromagnetic wave propagation, and (b) special knowledge and experience in modern wireless systems. This course properly prepares postgraduate students for a career in the rapidly evolving telecommunications industry. This course aims (a) to familiarize electronic/telecommunication engineers with the technology of microwave and millimeter waves and their applications, in order to fully understand the operation of wired and wireless telecommunication systems, and (b) to get postgraduate students acquainted with the principles of antenna theory and electromagnetic wave propagation, in order to use them during analysis and design of wireless telecommunication links. Upon successful completion of this course postgraduate students will have acquired the necessary knowledge and skills, along with the appropriate tools for dealing with practical applications related to waveguides, antennas, and propagation models, as well as the experience

	to design and optimize real microwave/millimeter-wave devices, antennas, and telecommunication systems. More specifically students will be able to: + select the most appropriate propagation mean and spectrum part for each telecommunication system, + analyze any transmission line and propagation mean, + evaluate the performance of telecommunication systems based on the propagation means it is using, + analyze and design wired and wireless telecommunication systems according to the needs, + be able to supervise and maintain wired and wireless telecommunication systems, + design telecommunication systems using different transmission lines, + understand the theory of microwaves and electromagnetic wave propagation in a unified manner, in order to use them for the analysis and design of wireless telecommunications links, + familiarize with the various phenomena at microwave and millimeter-wave frequencies, + understand the behavior of any waveguide and of the microwave energy transmission over distance (point-to-point transmission and reception), + understand the operation of various elements, circuits and devices at microwave and millimeter frequencies, + familiarize with active and passive microwave components of modern telecommunication systems, + measure the basic characteristics and parameters of microwave devices, + familiarize with various waveguiding and propagation layouts of practical interest, in order to compare their characteristics (advantages/disadvantages), deciding which is the most appropriate for each practical application, + be informed about the latest developments in the field of wired and wireless telecommunications, + design of components (transmission lines, waveguides, power generators, amplifiers), circuits and systems, + analyze microwave networks, + design and optimize real telecommunication systems, which can be used in the analysis and design of new microwave, millimeter and optical systems, + understand electromagnetic theory and its applications to antennas and transmission of electromagnetic signals carrying information, + understand the theory of antennas and electromagnetic wave propagation in a uniform way, in order to use them in the analysis and design of wireless telecommunications, + describe the basic mechanisms of radio wave propagation and understand the interaction of electromagnetic waves with the environment,

	+ be aware of the wave propagation phenomena caused in the real environment and the measurement methods used in practice, + calculate and measure the basic antenna parameters and characteristics (eg radiated power, radiation intensity, directivity, gain, radiation resistance), + compare antenna characteristics (advantages/disadvantages), deciding which is the most suitable antenna for each practical application, + perform antenna and electromagnetic radiation measurements, + familiarize with various practical antenna devices, + calculate the radiation diagram of an antenna, when its current distribution is known, + evaluate propagation models and select the appropriate model for calculating losses in a telecommunications link, + prepare radio coverage studies, + be informed about the latest developments in the field of wireless and personal communication systems, + analyze and design wireless telecommunication systems according to the respective needs, + be ready to supervise and maintain wireless telecommunications systems. The course is at the core of the Electronic/Telecommunications Engineer postgraduate curriculum. **Note:** The project-based version of the course will help the Erasmus students to get many of the above mentioned learning outcomes.
Contents	The project-based version of the course will cover many of the following subjects: Review of electromagnetic theory. Electric, magnetic, electromagnetic fields. Description of electromagnetic phenomena. Maxwell's equations. Wave equations. Boundary conditions. Electromagnetic field power and energy. Poynting vector. Scalar and vector potentials. Fields of sinusoidal time change. Planar electromagnetic waves [polarization, wave propagation in conductive and non-conductive media, phase and group velocities, reciprocity]. Reflection and refraction of planar waves [Snell's law, Fresnel equations, reflection and transmission coefficients, normal and oblique incidence on perfect dielectric and lossy media, standing waves, incidence on dielectric plates, scattering]. Propagation and attenuation of electromagnetic waves. Polarization. Electromagnetic waves in free space. Transmission line theory. Transverse and sinusoidal time-varying waves in transmission lines. Characteristic impedance and complex resistance in transmission lines. Smith chart. Standing waves in transmission lines without losses. Propagation constant and speed in transmission lines. Load matching in transmission lines using λ/4 transformers, one or two short-circuited stubs, or non-uniform transmission lines. Non-periodic phenomena in transmission lines. Coupled transmission line analysis. Wired transmission line types (two-wire or coaxial lines). Phase and amplitude distortion. Balanced and unbalanced lines. Phone network. Phase instability, cross-talk, impact noise, structured cabling.

	Waveguiding. Guided waves and waveguide modes. Parallel-plate waveguide. Description of waves. Separation of variables method. TE, TM, TEM modes. Radial description of wave propagation. Propagation and waveguide losses. Waveguides of rectangular cross section. Wave equation solution. Cutoff conditions. Boundary conditions. Field components in Cartesian coordinates. TM and TE modes. Excitation, characteristic resistance and attenuation of rectangular waveguide modes. Rectangular waveguide resonator. Waveguides of circular cross section. Wave equation solution. Cutoff conditions. Boundary conditions. Field components in cylindrical coordinates. TM and TE modes. Excitation, characteristic resistance and attenuation of circular waveguide modes. Polarization. Circular waveguide resonator. Coaxial waveguide. TEM, TM and TE modes. Microstrip and stripline. Radial and field description of a dielectric layer waveguide. Dielectric layer and dielectric strip. Graded-index strips. Uniform and non-uniform circular optical fiber. Special types of waveguides. Propagation in lines of parallel conductors. Mode excitation. Dielectric and magnetic materials. Electron motion in ferrites. Magnetization equation. Magnetic susceptibility tensor. Wave propagation in ferrites. Faraday rotation. Ferritic microwave elements. Gyrotron. Isolator. Circulator. YIG filter. Mixing materials with different ε, μ. Waveguiding in rectangular waveguides containing strips of material (ε, μ). Non-linear waveguides and waveguides with discontinuities [propagation in a circular section of a rectangular waveguide, propagation in a rectangular waveguide with helical twist, cylindrical small poles with inductive or capacitive behavior in rectangular waveguides, probes]. Waveguide technical characteristics [metal waveguides, optical fibers, flanges, additional elements of waveguide structures, excitation, resonators, filters]. Analysis of microwave circuits [S-parameters, power, efficiency]. Description of signals in microwave circuits. Microwave multiport networks. Scattering matrices. Bidirectional and symmetrical multiport networks. Magic T coupler. Multiport networks without losses. Directional couplers. Power dividers. Other couplers. Methods of microwave network analysis. Microwave resonant circuits. Microwave filters. Integrated microwave circuits [striplines, microstrips, slotlines, coplanar lines, hybrid MICs]. Passive microwave components [design of lumped resistors-capacitors-inductors, circuits with lumped loads]. Waveguide matching [waveguide resistance, measurement of line resistance at any point, load resistance computation].

	Electron beam interaction with electromagnetic waves. High-power microwave sources [vacuum tubes, operating limits, klystron, magnetron, traveling-wave tube (TWT), gyrotron]. Low-power microwave sources. Semiconductor and solid-state devices [bipolar transistors, microwave transistors, field-effect transistors (FETs), semiconductor oscillators, oscillator modes with electron transfer effects]. Microwave mixing diodes. Tunnel diodes. Gunn diodes. IMPATT diodes. Masers. Microwave communications [microwave circuits, terminal equipment, filters, terminal transceivers and repeaters]. Microwave applications [diagnostic and therapeutic medicine, industrial measurements, speed measurements, ovens and thermal devices]. Biological effects of microwaves [radiation limits, biological phenomena, dielectric properties of the human body, electromagnetic environment]. Millimeter wave communications and applications. Review on telecommunications. Electrical signals. Telecommunication systems. Wired and wireless communications. Frequency spectrum (HF, VHF, UHF, microwaves). Introduction to antenna theory. Antenna and transmission line matching. Radiation mechanisms. Antenna characteristics, radiation diagrams, gain, bandwidth, quality factor. Theory of simple linear antennas. Analysis of antennas with assumed current distributions. Hertz dipole. Applications of electrically small antennas. Linear dipole antennas. Field and radiation pattern, directivity, gain, radiation resistance, active antenna height. Dipole $\lambda/2$. Traveling wave antennas. Loop antennas. Antennas above perfect ground. Mirroring and image theory. General analysis of the radiation field of any antenna. Applications. Antenna arrays. Rhombic antenna. Principles of antenna design. Applications. Linear arrays. Uniform linear arrays with small and large number of elements. Polynomial theory of linear arrays. Applications. Superdirective antennas. Phase detection. Methods of radiation pattern synthesis. Dolph-Chebyshev linear arrays. Composition of linear arrays with Fourier sums. Applications and examples of antenna analysis and synthesis. Antenna applications and measurements. Aperture antennas. Radiation from flat surfaces. Radiation from rectangular surfaces. Horn antennas. Parabolic reflector antennas. Horn-reflector antennas. Lens antennas. Passive reflectors.

	Input antenna resistance. Equivalent sources. Magnetic charges and currents. Voltage and current sources. Reciprocity theorem. Self-impedance of conductive antennas. Voltage induced on open-ended antenna by an incident field. Induced electromotive force method. Transmission and reception equivalent circuits. Dipole near field. Bandwidth. Receiving antennas. Antenna polarization. Noise in telecommunication systems and antenna noise temperature. Dipole self-impedance. Antenna as terminal impedance. Asymmetric excitation of dipoles. Matching conditions and maximum transmitted power. Matching using stubs. Folded dipole. Mutual complex resistance between dipoles. Antenna array excitation impedance. Impedance of dipoles above perfect ground. Antenna feeding with appropriate currents. Yagi-Uda antennas. The antenna as a receiver. Equality of mutual complex resistances. Equality of transmission and reception radiation patterns. Equality of transmission and reception self-impedances. Equality of transmission and reception antenna active heights. Active antenna surface. Received to transmitted power ratio. Transmission of waves in free space. Friis equation. Losses and maximum transmission distance. Radar equation. Propagation of electromagnetic waves in the earth environment. Ground reflection of obliquely incident plane waves with vertical or parallel polarization. Brewster angles. Ground wave. Space wave. Surface wave. Antennas elevated above ground level. Approximate relationship for propagation at very high frequencies. Near ground surface wave tilt and polarization. Spherical earth. Effects of the earth's curvature. Line-of-sight condition. Barrier effects in wave propagation. Diffraction links. Tropospheric refractive index. Tropospheric propagation, refraction, waveguiding, scattering. Radio horizon. Multiple routes. Intervals. Differential reception systems. Atmosphere attenuation. Critical frequency and ionosphere changes. Ionospheric propagation, refraction, reflection, scattering. Applications. Calculation of radio links. Over sharp obstacle links. Line-of-sight links. Above perfect ground links. Technical characteristics and practical applications of wireless links.
Course type	Project-based (exclusively)
Assessment	Final project evaluation. Blended learning using synchronous and asynchronous methods.
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- S. Mumtaz, J. Rodriguez, and L. Dai, *mmWave Massive MIMO: A Paradigm for 5G*, Academic Press, 2016, ISBN-10: 0128044187.
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- R.G. Winch, *Telecommunication Transmission Systems*, McGraw Hill, 1998 (2nd Edition), ISBN-10: 007070970X.
- P. Vizmuller, *RF Design Guide: Systems, Circuits, and Equations*, Artech House, 1995, ISBN: 0890067546.
- G. Roussy and J.A. Pearce, *Foundations and Industrial Applications of Microwaves and Radio Frequency Fields – Physical and Chemical Processes*, Wiley, 1995, ISBN-10: 0471938491.
- ARRL, *The ARRL UHF/Microwave Projects Manual – Vol. 1*, ARRL, 1994, ISBN: 0872594491.
- S. Ramo, J.R. Whinnery, and T.V. Duzer, *Fields and Waves in Communication Electronics*, Wiley, 1994 (3rd Edition), ISBN-10: 0471585513.
- G.H. Bryant, *Principles of Microwave Measurements*, IET, 1993 (Revised Edition), ISBN: 0863412963.
- B.L. Smith and M.-H. Carpentier, *The Microwave Engineering Handbook – Vol. 1: Microwave Components*, Van Nostrand Reinhold, 1993, ISBN-10: 0442315880.
- B.L. Smith and M.-H. Carpentier, *The Microwave Engineering Handbook – Vol. 2: Microwave Circuits, Antennas and Propagation*, Van Nostrand Reinhold, 1993 (2009th Edition), ISBN-10: 1441901140.
- B. Smith and M.H. Carpentier, *The Microwave Engineering Handbook – Vol. 3: Microwave Systems and Applications*, Springer, 1992 (1993rd Edition), ISBN-10: 041245680X.
- D.A. Olver, *Microwave and Optical Transmission*, Wiley, 1992, ISBN-10: 047193478X.
- S.F. Mahmoud, *Electromagnetic Waveguides: Theory and Applications*, IET, 1991, ISBN-10: 0863412327.
- R.E. Collin, *Field Theory of Guided Waves*, Wiley-IEEE Press, 1990 (2nd Edition), ISBN-10: 0879422378.
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- T. Itoh, *Numerical Techniques for Microwave and Millimeter-Wave Passive Structures*, Wiley-Interscience, 1989, ISBN-10: 9780471625636.
- N. Marcuvitz, *Waveguide Handbook*, IET, 1986, ISBN-10: 0863410588.

Related to Antennas

- C. Parini, S. Gregson, J. McCormick, D.J. van Rensburg, and T. Eibert, *Theory and Practice of Modern Antenna Range Measurements*, SciTech Publishing, 2021 (2nd Edition), ISBN-10: 1839531282.
- ARRL, *The ARRL Antenna Book for Radio Communications*, American Radio Relay League, 2019 (24th edition), ISBN-10: 1625951116.
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- R.J. Mailloux, *Phased Array Antenna Handbook*, Artech House, 2017 (3rd Edition), ISBN-10: 1630810290.
- C.A. Balanis, *Antenna Theory: Analysis and Design*, Wiley, 2016 (4th edition), ISBN-10: 1118642066.
- W.L. Stutzman and G.A. Thiele, *Antenna Theory and Design*, Wiley, 2012 (3rd edition), ISBN-10: 0470576642.
- S.K. Das and A. Das, *Antenna and Wave Propagation*, Tata Mc-Graw Hill Education, 2012, ISBN-10: 1259097587.
- J. Carr and G. Hippisley, *Practical Antenna Handbook*, Mc Graw Hill, 2011 (5th edition), ISBN-10: 9780071639583.
- R.E. Collin, *Antennas and Radiowave Propagation*, Mc-Graw Hill, 1985, ISBN-10: 0070118086.

DEPARTMENT OF ACCOUNTING AND FINANCE
HERAKLION

GENERAL INFORMATION			
SCHOOL	School of Management and Economics		
DEPARTMENT	Accounting and Finance		
TUTOR	Dr. Alexia Tzortzaki tzortz@hmu.gr		
LEVELOFSTUDIES	Undergraduate		
ECTS	**5**	**Semester**	WINTER
COURSE TITLE	**PRINCIPLES OF MANAGEMENT, LEADERSHIP AND MINDFULNESS**		

TEACHING ACTIVITIES	HOURS PER WEEK	CREDITS
Lectures	2	5

TYPE OF COURSE	Optional
PREREQUISITE COURSE	No
TEACHING LANGUAGE	English
OFFERED TO ERASMUS STUDENTS	Yes
ONLINE COURSE PAGE (URL)	https://eclass.hmu.gr/courses/ACCFIN140/

LEARNING OUTCOMES

This course is designed towards the acquisition of knowledge relating to the basic principles of Management (Business Administration) and provides the grounding for the development of Leaders, in all disciplines and sectors, including social leadership. It is based on the premise that one cannot become an effective manager without being a Leader and to be a Leader, one needs to first strive to become self-led and mindful.

By the end of the course students should be able to understand:

- "Mindfulness" as being the basis of heightened awareness of self and the environment, for win-win decision making, increased outcomes and effective crisis management.
- the importance of self leadership and soft skills

• the use of basic self-development tools for increased self-leadership and EI
• the difference between resonant and dissonant leadership.
• the practice of interconnecting and noticing trends in the ever-changing micro and macro environment.
• the role of human capital as a key competitive advantage in a predominately service-led and hi-tech landscape.
• the five key functions of Management
• Corporate Social Responsibility and its link to sustainability.

Also included in the course are: Self-knowledge exercises. An introduction to Emotional Intelligence and Neuro-Linguistic Programming. Time management and stress management tools. Anger management and conflict within the workplace. Presentation skills. An introduction to holding successful meetings and debating methods. Also included in the course are: Self-knowledge exercises. An introduction to Emotional Intelligence and Neuro-Linguistic Programming. Time management and stress management tools. Anger management and conflict within the workplace. Presentation skills. An introduction to holding successful meetings and debating methods. Job searching strategies and successful job application techniques.

SKILLS DEVELOPED

- Self-Awareness and Mindfulness skills
- Social Awareness skills
- Basic managerial skills (e.g. organizing, planning, evaluating)
- Leadership skills such as: Resonant Interpersonal and Communication skills, Visionary Thinking Skills
- Collaboration skills
- Conflict and Crisis Management
- Interdisciplinary Awareness and Research skills

TEACHING and LEARNING METHODS – EVALUATION

DELIVERY METHODS

Face-to-face / or online as needed.
In this course effective management and leadership skills are brought to life through real life examples, videos, personal and team work. Many in-class team exercises will help you discover your hidden talents and bring out the leader in you.

USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

- Support of learning process through the asynchronous platform e-class
- Use of PowerPoint and breakout rooms during the lectures and experiential learning exercises.
- Use of videos

Email, e-class, Zoom (communication with individual students)

WAYS OF TEACHING

Activities	***Workload of semester***
Lectures (2X13)	26

	Experiential activities	26	
	Homeworks	20	
	Reading	48	
	Overall	**120**	
STUDENTS' EVALUATION	1. Final exam test of **multiple choice type** 2. Homework and class presentations of group projects 3. Group Discussions 4. Self-Assessments 5. Attendance and Participation		

RECOMMENDED LITERATURE

1. Covey, S. (2004), The 7 Habits of Highly Effective People. London, UK: Simon & Schuster Ltd.
2. McKee, A., Boyatzis, R., & Johnston, F. (2008). Becoming a resonant leader: Develop your emotional intelligence, renew your relationships, sustain your effectiveness. Boston, MA: Harvard Business Press.
3. Goleman, D., Boyatzis, R., & McKee, A. (2002). Primal leadership: Realizing the power of emotional intelligence. Boston, MA: Harvard Business School Press.
4. Bradberry, T. and Greaves, J, (2005), Emotional Intelligence – the quick book, Fireside.
5. Sharma, R. (1997), The monk who sold his Ferrari, HarperCollins Publishers.
6. Tzortzaki, A.M. (2019) Speak Your Truth and Lead: Empowering Women to become Compassionate Leaders, Self publication www.be-heart-led.com

Principles of Management | Open Textbook

https://open.lib.umn.edu/organizationalbehavior/

https://ep.liu.se/ecp/026/076/ecp0726076.pdf article on Managers vs. Leaders

Hellenic Mediterranean University School of Management and Economics Sciences Department of Accounting and Finance	
Course Title	**Financial Risk Management**
ECTS	**6**
Level of Studies	Undergraduate
Tutor	Dr. Christos Floros, Professor
E-mail	cfloros@hmu.gr
Brief Description	***Aims*** Learning the concept of Financial Risk and Risk assessment techniques. Contents: Concepts of Financial risk. Market Risk. Credit Risk. Interest Rate Risk. Currency Risk. Operational Risk. Liquidity Risk. Equity risk and portfolio. The Basel Committee. Calculating VaR (Value at Risk). Risk assessment techniques. Calculation of risk in financial derivatives. shares and portfolios (with examples). Risk Management: Lessons from the recent crisis.
Learning Outcomes	By the end of the course students should be able to understand the importance of financial risk and VaR methods.
Prerequisites	None
Assessment	100% Individual Assignment

Teaching / Learning Methodology	Lectures Independent learning Office meetings with the tutor
Recommended Literature	*1.* *Saunders*, A. and *Cornett*, M.M. (2018) Financial Institution Management—A Risk Management Approach. 8th Edition, McGraw Hill Irwin, New York. https://www.mheducation.com/highered/product/financial-institutions-management-risk-management-approach-saunders-cornett/M9781259717772.html 2. Steve L. Allen, Financial Risk Management: A Practitioner's Guide to Managing Market and Credit Risk **(Wiley Finance)**

Hellenic Mediterranean University School of Management and Economics Sciences Department of Accounting and Finance	
Course Title	**Corporate Finance II**
ECTS	**6**
Level of Studies	Undergraduate
Tutor	Dr. Christos Floros, Professor
E-mail	cfloros@hmu.gr
Brief Description	Students learn how to use financial analysis for control, financial programming, choices of financing and the effect of capital structure on the value of the stock and the dividend policy. Contents: Use of financial programming. Financial and Operational leverage. Break even point. Use of financial ratios in the evaluation of firm performance. Capital structure and how it affects the value of the stock. Optimal capital structure. Risk measurement and cost of capital. Short term and long term financial planning. Management of Working Capital. Dividend policy. Venture Capital, Leasing, Mergers and Acquisitions. Sources of financing.
Learning Outcomes	By the end of the course students should be able to understand: • The importance of short term and long term financial programming. • The effect of leverage on profitability and value of stock. • The use of financial ratios. • The efficient management of Working Capital. • Dividend policy decisions • Mergers and Acquisitions
Prerequisites	None
Assessment	100% Individual Assignment

Teaching / Learning Methodology	Lectures Independent learning Office meetings with the tutor
Recommended Literature	1. BerkJ, DeMarzo, Harford, Fundamentals of Corporate Finance, Pearson, https://www.pearson.com/us/higher-education/product/Berk-Fundamentals-of-Corporate-Finance-3rd-Edition/9780133507676.html 2. R. Brealey and S. Myers, **Principles of Corporate Finance**, Mc Graw Hill 3. Ross, Westerfield and Jaffe, **Corporate Finance**, Mc Graw Hill Intern. https://www.mheducation.com/highered/product/corporate-finance-ross-westerfield/M9781259918940.html

Hellenic Mediterranean University **School of Management and Economics Sciences** **Department of Accounting and Finance**	
Course Title	**Derivatives Products and Hedging Techniques**
ECTS	**6**
Level of Studies	Undergraduate
Tutor	Dr. Christos Floros, Professor
E-mail	cfloros@hmu.gr
Brief Description	***Aims***

	Learning the concept of derivatives and mechanisms of derivatives markets. Contents: Basic Concepts of Financial Derivatives. Methods of Pricing and Hedging Futures positions, Forwards, Options and other derivatives. Interest Rates futures and Duration. Stock Options. Strategies in Options. Pricing futures contracts. Options on stock indices. Forward exchanges Futures and Options.
Learning Outcomes	By the end of the course students should be able to understand: The importance of financial futures and options, hedging techniques, and pricing methods.
Prerequisites	None
Assessment	100% Individual Assignment
Teaching / Learning Methodology	Lectures Independent learning Office meetings with the tutor
Recommended Literature	John C. Hull **Options, Futures, and Other Derivatives** CD Package, https://www.pearson.com/us/higher-education/product/Hull-Options-Futures-and-Other-Derivatives-8th-Edition/9780132164948.html

Hellenic Mediterranean University School of Management and Economics Sciences Department of Accounting and Finance	
Course Title	**Portfolio Management**
ECTS	**5**
Level of Studies	Undergraduate
Tutor	Dr. Christos Floros, Professor
E-mail	cfloros@hmu.gr
Brief Description	Students learn how to use financial models (CAPM, APT) and portfolio valuation theories in financial decision making. Contents: The methods of calculating return on investment. Investment risk, risk premium and the cost of capital. The types of risks and their characteristics. The methods of determining and calculating investment risks. The diversification of risk and the performance of the investment portfolio. Modern risk management models. Theories of portfolio valuation and risk analysis. The capital assets pricing model (Capital Asset Pricing Model) and the theory of investment valuation (Asset Pricing Theory). Modern theories of portfolio valuation and risk analysis. The efficient market hypothesis, the importance of market efficiency for investment decisions, methods of estimation of market efficiency. Stages of investment portfolio management, the behavior of listed securities (variable, constant, procyclical). The defensive / aggressive and passive / active investment strategies.
Learning Outcomes	To help students understand investors needs and make them capable to perform effective analysis and management of portfolio investments.
Prerequisites	None
Assessment	100% Individual Assignment

Teaching / Learning Methodology	Lectures Independent learning Office meetings with the tutor
Recommended Literature	1. *Elton, E. J., Gruber, M. J., Brown, S. J., & Goetzmann, W. N.* Modern portfolio theory and investment analysis. (9th ed.) John Wiley & Sons. https://www.wiley.com/en-us/Modern+Portfolio+Theory+and+Investment+Analysis%2C+9th+Edition-p-9781118469941 2. Reilly, K. F. and Brown, C. K. (1986) Investment Analysis and Portfolio Management, https://www.cengage.co.uk/books/9781305262997/

Hellenic Mediterranean University **School of Management and Economics Sciences** **Department of Accounting and Finance**	
Course Title	**Special Topics in Financial Management**
ECTS	**6**
Level of Studies	Undergraduate
Tutor	Dr. Christos Floros, Professor
E-mail	cfloros@hmu.gr
Brief Description	***Aims***

	Understanding of special topics in Financial Management (with an emphasis on quantitative analysis). Contents: Topics in Financial Management: Behavioral Finance, Market Efficiency, Volatility of stock market returns. Performance of portfolios and stock products (extensions of CAPM, Greeks & VaR), Examples in Excel and EViews.
Learning Outcomes	By the end of the course students should be able to understand the importance of Modern techniques with applications to Behavioral Finance theories and Financial Markets.
Prerequisites	None
Assessment	100% Individual Assignment
Teaching / Learning Methodology	Lectures Independent learning Office meetings with the tutor
Recommended Literature	1. Zvi B., Kane, A., Marcus, A. J., Investments, McGraw Hill. 2019 https://www.mheducation.ca/ise-essentials-of-investments-9781260288391-can-group 2. Forbes, W. Behavioural Finance, 2009, John Wiley & Sons Ltd.

Hellenic Mediterranean University School of Management and Economics Sciences Department of Accounting and Finance	
Course Title	**Corporate Finance I**
ECTS	**5**
Level of Studies	Undergraduate
Tutor	Dr. Christos Floros, Professor
E-mail	cfloros@hmu.gr
Brief Description	Students learn how to use capital budgeting and weighted Average Cost of Capital techniques in decision making. The student learns the time value of money, valuing bonds and stocks and the cost of capital derived from those models. Use of capital budgeting methods, using discounting cash flow analysis, focusing on the methods of NPV and IRR, calculation of projected Free Cash Flows to Firm (FCFF), under conditions of certainty and uncertainty. The student is introduced to the concept of risk and the calculation of risk factor in capital budgeting through the coefficient of variation, CAPM and scenario analysis. Calculation of the weighted average cost of capital, its interpretation and its use in company valuation. Capital budgeting under inflation and under conditions of risk. Cost of capital, cost of debt.
Learning Outcomes	By the end of the course students should be able to understand: • The importance of capital budgeting techniques in long term financial decision making • The use of average cost of capital in project evaluation • Estimation of the value of the firm.
Prerequisites	None
Assessment	100% Individual Assignment

Teaching / Learning Methodology	Lectures Independent learning Office meetings with the tutor
Recommended Literature	1. BerkJ, DeMarzo, Harford, Fundamentals of Corporate Finance, Pearson, https://www.pearson.com/us/higher-education/product/Berk-Fundamentals-of-Corporate-Finance-3rd-Edition/9780133507676.html 2. R. Brealey and S. Myers, **Principles of Corporate Finance**, Mc Graw Hill 3. Ross, Westerfield and Jaffe, **Corporate Finance**, Mc Graw Hill Intern. https://www.mheducation.com/highered/product/corporate-finance-ross-westerfield/M9781259918940.html

Department of Agriculture,(Heraklion) School of Agricultural Sciences, https://agro.hmu.gr//

Description of (B.Sc) courses offered in English

Erasmus Departmental Coordinator: Assist. Professor Konstantinos Paschalidis kpaschal@hmu.gr

Department of Agriculture									
Module Code	**X**	**Module Title**	**Number of teaching hours/week**				**ECTS**	**Semester**	**Responsbile**
			T	**PS**	**L**	**Total**			
	C	Plant Anatomy & Morphology	3		2	5	5	1st	D. Kollaros kollaros@hmu.gr
	C	Genetics	3	1		4	5	2nd	K. Paschalidis kpaschal@hmu.gr
	C	Plant Physiology	3		2	5	5	3rd	K. Loulakakis loulakak@hmu.gr
	C	Soil Science	3		2	5	5	3rd	V. Tzanakakis vetzanakakis@gmail.com
	C	Field Crop Production I (Gramineae and Leguminosae)	3		2	5	5	3rd	K. Paschalidis kpaschal@hmu.gr

Department of Agriculture									
Module Code	**X**	**Module Title**	**Number of teaching hours/week**				**ECTS**	**Semester**	**Responsbile**
			T	**PS**	**L**	**Total**			
		Plant Breeding	3	1		4	5	5th	K. Paschalidis kpaschal@hmu.gr
	E	Field Crop Production II (Industrial and Energy Crops)	2		2	4	5	9th	K. Paschalidis kpaschal@hmu.gr
	E	Introduction to Agronomy	3	1		4	5	10th	K. Paschalidis kpaschal@hmu.gr
		Computer Use in Agriculture					3	1st	Hatzakis Elias hatzakis@hmu.gr

Abbreviations: **T:** Theory, **PS:** Practical sessions, **L:** Lab. **Course type (X): C:** Compulsory, **CE:** Compulsory Elective, **E:** Elective

Department	**Agriculture**
Course Code	**04105**
Course Title	**Plant Anatomy & Morphology**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**1**
ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Professor Demetrios KOLLAROS, email: kollaros@hmu.gr
Lecturer personal webpage	

Learning Outcomes	The course aims to understand the basic knowledge of cytology and histology of plants. Particularly, it examines the major subcellular structures, the division of cells, of various tissues, of anatomical structure and external morphology in plant organs, such as stem, leaf, root, flower, fruit and seeds.
Prerequisites	No prerequisites
Course Contents	Introduction to Plant Biology, origin and development of plants, prokaryotes and eukaryotes, the molecular composition of the plant, the plant cell protoplasm and cytoplasm, cell membranes, ribosomes, intramembranous system, mitochondria, plastids, nucleus, cell wall, vacuoles, savings products, cell division (mitosis, meiosis), cells and tissues of the plant body (e.g. parenchyma, collenchyma, xylem-phloem, secretory cells and tissues), organization of the plant body stem, primary structure and development , secondary growth, leaf, root primary structure, flower, inflorescences, fruits, seeds, plant propagation, asexual reproduction, dormancy, germination.

Department	**Agriculture**
Course Code	**04205**
Course Title	**Genetics**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**2**
ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Assistant Professor Konstantinos Paschalidis mail: kpaschal@hmu.gr
Lecturer personal webpage	https://www.hmu.gr/agro/el/kpaschalhmugr

Learning Outcomes	The course provides the necessary information and methodology to: 1. Introduce students to the fundamental principles of genetics in agriculture and biology. 2. Make students understand the central concepts of agricultural genetics and their components. 3. Make students capable in understanding the Mendelian approach that reflects the dynamic nature of modern genetics by emphasizing an experimental, inquiry-based approach with a solid treatment of many research experiments.
Prerequisites	No prerequisites
Course Contents	The course includes the following major units: Introduction to Genetics, Mendelian Genetics, Chromosomal Basis of Inheritance, Extensions of Mendelian Genetic Principles, Quantitative Genetics, Gene Mapping in Eukaryotes, Advanced Gene Mapping in Eukaryotes, Variations in Chromosome Structure and Number, Genetics of Bacteria and Bacteriophages, DNA: The Genetic Material, DNA Replication, Gene Control of Proteins, Gene Expression: Transcription, Gene Expression: Translation, DNA Mutation, DNA Repair, and Transposable Elements, Recombinant DNA Technology, Applications of Recombinant DNA Technology, Genomics, Regulation of Gene Expression in Bacteria and Bacteriophages, Regulation of Gene Expression in Eukaryotes, Genetic Analysis of Development, Non-Mendelian Inheritance, Population Genetics, Molecular Evolution.

Recommended reading	- iGenetics: A Mendelian Approach Peter J. Russel Publisher: Benjamin Cummings; 1 edition (April 14, 2005) Language: English ISBN-10: 080534666X, ISBN-13: 978-0805346664. //o Introduction to Genetic Analysis (INTRODUCTION TO GENETIC ANALYSIS (GRIFFITHS)) by Anthony J.F. Griffiths, Susan R. Wessler, Sean B. Carroll and John Doebley (Dec 24, 2010) Publisher: W. H. Freeman; Tenth Edition edition (December 24, 2010) Language: English ISBN-10: 1429229438, ISBN-13: 978-1429229432.

Department	**Agriculture**
Course Code	**04202**
Course Title	**Plant Physiology**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**2**

ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Professor Konstantinos Loulakakis mail: loulakak@hmu.gr
Lecturer personal webpage	
Learning Outcomes	The purpose and aim of the course: the aim of the course is the understanding of the physiological and biochemical functions of plants in all stages of construction as subcellular units, cells, tissues, organs, and body as well as the determination of the causes that trigger the vital events and activities. Knowledge of physiological function of these plants is a prerequisite for increasing the main consumer products (cereals, vegetables, Ornamentals, nurseries) or industrial products (medicines, timber, essential oils).
Prerequisites	Plant Anatomy and Morphology

Course Contents	Structure and architecture of the plant and of the cell, the cell's organization in conjunction with the functional action, the molecular composition of plants, energy and enzymes, water and plant cells, water economy in plant nutrients and their participation in the process of metabolic circuit, photosynthesis, respiration, lipid metabolism, physiology of transport in the phloem, assimilation of inorganic nutrients, regulated growth, development and diversification, vegetable hormones, aging and Programmed Cell Death, control of the development of external reasons (temperature, tropism, photoperiodism , lythargos).
Recommended reading	"Plant Physiology Volume A" Textbook, TSEKOS JOHN, 2003 PUBLISHING HOUSE Kyriakidis Brothers SA "Introduction to Plant Physiology" Textbook, TSEKOS JOHN, ELIAS ELIAS, 2006 PUBLISHING HOUSE Kyriakidis Brothers

Department	**Agriculture**
Course Code	**04201**
Course Title	**Soil Science**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**2**
ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Assistant Professor Vassilis Tzanakakis Mail: vetzanakakis@gmail.com
Lecturer personal webpage	

Learning Outcomes	The purpose and aim of the lesson: The lesson of soil science is a basic lesson in all areas of School Of Agricultural Technologists. The purpose of this course is knowledge of the soil as a natural resource of the Earth's surface, the study of Genesis, classification and mapping of soils and the study of physical, chemical and biological properties.
Prerequisites	No prerequisites
Course Contents	General knowledge of soil, the factors that affect the growth of plants, the mineralogical composition of soil colloids of soil physical and chemical properties of this. B. soil nutrients, organic matter, soil capability, alternative acidity and alkalinity soils. C. General knowledge about fertilizers, soil microbiology and the classification of soils.
Recommended reading	Soil Science Kuriakos P. Panagiotopoulos

Department	**Agriculture**
Course Code	**04505**
Course Title	**Cereals - Legumes**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**5**
ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Assistant Professor Konstantinos Paschalidis Mail: kpaschal@hmu.gr
Lecturer personal webpage	https://www.hmu.gr/agro/el/kpaschalhmugr

Learning Outcomes	The purpose and aim of the course: To help students obtain, in the direction of Agriculture, the necessary specific knowledge about the usefulness, morphological characteristics, ecological requirements, the growing techniques and the maintenance of products of winter and spring cereals and legumes.
Prerequisites	General agriculture
Course Contents	Outline: utility, morphological characteristics, ecological requirements, crop production, crop silage, hay and fresh maintenance of products of winter-spring cereals and fruitful leguminous. Furthermore, the most important insects, diseases, weeds and their manipulating methods are also briefly outlined.
Recommended reading	"Special Agriculture - Cereals and Legumes" Textbook, D. PAPAKOSTA-Tasopoulou, 2012, ISBN: 978-960-357-105-6, Christina and Vassiliki Kordali AE

Department	**Agriculture**
Course Code	**04103**
Course Title	**Computer Use in Agriculture**
Level	**Bachelor**
Type of Course	**Compulsory**
Semester	**1**
ECTS credits	**3**
Language	**Greek and Engish**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Hatzakis Elias Mail: hatzakis@hmu.gr
Lecturer personal webpage	

Learning Outcomes	The purpose and aim of the lesson: students get to know the structure of computers and gain the ability to use them. To handle the Windows operating system, access the Internet and search for information relating to agriculture. To be able to use Word as editoring software and PowerPoint to create and format documents-slides and making presentations.
Prerequisites	None
Course Contents	Introduction to Computers. Structure and function of computers. The Windows operating system. Use of the Word editoring program and PowerPoint presentations. Introduction to the Internet and use of the Internet and electronic mail.
Recommended reading	-

Department	**Agriculture**
Course Code	**04601**
Course Title	**Plant Breeding**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**6**
ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Assistant Professor Konstantinos Paschalidis Mail: kpaschal@hmu.gr
Lecturer personal webpage	https://www.hmu.gr/agro/el/kpaschalhmugr

Learning Outcomes	The course provides the necessary information and methodology to: 1. Introduce students to the fundamental principles of plant breeding. 2. Make students understand the central concepts of plant breeding and their components. 3. Make students capable in applying tools in plant Breeding, such as sexual hybridization, tissue culture, polyploidy and biotechnology.
Prerequisites	Genetics
Course Contents	The course includes the following major units: Underlying science and methods of plant breeding, Historical perspectives and importance of plant breeding, The art and science of plant breeding, Plant cellular organization and genetic structure: an overview, Plant genetic resources for plant breeding, Genetic analysis in plant breeding, population genetics, quantitative genetics, Common statistical methods in plant breeding, Tools in plant breeding, Sexual hybridization and wide crosses in plant breeding, Tissue culture and the breeding of clonally propagated plants, Polyploidy in plant breeding, Biotechnology, Classical methods of plant breeding, Selected breeding objectives, Breeding for physiological and morphological traits, Breeding for resistance to diseases and insect pests, Breeding for resistance to abiotic stresses, Performance evaluation for crop cultivar release, Seed certification and commercial seed multiplication.

Recommended reading	Fanourakis Nikolaos, 2005, ISBN: 978-960-411-540-2, STELLA PARIKOU & CO AE A. TSAFTARIS, EIR. NIANOU, A.POLYDOROS, 2012, ISBN: 978-960-357-103-2, Christina and Vassiliki Kordali OE Roupakias Dimitrios, 2010, ISBN: 978-960-12-1972-1, University Studio Press Inc. - http://www.agri.ankara.edu.tr/fcrops/1289__BITKI_GENETIGI_VE_ISLAH.pdf //o An Introduction to Plant Breeding. Jack Brown and Peter Caligari. 2008. Blackwell Publishing, 9600 Garsington Road, Oxford OX4 2DQ, UK. 209 p. ISBN: 978-1-4051-3344-9 //o http://www.bspb.co.uk/BSPB%20Handbook.pdf

Department	**Agriculture**
Course Code	**04502**
Course Title	**Industrial - Energy Plants**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**5**
ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Assistant Professor Konstantinos Paschalidis Mail: kpaschal@hmu.gr
Lecturer personal webpage	https://www.hmu.gr/agro/el/kpaschalhmugr

Learning Outcomes	The purpose and aim of the course: To provide students with the necessary knowledge about the usefulness, morphological characteristics, ecological requirements, the growing techniques and the maintenance of important products to Greek agricultural industrial and energy plants.
Prerequisites	No prerequisites
Course Contents	Utility, morphological characteristics, ecological requirements, crop production, crop maintenance and the technology of industrial and energy plant products, such as tobacco, cotton, sugar beets, potatoes and tomatoes. Furthermore, the most important insects, diseases, weeds and their manipulating methods are also briefly outlined.
Recommended reading	Industrial Plants, Papakosta-Tasopoulou, ISBN: 978-960-357-049-4, Christina and Vassiliki Kordali AE Galanopoulou-Sendouka Stella, ISBN: 960-351-430-6, Stamoulis AE

Department	**Agriculture**
Course Code	**04104**
Course Title	**Introduction to Agronomy**
Level	**First cycle (bachelor)**
Type of Course	**Compulsory**
Semester	**1**
ECTS credits	**5**
Language	**Greek and English**
Teaching methods	Lectures, Lab exercises and/or projects
Assessment	Written exams and/or project evaluation
Lecturer	Assistant Professor Konstantinos Paschalidis Mail: kpaschal@hmu.gr
Lecturer personal webpage	https://www.hmu.gr/agro/el/kpaschalhmugr

Learning Outcomes	The course provides the necessary information and methodology to: 1. Introduce students to the fundamental principles of scientific agriculture. 2. Make students understand the concepts of agricultural systems and their components. 3. Examine the relationship of agriculture to human survival and human interactions, the place of agriculture in human history and how it relates to population growth and the roles that the consumption and production of food and fiber play in society.
Prerequisites	No prerequisites
Course Contents	The course includes the following major units: Principles underlying practices used in the culture of, mostly, grain and forage crops. Crop classification, structure, growth, and improvement. Crop response to environmental factors, soils, and pests and associated management practices. Laboratories will cover crop botany, crop development, and problem solving. A basic course for majors in agronomy and others interested in crop production.
Recommended reading	Courses in General Agriculture, CHRISTOS DORDAS, ISBN: 978-960-357-088-2, Christina and Vassiliki Kordali OE - http://www.freebookcentre.net/biology-books-download/Basics-ofAgriculture.html //o Agricultural Science by Godwin Aflakpui Publisher: InTech 2012 ISBN-13: 9789535105671 http://www.e-booksdirectory.com/details.php?ebook=7450

DEPARTMENT OF BUSINESS ADMINISTRATION AND TOURISM

HERAKLION

Hellenic Mediterranean University School of Management and Economics Sciences Department of Business Administration and Tourism	
Course Title	**DESTINATION BRANDING**
ECTS	**5**
Level of Studies	Undergraduate
Tutor	Dr. Nikolaos Trihas, Assistant Professor
E-mail	ntrihas@hmu.gr
Brief Description	This course provides students with a comprehensive review of the main issues and concepts related to destination branding. The course analyzes in theoretical and practical terms the factors that contribute to the competiveness of tourist destinations by placing emphasis on the development of a unique destination brand. The course examines the principles and practices of destination branding, exploring the importance of destination brands. It considers brand management, positioning and various branding models within the tourism and destination context, further exploring issues of brand identity, brand image, brand personality, brand loyalty, brand equity, and brand awareness. It introduces students to the principles and practices of marketing communications and the variety of communication tools available to promote a destination brand. It examines the role of media in the communication of a destination brand (traditional media and digital communication media). It examines the process of planning and executing an integrated destination brand promotion campaign. It examines the role of the various stakeholders involved in destination branding, including destination management organizations (DMOs) and local authorities. It considers the range of approaches to destination branding within the global tourism industry context through a range of case-studies.

Learning Outcomes	A student passing this course should be able to: 1. Define the broad concept of destination branding; 2. Understand the need for implementing destination promotion schemes; 3. Evaluate the role of DMOs in destination branding strategy; 4. Critically analyze destination branding material that is produced by a range of destinations; 5. Formulate an original destination branding strategy; 6. Understand the concept of marketing communications; 7. Develop a draft of a destination brand communication campaign and select adequate media in this campaign.
Prerequisites	None
Assessment	100% Individual Assignment (80% assignment + 20% presentation of the assignment in the class)
Teaching / Learning Methodology	Independent learning Office meetings with the tutor
Recommended Literature	• Ashworth, G. and Kavaratzis, M. (Eds.) (2010), *Towards Effective Place Brand Management. Branding European Cities and Regions.* Cheltenham: Edward Elgar Publishing Limited. • Bayraktar, A. and Uslay, C. (2017), *Strategic Place Branding. Methodologies and Theory for Tourist Attraction*, Hershey: IGI Global. • Kolb, B. (2006), *Tourism Marketing for Cities and Towns: Using Branding and Events to Attract Tourists*, Butterworth-Heinemann. • Kozak, M and Baloglu, Seyhmus (2011,) *Managing and Marketing Tourist Destinations: Strategies to Gain a Competitive Edge*, Oxon: Routledge • Morgan, N., Pritchard, A. and Pride, R. (Eds.) (2004), *Destination Branding. Creating the Unique Destination Proposition* (2nd Ed.), Oxford: Elsevier Butterworth-Heinemann.

	• Morgan, N., Pritchard, A. and Pride, R.(Eds.) (2011), *Destination Brands. Managing Place Reputation* (3rd Ed.), Oxford: Elsevier Butterworth-Heinemann. • Pike, S. (2008), *Destination Marketing: An Integrated Marketing Communication Approach*, Butterworth-Heinemann. • World Tourism Organization (2007), *A Practical Guide to Tourism Destination Management*, Madrid: WTO.

Hellenic Mediterranean University School of Management and Economics Sciences Department of Business Administration and Tourism	
Course Title	**STATISTICS I (EC0NOMIC STATISTICS)**
ECTS	**6**
Level of Studies	Undergraduate
Tutor	Argiro Moudatsou-Associater Professor in Economics
E-mail	moudatsou@hmu.gr
Brief Description	The course provides foundation knowledge on quantitative analysis. The students learn to summarize and describe data, calculate probabilities using the binomial, Poisson and normal distributions, construct confidence intervals, perform basic tests of hypothesis, examine two variables for correlation, and use the least squares method for fitting regression equations to a set of data.

	1. Statistics and its Applications 1.1. Descriptive statistics 1.2. Inferential statistics **2. Frequency Distributions and Graphical Representations** 2.1. Summarizing and classifying data 2.2. Class intervals, class limits, and class marks 2.3. Class frequency, relative frequency and cumulative frequency 2.4. Histograms, bar charts and pie charts **3. Populations, Samples and Measures of Location and Variation of Raw and Grouped Data** 3.1. The mean, median and mode 3.2. The range, variance and standard deviation **4. Probability Distributions** 4.1. Random variables and their probability distribution 4.2. The binomial, and the Poisson distributions 4.3. The normal distribution and its applications **5. Sampling** 5.1. Sampling distribution of the mean 5.2. The central limit theorem **6. Confidence Intervals** 6.1 For one mean 7. Tests of Hypothesis 7.1 For one mean 7.2 For two means (Independent samples case) 7.3 For two means (Dependent samples case) 7.4 For independence of two qualitative/categorical variables. **8 Simple Linear Correlation and Regression**. 8.1 The correlation coefficient, the coefficient of determination and the test of linear relationship between two variables. 8.2 The least-squares method. 8.3 Determine the regression line and use it as a prediction tool. 8.4 Applications using EXCEL

	9. Multiple Linear Regression. 9.1 Determine the equation of a regression plane and use it as a prediction tool. 9.2 Calculation of the coefficient of multiple determination. 9.3 Calculation of the coefficient of partial determination.
Learning Outcomes	Upon successful completion of the course students are expected to have: • Knowledge of basic statistical concepts - and how to present statistical data • Knowledge to describe combine or identify (a) The basic continuous theoretical probability distributions, (b) The concept of sampling and sampling distribution, (c) Estimation of population parameter confidence interval, (d) The process and formulation of controls (e) The concept of the correlation between modeling and the investigation of a causal relationship between socio-economic actors **Skills related to:** (a) in calculating basic statistical measures (b) in, using numerators (c) in calculating linear correlation coefficient and simple regression parameters (d) Using Theoretical distributions (in particular of the Bionomic-distribution and the Poisson distribution) in solving practical problems. • Skills to be able to distinguish, explain or calculate and classify, probabilities of theoretical continuous probability distributions, probability of sampling distributions, population parameter confidence intervals, hypothesis tests, degree of correlation of two variables, parametric estimation, basic statistical evaluation of single and multiple regression models, **Ability to:** • Combine statistical data from companies and calculate key statistics and evaluate results • Be able to solve complex real and possibly unpredictable problems proving the knowledge and skills acquired from the course. To analyze, compose and finally formulate evaluative judgments on statistical issues of companies / organizations
Prerequisites	None
Assessment	Midterm Examination 30% Final Examination 70% The midterm examination is a 1.30 hours written examination on units 1, 2, 3, 4

	The final examination is a 2-hour written examination on all units
Teaching / Learning Methodology	Reading Course
Recommended Literature	Len Gill, Chris D. Orme & Denise Osborn (1997-2003) “Statistics for Economists” Enrico Giovannini -OECD: “Understanding Economic Statistics, an OECD perspective” https://www.oecd.org/sdd/41746710.pdf Marcelo Fernandes (2009) “Statistics for Business and Economics”
Information about the course	The course is assisted with material (theories and exercises) that will be posted at regular time intervals in the e-class Course website https://eclass.hmu.gr/courses/BAT189/ Office Hours : Monday 12.00-13.00 (SEDO 1rts flour, room 18)

Hellenic Mediterranean University School of Management and Economics Sciences Department of Business Administration and Tourism	
Course Title	**FOOD AND BEVERAGE MANAGEMENT**
ECTS	**5**
Level of Studies	Undergraduate
Tutor	Dr. George Triantafyllou
E-mail	triantafyllou@hmu.gr
Brief Description	Unit-1 : Brief knowledge of: a) Development of catering industry, job prospects and careers in the catering industry. b) Different types of catering establishments. c) Relationship of the waiter with – i) Customer, ii) Kitchen, and iii) Management. Unit-2 : Brief description and correct uses of : a) Different types of cutlery, crockery, silverware, flatware, halloware and glassware used in a standard catering establishment. b) Different types of equipment – Baine Marie, plate warmer, hot plates, microwave oven, ice cream machine, coffee machine, ice cube machine, side boards, dish washing machine, glass washing machine. c) Special equipment – Nut cracker, grape scissors, Oyster service, caviar, lobsters, snails, cheese. Cigar cutters, wine bottle openers, gueridon equipment. d) Different types of restaurant linen, exchange and requisition systems. Unit-3 : Preparation of the restaurant – Mis-en-place & mis-en-scene, rules for laying of table and waiting. Useful tips for Food/Beverage service. Restaurant vocabulary – English and French. Unit-4 : Various forms of a meal courses: Hors d' oeuvres, Potege, Poisson, Entrée, Releve (main), Sorbet, Roti, Legumen, Entrement, Savoury, Desserts and Cafe. Unit-5 : Table Sauces – accompliments/garnishes.

	Unit-6 : Meals and Menu planning – Different types of Menus – (a) Table d'hote, (b) A'la carte, (c) State Banquets, (d) Buffet – cold/hot spreads, for various types of function. Unit-7 : Different forms of service – Russian, American, French, Indian and English. Unit-8 : Staff organisation of F&B Deptt., and inter & intra departmental coordination. Unit-9 : Silver polishing methods – (a) Polivit method, (b) Plate powder, (c) Burnishing method. Unit-10: Significance of pantry & still room in F&B operation, Functions of pantry and sections of pantry. Unit-11: Kitchen stewarding. Broad specifications of light and heavy duty equipment, Restaurant, Pantry and Still room equipment. Unit-11: Modern trends in the Hotel and Catering industry: - Ecotels - Fast Food outlets - Adventure Tourism - Theme Restaurants - Welfare Catering PRACTICALS : Hygienic handling of cutlery, crockery, glassware and trays. Laying and relaying of table cloth during and before meals. Correct use of waiter's cloth runners, Napkins and Napkin foldings. Mise-en-scene and Mise-en-place for various types of meals and menus. Correct handling and practice of service spoons and service forks, silver service. Serving and clearing of a meal (course by course). Table d'hote menus, laying for cover and service for lunch and dinner, preparation & service of tea, black coffee, turkish coffee, cona coffee, espresso coffee. Receiving and seating the guests, presenting menu cards and taking the order from guests and writing of KOT. Passing the order to the Kitchen & pickup. Making and presentation of a bill. Organising parties and functions – Buffets & Banquets. Indian and Chinese food service procedures. Daily briefing and system of tips/distribution.
Learning Outcomes	A Student will be able to: • Will know factors that play role in the development of the food and beverage industry. • Can explain social and economic reasons in the development of food and beverage industry. • Can classify the types of food and beverage operations.

	• will know the difference of food and beverage operations management. • Explains the management process in the food and beverage operations. • Knows managerial roles. • Can explain the cycle of food and beverage. • Can control purchasing, receiving, and storage process. • Makes the production and cost control. • Makes the revenue control • Can explain sales and marketing operations. • Knows the techniques of advertising and personal selling. • Can do promotion and public relations.
Prerequisites	None
Assessment	**100% Individual Assignment (100% assignment)**
Teaching / Learning Methodology	**Independent learning**
Recommended Literature	- Cichy Ronald F., Hickey Philip J. Jr., *Managing service in food and beverage operations* - Ninemeier Jack D., *Management of food and beverage operations* - Ninemeier Jack D., *Planning and control for food and beverage operations* - Cousins John, *Food and beverage management.* - Bernard Davis, Andrew Lockwood, Sally Stone, *Food and Beverage Managemen*t - Dittmer Paul R., *Principles of Food, Beverage, and Labor Cost Controls* - Kasavana M., Smith D., (1982), *Menu Engineering - A Practical Guide.* Lansing, - MI: Hospitality Publishers. - Seaberg, A.G., (1983), *Menu design, merchandising and marketing,* Boston, Mass.: CBI..

Hellenic Mediterranean University School of Management and Economics Sciences Department of Management Science and Technology	
Course Title	**New Technologies in Marketing**
ECTS	**5**
Level of Studies	Undergraduate
Tutor	Dr. George Mastorakis, Associate Professor
E-mail	gmastorakis@hmu.gr
Brief Description	This course provides an introduction to digital marketing. The course covers all major digital platforms, such as mobile and social media. The following topics are covered: The decision support marketing with the help of IT systems Decision support expert systems Database marketing and CRM (Customer Relationship Management) Marketing and media Marketing and web (online marketing) Development plan for online marketing Web promotion / advertising, web site traffic analysis systems The course also addresses the following key elements of e-marketing: • Traffic statistics (Web Analytics): importance of traffic analysis in the Internet, methods of measurement and analysis software.

	• Search Engine Optimization (SEO): reference to the Search Engines, in terms of their function and their importance in online marketing, methods and practices for web site optimization for search engines. • Promotion through Social Media (Social Media Marketing): methods and practices for carrying out promotional activities through social networks. • Digital Advertisement: web site design for digital forms of advertising, use of interactive display networks. • E-mail marketing: basic techniques for successfully carrying out promotional activities by e-mail.
Learning Outcomes	The objective of this course is to familiarize students with the information management systems in marketing, the e-Marketing technologies and the online Marketing techniques/methods. In addition, this course will expose students to digital marketing mainly for lead generation and retention activities in both business to business and business to consumer environments. By the end of this course, students will have the opportunity to: 1. learn the basics of digital marketing and the importance of the offer, list and creative in response rates 2. develop a comprehensive digital marketing strategy 3. learn through doing how to use new media such as mobile, search and social networking; learn the measurement techniques used in evaluating digital marketing efforts 4. learn the importance of ongoing reading and following of industry publications given the dynamic and rapidly changing digital landscape 5. understand and know the ethical and legislation impacting digital marketing
Prerequisites	None
Assessment	100% Individual Assignment
Teaching / Learning Methodology	Independent learning Office meetings with the tutor

Recommended Literature	• Agrawal, Smita. "The impact of emerging technologies and social media on different business (es): Marketing and management." In Maximizing Business Performance and Efficiency Through Intelligent Systems, pp. 37-49. IGI Global, 2017. • Huang, Ming-Hui, and Roland T. Rust. "A strategic framework for artificial intelligence in marketing." Journal of the Academy of Marketing Science 49, no. 1 (2021): 30-50. • Krasnov, Alex, Valentin Nikonorov, and Marina Yanenko. "Digital platforms based marketing innovations: new development trends." In SHS Web of Conferences, vol. 44, p. 00049. EDP Sciences, 2018. • Cvitanović, Petra Leonora. "New technologies in marketing as competitive advantage." In 2018 ENTRENOVA Conference Proceedings. 2018. • Arkhipova, Nadezhda, Alan Abaev, and Madina Gurieva. "Digital Technologies as a Factor in the Development of Modern Marketing." In 3rd International Conference on Economics, Management, Law and Education (EMLE 2017), pp. 30-33. Atlantis Press, 2017. • Kumar, V., Divya Ramachandran, and Binay Kumar. "Influence of new-age technologies on marketing: A research agenda." Journal of Business Research 125 (2021): 864-877. • Day, George S. "Organizing Marketing for an Era of Digital Turbulence." Handbook of Advances in Marketing in an Era of Disruptions: Essays in Honour of Jagdish N. Sheth (2018): 135.

Department of Electrical and Computer Engineering

HERAKLION

See below the Description of the lessons provided in English

https://iroen.hmu.gr/informatics-engineering-courses-available-in-english/

See below the Lessons provided in English for the Master (Msc in Informatics Engineering) for the Winter Semester

https://www.hmu.gr/mscie/en/%CF%83%CE%B5%CE%BB%CE%AF%CE%B4%CE%B5%CF%82-%CE%BC%CE%B5%CE%BD%CE%BF%CF%8D/1st-semester-0

See below the Lessons provided in English for the Master (Msc in Informatics Engineering) for the Spring Semester

https://www.hmu.gr/mscie/en/%CF%83%CE%B5%CE%BB%CE%AF%CE%B4%CE%B5%CF%82-%CE%BC%CE%B5%CE%BD%CE%BF%CF%8D/2nd-semester-0

Department of Mechanical Engineering

HERAKLION

Mechanical Drawing II

Course Description

Course Title	**Mechanical Drawing II**
ECTS	**5**
Prerequisite/ Corequisite	--
Semester	2nd (spring)
Objectives	The **Mechanical Drawing II - CAD** aims to utilize and deepen the existing basic knowledge, standardizations and regulations, acquired in the Mechanical Drawing I and their applications in integrated Mechanical Drawings. The students will be invited to realize drawings of assemblies of mechanical devices.
Intended Learning Outcomes	The aim of the course of the **Mechanical Drawing II - CAD** is to offer to the students the opportunity to apply the rules of the Mechanical Drawing and the standardization of machine elements and parts, in order to acquire the ability and the skills: • to know in depth the international regulations of standardization of the Mechanical Drawing, • to understand complex mechanical drawings and assemblies, as a composition of the individual parts, • to ttransform their thoughts, ideas and calculations into engineering drawings regardless of the degree of complexity • to make the desired or necessary corrections, upgrades and modifications of complex mechanical devices • to prepare complex mechanical drawings in appropriate design software. In Engineering Drawing II - CAD, the students are trained in depth, in 2D computer aided design using the AutoCAD platform.
Indicative Syllabus	Preparation of 13 engineering drawings and assemblies for the implementation of all the following modules: 68. Tolerances in the mechanical drawing.

	69. Welding and design of welded structures. 70. Drawings of machine elements and parts of any kind. 71. Search and use templates and machine component catalogs. 72. Views, sections and half sections of assemblies. 73. Drawings of mechanical assemblies using normalized machine elements (threads, screws, shafts, bearings, gears, pulleys, springs, seals, piping, reducers, welds).
Teaching/Learning Methodology	**Tutorial:** Mechanical drawings of typical mechanical engineering assemblies.
Assessment Methods in Alignment with Intended Learning Outcomes	Weekly Drawings: 100%
Students' Working Load	Tutorials 40 hrs Homework 60 hrs Self study 50 hrs In total 150 hours → 5ECTS
Reading List and References	• Manual of Engineering Drawing: British and International Standards, Colin H. Simmons, Dennis E. Maguire, Neil Phelps. • Engineering Drawing, N S Parthasarathy, Vela Murali. • Learn AutoCAD!: Mechanical Drawing Using AutoCAD® 2017, David Martin. • AutoCAD 2007 Introduction to mechanical drawing and tutorial examples, BEN SHE.YI MING.

HEAT TRANSFER II

Course Title	**Heat Transfer II**
ECTS	**5**
Prerequisite/ Corequisite	Heat Transfer I, Thermodynamics I, Physics I
Semester	7
Objectives	The course presents a detailed description of conduction, convection and radiation. It is mainly focused on 1-D and 2-D steady state and transient systems. A significant part of the course is dedicated to radiation (properties and radiation exchange between surfaces), view factors and thermal resistance circuits. Heat exchangers and basic storage units theory is also covered as a means for studying and finally selecting appropriate heat exchangers.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a) understand the basic concepts of conduction, convection and radiation. b) perform combined studies of all heat transfer modes in various environments (houses, factories, etc.). c) calculate heat loss from fins of uniform and non-uniform cross section. d) understand the basic concepts of thermal boundary layer and solve complicated thermal resistance circuits (Kirchhoff's law, view factors, black body radiation etc.). e) study the finally select the appropriate heat exchanger that suits specific and well-defined requirements.
Indicative Syllabus	1. Introduction (4 hours) ○ Introduction to conduction, convection, and radiation 2. 1-D heat transfer (8 hours) ○ Mathematical formulation of 1-D heat transfer ○ Example problems on various geometries 3. 2-D heat transfer (8 hours) ○ Mathematical formulation of 2-D heat transfer ○ Example problems on various geometries 4. Radiative hear transfer and view factors (8 hours) ○ Introduction to electromagnetic waves, Planck's radiation law and black body radiation

	○ Integral calculus and view factor computation of specific geometric configurations 5. Thermal resistance circuit (4 hours) ○ Kirchhoff's current law for heat transfer ○ Series and parallel thermal networks 6. Example problems on radiative heat transfer (8 hours) 7. Heat exchangers (8 hours) ○ Understanding heat exchangers, basic principles and design characteristics ○ Example problems on heat exchangers
Teaching/Learning Methodology	**Lecture:** the lectures are performed using PowerPoint presentations, lecture notes and textbooks on heat transfer. **Tutorial:** some of the lectures are specifically designed as tutorial classes where example problems will be presented and group discussions will assist the students in understanding the appropriate material.
Assessment Methods in Alignment with Intended Learning Outcomes	Mid-term exam: 30% Final exam: 70%
Students' Working Load	Lectures 48 hours Self-study 42 hours Homework 60 hours In total 150 hours → 5 ECTS
Reading List and References	4. Heat Transfer: Pitts and Sissom, Schaum's outlines 5. Introduction to Engineering Heat Transfer: Nellis and Klein, Cambridge University Press 6. Fundamentals of Heat and Mass Transfer: Incropera, DeWitt, Bergman and Lavine

SOLAR SYSTEMS

Course Title	Solar Systems
ECTS	**4**
Prerequisite/ Corequisite	Physics
Semester	≥ 4
Objectives	This course aims to provide understanding of basic and advanced issues related to solar systems, including electromagnetic radiation from the sun, solar geometry, as well as design and dimensioning of photovoltaic systems and solar thermal systems.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: f) Study and assess of the solar potential of a specific place g) Analyze the basic characteristics of photovoltaic and solar thermal systems h) Characterize the long-term performance of solar thermal systems i) Dimension an autonomous or interconnected photovoltaic system j) Use software tools to estimate the energy production from photovoltaic and solar thermal systems
Indicative Syllabus	1.Solar radiation basics (1 hour) ○ Basic principles ○ Diffuse and direct solar radiation ○ Measurement 2. Solar geometry (4 hours) ○ Basic angles ○ Solar and civil time ○ Sun paths

	○ Estimation of extraterrestrial solar radiation and available solar radiation on Earth's surface 3. Solar thermal systems (5 hours) ○ Operation principle and basic parameters ○ Flat plate and evacuated tube collectors ○ f-chart method 4. Photovoltaic (PV) systems (6 hours) ○ Physics of a PV cell ○ Types of PV modules ○ Types and components of PV systems ○ Dimensioning of PV systems ○ Other issues related to PV systems (maintenance, etc)
Teaching/Learning Methodology	**Lecture:** Various applications of displays will be described using ppt presentations, demonstrating videos, and internet sites. The students are free to request help. The students are encouraged to solve problems and to use their own knowledge to verify their solutions before seeking assistance. **Exercises:** A set of problems about the main topics of the course will be arranged in the tutorial classes. The needed written exercises will differ on their initial data for each student.
Assessment Methods in Alignment with Intended Learning Outcomes	Written exercises: 20% Written Report: 60% Oral Presentation: 20% The basic assessment method will be a written project related to a specific topic in solar systems. The evaluation of this project will be based by the quality of the written report, the oral presentation, as well as the feedback with the students during the whole semester. Apart from this, students will also be evaluated by a number of written exercises that will cover the main sections of the course (solar geometry, solar thermal systems and photovoltaic systems).
Students' Working Load	Lectures 16 hours Written Report 80 hours Oral Presentation 2 hours Homework – Exercises 22 hours In total 120 hours → 4ECTS

Reading List and References	7. Duffie, John A., and William A. Beckman. Solar engineering of thermal processes, 4th edition. John Wiley & Sons, 2013. 8. Mertens, Konrad. Photovoltaics: fundamentals, technology and practice. 2013. 9. Häberlin, Heinrich. Photovoltaics: system design and practice. John Wiley & Sons, 2012. 10. Lynn, Paul A. Electricity from sunlight: an introduction to photovoltaics. John Wiley & Sons, 2011.

MACHINE ELEMENTS II

Course Title	**Machine Elements II**
ECTS	**5**
Tutor	Vairis Achilleas
Semester	**Autumn semester**
Objectives	• Gears • Belts • Chains
Indicative Syllabus	The recommended book for studying is "Mechanical Engineering Design" by Shigley and Mischke Evaluation Methods /
Assessment Methods in Alignment with Intended Learning Outcomes	Students have to complete in time assignments which are issued for every chapter. Written exams are given at the end of the course. Pass mark is set at 50 %.

MECHANICAL DESIGN I

Course Title	**Mechanical Design I**
ECTS	**5**
Tutor	Petousis Markos
Prerequisite/ Corequisite	
Semester	**Autumn semester**
Objectives	Aims in integrating basic mechanical engineering knowledge for the processing of technical problems related with the products design. Basic mechanical engineering knowledge, such as mechanical drawings, materials technology, mechanics, materials strength, machine elements and manufacturing technologies, are combined in an applied level for the design and development of a new or the redesign of an existing mechanical product. Understanding the industrial design stages (from the conceptual design, to the process of the idea and the evaluation of the prototype) is achieved from the students with the implementation of a mechanical design project through decision making processes.
Intended Learning Outcomes	The student who has successfully completed the Mechanical Design I class, will have the ability to: • Analyze a technical problem related to the design of a mechanical product • Seek ideas that lead to the solution of a technical problem • Select the optimum solution and covert it to a mechanical setup • Implement full design of the mechanical setup • Manufacture a prototype model for the mechanical setup • Present the developed solution of the technical problem studied. For the project implementation students employ advanced products design, analysis and prototype manufacturing methods, such as CAD/CAM/CAE software tools and 3D printers.
Indicative Syllabus	Class contents 1. The mechanical design process 2. Technical problems formulation and analysis 3. Collection and processing of information 4. Specifications list5. Conceptual Design 6. Synthesis and evaluation of technical solutions 7. Development and design of a technical solution - Materials, parts, standardization - Loads, construction analysis - Kinematics, mechanisms - Safety - Manufacturing and production - Assembly - Maintenance, reliability - Aesthetics, ergonomics - Billing - Innovation - Design optimization 8. Production systems and processes selection 9. Organizing and administration of working groups 10. Mechanical design software tools in the computer

MECHANICAL DESIGN II

Course Title	**MECHANICAL DESIGN II**
ECTS	**5**
Tutor	Petousis Markos
Prerequisite/ Corequisite	-
Semester	**Autumn semester**
Objectives	Mechanical Design II scopes in applying and expanding the basic engineering knowledge already acquired during previous semesters in order to: • advance his mechanical engineering education, a fundamental requirement for any professional engineer and • Overall management of a technical design problem of a mechanical part or device.
Intended Learning Outcomes	The appropriate combination of basic Engineering knowledge aims to the design of a new product or the redesigning an existing one. Understanding the stages of industrial design (from conception and elaboration of the idea, to the fabrication and evaluation of a prototype) is carried out as a group effort within a student design team.
Class Contents	1. The conceptual design processes. 2. Formulation and analysis of engineering problems. 3. Information Collection – Processing. 4. Specification list. 5. Composition - Review of technical solutions. 6. Development – Optimal Design of a technical solution. 7. Design organization and administration
Students' Working Load	Semestrial Project: Conceptual design of a machine or mechanism Project thesis and presentation

VIBRATION AND MACHINE DYNAMICS

Course Title	**Vibration and Machine Dynamics**
ECTS	**5**
Tutor	Papadakis Nikos
Prerequisite/ Corequisite	-
Semester	**Autumn semester**
Course description	The analysis of motion, velocity, acceleration, and forces in mechanisms and machines. Emphasis is placed on the modelling of the physical system. Additionally analytical methods suitable for hand calculation, computerized analysis and preliminary design studies. Special emphasis is place on Vibration isolation. Also an introduction to vibration theory, including the modeling and analysis of oscillatory phenomena found in linear discrete and continuous mechanical systems.
Course Chapter	Topics Covered 1. Review kinematics and kinetics of particles. 2. Single degree of freedom systems a. Vibration for mass-spring system, natural frequency. b. Rotational vibration (Systems involving pendulums). c. Finding the stiffness of complicated systems and real life components. d. Equation of motions for complicated vibratory systems. e. Damping in 1-DOF systems. f. Forced vibration (Applied force and also unbalanced rotation), and resonance. g. Forced vibration (Base Excitation) h. Transient response (convolution integral) i. Solution approaches (numerical, laplace, transfer functions) 3. Two degree of freedom systems 4. Modelling of multiple degree of freedom systems a. Free vibrations of MDOF systems b. Forced vibrations of MDOF c. Vibration of Continuous System

STATISTICS AND PROBABILITY

Course Title	**Statistics and probability**
ECTS	**5**
Tutor	Papadakis Nikos
Prerequisite/ Corequisite	-
Semester	**Spring semester**
Objectives	Introduction to probability and statistical inference. Topics include sample spaces, conditional probability and Bayes' rule, random variables, discrete and continuous probability distributions, expectation, estimation, and hypothesis testing. The course objective is to provide a foundation in probability theory and statistical inference to solve applied problems and to prepare for more advanced courses.
Intended Learning Outcomes	The course aims to impart to students theoretical knowledge and experience in practical application on probability theory, statistics and the basic concepts of stochastic analysis. Upon successful completion of the course the student will be able to: • Clearly explains concepts of statistics and probability • calculate quantities for probability distributions and random variables • Performs statistical calculations. • develop probabilistic and statistical models for certain applications, to compose approaches to problem solving in the science of engineering (in the strength of materials, production).
Indicative Syllabus	1. Descriptive statistics (13 hours) - Quantitative and Qualitative Variables - Description of Qualitative and Quantitative Random variables (RV) - Percentiles, and distributions - Measures of location - Measures of distribution - Summarizing Data - Chebychev and Markov inequalities - Multi Variate distributions - Correlation and Regression

	- Transformation of RV. 2. Probability (13 hours) - Conditional probability - Discrete distributions: Binomial Hypergeometric, geometric - Distributions with memory - Central Limit Theorem. - Random Samples and Accuracy 3. Inference (13 hours) - Estimation of unknown parameters - Hypothesis Testing Introduction - One and two sample tests - Dependent Sample tests - Chi-squared Distribution and tests - Intro to ANOVA Intro to Statistical Process Control
Teaching/Learning Methodology	**Lecture:** the fundamentals of *statistics and probability* will be described using ppt presentations, demonstrating videos, Internet. The students are free to request help. The students are encouraged to solve problems and to use their own knowledge to verify their solutions before seeking assistance. **Tutorial:** a set of problems and group discussion topics will be arranged in the tutorial classes. Students are encouraged to solve problems before having solutions.
Reading List and References	▪ Douglas C. Montgomery and George C. Runge, "*Applied Statistics and Probability for Engineers"* ▪ Ronald Walpole "*Probability & Statistics for Engineers & Scientists*". ▪ Mendenhall W. & Sincich T., "Statistics for the Engineering and Computer Sciences", Collier Macmillan Inc., Canada, 1988.

MACHINE ELEMENTS I

Course Title	**Machine Elements I**
ECTS	**5**
Tutor	Vairis Achilleas
Semester	**Spring semester**
Objectives	The course covers the following topics: Permanent Joints Non permanent joints Bearings Clutches Shafts Flexible joints Springs
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. understand common technologies to produce Permanent Joints and design using them b. understand common technologies to produce Non-permanent joints and design using them c. understand the use of Bearings and design assemblies with them d. understand the use of Clutches and design assemblies with them e. understand the use of Shafts and design assemblies with them f. understand the use of Flexible joints and design with them g. understand the use of Springs and design with them
Indicative Syllabus	1. Welding, Bonding, and the Design of Permanent Joints (1 week) 2. Non-permanent joints (screws, fasteners) (1 week) 3. Bearings (rolling contact) (1 week) 4. Lubrication and journal bearings (1 week) 5. Clutches, Brakes, Couplings and Flywheels (1 week) 6. Shafts (1 week) 7. Flexible joints (1 week)

	8. Springs (1 week)
Assessment Methods in Alignment with Intended Learning Outcomes	Continuous assessment: 20% Final exam: 80% Continuous assessment consists of assignments and mid-term test. The continuous assessment will assess the students' understanding of basic concepts and principles in using machine elements, through problems.
Reading List and References	1. Mechanical engineering design, by Shigley, Joseph Edward.Boston, Mass. : McGraw-Hill, c2001. (it can be found in Heraklion library @ TJ230 .S55 2001) 2. Shigley's mechanical engineering design, Budynas, Richard G. (Richard Gordon) New York : McGraw-Hill, c2011. (it can be found in Heraklion library @ TJ230 .S5 2011) 3. Fundamentals of machine elements, by Hamrock, Bernard J. Boston : McGraw-Hill, Higher Education, c2005. 4. Mechanical design, Childs, Peter R. N., Amsterdam : Boston : Elsevier, c2004. 5. Design of machine elements, by Spotts, Merhyle Franklin, Englewood Cliffs, NJ : Prentice Hall, 1971. 6. Machine design calculations reference guide, New York : McGraw-Hill, c1987. 7. Schaum's outline of theory and problems of machine design, by Hall, Allen Strickland, New York : McGraw-Hill, c1961. 8. Machine design, by Black, Paul H. (Paul Howard), New York : McGraw-Hill; 1955. 9. Design of machinery : an introduction to the synthesis and analysis of mechanisms and machines, Norton, Robert L., Boston, Mass. : McGraw Hill, 2001. 10. Engineering design : a systematic approach / G.Pahl,W. Beitz;translated by Arnold Pomerans and Ken Wallace,edited by Ken Wallace. 11. Engineering considerations of stress, strain, and strength / [by]Robert C. Juvinall 12. Konstruktionslehre : handbuch fur studium and praxis/ Gerhard Pahl, Wolfgang Beitz. 13. Konstruktionslehre :grundlagen / Dietrich Schlottmann. 14. Mechanism design: analysis and synthesis / Arthur G. Erdman, George N. Sandor. 15. Designing cost-efficient mechanisms: minimum constraint design designing with commercial componets and topics in design enginneering/Lawrence J.Kamm. 16. Machine Design for mobile and industrial applications / By Gary ,Krutz, John K.Schueller and Paul W.Glaar

MECHANICS II- APPLIED DYNAMICS

Course Title	**Mechanics II - Applied Dynamics**
ECTS	**5**
Tutor	Papadakis Nikos
Prerequisite/ Corequisite	-
Semester	**Spring semester**
Objectives	This course is an introduction to the dynamics and vibrations of lumped-parameter models of mechanical systems. Topics covered include kinematics, force-momentum formulation for systems of particles and rigid bodies in planar motion, work-energy concepts, virtual displacements and virtual work. Students will also become familiar with the following topics: Lagrange's equations for systems of particles and rigid bodies in planar motion, and linearization of equations of motion. The objective of the course is to provide basic knowledge of engineering dynamics to the students such that they can understand the basics of kinematics and kinetics for both particles and rigid bodies and their motion.
Intended Learning Outcomes	The aim of the course is to introduce the student to the basic principles of the dynamics of material point systems and rigid bodies. Upon successful completion of the course the student will be able to: - recognizes the basic of kinematic and dynamic concepts in engineering problems - Evaluates the effect of forces on the motion of bodies in relation to the center of gravity and the moment of inertia. - Calculates the rotational and translational motion of a body under the influence of forces. - Develop equations of motion - Application of vector engineering theorems for solving complex motion problem Evaluation of the change of the kinetic state through the principles of work-energy and Impulse-Momentum
Indicative Syllabus	**Introduction** **Kinematics of Particles** - Velocity and acceleration - Linear and Curvilinear motion - Coordinate Systems (Cartesian, Polar, Tangential-normal, spherical) **Dynamics of Particles** - Newton second law

	- Linear and angular momentum - Conservative systems - The principle of momentum conservation - Impulse, impulsive motion, and impact - Motion of center of gravity - Orbital mechanics **Kinematics of Rigid Bodies** - Planar motion of rigid bodies - General 3d motion - Mechanisms - Rotating Frames of Reference - Coriolis - Instantaneous centers **Dynamics of Rigid Bodies** - Equations of motion - Linear and Angular Momentum conservation - Work-Energy principle - Convervation of energy principle - Impulse momentum conservation **Mechanical Vibrations** - Equation of motion for the simple harmonic oscillator - Free vibrations, eigenfrequency - Damped free vibration, damping ratio - Forced Vibrations
Teaching/Learning Methodology	**Lecture:** the fundamentals of *applied dynamics* will be described using ppt presentations, demonstrating videos, Internet. The students are free to request help. The students are encouraged to solve problems and to use their own knowledge to verify their solutions before seeking assistance.

	Tutorial: a set of problems and group discussion topics will be arranged in the tutorial classes. Students are encouraged to solve problems before having solutions.
Reading List and References	▪ Ferdinard P.Beer and E.Russell Johnston,Jr., Vector Mechanics for Engineers: Statistics and Dynamics, Fifth Edition, McGraw-Hill, 1988. ▪ R.C. Hibbeler, Engineering Mechanics: Statistics and Dynamics, Sixth Edition, MacMillan Publishing Company, USA 1992

Department of Music Technology & Acoustics

School of Music & Optoacoustic Technologies

RETHYMNO

https://mta.hmu.gr/

Description of (B.Sc) courses offered in English

WINTER SEMESTER									
Module Code	X	Module Title	Number of teaching hours/week				ECTS	Semester	Responsbile
			Θ	A	E	Total			
0807.3.004.1	Y	Programming Environments for Sound & Music	2	2		4	7	3rd	S. Paschalidou pashalidou@hmu.gr
0807.3.001.1	Y	Electroacoustics	2	1		3	6	3rd	N. Stefanakis nstefana@hmu.gr
Total Winter Semester courses offered in English (Y & EY)			**4**	**3**		**7**	**13**		

SPRING SEMESTER									
Module Code	**X**	**Module Title**	**Number of teaching hours/week**				**ECTS**	**Semester**	**Responsbile**
			Θ	**A**	**E**	**Total**			
0807.2.004.1	Y	Structured Programming	2	2		4	7	2nd	C. Alexandraki chrisoula@hmu.gr
0807.8.002.1	E Y	Selected topics in acoustics	2	2		4	6	8th	S. Kouzoupis skouzo@hmu.gr
Total Spring Semester courses offered in English (Y & EY)			**4**	**4**		**8**	**13**		

Abbreviations:

Θ: Theory, **A:** Practical sessions, **E:** Lab.

Course type (X): Y: Compulsory, **EY:** Compulsory with options, **Π:** Elective

COURSE TITLE	*Programming Environments for Sound & Music*		
COURSE CODE	0807.3.004.1	**SEMESTER**	3rd / Winter
COURSE PROMOTER	Dr. Stella Paschalidou [2021]		

TEACHING ACTIVITIES	**HOURS PER WEEK**	**ECTS**
LECTURES	2	
PRACTICAL SESSIONS	2	
TOTAL	4	7

TYPE OF COURSE	Compulsory
PREREQUISITE COURSES	No
TEACHING LANGUAGE	Greek/English
OFFERED TO ERASMUS STUDENTS	Yes

AIMS & OBJECTIVES

The course aims at getting students acquainted with audio programming environments and providing them with the basic understanding and skills of audio programming. This can be considered as an introductory course in digital audio synthesis, as it covers rudimentary knowledge on digital sound and computer music. No prior computer programming skills are required. More specifically, the course offers fundamental knowledge on the following subjects: - computer music - digital sound - digital sound synthesis - GUIs and audio interactive systems.
LEARNING OUTCOMES
By completion of this course, students will be familiar with the theoretical background required for understanding basic sonic algorithmic processes and will have gained skills to develop their first computer music synthesis and sonic interaction algorithms in (mainly, but not exclusively) graphical audio programming environments.
COURSE CONTENT

- Introduction to audio programming environments and languages (graphical/modular versus textual)
- Bridging analog to digital sound
- Digital sound: sampling & quantization
- The concepts of Oscillators, Unit Generators, Wavetables and Signal flowcharts
- Interpolation functions over time for sound control (amplitude envelopes, glissandi)
- Stereo imaging and panning
- Additive synthesis (example: Bell by Jean-Claude Risset)
- LFOs for tremolo and vibrato
- Real-time sound control and interaction (mouse and MIDI controllers)
- Overview and comparison of audio programming environments

Indicative audio programming environments used during practical sessions: MaxMsp / PureData, Supercollider.

RECOMMENDED LITERATURE

[1] Online course material and hand-outs ('E-class' online platform)
[2] Διαμαντόπουλος Τ., Η μουσική των υπολογιστών
[3] Λώτης Θ., Διαμαντόπουλος Τ., Μουσική πληροφορική και μουσική με υπολογιστές
[4] Roads C., The Computer Music Tutorial
[5] Dodge C., Jerse T., Computer Music: Synthesis, Composition, and Performance
[6] Collins N. & d'Escrivan J., The Cambridge Companion to Electronic Music
[7] Wilson S., Cottle D, Collins N., The Supercollider book

COURSE TITLE	***Electroacoustics***		
COURSE CODE	0807.3.001.1	**SEMESTER**	3rd / Winter
COURSE PROMOTER	Dr. Nikos Stefanakis [2021]		

TEACHING ACTIVITIES	**HOURS PER WEEK**	**ECTS**
LECTURES	2	
PRACTICAL SESSIONS	1	
TOTAL	3	6

TYPE OF COURSE	Compulsory
PREREQUISITE COURSES	No
TEACHING LANGUAGE	Greek/English
OFFERED TO ERASMUS STUDENTS	Yes

AIMS & OBJECTIVES

This course presents the basic theoretic principles related to the design, operation and combination of analog sound systems and electroacoustic transducers.

LEARNING OUTCOMES

The student will understand the basic functionality and usefulness of the most basic analog sound systems. He/she will learn to interpret basic specifications of commercial systems and predict cause and effect relations in the electroacoustic chain. He/she will become able to perform basic calculations with electroacoustic quantities and learn how to exploit such calculations for driving choices relating to the design of electroacoustic installations. Finally, the student will become familiar with the study of electro-mechano-acoustical circuits and will learn how to apply basic electrical circuit theory in order to analyze the behavior of microphones and loudspeakers.

COURSE CONTENT

The course covers several theoretical and practical aspects including:

1) sound propagation and radiation in the free field
2) design and operation of the electroacoustic transducers and factors that affect their behavior
3) the importance and the role of several sound systems in the electroacoustic chains such as the preamplifier, the equalizer, the compressor and the power amplifier,
4) the terminology and units related to the measurement of electrical and acoustical quantities,
5) cause and effect relations in analog sound systems and electroacoustic transducers
6) the description of analog sound signals in the time domain and in the frequency domain,
7) the combination of power amplifiers and loudspeakers

RECOMMENDED LITERATURE

[1] L. L. Beranek, Acoustics, American Institute of Physics (1986).

[2] G. Davis, G. and G.D. Davis, The sound reinforcement handbook. Hal Leonard Corporation (1989)

COURSE TITLE	***Structured Programming***		
COURSE CODE	0807.2.004.1	**SEMESTER**	2nd / Spring
COURSE PROMOTER	Dr. Chrisoula Alexandraki [2021]		

TEACHING ACTIVITIES	**HOURS PER WEEK**	**ECTS**
LECTURES	2	
PRACTICAL SESSIONS	2	
TOTAL	4	7

TYPE OF COURSE	Compulsory
PREREQUISITE COURSES	No
TEACHING LANGUAGE	Greek/English
OFFERED TO ERASMUS STUDENTS	Yes

AIMS & OBJECTIVES

This course focuses on algorithmic problem solving and algorithm implementation, thus aiming at the development of general reasoning and problem solving skills to fluently interpret and design structured procedures and rule systems.

LEARNING OUTCOMES

Specific objectives of the course focus on developing skills for:

a) Algorithmic thinking, i.e. how to analyse the solution to a given problem in a finite number of well-defined steps.
b) Algorithm implementation, i.e. how to transform an algorithm to a computer program and what are the best practices in coding, documentation and effective use of computer memory and processing power.
c) C Programming Language, i.e. acquaint students with one of the most fundamental programming languages. The course emphasizes on different concepts including variables, numerical operations, control structures, procedures, pointers, data structures and memory management.

COURSE CONTENT

Following are the titles of weekly lectures:

1. Introduction: Algorithms and Programs
2. Variable types, operands, program input/output
3. Flow Control Structures: sequence, selection, repetition
4. Arrays
5. Pointers, pointer operations, array-pointer relationship
6. Functions, call-by-reference, call-by-value, variable scope
7. Strings and string operations
8. Dynamic Memory Allocation
9. Data Structures
10. File operations

RECOMMENDED LITERATURE

[1] Programming in C. C, Kernighan B., Ritchie D., Pearson; 2nd edition, 1988.

[2] Programming in ANSI C. E. Balagurusamy, MC GRAW HILL INDIA; 8th edition, 2019.

COURSE TITLE	***Selected Topics in Acoustics***		
COURSE CODE	0807.8.002.1	**SEMESTER**	8th / Spring
COURSE PROMOTER	Dr. Spyros Kouzoupis [2021]		

TEACHING ACTIVITIES	**HOURS PER WEEK**	**ECTS**
LECTURES	2	
PRACTICAL SESSIONS	2	
TOTAL	4	6

TYPE OF COURSE	Elective
PREREQUISITE COURSES	0807.4.001.1, 0807.4.002.1
TEACHING LANGUAGE	Greek/English
OFFERED TO ERASMUS STUDENTS	Yes

AIMS & OBJECTIVES

Acquiring a good understanding of a certain acoustics branch. Typical acoustics areas could be: Musical acoustics, structural acoustics, room acoustics, bioacoustics, numerical acoustics e.t.c.

LEARNING OUTCOMES

Basic theoretical knowledge and experimental or numerical skills concerning a certain Acoustics topic.

COURSE CONTENT
This is a project oriented course. Students will pick a topic from a list of topics and write up a report, introducing the selected field, perform basic bibliographical survey and depending on the subject selected, engage in some simple experimental or numerical work.
RECOMMENDED LITERATURE
Depends on the topic selected.

DEPARTMENT OF NUSRING

HERAKLION

GENERAL INFORMATION			
SCHOOL	School of Health Sciences		
DEPARTMENT	Nursing		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE		SEMESTER	8th
COURSE TITLE	NURSING PRACTICE IN HOSPITAL (INTERNSHIP)		
TEACHING ACTIVITIES	HOURS PER WEEK	CREDITS	
(weekly work in hospitals, or community health settings).	40	5	
TYPE OF COURSE	Obligatory / Nursing		
PREREQUISITE COURSE	1. Medical Nursing I - II 2. Surgical Nursing I - II 3. ICU Nursing 4. Emergency Nursing		
TEACHING LANGUAGE	Greek		
OFFERED TO ERASMUS STUDENTS	Yes		
ONLINE COURSE PAGE (URL)			

LEARNING OUTCOMES

Practical Training: the main object is to consolidate and expand the knowledge and skills acquired during Practical Nursing Internship, so that they can realize the professional nursing role without special guidance from the supervisor.
Upon successful completion of the course, students will be able to:

• Consciously associate the theoretical approaches of Nursing with clinical implementation, having the capacity of an integrated clinical environment. • Have developed professional role awareness through responsibility, initiative development, development of interdisciplinary cooperation, respecting the principles and values of Nursing Science. • Use the knowledge and skills acquired during the training as well as the opportunities offered by the Organization to help, prevent, ant treat patients, families, groups and communities • Understand the role of the Nurses for investigating - identifying patients' needs, designing and submitting proposals for implementing nursing care plans. • Promote dynamics of self-help and activation of the population in order to meet needs in community settings. • Contribute to the development of the interconnection of Health Services in order to better meet the needs of the elderly and the community.
General abilities
• General Capabilities • Decision making • Autonomous Work • Teamwork • Working in an interdisciplinary environment • Design and Management of Projects, Interventions • Respect for diversity and multiculturalism • Exercise of critical thinking
CONTENT OF THE COURSE
The practical lesson " NURSING PRACTICE IN HOSPITAL (INTERNSHIP) consists of: 1. The course will be conducted in two hospitals located at Heraklion City (PAGNI & VENIZELIO). Also some months can be delivered in Primary Health Care Facilities in the Municipality of Heraklion. 2. The course aims to familiarize students with the implementation of nursing work in the framework of the operation of Nursing Organizations, to acquire a professional identity, to empower them so that they can function as nurses, achieving autonomy from the supervisor. Trainees make use of the knowledge and skills they have acquired during the training, as well as the opportunities offered by the Organization to identify, prevent, treat and address modern problems of individuals, families, groups and communities.
TEACHING and LEARNING METHODS – EVALUATION

DELIVERY METHODS	Participation in the daily nursing program in hospitals or primary care setting.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	• Support Learning Process via the e-class platform • Communicating with students via email	
WAYS OF TEACHING	**Activities**	**Workload of semester**

	Practical Exercise	150	
	Writing reports	30	
	Total	***180***	
STUDENTS' EVALUATION	The presence of the student is necessary in both parts (Practice in the Organization and weekly group supervision) Required attendance rate of 80%, while the final grade of the course is evaluated both. Required is the fulfillment of specific educational criteria, according to the expected learning outcomes. Educational evaluation criteria are accessible to students in the e-class During the semester; the group supervises an intermediate assessment (including self-assessment of the student) as well as a final evaluation.		

RECOMMENDED LITERATURE

1. *Medical-Surgical Nursing, 10th Edition*
   by Donna D. Ignatavicius, MS, RN, CNE, CNEcl, ANEF, M. Linda Workman, PhD, RN, FAAN, Cherie R. Rebar, PhD, MBA, RN, COI and Nicole M. Heimgartner, DNP, RN, COI
2. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing (Brunner and Suddarth's Textbook of Medical-Surgical) 14th Edition*
3. *LeMone and Burke's Medical-Surgical Nursing: Clinical Reasoning in Patient Care 7th Edition*
   by Gerene Bauldoff, Paula Gubrud, Margaret Carno by Dr. Janice L Hinkle, Kerry H. Cheever
4. *A Textbook of Community Nursing, 2nd Edition*
   Edited by Sue Chilton, Heather Bain, Copyright Year 2018

DEPARTMENT OF NUTRITION AND DIETETICS
SITEIA

NUTRITION AND METABOLISM II

GENERAL INFORMATION			
SCHOOL	School of Health Sciences		
DEPARTMENT	Nutrition and Dietetics		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	YD211	**Semester**	4th
COURSE TITLE	**NUTRITION AND METABOLISM II (MACRONUTRIENTS)**		
TEACHING ACTIVITIES	**HOURS PER WEEK**	**CREDITS**	
Lectures	4	6	
TYPE OF COURSE	Mandatory		
PREREQUISITE COURSE	No		
TEACHING LANGUAGE	English		
OFFERED TO ERASMUS STUDENTS	Yes		
ONLINE COURSE PAGE (URL)	https://eclass.hmu.gr/courses/YD211/		

LEARNING OUTCOMES

Nutrients that are needed in large amounts are called macronutrients. There are three classes of macronutrients: carbohydrates, lipids, and proteins. Macronutrients are carbon-based compounds that can be metabolically processed into cellular energy through changes in their chemical bonds. The chemical energy is converted into cellular energy known as ATP that is utilized by the body to perform work and conduct basic functions. The course focuses on the interconversion of macronutrients, the energy they offer and how a nutritionist-dietitian can utilize them in the diet (glycemic index, glycemic load etc.).

General abilities

• In the context of this course:
• The trainee acquires knowledge in the individual metabolic pathways, which constitute the main possibilities of utilization of macronutrients, carbohydrates, lipids, proteins.

• The trainee understands the logic that governs the metabolic processes of macronutrients (carbohydrates, lipids, and proteins), their interaction and their utilization in the phenomenon of life.
• Finally the learner learns to organize, analyze and explain experimental data related to the macronutrients and functional components of food.

CONTENT OF THE COURSE

- The study of the role of the three main nutrients of food in the human diet. The need for their participation in the diet and to highlight their interactions at the metabolic level, as well as the problems created by their deficient or unbalanced intake.
- Structure and characteristics of carbohydrates. Digestion and absorption of carbohydrates. Contribution of carbohydrates to the structure and function of the human body. Glycemic Index, Glycemic Load, Satiety Index, Insulin Index, Applications in Modern Dietetics.
- Structure and properties of proteins-amino acids. Digestion and absorption of proteins. Human requirements for amino acid proteins, biological value of proteins, ways of calculating them. Protein sources, bioavailability of amino acids. Disorders of insufficient or excessive intake of proteins-amino acids.
- -Structure and properties of fats found in food, digestion and absorption of fats. Human needs for fats, essential fatty acids. Effect of fat intake and type of fatty acids on health. Problems with fat metabolism. Disorders related to unbalanced intake and fat metabolism.
- Study of digestion, absorption, bioavailability and metabolism of proteins, vitamins, minerals and water, as well as their interactions. Interactions between nutrients and metabolic intermediates. Effect of nutrient metabolism on body function. Individual energy requirements and body composition.

TEACHING and LEARNING METHODS – EVALUATION

DELIVERY METHODS: Face-to-face / In vivo - through internet during CONVID19 measures

USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

- Support of learning process through the asynchronous platform e-class
- Use of PowerPoint during lectures.
- Email, Skype (communication with students)

WAYS OF TEACHING

Activities	***Workload of semester***
Lectures (2X12)	52
Experiential activities	0
Homework	20
Reading	48
Overall	**120**

STUDENTS' EVALUATION

6. Final exam test by critical written questions
7. Homework and class presentations of group projects
8. Group Discussions
9. Self-Assessments
10. Attendance and Participation
11. Assessment criteria are referred upon e-class. Exam degrees are uploaded at e-class and exam papers are available to students.

RECOMMENDED LITERATURE
• Introduction to Nutrition and Metabolism 5th Edition, by David A. Bender, ISBN-13: 978-1466572249, ISBN-10: 1466572248 • Advanced Nutrition and Human Metabolism Sareen S. Gropper (Author) Jack L. Smith (Author), ISBN-13: 978-1133104056, ISBN-10: 1133104053 • Nutrition and Metabolism: An Integrated Approach, Evelyn Howard (Editor), ISBN-13: 978-1647400279. ISBN-10: 1647400279 • Understanding Nutrition and Metabolism, Elsa Holt (Editor), ISBN-13: 978-1641164207. ISBN-10: 1641164204 • Nutrition and Metabolism in Sports, Exercise and Health: Kang, Jie, 9781138687585

FOOD MICROBIOLOGY AND HYGIENE

GENERAL INFORMATION			
SCHOOL	School of Health Sciences		
DEPARTMENT	Nutrition and Dietetics		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	YD237	**Semester**	4th
COURSE TITLE	**FOOD MICROBIOLOGY AND HYGIENE**		
TEACHING ACTIVITIES	**HOURS PER WEEK**	**CREDITS**	
Lectures	4	5	
TYPE OF COURSE	Mandatory		
PREREQUISITE COURSE	No		
TEACHING LANGUAGE	English		
OFFERED TO ERASMUS STUDENTS	Yes		
ONLINE COURSE PAGE (URL)	https://eclass.hmu.gr/courses/YD237/		
LEARNING OUTCOMES			

The aim of the course is to teach students the sources of food contamination, the types of food hazards and how to deal with them in food establishments. The training of dietitians in matters of hygiene is a necessary condition for working in places where they directly or indirectly come into contact with food intended for eating. The course includes a laboratory with mandatory attendance for the final documentation of the training, according to the requirements of EFSA or relevant certification bodies for food safety.

General abilities

It is expected that upon completion of the course, students will be able to:
• Students acquire the basic knowledge of microbiology and food hygiene, focusing on the relationships of microorganisms with food and humans.
• Supervise the design and implementation of food safety and hygiene guidelines and food services.
• Correctly interpret the findings of recent scientific research on microbiology and food hygiene problems.
• Summarize and evaluate the literature on current research activity in food hygiene and microbiology

CONTENT OF THE COURSE

- The most important microorganisms in microbiology and food hygiene (fungi, yeasts, bacteria) -morphological, cultural, physiological and biochemical characteristics of them, reproduction, relationship with food and public health).
- Nutrition of microbes, their food types and effect of physicochemical factors on the growth and activities of microbes (temperature, pH, radiation, pressure).
- The growth of single-celled microorganisms and its parameters (number of divisions, generation time, growth rate, age of bacteria, curve and growth phases).
- Natural sources of food contamination (microflora of plants, animals, soil, water, air), food preservation principles (heat, cold, etc.).
- Microbiology, hygiene and control of water, milk, meat.
- Diseases transmitted through food contaminated with pathogenic microorganisms (foodborne infections and food poisoning - prevention measures).
- Protozoa important in microbiology and food hygiene.
- Metas important in microbiology and food hygiene.
- Viruses important in microbiology and food hygiene.

TEACHING and LEARNING METHODS – EVALUATION

DELIVERY METHODS	Face-to-face / In vivo - through internet during CONVID19 measures
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	▪ Support of learning process through the asynchronous platform e-class ▪ Use of PowerPoint during lectures. • Email, Skype (communication with students)
WAYS OF TEACHING	

Activities	***Workload of semester***
Lectures (3X12)	48
Experiential activities	0
Homework	24

	Reading	48
	Overall	**120**
STUDENTS' EVALUATION	12. Final exam test by critical written questions 13. Homework and class presentations of group projects 14. Group Discussions 15. Self-Assessments 16. Attendance and Participation 17. Assessment criteria are referred upon e-class. Exam degrees are uploaded at e-class and exam papers are available to students.	
RECOMMENDED LITERATURE		
• Food Microbiology and Hygiene 2nd ed. 1995 Edition, by Richard Hayes (Author), ISBN-13: 978-1461365747, ISBN-10: 1461365740 • Essential Microbiology and Hygiene for Food Professionals, By Sibel Roller, Copyright Year 2012, ISBN 9781444121490, Published April 27, 2012 by CRC Press • Encyclopedia of Food Microbiology, 2nd Edition, Editors: Carl Batt Carl A. Batt. Editor in Chief: Richard Robinson, eBook ISBN: 9780123847331 • Essential Microbiology and Hygiene for Food Professionals, BySibel Roller, Edition1st Edition, Imprint CRC Press, DOIhttps://doi.org/10.1201/b13524, Pages240, eBook ISBN9780429102783 • Essential Microbiology and Hygiene for Food Professionals Paperback – 27 April 2012, by Sibel Roller (Author), ISBN-10 1444121499		

DEPARTMENT OF SOCIAL WORK
HERAKLION

1.INTERPERSONAL RELATIONSHIPS AND WELL-BEING

GENERAL INFORMATION			
SCHOOL	School of Health Sciences		
DEPARTMENT	Social Work		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE		**Semester**	6th
COURSE TITLE	**INTERPERSONAL RELATIONSHIPS AND WELL-BEING**		
TEACHING ACTIVITIES		**HOURS PER WEEK**	**CREDITS**
	Lectures	3	5
TYPE OF COURSE	Optional		
PREREQUISITE COURSE	No		
TEACHING LANGUAGE	English		
OFFERED TO ERASMUS STUDENTS	Yes		
ONLINE COURSE PAGE (URL)	https://eclass.hmu.gr/courses/SW116/		

LEARNING OUTCOMES

This course will introduce the students to the psychology of human relationships. It will address knowledge and skills needed for positive relationships in community, family and career settings. Its primary focus will be romantic relationships, although other kinds of close relationships (e.g., family, friends, work relationships) will also be discussed. The goals of this course are: (1) to provide students with a comprehensive overview of the research in relationship psychology and of its underlying theories, (2) to help students acknowledge the significance of interpersonal relationships, (3) to help students discern those problem situations in which interpersonal skills are required, (4) to cope with unhealthy relationships and respond non-violently, with awareness and empathy, (5) to learn how to effectively apply knowledge in daily living. The course is largely experiential as it includes a lot of classroom activities.

Hopefully, by successfully completing this course the students will have the skills to:

- identify and describe the core theories involved in relationships research,

▪ interpret, critically evaluate, and discuss scientific research on relationships, ▪ acknowledge the significance of interpersonal relationships, ▪ develop a better understanding of self and others in terms of how we relate to others (self-Disclosure), ▪ have the skills needed to develop and maintain healthy interpersonal relationships, and ▪ apply knowledge to experiences from the daily life.
General abilities
▪ Independent work ▪ Teamwork ▪ Interdisciplinary work ▪ Respect of diversity and multicultural environments ▪ Accountability and sensitivity of gender issues ▪ Critical thinking and self-criticism ▪ Advancement of free, creative and inductive thinking
CONTENT OF THE COURSE
1st week: Introduction to the psychology of interpersonal relationships 2nd week: Relationships in modern society 3rd week: Impact on health, mental health, well-being and happiness 4th week: Psychological resilience and social networks 5th week: Theories of interpersonal relationships 6th week: Assessment of interpersonal relationships 7th week: Kindness and forgiveness 8th week: Stress, conflicts and conflict resolution 9th week: Infidelity, Betrayal and jealousy 10th week: Coercion, manipulation, exploitation and interpersonal violence 11th week: Interpersonal skills and coping strategies 12th week: Compassionate, empathetic or non-violent communication 13th week: Dissolution and Loss

TEACHING and LEARNING METHODS – EVALUATION	
DELIVERY METHODS	Face-to-face / In vivo
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	▪ Support of learning process through the asynchronous platform e-class ▪ Use of powerpoint during lectures. ▪ Use of video/DVD during lectures. • Email, fb, Skype (communication with students)

WAYS OF TEACHING	*Activities*	*Workload of semester*
	Lectures (3X13)	39
	Experiential activities	13
	Homeworks	20
	Reading	48
	Overall	**120**

STUDENTS' EVALUATION	
	1. Final exam test of **multiple choice type** 2. Homeworks and class presentations of group projects 3. Group Discussions 4. Self-Assessments 5. Attendance and Participation 6. Assessment criteria are referred upon e-class. Exam degrees are uploaded at e-class and exam papers are available to students.

RECOMMENDED LITERATURE

Armour, M. P., & Umbreit, M. S. (2005). The paradox of forgiveness in restorative justice. In E. L. Worthington Jr (ed.), Handbook of forgiveness. New York, NY: Routledge. Available online at http://fetzer.org/sites/default/files/images/Parodox_of_Forgiveness_in_RJ.pdf
Harvey, J. H., Pauwels, B. G., & Zicklund, S. (2001). Relationship connection: The role of mnding in the enhancement of closeness. In C. R. Snyder & S. J. Lopez (Eds.), The handbook of positive psychology (pp. 423-233). New York, NY: Oxford University Press.
Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. Journal of personality and social psychology, 52(3), 511-524.
Lyubomirsky, S (2011). The How of Happiness. A Practical Guide to Getting the Life You Want. New York: The Penguin Press
Lyubomirsky, S. (2013). The myths of happiness: What should make you happy, but doesn't, what shouldn't make you happy, but does. New York, NY: Penguin.
Wong, P. T. P. (2004). The healing power of forgiveness. Available online at http://www.meaning.ca/archives/presidents_columns/pres_col_dec_2004_healing-forgiveness.htm
Birtchnell, J., Newberry, M., & Kalairzaki, A. (Eds) (2016). Relating Theory: Clinical and Forensic Applications. London: Palgrave Macmillan.
Keltner, D. (2009). Born to be good: The science of a meaningful life. New York, NY: W. W. Norton & Company, Inc.
Tedeschi, R. G.. & Calhoun. L. G. (1996). The postraumatic growth inventory: Measuring the positive legacy of trauma. Journal of Traumatic Stress. 9, 455-471.
Ungar, M. (2008). Resilience across cultures. British journal of social work,38(2), 218-235. Available online at http://pss-forum-2013.repssi.org/download/Media/Ungar-%20resilience%20across%20cultures%20(1).pdf
Arnold, D., Calhoun, L. G., Tedeschi, R., & Cann, A. (2005). Vicarious posttraumatic growth in psychotherapy. Journal of Humanistic Psychology, 45(2), 239-263.
Park, C. L. (2010). Making sense of the meaning literature: an integrative review of meaning making and its effects on adjustment to stressful life events. Psychological bulletin, 136(2), 257-301. Available online at

http://www.researchgate.net/publication/41654706_Making_sense_of_the_meaning_literature_an_integrative_review_of_meaning_making_and_its_effects_on_adjustment_to_stressful_life_events/file/32bfe5124f7cac0c86.pdf

2.FIELD PRACTICE-SUPERVISION III

GENERAL INFORMATION			
SCHOOL	School of Health Sciences		
DEPARTMENT	Social Work		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE		**SEMESTER**	8th
COURSE TITLE	**FIELD PRACTICE – SUPERVISION III**		
TEACHING ACTIVITIES	**HOURS PER WEEK**	**CREDITS**	
(subject to 32 hours of weekly work with social organization activities)	3 hours group supervision	14	
TYPE OF COURSE	Obligatory /Social Work		
PREREQUISITE COURSE	5. Field Practical-Supervision III 6. Community Development & Social Work 7. Social Work with a Family		
TEACHING LANGUAGE	Greek		
OFFERED TO ERASMUS STUDENTS	Yes		
ONLINE COURSE PAGE (URL)			
LEARNING OUTCOMES			

Practical Training - Supervision III main objective is to consolidate and expand the knowledge and skills acquired during Practical Laboratory Exercise II, so that they can realize the professional role of the social worker without special guidance from the supervisor / supervisor.
Upon successful completion of the course, students will be able to:
• Consciously associate the theoretical approaches of Social Work with implementation, having the capacity of an integrated cross-method approach. If the intervention concerns the individual-family, they deepen on counseling issues aimed at restoring social functioning, empowering a person-family. If community involvement goes deeper into community development strategies aimed at improving living conditions.
• Have developed professional role awareness through responsibility, initiative development, development of interdisciplinary cooperation, respecting the principles and values of Social Work.
• Use the knowledge and skills acquired during the training as well as the opportunities offered by the Organization to help prevent and address modern social problems of individuals, families, groups and communities
• Understand the role of the social worker in investigating - identifying social needs, designing and submitting proposals for implementing social programs at the local level.
• Use sources - programs (National, European Union programs) to meet social needs.
• Develop initiatives and promote innovation in the development and implementation of programs
• Promote dynamics of self-help and activation of the population in order to meet social needs.
• Contribute to the development of the interconnection of Social Services in order to better meet the needs of the community and the community
In relation to Surveillance III, students are expected to:
• Have developed an integrated ability to record and present (written and spoken) their work
• Associate theoretical knowledge with the implementation of social work
• Promote teamwork in the context of educational supervision
• Present their work to the supervisory team in a clear and comprehensive way
• Effectively deal with their own emotional involvement, attitudes and prejudices that affect their relationship with the Service's employees and staff
• They have developed a social worker identity

General abilities

- General Capabilities
- Decision making
- Autonomous Work
- Teamwork
- Working in an interdisciplinary environment
- Design and Management of Projects, Interventions
- Respect for diversity and multiculturalism
- Exercise of criticism and self-criticism
- Promoting free, creative and inductive thinking

CONTENT OF THE COURSE

The laboratory lesson "Practical Laboratory Exercise-Supervision III consists of:
1. Practical Laboratory Exercise III conducted in selected Social Services / Practice Exercises Organizations selected by the Department. Practical Laboratory III aims to familiarize students with the implementation of social work in the framework of the operation of Social Organizations, to acquire a professional identity, to empower them so that they can function as social workers, achieving autonomy from the supervisor. Trainees make use of the knowledge and skills they have acquired during the training, as well as the opportunities offered by the Organization to help prevent and address modern social problems of individuals, families, groups and communities.
2. The 3-hour Group II Supervision which supports Practical Laboratory Exercise III and is performed on a weekly basis by members of the faculty, EDIP and scientific associates (PD 407) of the Social Worker's Specialty.

TEACHING and LEARNING METHODS – EVALUATION

DELIVERY METHODS	Face to face, small supervision groups
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	• Support Learning Process via the e-class e-class platform • Communicating with students via email
WAYS OF TEACHING	

Activities	Workload of semester
Practical Exercise	200
Group supervision	50
Writing reports	30
Presentation of work	30
Study & Analysis of Literature	10
Case Study-Analysis	30
Individual / group exercises	30
Independent Study	40
Total	***420***

STUDENTS' EVALUATION	The presence of the student is necessary in both parts (Practice in the Organization and weekly group supervision) Required attendance rate of 80%, while the final grade of the course is evaluated both. Required is the fulfillment of specific educational criteria, according to the expected learning outcomes. Educational evaluation criteria are accessible to students in the e-class During the semester; the group supervises an intermediate assessment (including self-assessment of the student) as well as a final evaluation.

RECOMMENDED LITERATURE

Archondakis, Z, and Philippou, D. (2003). 205 Experiential Exercises for Group Involvement. Athens: Kastaniotis.
Yiotakos, O, Tsiliakou, M., Tsitsika, A. & Tsouvelas, G. (2014). New forms of child and adolescent abuse. Athens: Beta Medical Publications.
Collins, D., Jordan, C. & Coleman, H. (2017). Social Work with Family. Sci. Ep. C. Asimopoulos & S. Martinaki. Athens: Beta Publications.
Dimopoulou-Lagonika, M. (2007). Social Work Methodology - Intervention Models. Athens: Greek Letters.
Dimopoulou-Lagonika, M. (2007). Social Work Methodology - Intervention Models. Athens: Greek Letters

Hellenic Gerontological and Geriatric Society (2004). Elderly Parents Care Guide. Athens: Mendor.
Zaimakis, G. & Kandylaki, A. (eds.) (2005). Social protection networks: Forms of intervention in vulnerable social groups. Athens: Criticism.
Zoniou-Sideris, A. & Spandagou, H. (2011). Education and blindness. Collective. Athens: Field.
Zoniou-Sideris, A., Deropoulou-Derou, E. & Vlachou-Balafouti, A. (eds.) (2012).
Disability and educational policy. Critical Approach to Special and Inclusive Education. Collective work. Athens: Field.
Karagiannis, G. (2017). The disability in Greece of the crisis. Athens: Gutenberg.
Karagounis, B. (2008). Community work and local development. Athens: Place.
Kastoriadou-Papadopoulou, Ch. (2009). Social Work with Groups. Atanna: Hellenic -G. Patrikos & Co Ltd.
Kounti-Chronopoulou, K., Tedaki, M. & Passa, M. (eds.) (2015). The Contribution of Social Work to Psychiatric Therapeutics. A Psychiatric Clinic of the University of Athens, Eginiteio Hospital.
Collective Work. Coordinator G. Papadimitriou. Athens: Paris.
Marwedel, U. (2009). Gerontology & Gerontopsychiatry. Athens: Ion.
Moores, D. (2011). Education and deafness. Ep. A. Zoniou-Sideris & E. Deropoulou-Derou. Athens: Field.
Mosesidis, A., Anthopoulou, Th. & Dukken, M.N., (2002). The elderly in the rural area. Athens: Gutenberg. Oliver, M. (2009) .Understanding Disability - From Theory to Practice (2nd Edn).
Basingstoke: Macmillan.
Related scientific journals:
Social work
The Step of Social Sciences
Social Research Survey
Social Work
European Social Work
Community practice
British Journal of Social Work
Child & Family Social Work

3. DOMESTIC VIOLENCE AND SOCIAL WORK PRACTICE

School	School of Health Sciences		
Department	Social Work		
Level of study	Undergraduate		
Course code	YK70E3	SEMESTER	7th
Title of course	**DOMESTIC VIOLENCE AND SOCIAL WORK PRACTICE**		
TEACHING ACTIVITIES		**HOURS PER WEEK**	**CREDITS**
Lectures		**3**	
Total		**3**	**5**
TYPE OF COURSE	Optional		
PREREQUISITE COURSE	No		
TEACHING LANGUAGE	English		
OFFERED TO ERASMUS STUDENTS	Yes		
ONLINE COURSE PAGE (URL)			

LEARNING OUTCOMES

The lesson aims to raise students' awareness on domestic violence issues, to improve their knowledge and reinforce their skills in addressing and dealing efficiently with abused people in the health and social care settings. At the end of the course students should be able to:

- Gain understanding of the dynamics and consequences of violence
- Develop clinical skills needed to screen for violence, assess risk, provide counselling and document violent situations in charts and referrals.
- Understand the law implementation process for domestic violence cases and become aware of the referral resources and procedures.

GENERAL SKILLS

- Collection and synthesis of information
- Decision making
- Individual work
- Interdisciplinary work
- Professional responsibility
- Critical thinking
- Self-evaluation

CONTENT OF THE COURSE

- Theory of violence
- Risk factors and consequences
- Clinical indicators of domestic violence
- Clinical protocols and practice guidelines for the identification and management of domestic violence
- Cultural competency in responding to domestic violence victims
- Screening for domestic violence
- Interviewing basics, barriers to interviewing, sensitive questioning
- Recording and documentation of domestic violence
- Information sharing
- Counselling techniques
- Referral – networking
- Reporting requirements - Mandatory reporting
- Legal framework

TEACHING and LEARNING METHODS – EVALUATION

DELIVERY METHODS	Face-to-face

USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Communication through e-class platform
WAYS OF TEACHING	Lectures Problem solving Case studies Role playing Small-group task-oriented discussions Individual reading
STUDENTS' EVALUATION	I. Final written examinations (70%) II. Evaluation of practical skills (30%)
RECOMMENDED LITERATURE	
Roberts, G., Hegarty, K., & Feder, G. (2006). *Intimate partner abuse and health professionals: New approaches to domestic violence.* Edinburgh: Churchill Livingstone. McClennen, J. C. (2010*). Social Work and Family Violence: Theories, Assessment, and Intervention*. NY: Springer.	