CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Doc. 300.1.2

Date: Date.

Higher Education Institution's

eqar//// enga.

Response

- Higher Education Institution: CYPRUS COLLEGE
- Town: LIMASSOL
- Programme of study Name (Duration, ECTS, Cycle)

In Greek:

ΠΛΗΡΟΦΟΡΙΚΗ (4 Έτη Πλήρους Φοίτησης ή 8 Έτη Μερικής Φοίτησης, Πτυχίο, 240 ECTS)

In English:

COMPUTER SCIENCE (4 Years Full-Time or 8 Years Part-Time, Bachelor, 240 ECTS)

- Language(s) of instruction: GREEK
- Programme's status: Currently Operating
- Concentrations (if any):

In Greek: Concentrations In English: Concentrations

KYΠPIAKH ΔHMOKPATIA REPUBLIC OF CYPRUS



The present document has been prepared within the framework of the authority and competencies of the Cyprus Agency of Quality Assurance and Accreditation in Higher Education, according to the provisions of the "Quality Assurance and Accreditation of Higher Education and the Establishment and Operation of an Agency on Related Matters Laws" of 2015 to 2021 [L.136(I)/2015 – L.132(I)/2021].



- 1. Guidelines on content and structure of the report
 - The Higher Education Institution (HEI) based on the External Evaluation Committee's (EEC's) evaluation report (Doc.300.1.1 or 300.1.1/1 or 300.1.1/2 or 300.1.1/3 or 300.1.1/4) must justify whether actions have been taken in improving the quality of the programme of study in each assessment area. The answers' documentation should be brief and accurate and supported by the relevant documentation. Referral to annexes should be made only when necessary.
 - In particular, under each assessment area and by using the 2nd column of each table, the HEI must respond on the following:
 - the areas of improvement and recommendations of the EEC
 - the conclusions and final remarks noted by the EEC
 - The institution should respond to the EEC comments, in the designated area next each comment. The comments of the EEC should be copied from the EEC report <u>without any interference</u> in the content.
 - In case of annexes, those should be attached and sent on separate document(s). Each document should be in *.pdf format and named as annex1, annex2, etc.

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



1. Study programme and study programme's design and development

(ESG 1.1, 1.2, 1.7, 1.8, 1.9)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For official use Only
Lack of second marking and moderation process	First of all, we would like to thank the EEC for its constructive suggestions in the context of the re-accreditation of the Bachelor of Science BSc Computer Science of Cyprus College Limassol. We also agree with the EEC's recommendation for the need of audit marking. For this reason, the Quality Assurance Committee, approved on the 5th of July 2022 that 20% of all exams will be blindly doubled-marked for all courses. Currently we have another teaching staff that shares the same expertise to do that. In the case of major discrepancy (more than 5 points) between the instructor's evaluation and the re-evaluation that requires a change of grade, the average of the two evaluations will be assigned as the final grade. (The minutes of the decisions are attached ANNEX 1): Additionally, we would like to point out that in the case where a student believes that her/his grade is different from what was expected, s/he has the right to appeal against the grade by filling a petition at the Office of the Registrar, within a period of four weeks from the date the results are announced. The registrar forwards the petition to the Program Coordinator (Chairperson) of the Program of Study. The Program Coordinator first checks that the instructor made no errors, and then s/he assigns an anonymous re-evaluation of the final exam to another instructor. In case of a major discrepancy between the instructor's evaluation and the re-evaluation that requires a change of grade, the average of the two evaluations will be assigned as the final grade to the final examination/project.	Choose an item.
Limited evidence of a systematic provision for staff development and induction & Limited evidence of a systematic academic mentoring	 The Quality Assurance Committee, agreed on the 5th of July 2022 the following (The minutes of the decisions are attached ANNEX 1): 1. Establishment of yearly "Induction Seminar/Session" for College's new staff to orient them with culture of the organisation. This Induction will include a general introduction to the work of the college and the role of the specific post. Where appropriate it should include a discussion of development needs and opportunities. An induction pack among the "Teaching Personnel Handbook" will be given to all participants to guide induction training. 2. Establishment of a 35-hour Faculty Development Program (FDP) which will be offered in three parts in September, January and June every year. The content of the program will focus on various aspects on teaching and learning in higher education and upon its completion participants are granted a certificate of attendance and participation. The FDP will be annually revised based on the feedback provided by participants and consideration will be made for the external accreditation of the program as a Graduate Certificate in Higher Education Teaching. 	Choose an item.

۱<u>ار او او او</u>

eqar/// enga.

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

		—
	3. Offer both Full-Time and Part-Time Staff, the opportunity to submit research proposals for funding under their Cyprus College affiliation.	
	4. Offer Part-time staff to act as supervisors on the final year thesis of undergraduate research projects, which will enable them to work within their research fields and produce publishable work. In other words, our part-time staff, while working at the Cyprus College are provided with opportunities to advance their careers and enhance their CVs at the same time.	
	5. Establish a "Mentoring Scheme" to promote a synergetic, purposeful conversation and reflection on experience amongst all instructors. In particular the "Mentoring Scheme" will ensure that newly hired part- time academic staff are provided with all the necessary information and support once they commence their cooperation with the College and throughout their collaboration.	
Global vision for growth	As the EEC has identified, and the organization agrees too, the "Global Vision" is imperative for ensuring growth. The attraction of international students is a strategic goal, and the Computer Science degree is a top candidate for this purpose.	Choose an item.
	The Quality Assurance Committee, agreed on the 5th of July 2022 to study thoroughly the prospect of introduction of "English" language, in the next re- accreditation, as an additional language of instruction which is of great importance in attracting international students. (The minutes of the decisions are attached ANNEX 1):	
Align program to industry	The program has been updated/revised further to be aligned to industry and	Choose an
and global trends	 Data Mining and Machine Learning Artificial Intelligence Introduction to Cybersecurity 	item.
	(Course Syllabi Attached ANNEX 7):	
High new people to widening participation, initiatives in the local community, look at the UN goals The programme does not provide courses which include cooperation with the IT industry nor courses which are directed to address social and environmental goals (see the United Nation goals)	The introduction, in the new program of study, the course of "CIP400 Practical Training", aims to strike up active collaborations with the IT industry giving our students a learning experience related to working under real working conditions, applying at the same time the knowledge gained from the various courses in real conditions. In addition, the organization would benefit from the industry's feedback and guidance on enhancing and expanding our program of study, where at the same time we will strengthen existing partnerships with various companies in relation to our student's career prospects.	Choose an item.
	 a. Strengthening the Bridge Between Academic and the Industry, through authentic learning and real-life problem-solving projects. b. Address social and environmental goals by utilizing the findings of many researchers on "How can maker spaces boost sustainability 	

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



۱<u>ار او او او</u>

	 and help build a wellbeing economy" (DOTS Conference, 2019), such as: Make things that make sense: Create products and solutions that solve fundamental, real-world problems. Integrate Local Knowledge: Design with the community, leveraging on local knowledge and experience, as well as the local resources & assets available. Include Ecosystem Services: Aim to give back more than you take from the environment and include 	
	 accounting practices that value the natural resources used. iv. Build for Continuity: Design for the present and future; build social capacity & aim for financial self-sufficiency. v. Share How You Make: Develop a set of guidelines that provide a framework for openly documenting everything about the making of the project. 	
Correct typos on the certificate template: o 'Στη Πληροφορική' -> Στην Πληροφορική o 'Τετραετές Κλάδος Σπουδών' -> Τετραετής Κύκλος Σπουδών	The typos have been corrected. (The certificate is attached ANNEX 2)	Choose an item.
Ensure all course bibliography remains up to date and there exist references published within the most recent 5-year period - e.g. modernise Management Information Systems bibliography from 1980s, HCI bibliography from 1993, etc	The bibliography has been updated throughout all syllabi with new books and/or latest editions. (Updated Course Syllabi attached ANNEX6)	Choose an item.
Ensure bibliography is complete (all items to include year of publication, edition number, etc.) and captured consistently across crouses	The bibliography has been updated throughout all syllabi including year of publication, edition number etc. (Updated Course Syllabi attached ANNEX6)	Choose an item.
Consider rebranding some courses (e.g. Systems Analysis and Design, Smartphone Programming) to capture the course content under a timely and topical heading - for example, Requirements Engineering, Systems Engineering, Mobile Application Development, etc.	The courses, CMP205: Systems Analysis and Design and CMP325: Smartphone Programming have been revised entirely as per EEC's recommendation. (Updated Course Syllabi attached ANNEX6)	Choose an item.

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



The fact that most of the	The decisions of the Quality Assurance committee on 5th of July 2022 aim to	Choose an
teachers are part time makes	provide additional professional development incentives to part-time	item.
it difficult to organize	teachers, that will benefit both teachers and the College.	
development activities at	(The minutes of the decisions are attached ANNEX 1):	
teacher level		
	In addition, we will continue and establish the use of hybrid meetings (Face	
	to Face and Web Meetings) as it has proven to be very helpful and	
	productive in organizing development activities at any level, especially with	
	Guest Lecturers.	

2. Student – centred learning, teaching and assessment

(ESG 1.3)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For official use Only
To revise the programme's Intended Learning Outcomes (ILOs) to include more of the scientific aspects of the degree in Computer Science, which are covered by the courses. For example, computational thinking, abstraction, programming in different environments and languages, etc	The programme's Intended Learning Outcomes (ILOs) have been revised so that they conform linearly with the scientific aspects of the degree in Computer Science, as per EEC's recommendation. (Revised Intended Learning Outcomes attached ANNEX8)	Choose an item.
To modernise the curriculum through considering courses in Artificial Intelligence, Machine Learning, Data Science, and Cybersecurity, and consider engaging external consultation	 Based on EEC's constructive suggestions the curriculum has been significantly modernized. The following courses have been added to program of study: Data Mining and Machine Learning Artificial Intelligence Introduction to Cybersecurity Introduction to Robotics In addition, as per EEC's recommendation for modernizing the Program of Study, we revised entirely the courses CMP205: Systems Analysis and Design CMP325: Smartphone Programming (You can find attached: ANNEX 3: Updated Structure of the Program of Study ANNEX 4: Updated List of Compulsory and Elective Courses ANNEX 5: Updated Courses Syllabi ANNEX 7: New Courses Syllabi 	Choose an item.

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

3. Teaching staff

(ESG 1.5)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For official use Only
The college must offer a menu of staff development opportunities; these could incorporate the Sustainable Development Goals of the UN's Agenda 2030 (climate action, well being, gender equality, etc) to take action for a more sustainable world	 The Quality Assurance Committee, agreed on the 5th of July 2022 the following (The minutes of the decisions are attached ANNEX1): 1. Establishment of a 35-hour Faculty Development Program (FDP) which will be offered in three parts in September, January and June every year. The content of the program will focus on various aspects on teaching and learning in higher education and upon its completion participants are granted a certificate of attendance and participation. The FDP will be annually revised based on the feedback provided by participants and consideration will be made for the external accreditation of the program as a Graduate Certificate in Higher Education Teaching. 2. Offer both Full-Time and Part-Time Staff, the opportunity to submit research proposals for funding under their Cyprus College affiliation. 3. Offer Part-time staff to act as supervisors on the final year thesis of undergraduate research projects, which will enable them to work within their research fields and produce publishable work. In other words, our part-time staff, while working at the Cyprus College are provided with opportunities to advance their careers and enhance their CVs at the same time. Furthermore, the College allows and desires its Staff to participate in research projects that could incorporate the Sustainable Development Goals of the UN's Agenda 2030, such as climate action, well-being, and gender equality. For example, our instructor, Mr. George Pallaris is Research Associate in Erasmus+ Project, titled FeSTEM Female Empowerment in Science, Technology, Engineering and Mathematics in Higher Education, which aims to promote an innovative method and pedagogy that will allow higher education students to use traditional and computationally rich media to create meaningful, shareable exhibits that will act as mentoring models for encouraging girls and women to remain active in STEM. 	Choose an item.
The college should introduce an EDI strategy promoting a growth widening participation approach to help with the integration of under- represented communities to its staff and student population	Cyprus College considers the adoption of policies that promote diversity, inclusiveness, equality and cooperation within its community of students and staff a necessary prerequisite for success in education	Choose an item.



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



Consequently, as affiliates with the European University Cyprus (EUC), we participate in the common "Gender Equality Plan 2022-2024", where we adopt policies that promote diversity, inclusiveness, equality and cooperation within our community of students and staff.	
In Particular: a) Gender balance in leadership and decision-making: In the current academic year (2021-2022), women represent:	
 55.5% of the Administrative Staff 33.3% of Program Coordinators Staff 	
 b) Cyprus College is an equal opportunity employer. Discrimination based on any individual characteristics (e.g. age, colour, gender, disability, marital status, national origin, race, religion and sexual orientation) is prohibited and covers all areas of employment including hiring, promotions, compensation, benefits, education/training, and termination of employment. 	
c) Measures against gender-based violence including sexual Harassment, Cyprus College has clear institutional policies on sexual and other forms of harassment. The behaviour and conduct expected by the College's employees communicated frequently to personnel. A culture of zero tolerance for any kind of harassment is enforced as indicated in the following College's policies:	
 The Sexual Harassment Policy details behaviors constituting harassment, complaint mechanisms, and sanctions and disciplinary measures. 	
 The Code of Conduct and Ethics sets out principles of integrity and ethical behavior and the staff's responsibilities to each other, students, suppliers, stakeholders, the public and the environment. 	
d) Staff and Students Wellbeing	
At Cyprus College we try to adopt a holistic approach to wellbeing in all aspects of life physical, mental and social. We focus particularly on changing attitudes towards mental health issues and offer the support to members of our community who need it. We give emphasis on providing the support to our students and staff to enable them to deal with the challenges in their lives so they can succeed in their studies and their careers.	
Most importantly we treat everyone with respect and dignity, and we are dedicated to providing a safe and inclusive environment irrespective of origin, religion, gender, culture, or sexual orientation.	
KEPSYPA	



CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



Committed to catering to the personal well-being of the Cyprus College community, KEPSYPA was established to provide psychological services (Prevention Assessment-Therapy) to students and staff of Cyprus College.

The center operates under the supervision of the Psychology Department of the School of Humanities, Social and Education Sciences. The center offers professional psychological services to all students and staff, free of charge. Only KEPSYPA staff are involved in this process and anything discussed in the center is treated with the strictest confidence. KEPSYPA offers short-term and long-term one-on-one counselling and psychotherapy. In addition, group therapy is offered, as well as seminars on selfdevelopment. Students and staff are encouraged, freely and without any prejudice, to contact KEPSYPA. The most common reasons somebody might contact KEPSYPA are the following: Lack of motivation to attend lectures, learning difficulties, low academic performance, changes in mood and behavior, stress and anxiety, depression, interpersonal or social problems, low self-esteem or self-confidence.

Special Needs Committee

The Committee for Students with Special Educational Needs (CSSEN) enables students with special needs and learning challenges to receive support to ensure their academic and personal success at the college.

The identification of students with academic and other difficulties, takes place after the students' official registration to the College as follows:

- During the registration/induction process,
- By students' self-referral,
- Referral by a College's administrative officer or academic personnel,
- Referral by third parties or organizations who have the student's written consent to contact EFEEA.
- All students who evidently present with one or more of the following difficulties, are eligible to apply for
- academic accommodations and/or support:
- Learning difficulties: Reading Disorder (Dyslexia),
- Mathematics Disorder (Dyscalculation),
- Expression Disorder, Learning Disorder not otherwise specified, Special Learning Disorder
- Attention Deficit Hyperactivity Disorder (ADHD)
- Hearing Impairment
- Vision Impairment
- Movement Disability
- Psychological disorders & Emotional Distress
- Health Problems



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



۱<u>ار او او او</u>

	Student Support Services	
	 Student Support Services at Cyprus College provide a broad network of activities with the involvement of academic and administrative staff. This includes several services such as: Individualized counselling for personal, career and academic matters provided by designated advisors and faculty 	
	 Information on student financial aid programs, scholarships and payment plans 	
	Advice on student placement and internships to learn about career options for their program of study	
	Exposure to social and cultural events	
The college should invest in a a growth strategy that will lead to regular revision and long term sustainability of the programme	The Quality Assurance Committee, agreed on the 5th of July 2022 (ANNEX1) the establishment of an updated Program Evaluation Review (PER) process, where through of it, we will continuously evaluate our program, with feedback from various parties, such as industry, professional bodies, faculty, and students.	Choose an item.
	The PER process will be an integral part of the College's overall Quality Assurance process. PER encourages excellence in academic programs by aligning teaching and learning, curriculum, and other academic processes and activities with the mission of individual programs, which will ultimately lead to assuring the long-term sustainability of the programme. (PER Process attached ANNEX9)	
	In Regards of Research During the committee, there must have been some misunderstanding regarding the college's research policy. The College supports academic staff, both financially and teaching coursework load reduction.	
	Research Activities Incentives:	
	 Teaching Hours Redaction (THR) for each research grand (Research project) where a permanent staff participates and the Cyprus College is a partner. A THR for permanent staff that attends a PhD program of studies. A THR for each 3 journals published in IEEE / ACM / Scopus within 5 years for each permanent staff. Established Annual Budget for Open Access publications. Presentation of research works of staff in national and international conferences (registration fees travel fees, living costs), where the staff uses affiliation the Cyprus College. Proceedings of research work published in reviewed journals of the staff where the staff uses the Cyprus College Limassol as affiliation. 	



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

۱<u>ار او او او</u>

	 Organization of national and international workshops and conferences. 	
Student aggregated feedback should be used in the programme development	Student aggregated feedback is used in the programme development as described in Program Evaluation Review (PER) process. (ANNEX 9)	Choose an item.
Non-permanent staff are not offered neither a probation or mentoring opportunity, while permanent staff during the employment period have to undergo an annual performance evaluation review and all staff (both permanent and non-permanent) are having a discussion with the programme director about their course delivery requirements.	 The Quality Assurance Committee, agreed on the 5th of July 2022 the following (The minutes of the decisions are attached ANNEX1): 1. Establishment of yearly "Induction Seminar/Session" for College's new staff to orient them with culture of the organisation. This Induction will include a general introduction to the work of the college and the role of the specific post. Where appropriate it should include a discussion of development needs and opportunities. An induction pack among the "Teaching Personnel Handbook" will be given to all participants to guide induction training. 	Choose an item.
	2. Establishment of a 35-hour Faculty Development Program (FDP) which will be offered in three parts in September, January and June every year. The content of the program will focus on various aspects on teaching and learning in higher education and upon its completion participants are granted a certificate of attendance and participation. The FDP will be annually revised based on the feedback provided by participants and consideration will be made for the external accreditation of the program as a Graduate Certificate in Higher Education Teaching.	
	 Offer both Full-Time and Part-Time Staff, the opportunity to submit research proposals for funding under their Cyprus College affiliation. 	
	4. Offer Part-time staff to act as supervisors on the final year thesis of undergraduate research projects, which will enable them to work within their research fields and produce publishable work. In other words, our part-time staff, while working at the Cyprus College are provided with opportunities to advance their careers and enhance their CVs at the same time.	
	5. Establish a "Mentoring Scheme" to promote a synergetic, purposeful conversation and reflection on experience amongst all instructors. In particular the "Mentoring Scheme" will ensure that newly hired part-time academic staff are provided with all the necessary information and support once they commence their cooperation with the College and throughout their collaboration.	
	 Establishment of Annual Performance Evaluation Review for both permanent and non-permanent Teaching personnel. 	

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

s 🔽 🖗

There is a student evaluation survey	Student aggregated feedback is used in the programme	Choose an item.
however, it is not clear how student	development as described in Program Evaluation Review (PER)	
feedback is being used.	process. (ANNEX 9)	

Г

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Student admission, progression, recognition and certification

(ESG 1.4)

Areas of improvement and	Actions Taken by the Institution	For official use
recommendations by EEC		Only
Continuity of the courses as these evolve: make sure that each course has a defined syllabus that builds on previous courses and advances the knowledge of the students into the specific subject	The prerequisites and co-requisites for every course have been thoroughly examined (with alterations where needed) to ensure continuity and advancement of knowledge. (ANNEX 6)	Choose an item.
Assessment is consistent and streamlined across courses: Each course having its own components of assessed coursework and exams bearing different weights makes it challenging to ensure that the level of challenge and effort required by the students is consistent across courses and in accordance with the credits of each course	The Assessment has been updated throughout all syllabi, following a consistent and streamlined assessment methodology divided in four (4) parts: Participatiom Assignments/Group Projects Mid-Term Examination Final Examination (ANNEX 6)	Choose an item.
Information governing the processes in which students can liaise with the Programme and the College's team(s) are publicized and followed, for example explaining how students can raise good cause claims for coursework, exams, etc.; to know how they can appeal decisions of the College; etc	The website has been updated with all necessary information, both in English and Greek. Information governing the processes can be found at <u>https://cycollege.ac.cy/en/academic-regulations/</u> <u>https://cycollege.ac.cy/el/academic-regulations/</u> <u>https://cycollege.ac.cy/el/academic-regulations/</u> <u>immediatestary and and and and and and and and and and</u>	Choose an item.
The department may consider developing an action plan leading to an increasing number of students, something that would be beneficial in many ways, such as the availability of a larger number of available electives, and especially the long- term sustainability of this program	 In consultation with the Marketing and MIS Departments, aiming to enhance Computer Science program branding that will lead to increasing number of students we agreed to the following plan: 1. Enhance the Makerspace (1st Ever Makerspace in Private Tertiary Education) a. Transfer to a Dedicated Room b. Purchase additional equipment. (Laser Engraver, CNC Carving, +2 3D Printers, Oculus Quest 2, Additional Microprocessors) c. Design dedicated Logo (Trademark) 	Choose an item.



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



۱<u>ار او او او</u>

2.	Promot	e Computer Science program and Authentic	
	Learnin	g through Makerspace.	
	a.	Invite students from high schools to experience	
		(Hands-On) Makerspace equipment and the	
		high potential of the Computer Science	
		program.	
	b.	Promote it in Social Networks and Local Media.	

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

4. Learning resources and student support

(ESG 1.6)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For official use Only
Develop an infrastructure to support delivery of practical curricula online	In collaboration with MIS Department, we agreed on a specific action plan in regards of delivering practical curricula online, in case of an emergency or unexpected need (e.g. During Pandemic) The delivery of practical curricula will take place by combining "Blackboard Learn online" and "Microsoft Azure Cloud Computer Services" platforms. Blackboard Learn online platform it operates to a high standard and offers an excellent teaching and learning experience where Microsoft Azure Cloud Computer Services platform offers the necessary infrastructure to develop virtual machines where students and instructors can develop and host the necessary environment/frameworks to conduct Web programming, Web Servers, Databases and PHP Programming Language courses.	Choose an item.
The evaluation committee	Satisfied by the establishment of the updated Program	Choose an item.
recommends periodic review of the	Evaluation Review (PER) process. (ANNEX 9)	
program by taking into consideration		
feedback from academic staff,		
students, external local industry		
experts and professional bodies		



5. Additional for doctoral programmes

(ALL ESG)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For official use Only
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

7. Eligibility (Joint programme)

(ALL ESG)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For official use Only
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.



2. Conclusions and final remarks

Conclusions and final remarks by EEC	Actions Taken by the Institution	For official use Only
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.



3. Higher Education Institution academic representatives

Name	Position	Signature
George Pallaris	Campus Director In Charge since 1 st of June 2022	Ballas
Christos Vaganas	Ex Campus Director In Charge during EEC Committee	A
Christos Giallouras	Program Coordinator	ED
Kyriakos Pallaris	Administrative Staff Representative	Kpallar. J
Panikos Kanakis	Member of Quality Assurance Committee	Thomas
Maria Menealou	Member of Quality Assurance Committee	Oleydaa

Date: 29/08/2022





List of ANNEXES

ANNEX 1: QUALITY ASSURANCE COMMITTEE MINUTES 5 thJuly 2022 ANNEX 2: UPDATED CERTIFICATE TEMPLATE ANNEX 3: UPDATED STRUCTURE OF THE PROGRAM OF STUDY ANNEX 4: UPDATED LIST OF COMPULSORY AND ELECTIVE COURSES ANNEX 5: UPDATED COURSE DISTRIBUTION PER SEMESTER ANNEX 6: UPDATED COUSES SYLLABI (Updated Bibliography, Prerequisites, Assessment) ANNEX 7: NEW COURSES SYLLABI ANNEX 8: REVISED INTENDED LEARNING OUTCOMES (ILOS) ANNEX 9: PROGRAM EVALUATION REVIEW (PER) PROCESS

ANNEX 1: QUALITY ASSURANCE COMMITTEE MINUTES 5thJuly 2022



Limassol Campus Meeting on 5th of July 2022

MINUTES

2022/11

The Meeting started at 09:00 am - Ended 12:30 pm

Internal Quality Committee

Present: George Pallaris Panikos Kanakis Maria Menelaou Evripidou Anna Maria Kyriakos Pallaris Andreas Efstathiades Pieris Chourides

MATTERS ARISING:

The Internal Quality Committee members reviewed and discussed about:

- 1. Align and confirm our procedures for conducting student examinations and assessment, with new legislation and instructions.
- 2. Evaluate the effectiveness of student's intra-communication and facilitating their participation in the improvement of the educational process.
- 3. Facilities (Renovation of aesthetics labs, Laser Room, Technology Center)
- 4. Establish a career week.
- 5. Establish New communication Channels (effective communication with teachers and students.
- 6. Establish mechanisms to monitor Faculty Office Hours. (Academic advisory procedures (mentoring) are transparent and effective in undergraduate and postgraduate programs)
- 7. Establish mechanisms to control the alignment of Course Outline with Syllabus methods, Authentic Learning, maker spaces, adult education seminars
- 8. Evaluate current procedures for providing ongoing feedback to students at regular intervals. (GPA Information)
- 9. Evaluate the procedures and criteria for assessing the performance of students Set clear, adequate, and knowledgeable to students, assessment criteria. (Rubrics)
- 10. Modernize curriculum teaching shall adopt the use of modern educational technologies in accordance with international standards, including an e-learning support platform. (Maker Spaces. Authentic Learning)
- 11. Confirm that the teaching material (books, manuals, scientific journals, databases and teaching notes) meets the requirements of the methodology of the individual courses of the curriculum and is regularly updated. (Journal, Past Publications, Magazines).

- 12. Assess the College Research Policy.
- 13. Introduce motives for research e.g. The teaching hours of academic staff must not restrict research, academic writing, and social contribution (Research Policy).
- 14. Re asses the purpose and learning outcomes of the Program of Studies/Structure and Content of the Program of Studies.
- 15. Assurance of Quality Assurance of the Program of studies. (Academic Committee, Internal Quality Committee (It meets twice a year & add member from the labour market).
- 16. International Dimension of the Program of Studies Utilize Erasmus)
- 17. Invite into Quality Assurance committee external professionals from industry.
- 18. Assess teaching material (books, textbooks, scientific journals, databases) to be adequate and easily accessible to students. (Update Bibliography)
- 19. Teaching staff professional development (new teaching methodologies, adult education, train in new technologies based on a structured learning framework.

DECISSIONS OF THE INTERNAL QUALITY COMMITTEE:

The Internal Quality Committee members approved the following:

- 1. Establishment of a career week.
- 2. Update the bibliographies for every course.
- 3. Establishment of an enhanced Program Evaluation Review (PER) process, where through of it, the organization will continuously evaluate the College programs, with feedback from various parties, such as industry, professional bodies, faculty, and students. The PER process will be an integral part of the College's overall Quality Assurance process, by aligning teaching and learning, curriculum, and other academic processes and activities with the mission of individual programs, which will ultimately lead to assuring the long-term sustainability of the programme.
- 4. Establishment of audit marking policy 20% of all exams will be blindly doubled-marked for all courses. Currently we have another teaching staff that shares the same expertise to do that. In the case of major discrepancy (more than 5 points) between the instructor's evaluation and the re-evaluation that requires a change of grade, the average of the two evaluations will be assigned as the final grade.
- 5. Establishment of yearly "Induction Seminar/Session" for College's new staff to orient them with culture of the organisation. This Induction will include a general introduction to the work of the college and the role of the specific post. Where appropriate it should include a discussion of development needs and opportunities. An induction pack among the "Teaching Personnel Handbook" will be given to all participants to guide induction training.
- 6. Establishment of a 35-hour Faculty Development Program (FDP) which will be offered in three parts in September, January and June every year. The content of the program will focus on various aspects on teaching and learning in higher education and upon its completion participants are granted a certificate of attendance and participation. The FDP will be annually revised based on the feedback provided by participants and consideration will be made for the external accreditation of the program as a Graduate Certificate in Higher Education Teaching.
- 7. Offer both Full-Time and Part-Time Staff, the opportunity to submit research proposals for funding under their Cyprus College affiliation.

- 8. Offer Part-time staff to act as supervisors on the final year thesis of undergraduate research projects, which will enable them to work within their research fields and produce publishable work.
- 9. Establish a "Mentoring Scheme" to promote a synergetic, purposeful conversation and reflection on experience amongst all instructors. In particular the "Mentoring Scheme" will ensure that newly hired part-time academic staff are provided with all the necessary information and support once they commence their cooperation with the College and throughout their collaboration.
- 10. Computer Science Programme committee should study thoroughly the prospect of introduction of "English" language, in the next re-accreditation, as an additional language of instruction which is of great importance in attracting international students.
- 11. Establishment of Annual Performance Evaluation Review for both permanent and nonpermanent Teaching personnel.
- 12. Communicate further the following:
 - a. Organization's Charter, Internal Regulations and Staff Handbooks.
 - b. Organization's Gender Equality Plan 2022-2024
 - c. Organization's EDI Action Plan
 - d. Organization's efforts in achieving the Sustainable Development Goals (SDGs) adopted by the United Nations in its 2030 agenda for Sustainable Development.

DATE OF NEXT MEETING:

1. It was agreed that the next meeting should be set between 12th of December 2022 and 16th of December 2022.

The Meeting was adjourned at 12.00 a.m.

Approval by the Director

George Pallaris

ANNEX 2: UPDATED CERTIFICATE TEMPLATE

ΔΙΠΑΕ ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



Ύστερα από πρόταση του διδακτικού προσωπικού και με την εξουσία που έχει το Διοικητικό Συμβούλιο απονέμει στον/στην

> Όνομα φοιτητή ^{Πτυχίο} Στην Πληροφορική

«(Τετραετής Κύκλος Σπουδών εγγεγραμμένος ως 'Πληροφορική (Τέσσερα Έτη Πλήρους Φοίτησης ή Οχτώ Έτη Μερικής Φοίτησης) Πτυχίο' Πλήρους Φοίτησης»

> Και κατοχυρώνει όλα τα δικαιώματα και προνόμια που συνεπάγεται ο τίτλος αυτός. Για επικύρωση αυτού θέσαμε τις υπογραφές μας και την Σφραγίδα της Σχολής σήμερα (ημερομηνία).



Γραμματέας

Διευθυντής

Πρόεδρος

Σημείωση: Έχει εκδοθεί χωριστά Αναλυτική Βαθμολογία Αριθμός Εγγραφής: Αύξων Αριθμός Διπλώματος: Ημερ. Έκδοσης: ANNEX 3: UPDATED STRUCTURE OF THE PROGRAM OF STUDY



E. TABLE 1: STRUCTURE OF THE PROGRAM OF STUDY

PROGRAM REQUIREMENTS	ECTS
Compulsory courses	162
Elective courses	
(a) Courses of specialization	18
(b) General Education courses / Free Electives	42
Senior Project	12
Practical training	6
Total ECTS	240

ANNEX 4: UPDATED LIST OF COMPULSORY AND ELECTIVE COURSES



F. ANNEXES

ANNEX 1 – LIST OF COMPULSORY COURSES AND ELECTIVE COURSES

A/A	Μάθημα		
1.	CMP100	Introduction to Computer Science	
2.	CMP105	Network Fundamentals	
3.	CMP110	Web Technologies	
4.	CMP115	Programming Principles I	
5.	CMP120	Discrete Structures	
6.	CMP125	Programming Principles II	
7.	CMP130	Introduction to Information Systems	
8.	CMP135	Digital Logic	
9.	CMP140	Computer Organization & Architecture	
10.	CMP200	Data Structures & Algorithms	
11.	CMP205	Systems Analysis and Design	
12.	CMP210	Programming in Unix-like Environment	
13.	CMP215	Data Communications and Computer Networks	
14.	MTM200	Finite Mathematics	
15.	CMP220	Operating Systems	
16.	CMP225	Web Programming	
17.	CMP230	Fundamentals of Distributed Systems	
18.	CMP235	Writing for Computer Science and Engineering	
19.	CMP300	Introduction to Robotics	
20.	MTM300	Algebra with Applications in Computer Science	
21.	CMP305	Database Management Systems	
22.	CMP310	Software Engineering I	
23.	CMP315	Introduction to Cybersecurity	
24.	CMP320	Data Mining and Machine Learning	
25.	MTM305	Probability & Statistics	
26.	CMP325	Smartphone Programming	
27.	CMP330	Software Engineering II	
28.	CMP400	Research Methods in Computer Science	
29.	CMP405	Artificial Intelligence	
30.	CMP410	Algorithms	
31.	CMP415	Senior Project	
32.	CMP420	Theory of Computation	
33.	CIP400	Practical training	
34.	CMP425	Network Security (MAJOR ELECTIVE)	
35.	CMP430	Computer Graphics (MAJOR ELECTIVE)	
36.	CMP435	Human Computer Interaction (MAJOR ELECTIVE)	



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar//// enga.

37.	CMP440	E-commerce and the Internet (MAJOR ELECTIVE)
38.	CMP445	Search Engine Optimisation and Internet Marketing (MAJOR ELECTIVE)
39.	CMP450	Management Information Systems (MAJOR ELECTIVE)
40.	CMP455	Contemporary Topics (MAJOR ELECTIVE)
41.	CMP460	Wireless and Mobile Networks (MAJOR ELECTIVE)

ANNEX 5: UPDATED COURSE DISTRIBUTION PER SEMESTER

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

1

TABLE 2: COURSE DISTRIBUTION PER SEMESTER

ΔΙΠΑΕ

A/A	Course Type	Course Name	Course Code	Periods per week	Period duration	Number of weeks/ Academic semester	Total periods/ Academic semester	Number of ECTS		
	A' SEMESTER									
1.	Major Requirement	Introduction to Computer Science	CMP100	3	50'	14	42	6		
2.	Major Requirement	Network Fundamentals	CMP105	3	50'	14	42	6		
3.	Major Requirement	Web Technologies	CMP110	3	50'	14	42	6		
4.	Major Requirement	Programming Principles I	CMP115	3	50'	14	42	6		
5.	Major Requirement	Discrete Structures	CMP120	3	50'	14	42	6		
		B' SEME	STER							
6.	Major Requirement	Programming Principles II	CMP125	3	50'	14	42	6		
7.	Major Requirement	Introduction to Information Systems	CMP130	3	50'	14	42	6		
8.	Free Elective	FREE ELECTIVE 1	-	3	50'	14	42	6		
9.	Major Requirement	Digital Logic	CMP135	3	50'	14	42	6		
10.	Major Requirement	Computer Organization & Architecture	CMP140	3	50'	14	42	6		
	C' SEMESTER									
11.	Major Requirement	Data Structures & Algorithms	CMP200	3	50'	14	42	6		
12.	Major Requirement	Systems Analysis and Design	CMP205	3	50'	14	42	6		
13.	Major Requirement	Programming in Unix-like Environment	CMP210	3	50'	14	42	6		
14.	Major Requirement	Data Communications and Computer Networks	CMP215	3	50'	14	42	6		
15.	Gen. Education	Finite Mathematics	MTM200	3	50'	14	42	6		
D' SEMESTER										
16.	Major Requirement	Operating Systems	CMP220	3	50'	14	42	6		
17.	Major Requirement	Web Programming	CMP225	3	50'	14	42	6		
18.	Free Elective	FREE ELECTIVE 2	-	3	50'	14	42	6		
19.	Major Requirement	Fundamentals of Distributed Systems	CMP230	3	50'	14	42	6		
20.	Gen. Education	Writing for Computer Science and Engineering	CMP235	3	50'	14	42	6		



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

ΔΙΠΑΕ

eqar/// enga.

	E' SEMESTER								
21.	Major Requirement	Introduction to Robotics	CMP300	3	50'	14	42	6	
22.	Gen. Education	Algebra with Applications in Computer Science	MTM300	3	50'	14	42	6	
23.	Major Requirement	Database Management Systems	CMP305	3	50'	14	42	6	
24.	Major Requirement	Software Engineering I	CMP310	3	50'	14	42	6	
25.	Major Requirement	Introduction to Cybersecurity	CMP315	3	50'	14	42	6	
		F' SEN	MESTER						
26.	Major Requirement	Data Mining and Machine Learning	CMP320	3	50'	14	42	6	
27.	Gen. Education	Probability & Statistics	MTM305	3	50'	14	42	6	
28.	Major Requirement	Smartphone Programming	CMP325	3	50'	14	42	6	
29.	Major Requirement	Software Engineering II	CMP330	3	50'	14	42	6	
30.	Free Elective	FREE ELECTIVE 3	-	3	50'	14	42	6	
		G' SEM	IESTER						
31.	Major Requirement	Research Methods in Computer Science	CMP400	3	50'	14	42	6	
32.	Major Requirement	Artificial Intelligence	CMP405	3	50'	14	42	6	
33.	Major Requirement	Algorithms	CMP410	3	50'	14	42	6	
34.	Senior Project	Senior Project	CMP415	6	50'	14	42	12	
	_	H' SEM	IESTER	-	-		-		
35.	Major Requirement	Theory of Computation	CMP420	3	50'	14	42	6	
36.	Major Elective	MAJOR ELECTIVE 1	-	3	50'	14	42	6	
37.	Practical Training	Practical Training	CIP400	3		-		6	
38.	Major Elective	MAJOR ELECTIVE 2	-	3	50'	14	42	6	
39.	Major Elective	MAJOR ELECTIVE 3	-	3	50'	14	42	6	
ANNEX 6: UPDATED COUSES SYLLABI (Updated Bibliography, Prerequisites, Assessment)

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

ANNEX 2 – COURSE DESCRIPTION

ΔΙΠΑΕ

Course Title	Introduction to Computer Science					
Course Code	CMP100					
Course Type	Major Require	ment				
Level	Bachelor (1 st	cycle)				
Year / Semester	1 st Year / 1 st S	Semester				
Teacher's Name						
ECTS	6 ECTS Lectures / 3 hours/ 14 weeks Laboratories / None					
Course Purpose and Objectives	The purpose of this course is to provide students with an overview of the computer science discipline and assist students in understanding theoretical concepts and areas of study as well as application of computer science. One objective of the course is to enable student to gain an appreciation of computer scientists in society. Additionally, the course will provide a first contact with the area of robotics through practical sessions.					
Learning Outcomes	 Expla Provid respo List th their i Descr perfor List al they a Outlin progra Descr network 	in the importa de examples of nsibility of cor ne key areas of nterrelationsh ribe number sy rm conversion nd explain log are used as a ne differences amming langu ribe network ty orks, the interr	nce of the co of the importa nputer scient of study in cor ips ystem as use s between th ical gates an basis for corr between diffe ages /pes; explain het and the W	mputer s int role ar ists in ou mputer so d in comp em d integrat puting erent para commun /orld Wide	cience d nd ethica r society cience ar puter sci- ted circu adigms c ications e Web.	iscipline I nd discuss ence and its how of high level using
Prerequisites	None Co-requisites None					
Course Content	The Computer Science discipline: Define the term 'Computer Science' and describe the difference between Computer Science and other related disciplines. Brief history of Computer Science.					

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION



l r r r	Describe the main Computer Science fields of study and related careers. Understand what is needed by a Computer Science studentin order to become a professional Computer Scientist. Understand the ethical responsibilities of Computer Scientists. Comprehend the difference between a computer scientist and a computer programmer, software engineer, information scientist, etc. nformation and data representation. Number systems and positionalnotation; decimal; binary; octal; hexadecimal; decimal systems basicoperations; relationships and conversion between systems. Analog and digital information, compression and compression ratio, ASCII and Unicode sets, number representation, video representation.
- H i c	Hardware related concepts. Computers and electricity; Logic gates, transistors, ntegrated circuits; Boolean expressions, truth tables; logic diagrams; constructing solutions: Half-adders, multiplexers andgenerations of integrated circuits.
(c r s	Computer components; the von Neumann machine; input, output, memory; control unit; arithmetic logic unit; the fetch-decode-executecycle; computer memory types and organization; storage devices; HDDs, SSDs, USB sticks; touch screen technologies; parallel computing; embedded systems
F F S	Algorithms and problem Problem solving and the problem solving process; data types; data structures; recursion; arrays; sorted and unsorted arrays; sorting algorithms: bubble sort, selection sort, insertion sort; quicksort, binarysearch
F L C t	Programming concepts Understand the concepts of programming and programming languages. Distinguish between functional and object-oriented design. Define the difference between interpretation and compilation.Understand the difference between low-level and high-level programming languages.
C S T L S S T	Operating system concepts Operating systems software and application software; roles of operating system; resource management; timesharing; memory management; process management Understand the concept of an operating system and its role in a computing system. Define the main functions of an operating system(memory and process management). Understand the organizationalstructure of files and directories.
l t F	nformation systems, applications and database managementsystems; Getting to know and using spreadsheets; using formulas and built-in functions. Relational database model; relationships; the standard query language (SQL); basic SQL commands; entity relation diagrams.
E F i c	Data communications and computer networks Key aspects of a computer network; types and characteristics of networks; network topologies of local area networks; internet connection types; the nternet and how it works; packet switching; network communication protocols; ICP/IP, firewalls; addressing; nostnames; IP v4 and v6 addressees. Explaining DNS and its usage.Cloud computing.



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Advanced applicatio language processing principles to build sim	ons: artificial intelligence; neural networks; natural g; robotics; simulation; using object-oriented design nulation models.			
Teaching Methodology	Face-to-face				
Bibliography	Cisco Networking Ac Labs & Study Guide	cademy, 2020. <i>IT Essentials v7 Companion Guide and</i> v ValuePack. CISCO Press.			
	CISCO Networking / CISCO Press	Academy, 2019. <i>IT Essentials Course Booklet. 7th Ed</i> .			
	Dale N., & Lewis J., 2020. <i>Computer science illuminated</i> . 7 th ed. Jones & Bartlett Learning				
	Brookshear G.,& Brylow D., 2019. <i>Computer Science: An overview</i> .13 th ed. Pearson.				
	Forouzan,B.A.,2018	3. Foundations of Computer Science. 4 th ed. Cengage <mark>.</mark>			
Assessment	Mid Term Exam:	30%			
	Final Exam:	40%			
	Assignments:	20%			
	Participation:	10%			
Language	Greek				

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Network	Fundamentals					
Course code	CMP10	CMP105					
Course type	Major R	equirement					
Level	Bachelo	or (1 st Cycle)					
Year / Semester	1st Year /	1st Semester					
Teacher's name							
ECTS	6 ECTS	'S Lectures / week 3 periods 50'/ Per week Laboratories / week					
Course purpose and objectives	This cours models of structure and funct of the cou configura	This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and functions are introduced to provide the basis for the curriculum. By the end of the course, students will be able to create simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.					
Learning outcomes	Upon succ To co De Ex lay To giv Ex fu To To To ro Us an	cessful completion of this of identify and describe the mmunications over data ne escribe the role of protocol plain the importance of ad yers of data networks in IPv design, calculate and imple yen requirements in IPv4 and plain fundamental Ethernet nctions ocreate a simple Ethernet r ouse Cisco command-line in uter configuration and swift se common network utilities halyse data traffic.	course studen devices and s etworks and layers in dat dressing and v4 and IPv6 e ement mask nd IPv6 network t concepts s network usin nterface (CLI tching es to verify sr	nts sho service the In- ta netv d namin enviror s and s vorks uch as g route) comr mall ne	ould be able to: es used to support ternet vorks ng schemes at different ments subnet addresses to meet media, services and ers and switches mands to perform basic		
Prerequisites	NONE		Required	NON	E		



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

	Exploring the Network: Global Connected, LAN, WAN and the Internet, The Network as a Platform, The Changing Network Environment				
	Setting up a network operating system: iOS Bootcamp, Getting Basic, Troubleshooting programs				
	Getting Started, Getting Started, Getting Started, Getting Started: Communication rules, network protocols and standards, Moving data across the network				
	Network access: Physical layer protocols, Network media, Data link layer protocols, Media access control				
	Ethernet: Ethernet Protocol, Address Resolution Protocol, LAN Switches				
Course content	Network level: Network layer protocols, routing, routers, Cisco router configuration				
	Transport Layer: transport layer protocols, TCP and UPD				
	IP address: IPv4 network addresses, IPv6 network addresses, Connection verification				
	IP subnetting networks: IPv4 network subnetting, Address schemes, Design problems for IPv6				
	Application level: Application layer protocols, well-known protocols and application layer services, the message was heard around the world				
	Network: Build and deploy, Keeping the network secure, Basic network performance, Managing IOS configuration files, Integrated routing services				
Teaching methodology	Face to Face				
	Cisco Networking Academy, 2020. Introduction to Networks Companion Guide (CCNAv7). Cisco Press. 1st Edition				
Bibliography	Cisco Networking Academy, 2020. IT Essentials v7 Companion Guide and Labs & Study Guide ValuePack. Cisco Press. 1st Edition				

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Ś

	Wilkins, S., 2020. CCNA 200-301 Pearson uCertify Network Simulator Student Access Card. Cisco Press 1st Edition			
Assessment	Mid Term Exam:	30%		
	Final Exam:	40%		
	Assignments:	20%		
	Participation:	10%		
Language	Greek			

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

ΔΙΠΑΕ

Course title	Web Te	Web Technologies					
Course code	CMP110	CMP110					
Course type	Major R	Major Requirement					
Level	Bachelo	or (1 st Cycle)					
Year / Semester	1st Year /	1st Semester					
Teacher's name							
ECTS	6 ECTS	ECTS Lectures / week 3 periods 50'/ Per week Laboratories / week					
Course purpose and objectives	To familia to unders Web appl	To familiarize the student with the basic concepts of the Internet and the Web, to understand their usefulness and to be able to design, develop and maintain Web applications using the corresponding technologies.					
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Recognises the theoretical aspects of the Internet as a platform for web systems Recognizes the modern architectures of web systems the characteristics of modern Web Servers. Identifies how network systems can help as a strategic asset to businesses and organizations. Recognises the relevant web systems design process. Recognises methods for evaluating the usability of web systems. Identifies the basic concepts of Service Oriented Architecture technology and its applications. 						
Prerequisites	NONE Required NONE				E		
Course content	Introducti The histor Internet The World	Introduction The history of the Internet and the World Wide Web. Basic concepts of the Internet The World Wide Web					



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

	Fundamental technologies and architecture of the World Wide Web. Web protocols.					
	Web Design & Website Design					
	Web development methods, Web site development principles					
	Security					
	Introduction to Internet security concepts.					
	Usability					
	Usability on the Web. Usability evaluation methods.					
	Efficiency in organisations and businesses					
	How the Internet can be used to improve the performance of organisations and businesses. Applications: Electronic Commerce.					
	Advanced topics					
	Semantic Web technologies, Web Services and how they can be used in organisations and businesses.					
Teaching methodology	Face to Face					
	Kuzmiakova, A., 2020. Computer Science and Web Technologies [e-book]. Arcler Press.[ebscohost] 1st Edition					
Bibliography	Hehn, J., 2022. Design Thinking for Software Engineering: Creating Human- oriented Software-intensive Products and Services [e-book]. Springer Cham 1st Edition					
	Gervasi, V., & Vogelsang, A, 2022. Requirements Engineering: Foundation for Software Quality [e-book]. Springer Cham 1st Edition					



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Femmer, H., 2021. Assisted Requirements Engineering: What Will Remain in the Hands of the Future Requirements Engineer? (Invited Keynote) [e-book]. Springer, Cham 1st Edition				
	Subscribed digital Jou	Irnal: Requirements Engineering [from Springer] 1st Edition			
	Mid Term Exam:	30%			
Assessment	Final Exam:	40%			
	Assignments:	20%			
	Participation:	10%			
Language	Greek				

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Programming Principles I						
Course code	CMP115						
Course type	Major Requirement	Major Requirement					
Level	Bachelor of Science(1	st Cycle)					
Year / Semester	1st Year / 1st Semeste	er					
Teacher's name							
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	-		
Course purpose and objectives	Introduce the basic ideas of problem solving and programming, using the principles of top-down design, gradual improvement and pumping using methods. Students gain hands-on experience with object-oriented or structured programming language along with its use in the construction and execution of integrated programs that solve simple algorithmic problems. Basic data types, I / O contracts, selection structures and iteration structures are presented.						
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Designs, compiles and executes a simple program. Defines primitive data types, key statements and writes programs that include selection structures and control of iteration structures. Defines, applies and uses methods / functions Declares and manipulates arrays, as well as designs programs that use arrays. Identifies and uses indicators (if applicable) Constructs solutions to basic programming problems. 						
Prerequisites	None	Requ	lired	None			
Course content	Introduction to Compo Operating Systems, lo programming language Introduction to Progra input-output statement priority. Writing, comp Pseudocode. Control Structures: The while and for structure break and continue sta Characters & Fonts: variable fonts, regular	uters: What is a ow- and high-leve es, the Internet at amming: Primitive ts, program outpo- iling and execution he if, if / else and es, assignment atements, logical Fonts, characters expressions (if ap	Computer, B I languages, I and the World V e data types a ut formatting, ng a simple co d the switch s vectors, increa operators. s and related oplicable).	asic Computer O history and evoluti Wide Web. and variable defin arithmetic operate omputer program, selection structure ase and decrease methods, font m	rganization, ion of major nition. Basic ors, order of Algorithms, . Repetitive e operators, nanipulation,		

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iiii* enga.

V s

	Methods / Functions: program modules, using methods / functions from existing libraries, method / function definitions and prototypes, argument promotion and casting, ID duration, scope rules, method overload, references and reference parameters. Arrays: Introduction to arrays, declaration and distribution, initialization of array data, access to data, manipulation of arrays, passing arrays to methods / functions. Indicators (if applicable): Indicator type variables, working with indices, index operators and index arithmetic. Function call with reference. Using pointers in place of arrays. Pointers to pointers, 2D arrays with pointers. Tables of indicators, Indicators in functions.				
	Troubleshooting: Representing and refining algorithms using sub-programs for sub-problems, algorithmic steps, problem-solving strategies, generalizing a solution, debugging and program control, common programming errors.				
Teaching methodology	Class Instruction:42 HoursConsultation28 HoursStudent Workload:84 HoursTotal154 Hours				
	Deitel P.,& Deitel H., 2022. C How to program. 9th ed. Pearson Cyganek, B., 2020. Introduction to Programming with C++ for Engineers [ebook]. John Wiley & Sons. 1 st Edition				
Bibliography	Quinn, R., 2020. Advanced C++ Programming Cookbook : Become an Expert C++ Programmer by Mastering Concepts Like Templates, Concurrency, and Type Deduction [ebook]. Packt Publishing [ebscohost]. 1 st Edition				
	Alankus, G., etc., 2019. Advanced C++ : Master the Technique of Confidently Writing Robust C++ Code [ebook]. Packt Publishing [ebscohost]. 1 st Edition				
	Oshita, M., Kaida, K., & Matsumoto, S., 2019. Improving User Experience of C Programming Language Learning System for Novices. In: 8th International Congress on Advanced Applied Informatics (IIAI-AAI). Toyama, Japan, 07-11 July 2019. IEEE 1 st Edition				
	Mid Term Exam: 30%				
Assessment	Final Exam: 40%				
	Assignments: 20%				
	Participation: 10%				
Language	Greek				

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Discrete Structures					
CMP120					
Major Requirement					
Bachelor of Science(1st	Cycle)				
1st Year / 1st Semester					
6 ECTS	Lectures / week	3 hours, weeks	/ 14	Laboratories / week	-
To give students the necessary mathematical bases for their next computer courses. This will extend students' mathematical maturity and ability to engage in subtraction.					
 Upon completion of the course the learner is expected to be able to: Applies characteristic methods of propositional and categorical logic. Solves problems with the use of functions, relationships and sets. Recalls the different proof techniques and applies them for a given problem. Calculates layouts and combinations of a set 					
CMP115	Required	Required None			
Basic principles of Logic: Basic links and Truth Tables. Logical Equivalence and Logical Consistency. Absolute Logic. The use of quantifiers. Relationships and functions: Cartesian product and Relationships. Partial layout, equivalence. Functions: one-to-one and on. Composition and inverse function. Set theory: Sets, subsets and operations on sets. The laws of set theory. Venn diagrams. Cartesian product. Power sets. Mathematical proofs: The structure of mathematical proofs. Immediate receipts. Proof by counter-example. Mathematical induction. Strong induction. Induction induction. Count: General methods of counting devices and combinations. Layouts and combinations with or without repetition. Bionomic development. Identity of Pascal. Principle of inclusion - exclusion. The beginning of the dovecote.					
	Discrete Structures CMP120 Major Requirement Bachelor of Science(1st 1st Year / 1st Semester 6 ECTS To give students the near This will extend students Upon completion of the e Applies characteristic r Solves problems with t • Recalls the different pr for a given problem. • Calculates layouts and CMP115 Basic principles of Logic Basic links and Truth Ta Logic. The use of quanti Relationships and functi Cartesian product and F Functions: one-to-one a Set theory: Sets, subsets and opera Cartesian product. Powe Mathematical proofs: The structure of matherr Mathematical induction. Count: General methods of cou with or without repetitior inclusion - exclusion. Th	Discrete Structures <u>CMP120</u> Major Requirement Bachelor of Science(1st Cycle) 1st Year / 1st Semester 6 ECTS Lectures / week To give students the necessary mathemat This will extend students' mathematical mat Upon completion of the course the learner • Applies characteristic methods of propos • Solves problems with the use of function • Recalls the different proof techniques an for a given problem. • Calculates layouts and combinations of a CMP115 Required Basic principles of Logic: Basic links and Truth Tables. Logical Equi Logic. The use of quantifiers. Relationships and functions: Cartesian product and Relationships. Part Functions: one-to-one and on. Compositio Set theory: Sets, subsets and operations on sets. The Cartesian product. Power sets. Mathematical proofs: The structure of mathematical proofs. Imm Mathematical induction. Strong induction. Count: General methods of counting devices and with or without repetition. Bionomic device inclusion - exclusion. The beginning of the If time permits, one can make an introduct	Discrete Structures CMP120 Major Requirement Bachelor of Science(1st Cycle) 1st Year / 1st Semester 6 ECTS Lectures / week To give students the necessary mathematical base This will extend students' mathematical maturity an Upon completion of the course the learner is expect Applies characteristic methods of propositional an Solves problems with the use of functions, relation Recalls the different proof techniques and applies for a given problem. CMP115 Required Basic principles of Logic: Basic links and Truth Tables. Logical Equivalence a Logic. The use of quantifiers. Relationships and functions: Cartesian product and Relationships. Partial layout Functions: one-to-one and on. Composition and inv Set theory: Sets, subsets and operations on sets. The laws of set Cartesian product. Power sets. Mathematical proofs: The structure of mathematical proofs. Immediate re Mathematical induction. Strong induction. Induction Count: General methods of counting devices and combina with or without repetition. Bionomic development. Ic inclusion - exclusion. The beginning of the dovecot	Discrete Structures CMP120 Major Requirement Bachelor of Science(1st Cycle) 1st Year / 1st Semester 6 ECTS Lectures / week 3 hours/14 weeks To give students the necessary mathematical bases for tf This will extend students' mathematical maturity and abilit Upon completion of the course the learner is expected to • Applies characteristic methods of propositional and cate • Solves problems with the use of functions, relationships • Recalls the different proof techniques and applies them for a given problem. • Calculates layouts and combinations of a set CMP115 Required None Basic principles of Logic: Basic links and Truth Tables. Logical Equivalence and Lo Logic. The use of quantifiers. Relationships and functions: Cartesian product and Relationships. Partial layout, equiv Functions: one-to-one and on. Composition and inverse f Set theory: Sets, subsets and operations on sets. The laws of set the Cartesian product. Power sets. Mathematical proofs: The structure of mathematical proofs. Immediate receipts Mathematical induction. Strong induction. Induction induct Count: General methods of counting devices and combinations. with or without repetition. Bionomic development. Identity inclusion - exclusion. The beginning of the dovecote. If time permits, one can make an introduction to reductive	Discrete Structures CMP120 Major Requirement Bachelor of Science(1st Cycle) 1st Year / 1st Semester 6 ECTS Lectures / week 3 hours/ 14 weeks To give students the necessary mathematical bases for their next comput This will extend students' mathematical maturity and ability to engage in s Upon completion of the course the learner is expected to be able to: • Applies characteristic methods of propositional and categorical logic. • Solves problems with the use of functions, relationships and sets. • Recalls the different proof techniques and applies them for a given problem. • Calculates layouts and combinations of a set CMP115 Required None Basic principles of Logic: Basic links and Truth Tables. Logical Equivalence and Logical Consistent Logic. The use of quantifiers. Relationships and functions: Cartesian product and Relationships. Partial layout, equivalence. Functions: one-to-one and on. Composition and inverse function. Set theory: Sets, subsets and operations on sets. The laws of set theory. Venn diagr: Cartesian product. Power sets. Mathematical proofs: The structure of mathematical proofs. Immediate receipts. Proof by count Mathematical induction. Strong induction. Induction induction. Count: General methods of counting devices and combinations. Layouts and cor with or without repetition. Bionomic development. Identity of Pascal. Princi inclusion - exclusion. The beginning of the dovecote.

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Teaching methodology	Class Instruction: Consultation Student Workload: Total	42 Hours 14 Hours 98 Hours 154 Hours
Bibliography	Recommended Biblio Hunter D., 2021. <i>Essel</i> Kenneth H. R., 2018. από Σ.Ι. Σουρα Johnsonbaugh, R., 202	graphy: ntials of Discrete Mathematics.4 th ed. Jones & Bartlett Learning Διακριτά μαθηματικά και εφαρμογές τους. Μεταφρασμένο από Αγγλικά αβλάς, 2018. 8η Έκδ. Τζιόλα 19. <i>Discrete Mathematics</i> . Global ed. 8th ed. Pearson
Assessment	Mid Term Exam: Final Exam: Assignments: Participation:	30% 40% 20% 10%
Language	Greek	

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

Course title	Programming Principles II				
Course code	CMP125				
Course type	Major Requirement				
Level	Bachelor of Science(1	st Cycle)			
Year / Semester	1st Year / 2nd Semest	ter			
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	-
Course purpose and objectives	Introduction to the con features of an object-o the program, students programs, through ass	cept of object priented progra will gain exp signments.	oriented program amming language erience in writing	ming. In the cours will be studied. B object-oriented p	e advanced y the end of rogramming
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Defines objects with constructs and access methods Designs pro / basic-classes and sub-generated-classes with class relations Creates abstract classes and interfaces Generates basic GUIs and handles events (if applicable) Applies operator overload (if applicable) Applies error checking techniques Applies sequential and random access to files Uses font manipulation methods 				
Prerequisites	CMP115	R	equired	None	
Course content	Objects: Introduction to objects and object-oriented design, classes, constructs, constructor overload, access methods, class composition, class-level constants and variables, class scope, data extraction, and encapsulation. Heredity and polymorphism: Super / Basic classes, sub-generated classes, heredity, polymorphism, dynamic method commitment, abstract classes and methods, final methods and classes, interfaces. Friends, overload (if applicable) Methods friends and classes friends, operator overload, tables and classes GUI Introduction to GUI design, application of basic GUI elements such as tags, text boxes, composite boxes, buttons, radio buttons, check boxes.			constructor d variables, dynamic classes, sses	

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

	Events Event handling, internal classes, nested classes, event handling, and event listeners.				
	Exception Handling: Error checking and error handling techniques, throwing and catching error				
	Archives: What is a file, streams, sequential and random file access, file storage, class files, functions / methods for entering and exiting files.				
Teaching methodology	Class Instruction: 42 Hours Consultation 28 Hours Student Workload: 84 Hours Total 154 Hours				
	REQUIRED BIBLIOGRAPHY: Deitel, 2017. C++ how to program. 11 th ed. Prentice Hall				
	RECOMMENDED BIBLIOGRAPHY: Deitel P., & Deitel H., 2022. <i>C How to program</i> . 9th ed. Pearson				
	Walter Savitch, 2018. Problem Solving with C++. Global Ed., 10th Ed. Pearson				
	Cyganek, B., 2020. Introduction to Programming with C++ for Engineers [ebook]. John Wiley & Sons. 1 st Edition				
Bibliography	Quinn, R., 2020. Advanced C++ Programming Cookbook : Become an Expert C++ Programmer by Mastering Concepts Like Templates, Concurrency, and Type Deduction [ebook]. Packt Publishing [ebscohost]. 1 st Edition				
	Alankus, G., etc., 2019. Advanced C++ : Master the Technique of Confidently Writing Robust C++ Code [ebook]. Packt Publishing [ebscohost]. 1 st Edition				
	Oshita, M., Kaida, K., & Matsumoto, S., 2019. Improving User Experience of C Programming Language Learning System for Novices. In: <i>2019 8th International Congress</i> <i>on Advanced Applied Informatics (IIAI-AAI)</i> , Toyama, Japan, 07-11 July 2019. IEEE 1 st Edition				
	Mid Term Exam: 30%				
	Final Exam: 40%				
Assessment	Assignments: 20%				
	Participation: 10%				
Language	Greek				

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Introduction to Information Systems				
Course code	CMP130				
Course type	Major Requirement				
Level	Bachelor of Science(1	st Cycle)			
Year / Semester	1st / 2nd				
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	Provide a comprehens and tools, which will as relationship between ir understand their role ir applications of persona components and the a	Provide a comprehensive understanding of current information systems, their uses and tools, which will assist in the decision-making process. Students to know the relationship between information systems and the organizational level and to understand their role in management and decision making. Understand the goals and applications of personal, business teams and business information systems, their components and the appropriate role for business professionals in their development			
Learning outcomes	 Upon successful completion of the course students will be able to: Recognize the role of information systems in supporting structures and processes. Management and strategic success of organizations. Explain the basic components of an organization's infrastructure information technology: hardware and software. Data resources. Telecommunications and networks and the Internet. Solve management problems with the use of IT tools. Differentiate knowledge management and describe how knowledge management supports organizational decision making and how it affects strategic success. Evaluate key Information Systems issues, including security and control, and global systems issues. 				
Prerequisites	None		Required	None	
Course content	None Required None Part I: INFORMATION SYSTEMS IN PERSPECTIVE. Introduction to Information Systems in Organizations and Cloud Computing. Part II: TECHNOLOGY. Hardware and Software. Database Systems and Business Intelligence. Database Systems and Business Intelligence. Telecommunications, Internet, Intranets and Extranets. Microsoft Azure, Amazon Web Services, Google Cloud. SaaS, IaaS, PaaS Part III: BUSINESS INFORMATION SYSTEMS. Electronic and Mobile Commerce and Business Systems. Decision Information and Support Systems (CRM, ERP) Knowledge Management and specialized information systems. Part IV: SYSTEM DEVELOPMENT AND SOCIAL ISSUES. Systems Development.				

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N s

	Part V: INFORMATIO The personal and soc	N SYSTEMS IN BUSINESS AND SOCIETY. ial impact of computers.
Teaching methodology	Class Instruction: Consultation Student Workload Total	 42 hours 35 hours 77 hours 154 hours
Bibliography	Recommended Bibliogr Wallace, P., 2021. Introd Laudon, K. C. & Laudon Rainer, R. K. & Prince, B <u>Schewe</u> , K.D., & <u>Thalhei</u> [ebook]. Springer 1 st Edi	raphy: duction to Information Systems. 4th ed. Pearson , J. P., 2022. Management Information Systems.17th ed. Pearson ., 2021. Introduction to Information Systems. 9th ed. Wiley. im, B., 2019. Design and Development of Web Information Systems ition
Assessment	Mid Term Exam: Final Exam: Assignments: Participation:	30% 45% 15% 10%
Language	Greek	

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N s

Course title	Digital Logic					
Course code	CMP135					
Course type	Major Requirement					
Level	Bachelor of Science(1st	Cycle)				
Year / Semester	1/2					
Teacher's name						
ECTS	6 ECTS	Lectures / w	eek	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	The aim of the course is areas: Boolean algebra implicants, minimization sequential circuits (eg re	s to provide a , Boolean func of combinatio egisters) , met	solid kr ctions, t onal cir cers, me	nowledge bas truth tables, k cuits, as well emory).	e in the following arnaugh maps, pr as the design and	learning 'ime analysis of
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Describes the concepts of binary numbers and binary logic Describes Boolean algebra theorems and axioms and applies them to practical circuit design problems Analyzes, designs and implements digital combinatorial and sequential circuits Designs and implements register and cash circuits Explains the concept of memory in digital systems, as well as implements basic memory units 					
Prerequisites	CMP120 Required None					
Course content	Introduction: Digital Computers and I Binary Logic, Definition Gates. Boolean algebra: Basic Definitions, Boole and Properties Boolean Tables, Algebraic Trans product of majors, Conv product of sums, the log between logical gates, the Defining Boolean Funct The Karnaugh maps me functions in the Map. Re functions through the M Map of four variables, s NOR gates. Implementa Conditions of indifference	Digital System of Binary Logi an Algebra Of Algebra, Dua formations, B version betwee jical gates AN use of multiple ions: ethod, Maps o epresentation ap. implification of ation with AND ce. Selection of	s, Bina c, Circ fficer D lity, Op oolean D, OR, inputs f two a of func of func f produ	efinition, Boo erator Priority Functions, M nal and stand NAND, NOR , positive and tions in the M ct sums, impl NVERT and C e-implicants.	Binary Storage an and Binary Syster lean Algebra, Bas /, Boolean Functio inimal, Boolean, F ard forms, sum of ard for ard for ar	d Registers, ns, Logical ic Theorems ons, Truth Regular products, quivalence on of of Boolean



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

J ź

	Design procedures, adders, semi-adder, full adder, subtractors, semi-adder, complete adder, code conversion, NAND and NOR multi-level circuits.				
	Modern Sequential Circuits: Flip-flops, Basic flip-flps circuits, RS flip-flops, D flip-flops, JK flip-flops, flip-flops activation, master-slave flip-flops, synchronous sequence analysis, state table, state diagram, equations states for flip-flops, input functions flip-flops, minimization and assignment of states, reduction of state table, excitation table for RS-flip-flop, excitation table for JK-flip-flop, excitation table for D-flip-flop, design sequential circuits, design of sequential circuits with unused states, design of cash, design with equations of state. Registers, meters and memory modules, BCD burst meter unit, synchronous meters, memory registers.				
	Class Instruction: 42 Hours				
Teaching	Consultation 21 Hours				
methodology	Total 133 Hours				
Bibliography	Required Bibliography::Brown, S., and Vranesic, Z., 2021. Σχεδίαση Ψηφιακών Συστημάτων με τη Γλώσσα VHDL.Μετάφραση από Αγγλικά από Ι. Πεταλάς, 2021. 3η Βελτιωμένη Έκδοση. ΤζιολαBrown, S., and Vranesic, Z., 2023. Fundamentals of Digital Logic with VHDL Design. 4th ed.McGrawLaMeres, B.J., 2019. Introduction to Logic Circuits & Logic Design with VHDL [ebook]. 2nd ed.SpringerRecommended Bibliography:Donzellini, G., 2019. Introduction to Digital Systems Design [ebook]. Springer 1st EditionMorris, M., Cilleti,& M.D., 2018. Ψηφιακή Σχεδίαση. Μεταφρασμένο από Αγγλικά από Ε.Γκαγκατσιου, 2018. 6η εκδ. Παπασωτηρίου				
	Mid Torm Exam: 20%				
Assessment	Final Exam: 45%				
Assessment	Assignments: 15%				
	Participation: 10%				
Language	Greek				

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N s

Course title	Computer Organization & Architecture					
Course code	CMP140					
Course type	Major Requirement	Major Requirement				
Level	Bachelor of Science(1	st Cycle)				
Year / Semester	1/2					
Teacher's name						
ECTS	6 ECTS	Lectures / week	1	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	The course aims to introduce how hardware components are linked together to form a computer system. Additionally, the structure, behavior and interaction of the various IT modules are presented.					
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Describes the hardware units found in a standard processor. Describes the basic principles of processor operation. Understands how different design methodologies affect the performance of a processor. Explains the basic input / output function and memory management issues. 					
Prerequisites	CMP120		Requ	ired	None	
Course content	 Transfer data from memory and input / output to registrars as well as transfer data from registrar to registrar. Overview of micro-functions (Arithmetic, Logic, Change). Basic Computer Organization and Design. Instruction codes, computer registers, Computer instructions, timing and control, Command cycle, input / output and interrupt, host computer design. Computer software. Symbolic language and encoder. Command sets. Machine command features. Types of operations, functions. Organization of a Central Processing Unit. Processor Organization. Numerical and Logic unit. Pile mechanism organization. Ways to address commands, Registrar organization. The instruction cycle. Quick treatment pipeline instructions. Microprocessor organization. CISC VS RISC architectures. Overview of standard processors (eg INTEL) Check unit functions. Organization of micro-program control. Micro-command sequential control, execution, formats. Computer Arithmetic. The arithmetic and logic unit. Integer arithmetic operations (comparison, subtraction, addition, multiplication, algorithms). Arithmetic with 					



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N de

	 Entry / Exit Organization. External devices. The external device interface. Scheduled and intermittent control input / output. Instant memory access. Input / output channels and processors. View the computer memory organization. Internal and external memory. Main memory and cache organization. Virtual and correlative memory. Various categories of secondary storage devices. Recent developments and current issues related to the subject of the course are discussed. 				
Teaching methodology	Class Instruction: Consultation Student Workload: Total	42 Hours 28 Hours 84 Hours 154 Hours			
	Required Bibliography Linda Null, N. & Lobur <i>Architecture</i> . 5 th ec	r: . J., 2019. The Essentials of Computer Organization and d. Jones & Bartlett Learning			
Bibliography	Hennessy, John L., Patterson, David A. 2017. <i>Αρχιτεκτονική υπολογιστών: Ποσοτική</i> <i>προσέγγιση</i> . Μεταφρασμένο από Αγγλικά από Δ. Σερπανος, Γ. Σταμουλης, & Γ. Καλπακης, 2020. 6 ^η Αμερικάμικη εκδ. Κλειδάριθμος.				
Diolography	Stallings, William. 2019. <i>Οργάνωση και αρχιτεκτονική των υπολογιστών: Σχεδίαση με</i> <i>στόχο την απόδοση</i> . Μεταφρασμένο από Αγγλικά από Σ. Σουραβλας, 2020. 11 ^η εκδ.Τζιόλας				
	Bindal, A., 2019. Fundamentals of Computer Architecture and Design [ebook]. 2 nd ed. Springer Nature Switzerland AG.				
	Mid Term Exam:	30%			
	Final Exam:	45%			
Assessment	Assignments:	15%			
	Participation:	10%			
Language	Greek				

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

s s

Course title	Data Structures & Algorithms					
Course code	CMP200					
Course type	Major Requirement					
Level	Bachelor of Science(1st Cycle)				
Year / Semester	2/3					
Teacher's name						
ECTS	6 ECTS	Lectures / we	eek	3 hours/ 14 weeks	Laboratories / week	-
Course purpose and objectives	The course will introduce students to the basic concepts of data structures, as well as their usefulness in the various functions of the computer. Structures such as tables, stacks, queues, linked lists, trees, and graphs will be discussed and analyzed. Students will develop algorithms and learn to operate and manipulate these structures efficiently. Finally, an analysis of the complexity of space-time algorithms will be presented.					
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Analyzes the program with temporal complexity and its expression with Oh, Omega and Theta notation. Classifies and evaluates different data structures, both linear and non-linear. Creates programs that use abstract data structures to solve computing problems. Applies different algorithms to solve computational problems. 					
Prerequisites	CMP115, CMP120		Requ	ired	None	



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

V s

	Introduction and basic concepts of data structures:
	Defining data structures, implementing a data structure, defining an algorithm, distinguishing between an algorithm and a program, how to create and analyze programs. Asymptotic notation and arithmetic, O-notation. Search complexity and sorting algorithms. Retrospective mathematical function, problem defined repeatedly, relational mathematical induction, comparison of iterative and retrospective solutions, dividing and reigning strategies, retrospective retreat.
	Linked lists: Application of a linked list, application of the index to a linked list, function of inserting and deleting linked lists, the efficiency of these functions and comparison of linked lists with successive storage structures, algorithms for deleting and adding to linked lists, Duplicate linked lists directories and their advantages over individual linked directories.
Course content	Stacks and queues: The definitions of these two data structures are stacking, creating a stack, deleting from a stack, returning a stack item, adding an item to the stack, and algorithms for adding and deleting items from a stack. Functions in queues, Creating a queue, deleting the front of the queue, adding an item to the back of the queue, algorithms for deleting and adding to queues.
	Sort and search: O (n2) and O (nlogn) sorting techniques, Linear and binary search, greedy and Divide and Reign algorithms, Fragmentation.
	Trees: Definition of a tree, tree with root, height of tree with root, level numbers of each node, balanced trees, tree graph theorems, n-tree, algorithms passing through a tree, tree applications, binary trees, definition of search trees, binary search tree, activities supported by these structures (insert, delete, member) algorithms for the implementation of these tasks, the temporal analysis of these operations, introduction to balanced trees, deletion to balanced Trees
	Graph Theory: What a graph, what a path and a circuit, directional and non-directed graphs, networks, breadth and depth, graph search, graph representation diagrams as abstract data structures.
	Recent developments and current issues related to the subject of the course.
Teaching methodology	Class Instruction: 42 Hours Consultation: 28 Hours Student Workload: 84 Hours Total : 154 Hours
Bibliography	Required Bibliography: Γεωργακόπουλος, Γ., 2021. <i>Δομές δεδομένων: Έννοιες, τεχνικές και αλγόριθμοι.</i> Πανεπιστημιακές Εκδόσεις Κρήτης 1 ^η έκδοση

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N de

	Recommended Bibliography:				
	Knebl, H. ed., 2020. Algorithms and Data Structures: Foundations and Probabilist Methods for Design and Analysis. Springer 1 st Edition				
	Srivastava, A.K., 2020. <i>A Practical Approach to Data Structure and Algorithm with Programming in C</i> [ebook]. Arcler Press [ebscohost]. 1 st Edition				
	Mid Term Exam: 30%				
	Final Exam: 45%				
Assessment	Assignments: 15%				
	Participation: 10%				
Language	Greek				

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Ś

Course title	Systems Analysis and Design						
Course code	CMP205						
Course type	Major Requirement						
Level	Bachelor of Science (1st Cycl	e)					
Year / Semester	2/3						
Teacher's name							
ECTS	6 ECTS Lectur week	es / 3 hours/ 14 weeks	Laboratories / week				
Course purpose and objectives	The objective of this course is to introduce students to the development of information systems and of their software components. The course focuses on the induction and preliminary modelling of information systems requirements that enable identification of information problems and the subsequent analysis and modelling of an effective solution to those problems, by following the Object-Oriented methods expressed by the Unified Process software development life-						
Learning outcomes	 Upon successful completion of this course students should be able to: Describe the concept of Information Systems and analyze the differences between Information Systems and other types of software systems Describe the process of Requirement Engineering in Software Engineering. Describe the basic stages of the systems' lifecycle development process and discuss their interrelationship and its importance Undersant the ways in which a system analyst's interaction with system stakeholders play a part in information systems engineering/development. Understand the object-oriented methods models as covered by the Unified Model Language. Explain project management in support of system analysis projects Articulate the responsibilities and key skillsets of an effective systems analyst Develop and analyse a business case and system requirements Describe the operation of modeling tools in systems' development 						
Prerequisites	CMP125 Required None						
Course content	 Phase I: Systems Planning and Requirements Engineering Process Introduction to Requirement Engineering process of defining, documenting and maintaining the requirements, gathering and defining service provided by the system. Examination of Requirements elicitation, Requirements specification Requirements verification and validation and Requirements management Introduction, what is information technology, information systems components, business today, modelling business operations, business information systems, what information do users need, systems development tools, systems development methods, the information technology department. Analyzing the Business Case: a framework for IT Systems development, what is a business case, information systems projects, evelauation of systems 						



AA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION





CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

s s

	Managing Systems Support and Security
	Class Instruction: 42 Hours
Teaching	Consultation 21 Hours
methodology	Student Workload: 70 Hours
	I otal 133 Hours
	SCOTT TILLEY AND HARRY J. ROSENBLATT, SYSTEMS ANALYSIS AND DESIGN, CENGAGE 1 st Edition
	KENNETH E. KENDALL AND JULIE E. KENDALL, SYSTEMS ANALYSIS AND DESIGN 1 st Edition
Bibliography	ALAN DENNIS , BARBARA HALEY WIXOM, SYSTEMS ANALYSIS AND DESIGN: AN OBJECT- ORIENTED APPROACH WITH UML 1 st Edition
	JOHN W. SATZINGER , ROBERT B. JACKSON, SYSTEMS ANALYSIS AND DESIGN IN A CHANGING WORLD 1 st Edition
	Mid Term Exam: 30%
	Final Exam: 40%
Assessment	Assignments: 20%
	Participation: 10%
Language	Greek

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N s

Course title	Programming in Unix-like Environment						
Course code	CMP210						
Course type	Major Requirement						
Level	Bachelor of Science(1st C	ycle)					
Year / Semester	2/3						
Teacher's name							
ECTS	6 ECTS Lectures / 3 hours/14 Laboratories / week weeks week						
Course purpose and objectives	Introduce the concepts of the UNIX operating system, demonstrate the concepts of the C ++ programming language, further understand the methods of controlling and programming the computer memory, and demonstrate the use of tools and debugging techniques.						
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Discusses the basic concepts of Linux. Compose medium with advanced code difficulty. Creates computer programs that use memory efficiently. Uses debuggers to find persistent errors in the code it writes. 						
Prerequisites	CMP125, CMP200 Required None						
Course content	Introduction: Linux key concepts - files and directories, line and screen editors, change file and directory attributes, differentiate between binary and text files, create text files from the command line, familiarize yourself with Linux system files, write script files . C ++ Overview: Makefiles, types of constants and variables, expressions and operators, flow control structures, function definitions, header files, separate compilation and interface, understanding of the compilation process, understanding of the connection process. Object Oriented Programming with C ++: Class definition, heredity, encapsulation, polymorphism, and operator overload with C ++ structures, the comparison between object-based programming and object- oriented programming. Memory Management Indicators (reporting and finding values), memory models to host pointers, index arithmetic, parameterization (by value and by reference), pointers to pointers, pointers such as tables, pointers to objects, abstract data structures, file processing, dynamic creation objects and delete. Line-based and debugging commands:						
	Basic principles of debugging with cout statements. Using debuggers: getting to know gdb, using gdb for debugging, breakpoints and indicator.						

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

Teaching methodology	Class Instruction: : 42hours Consultation : 35hours Student Workload: 84hours			
	Total:161hoursRequired Bibliography:Manish J, 2018. Beginning Modern Unix: Learn to Live Comfortably in a Modern Unix Environment. Springer 1 st Edition			
	Recommended Bibliography: Yogesh Babar., 2020. Hands-on Booting: Learn the Boot Process of Linux, Windows, and Unix [ebook]. Apress [Springer] 1 st Edition			
	Palakollu, Sri M., 2021. Practical System Programming with C: Pragmatic Example Applications in Linux and Unix-Based Operating Systems [ebook] Apress. [Springer] 1 st Edition			
	Singh, etc, 2020. Predictive approaches for the UNIX command line: curating and exploiting domain knowledge in semantics deficit data. <i>Multimedia Tools and Applications</i> , [e-journal] 80 (6). Available through: European University Cyprus library «https://onlinelibrary.euc.ac.cy/».1 st Edition			
Bibliography	Hickey, M., & Arcuri, J., 2020. UNIX. <i>Hands on Hacking: Become an Expert at Next Gen Penetration Testing and Purple Teaming [ebook]</i> . John Wiley & Sons, Inc. Ch.10. 1 st Edition			
	Bell, J., 2020. Useful Unix Commands. <i>Machine Learning: Hands-On for Developers and Technical Professionals,</i> 2 nd ed [ebook]. John Wiley & Sons, Inc. Appendix C.			
	Kappelmann-Fenz, M., 2021. Introduction to Command Line (Linux/Unix). 1 st Edition			
	Next Generation Sequencing and Data Analysis [ebook]. Springer Cham. Ch.6			
	Pajankar, A., 2021. Useful Unix Commands and Tools. <i>Practical Linux with Raspberry Pi OS: Quick Start</i> [ebook]. Apress Berkeley. Ch.5.			
	Tutorialspoint, [2022]. UNIX / LINUX Tutorial, [online] Available at: «https://www.tutorialspoint.com/unix/index.htm#».1 st Edition			
	Mid Term Exam: 30%			
Assessment	Final Exam: 40%			
Assessment	Assignments: 20%			
	Participation: 10			
Language	Greek			

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

Course title	Data Communications and Computer Networks							
Course code	CMP215							
Course type	Major Requirement							
Level	Bachelor of Science (1s	st Cycle)						
Year / Semester	2/3							
Teacher's name								
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	3			
Course purpose and objectives	Provide an overview o computer networks. Da understanding compute	of the broad an ata communicati r communicatior	d emerging ion is discus n networks.	field of communi sed as the esser	cations and ntial tool for			
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Reports and identifies concepts related to data communication, communication protocols and layered protocol architectures Reports and interprets standard communication protocols such as OSI / RM and TCP / IP, as used in computer networking and internet Identifies and explains basic data transmission principles and types of data transmission media (wired and wireless) Defines and discusses connection control protocols and their functionality Recalls and explains multiplexing techniques and their applications Defines, explains and gives examples of concepts related to local area networks (wired and wireless), topologies and protocols, their types and transmission technologies Describes, explains and classifies types of security attacks, types and encryption 							
Prerequisites	CMP105 Required None							
Course content	Introduction Communication systems, entities and components. Computer networks as communication systems, topologies, types. Communication protocols, multilevel communication and protocol architectures. OSI / RM and TCP / IP standards Components of communication systems, transmission systems, faults and data transmission media Basic data transmission elements, concepts - frequency, bandwidth, spectrum. Data transmission rate and bandwidth. Analog and digital transmission, Wired data transmission problems. Transmission media and faults for wired (unshielded twisted pair cable, shielded twisted pair cable, coaxial cable. fiber optic) and wireless							



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iiii* enqa.

	(microwave, radio wave, infrared) transmission. Signal encoding techniques, analog-to-digital (and vice versa) data-to-signal conversion.					
	Communication Techniques, Data Link Control Multiplexing					
	Synchronous and asynchronous transmission, error checking: types, detection and correction. Flow control: Stop-and-wait, sliding-window, ARQ. HDLC protocol: functions, data frame types and function. frequency division multiplexing (FDM), Synchronous and Statistical time division multiplexing (TDM), multiplexing applications (CATV, ADSL)					
	Wired and wireless Local Area Networks					
	Topologies, protocols and IEEE 802.11 interface, bridges, distributors, switches. Ethernet versions. Cellular systems: reuse of frequencies, increase of production capacity, operation. Wireless LANs: applications / types and transmission technologies					
	Network security					
	Requirements, Attack Types, Symmetric and Asymmetric Encryption Techniques and their Algorithms, SSL IPv4 and IPv6 Security, Wireless Protected Access (WPA).					
Teaching methodology	Class Instruction::42 hoursConsultation/Εργαστήριο H/Y:21 hoursStudent Workload::91 hoursTotal:154 hours					
	Required Bibliography: Cisco Networking Academy, 2022. <i>Networking Essentials Companion Guide</i> . Cisco Press. 1 st Edition					
	Cisco Networking Academy, 2022. <i>Networking Essentials Lab Manual</i> . Cisco Press. 1 st Edition					
Bibliography	Kurose, J.F. 2021. Δικτύωση Υπολογιστών: Προσέγγιση από πάνω προς τα κάτω με έμφαση στο διαδίκτυο. Μεταφρασμένο από Αγγλικά από Α. Μ. Τροχάνης, 2021. 8η Έκδοση, Γκιουρδας					
	Recommended Bibliography: Tanenbaum, Α., 2021. <i>Δίκτυα υπολογιστών</i> . Μεταφρασμένο από Αγγλικά από Κ. Καρανικολος, Π. Αρκουδεας, & Γ. Σταμουλη, 2021. 6η εκδ. Κλειδάριθμος					
	Yu-Chen Hu., etc., 2022. <i>Ambient Communications and Computer Systems</i> : RACCCS-2018 [ebook]. Springer 1 st Edition					
Assessment	Exams75%Assignments25%100%					

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Mid Term Exam:	30%
	Final Exam:	45%
	Assignments:	15%
	Participation:	10%
Language	Greek	

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Finite Mathematics					
Course code	MTM200					
Course type	General Education					
Level	Bachelor of Science(1	st Cycle)				
Year / Semester	2/3					
Teacher's name						
ECTS	6 ECTS	Lectures , week	/	3 hours/ 14 weeks	Laboratories / week	-
Course purpose and objectives	Improving the mathematical skills that a student in business administration must have. Emphasis is placed on solving problems that can be formulated using array algebra. Depending on the case, the computing and graphic design capabilities of modern technologies will be used to enhance the learning process.					
Learning outcomes	 Upon successful completion of the course, students will acquire: The ability to use Table Algebra to solve business administration problems. The ability to use linear programming to solve practical problems in the field. The ability to solve problems that arise in the field of finance. 					
Prerequisites	None		Requ	ired	None	
	 Array algebra Introduction to table concepts, inverting, table operations including addition, subtraction, multiplication of a table with incremental sizes, internal product and multiplication of tables. Determinant, cofactors, table inversion, solving a linear system of equations using tables. Equation of line with plane: Slope, points of intersection with the x and ψ axes, straight line graph, equation of a given slope and line intersection of the line with the x-axis, equation of a given slope and arbitrary point at the plane through which it passes, parallel lines. 					
Course content	 Inequalities and systems of linear inequalities: Graphical solution of linear inequality with 2 variables, graphical solution of linear inequality systems with 2 variables. Introduction to Linear Programming: Determining the area of possible solutions graphically, determining the peak points, finding the optimal solution using the corner-point method. Functions: Introduction to Function Concepts: Definition Field, Value Field, Dependent and Independent Variables, Function Graph, Applications: Cost, Revenue and Profit Functions, Depreciation Straight, break-even analysis. 					
						peak points,

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Other applications, use of software, recent developments and issues related to the subject of the course.			
Teaching methodology	Class Instruction: : 42 hours Consultation: : 14 hours Student Workload: : 77 hours Total : 133 hours			
	Recommended Bibliography: <i>Barnett, R. A., etc. 2019. Calculus For Business, Economics,Life And Social Sciences.</i> 14th ed. Pearson.			
	Logan, D.L., 2023. A First Course in the Finite Element Method, Enhanced Edition, SI Version. 6 th ed. Cengage Learning.			
Bibliography	Angel, A., & Abbott, C., & Runde, D., 2021. A Survey of Mathematics with Applications. 11 th ed. Pearson			
Dibilography	Abramson. J., 2022. College Algebra [e-book].2 nd ed. Openstax			
	Lial, M.L., Greenwell, R.N., & Ritchey, N.P., 2022. <i>Finite Mathematics and Calculus with Applications</i> . 11th ed. Pearson			
	Goldstein, L.J., Schneider, D.I., & Siegel, M.J., 2023. <i>Finite Mathematics & Its Applications.</i> 13th ed. Pearson			
	Mid Term Exam: 35%			
Assessment	Final Exam: 45%			
	Assignments: 10%			
	Participation: 10%			
Language	Greek			

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Operating Systems					
Course code	CMP220					
Course type	Major Requirement					
Level	Bachelor of Science(1st (Cycle)				
Year / Semester	2/4					
Teacher's name						
ECTS	6 ECTS	Lectures / week	,	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	To provide students with how it works. The cour Systems, and focuses of environment.	a basic ur se demons on the app	ndersta strates plication	nding of wha the problem ns of this sp	t an operating sys s encountered by pecialized software	stem is and Operating e in a real
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Explain the role and main functions of the operating system. Describe the various functions of processes as well as process programming algorithms. Analyze the critical part problem and the software and hardware solutions to this problem. Provide a description of deadlocks and methods to prevent or avoid deadlocks in a computer system. Describe various memory management techniques and explain the concepts of virtual memory system. Explain the operation of file systems, file system design and system protection. Describe new trends in operating system design 					
Prerequisites	CMP140 Required None					
Course content	Introduction and overview of the operating system. Importance of operating systems. Operating Systems, as resource managers. The need for Operating Systems, what they do and how they are designed. Operating systems protection. The main resources of the system: The material: Material overview. Main memory. Central processing unit, memory registers. Input and output devices. Secondary storage devices. Interfaces. Control unit. Channels. Process Management: The concept of process and synchronization. Process scheduling, process intercommunication, process synchronization, and deadlock management. Critical part: Problem and solutions (software, semaphores, etc). Classic synchronization problems (readers and writers, philosophers, etc.). Characterization of a dead end. Methods for handling dead ends. Deadlock prevention. Avoid deadlocks. Banker's Algorithm. Deadlock detection.					
ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iii* enqa.

	Multiprogramming and time sharing: Software for multiprogramming and time sharing. Central processing unit time distribution. Main memory allocation. process planning. Memory registers. Distribution of input / output devices. Data resources control. Management of secondary storage spaces.
	Memory Management: Memory allocation and management. Processor management and priorities. Switches and control flow. Distribution of input / output devices. Segmentation. Pagination and Virtual Memory. Partition systems. Paging systems. Virtual memory. Virtual memory application.
	File Systems: Physical data storage. File tasks (create, write, read, delete). Access methods (sequential, index, etc.). Catalog systems (single level, tree-structured). File protection.
	Trends in operating system design. Typical operating system case study (Windows, Unix, Solaris).Recent developments and current issues related to the subject of the course.
Teaching methodology	Class Instruction::42 hoursConsultation:21 hoursStudent Workload::91 hoursTotal:154 hours
	Required Bibliography: Gagne,G., Galvin, P.B., & Silberschatz A., 2021. <i>Λειτουργικά συστήματα</i> . Μεταφρασμένο από Αγγλικά από Β.Ι. Σαμαράς, 2021. 10 ^η εκδ. Γκιουρδας
	Stallings, W., 2018. <i>Λειτουργικά Συστήματα: Αρχές Σχεδίασης</i> . Μεταφρασμένο από Αγγλικά από Σ.Ι.Σουραβλάς, & Γ. Καλπάκης. 9η εκδ. Τζιόλα.
Bibliography	Tanenbaum, A., 2014. <i>Σύγχρονα Λειτουργικά Συστήματα</i> . Μεταφρασμένο από Αγγλικά από Φ. Σκουλαρικης, 2018. 4 ^η Αμερικάνικη εκδ.Κλειδαριθμος
2.2.10 gr 4 pr 1 y	Recommended Bibliography: Silberschatz, A., Gagne,G., & Galvin, P.B., 2021. <i>Operating System Concepts.</i> 10 ed. Wiley
	Stallings, W., 2021. <i>Operating Systems: Internals and Design Principles</i> . 9 ed. Pearson
	Tanenbaum, A., Bos, H., 2022. <i>Modern Operating Systems</i> . 5 th ed. Pearson
	Mid Term Exam: 30%
Assessment	Final Exam: 45%
	Assignments: 15%
	Participation: 10%
Language	Greek

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

1

Course title	Web Programming					
Course code	CMP225					
Course type	Major Requirement					
Level	Bachelor of Science	(1st Cycle)				
Year / Semester	2/4					
Teacher's name						
ECTS	6 ECTS	Lectures / v	week	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	This course covers i to help students und while providing them	n-depth Web lerstand the with hands-o	o progr princip on expe	amming. The les of how to erience in crea	primary goal of the build distributed a ating shared web a	ne course is applications, applications.
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Explain the key concepts that are crucial for the development of web applications Makes online forms Explains the operation of databases and cookies Analyzes and designs databases for the Web Builds AJAX applications Applies techniques for the security of Web applications Builds dynamic applications on the Web 					
Prerequisites	CMP105, CMP110, CMP125 Required None		None			
Course content	This course will be a interactive applicatio incorporating key co Introduction to Web Understand how wel Build a web application Creating Web Serve To make overalls. Ap Validation Tools: Identify the required the Session State. Use of datasets and Apply databases and	n introduction ns accessible ncepts for a c Programming osites work. I ion and evalu r Forms and oply controls. fields and va cookies: d cookies.	n to "W e throu comple g: Introdu Jate the Tools:	/eb Programm gh the web. E ete application ction to the de ese applicatio	hing" the process Emphasis will be p velopment environs.	of writing laced on

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

J ź

	Testing and debugging the Web application: Check the Web application and use the debugger.				
	Web Database Programming: Introduction to ADO. NET. Identify with ADO. NET data commands. Modify databases with bound and unbound controls. Implement Data Grid and data list tools as well as XML.				
	Web Security: Implement various web security methods using forms-based authentication, Windows-based authentication, and network data encryption.				
	AJAX: Introduction to Ajax. Explain the server tools and the AJAX (AJAX Control Toolkit) toolbox.				
	Internet services: Create and test XML web application services				
Teaching methodology	Class Instruction:42 HoursConsultation28 HoursStudent Workload:84 HoursTotal154 Hours				
	Required Bibliography: Beasley, R. E., 2020. <i>Essential ASP.NET Web Forms Development: Full Stack</i> <i>Programming with C#, SQL, Ajax, and JavaScrip</i> [ebook]. Apress [Springer] 1 st Edition				
	Giretti, A., 2022. <i>Beginning gRPC with ASP.NET Core 6: build Applications using ASP.NET Core Razor Pages, Angular, and Best Practices in .NET 6</i> . Apress Berkeley. 1 st Edition				
Bibliography	Freeman, A., 2022. Pro ASP.NET Core 6: Develop Cloud-Ready Web Applications Using MVC, Blazor, and Razor Pages. 9 th ed. Apress Berkeley.				
	Δουληγέρης,, Χ., 2021. <i>Τεχνολογίες και Προγραμματισμός στον Παγκόσμιο Ιστό</i> . 2η Έκδ. Εκδοσεις Νεων Τεχνολογιων.				
	Recommended Bibliography: West, A. W. 2016. Practical Web Design for Absolute Beginners. Apress [Spriger]				
	Mid Term Exam: 20%				
	Final Exam: 30%				
Assessment	Assignments: 40%				
	Participation: 10%				
Language	Greek				

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

J ź

Course title	Fundamentals of Distribu	uted Systems			
Course code	CMP230				
Course type	Major Requirement	Major Requirement			
Level	Bachelor of Science(1st C	ycle)			
Year / Semester	2/4				
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	This course examines the independent networked c concepts of distributed s communication protocols, areas of logical clocks, n tuning and agreement a distributed file systems an	 basic principle omputers that systems are c processes and nutual diverger nd security. E d the Internet a 	es of distribut function as a covered, inclu threads, and nce, consiste xamples of are also cover	ted systems, which coherent system uding architectura naming. Also cove ncy, copying, faul distributed system red.	h consist of . The basic I networks, ered are the t tolerance, ns such as
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Explains and discusses the principles and theoretical models used in the design of distributed systems Describes the pros and cons to consider when designing distributed systems Describes and evaluates algorithms and architectural models used in the implementation of distributed file systems, logical clocks, elections, mutual exclusion, multicast multi-distribution multi-message transmission, transactions transactions Applies algorithms and models taught in programs that perform distributed computations, through the application of taught protocols Evaluates the suitability of algorithms, methods and models for a given application 				
Prerequisites	CMP200	Requ	ired	None	
Course content	Basic principles: Defined distributed sys transparency, transparency systems architectures. p migration. Contact: Layered protocols, types o communication, stream-or Naming:	tem, propertie cy), scalability, rocesses, ther of communicati iented communicati	es of distril types of dis nes, virtualiz on, remote pr nication, grou	buted systems stributed systems. ation, clients, ser rocess call, messa p communication.	(distribution distributed rvers, code ge-oriented
	names, IDs, and addresse Sync:	s, flat and stru	ctured name,	name-based attrib	oute.

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iii* enga.

🔽 é

	Clock synchronization, natural clocks, global positioning system, clock synchronization algorithms, logic clocks, Lamport logic clocks, vector clocks. mutual exclusion algorithms: concentrated, decentralized, distributed, comparing them. Electoral algorithms: traditional electoral algorithms, elections in wireless environments, elections in large-scale systems
	Coherence and reproduction: reasons for copying, data-centric consistency models, customer-centric consistency models: potential consistency, monotone reading and recording. Copy management, consistency protocols.
	Error tolerance: key concepts, failure models, process robustness: failure masking and reproduction, defective systems compliance, failure detection. reliable client-server communication: point-to-point communication, reliable communication group: basic reliable multicast-systems, scalability to reliable multicast, individual multicast. Distributed commitment, and recovery.
	Security: introduction, secure channels, access control. Distributed object-oriented systems, distributed file systems, Distributed web-based systems, Distributed systems with coordination: architecture, processes, communication, naming, synchronization, consistency and reproduction, fault tolerance.
Teaching methodology	Class Instruction:: 42 hoursConsultation: 28 hoursStudent Workload: 84 hoursTotal: 154 hours
	Required Bibliography: Maarten van Steen & Andrew S. Tanenbaum, A.S., 2017. Distributed Systems. 3rd ed. CreateSpace Independent Publishing Platform
Bibliography	Coulouris, G., Dollimore, J., Kindberg, T., 2020. Κατανεμημένα Συστήματα Αρχές και Σχεδίαση. Μετάφραση από Αγγλικά από Κ. Κοντογιάννης, 2020. 2η Αν. εκδ., Da Vinci μ.Ε.Π.Ε
	Sukumar Ghosh, 2020. Distributed Systems, an algorithmic approach. 14th ed. Chapman and Hall/CRC
	Padallan, Jocelyn O., 2019. Internet & Distributed Systems [ebook]. Arcler Press [escohost] 1 st Edition
	Mid Term Exam: 30%
Assessment	Final Exam: 45%
	Assignments: 15%
	Participation: 10%
Language	Greek

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Writing for Computer Science and Engineering					
Course code	CMP235					
Course type	General Education	General Education				
Level	Bachelor of Science(1st cy	cle)				
Year / Semester	2/4					
Teacher's name						
ECTS	6 ECTS	Lectures / week	3 hours, weeks	/ 14	Laboratories / week	
Course purpose and objectives	This course emphasizes the creation of technical texts by computer engineers and scientists. Its purpose is to educate the student in the creation of documents and communication material that cover the development cycle of a technological product. Particular attention is paid mainly to the writing of functional specifications and design specifications, technical explanations, description of algorithms and program documentation, writing proposals and progress reports, technical reports, creating presentations for audiences working in the high-tech inductor			s and nical ustry.		
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Analyzes ethical issues in the written word. Manufactures documents with specifications and design for software and materials. Writes correct comments in the code. Writes elementary scientific works. Records technical documentation, such as user manuals. 					
Prerequisites	-	Required		-		
Course content	Writing Techniques for Computer Science and Technology Definition of writing for computer science and engineering, examples o documents used by academics and professionals in the fields of compute science and engineering, first look at specific writing styles for the specific needs of the professions of computer science and engineering, how we address a specific audience. Ethics in the written word Definitions of plagiarism and deception. Ethics and technical text writing, EEEE and ACM ethics. Requirements Specifications Classification and elaboration of the client's needs, creation of requirements specifications, interview, writing of software requirements, writing of officia specifications text. Documentation: Understanding algorithms and providing effective documentation, how to pu comments in the code, writing user manuals.			ecific v we EEEE ments fficial		

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Proposal Writing: Writing proposals for grants to both industry and academia. How to write the summary, effective recording of innovation and key ideas, tabulation and communication in project management.
	Report Writing: Progress written report, build credibility in the description of the work performed, description of milestones and achievements, how the audience is convinced that progress has been made, explanation of problems and how assistance or guidance is sought.
	Academic writing: Bibliography review, references and reporting style, the structure of the text, how the methodology is described, how the experiments are described, how we write conclusions and concluding comments, how the future work is described.
	Recent developments and current issues related to the subject of the course.
Teaching methodology	Class Instruction: 42 Hours Consultation: 20 Hours
Bibliography	 RECOMMENDED READING: Bethann Garramo, M., 2020. Writing Science : Leveraging a Few Techniques from Creative Writing Toward Writing More Effectively. Bulletin of the Ecological Society of America [e-journal] 101 (2). European University Cyprus library, «https://onlinelibrary.euc.ac.cy/» 1st Edition Qiu, M., Qiu,H., & Zeng, Y., 2022. Research and Technical Writing for Science and Engineering. Taylor & Francis 1st Edition Leifler, O., etc., 2020. Teaching sustainability, ethics and scientific writing: An integrated approach. In: IEEE Frontiers in Education Conference (FIE). Uppsala, Sweden, 21-24 October 2020. IEEE 1st Edition Lövei, G.L., 2021. Writing and Publishing Scientific Papers : A Primer for the Non-English Speaker [e-book]. Cambridge 1st Edition Lindsay, D., 2020. Scientific Writing = Thinking in Words [e-book]. 2nd ed. Cisco Publishing.
	Mid Term Exam: 30%
Assessment	
	Assignments: 20%
	Participation: 10%
Language	Greek

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

Course Title	Introduction to Robotics				
Course Code	CMP300	CMP300			
Course Type	Major Requirement				
Level	Bachelor (1 st Cyc	le)			
Year / Semester	3/5				
Teacher's Name					
ECTS	6 ECTS	Lectures / weel	3 hours/ 14 weeks	Laboratories / week	
Course Purpose and Objectives	The objective of this course is to introduce students to robotics and how they are implemented in everyday life. Students will learn about the historyof robotics, definitions about robotics and learn how to solve simple problems using embedded systems, sensors, and actuators.				
Learning Outcomes	Upon successful Explain ho problems Describe to to the robo Describe la from sens Explain ho lateral thir Explain the solution	completion of this ow a robot works the various type of now actuators ca ors ow to use creativ sking, to solve pro e troubleshooting	s course, student s and how it car s of sensors tha in be used and c e skills such as b oblems using rob process for any	ts should be able to be used to solve t can be used to controlled using da prainstorming, vert pots issues in the imple	o: e simple provideinput taretrieved ical and emented
Prerequisites	CMP135, CMP200	,	Co-requisites	None	

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course Content	Introduction to robotics: Understanding the hardware associated with a robotics platform such as the LEGO Mindstorms EV3 or the Arduino platform. Understanding what sensors and actuators are and how they canbe used to solve problems.
	<u>Flowcharts and Pseudocode</u> : Building simple programs using flowcharts and pseudocode by analysing the intended operation of a robot and the requiredresult. Understanding the sequential flow of program operation and how that can be transferred to pseudocode and then to real code.
	<u>Variables and strings</u> : Initializing variables of different datatypes such as integers, floats and strings to be used as memory storage containers in therobot. Understanding how to input and output values through the serial monitor.
	Building a simple robot program: Learning how to formulate a simple C program that can control a basic robot. Understanding the program structure from variable declarations of basic data types, controlling power to the motors and viewing the movement of a robot. Moving forward, changing speed and direction.
	<u>Actuators</u> : Understanding how actuators can be used to output information to a robot. Learning how to use DC motors, servo motors, stepper motors and other types of output devices.
	<u>Sensing:</u> Understanding how sensors work and how the input received can be used to influence actuators. Wall detection using touch sensors. Wall detection using ultrasonic sensors. Moving forwards until a specified distance. Learning how to use a color sensor. Moving forward until dark.
	Line tracking using color or reflected light. Creating a simple PID line following algorithm.
	<u>Advanced variables:</u> Building variable arrays to store information. Developing programs for robots based on multiple values. Reading sensor values and storing them for later use on actuators.
	<u>Troubleshooting</u> : Using methods to troubleshoot problems that can be identified in a robot solution.
	Implementing more advanced robotic solutions: Identifying a more advanced problem and formulating a solution using flowcharts and pseudocode.
	Implementing a solution using sensors and actuators to develop a more advanced solution to a problem identified and troubleshooting the solution.
Teaching Methodology	Class Instruction: 42 Hours Consultation 28 Hours Student Workload: 84 Hours
	Total 154 Hours



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

	Cicolani, J., 2021. Beginning Robotics with Raspberry Pi and Arduino: Using Python and OpenCV [ebook]. Apress Berkeley. 1 st Edition			
	Monk, S., 2020. <i>Programming Arduino: Getting Started with Sketches: Learn</i> <i>how to program your Arduino</i> . [video online] Available at:			
Bibliography				
	tool] Carnegie Mellon University. 1 st Edition			
	Purdum, J., 2015. <i>Beginning C for Arduino: Learn C Programming for the Arduino</i> [e-book]. 2 nd ed. Apress [Springer]			
	Ibrahim, D., 2014. <i>PIC Microcontroller Projects in C: Basic to Advanced</i> [e-book], 2 nd ed. Newnes			
Assessment	Mid Term Exam: 30%			
	Final Exam: 40%			
	Assignments: 20%			
	Participation: 10%			
Language	Greek			

ДІПАЕ СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N de

Course title	Algebra with Applications in Computer Science				
Course code	MTM300				
Course type	General Education				
Level	Bachelor of Science(1st	Bachelor of Science(1st Cycle)			
Year / Semester	3/5				
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	-
Course purpose and objectives	Computer students, in order to be able to develop basic mathematical skills, must be able to cope with basic mathematical problems and applied management problems. The course will offer students basic theories and analytical modeling tools in a range of applications in computer science, economics and finance. The teaching and the purpose of the course has been done based on the offer of sufficient calculation techniques with emphasis on the application to problems in information technology, economics and finance.				
	Students after the succes	ssful completior	of the course	will be able to:	
	 Structure and present mathematical arguments with precision and clarity 				
	 Perform quantitative calculations as well as be able to comfortably immerse themselves in precision calculation exercises 				
Learning outcomes	 Use differential and integral calculus techniques for a parameter 				
	 Use analytical techniques to solve first degree differential equations 				
	Extend software processes to differential calculus beyond one parameter				
	Apply calculus techniques to multidimensional optimization problems				
Prerequisites	None	Requ	uired	None	
	Limits and Continuity of Functions Boundaries, Continuity, Continuity of functions with application to inequalities				
	Differentiation Derivative definition, rules of differentiation, derivative as rate of change, derivatives and quotient rules, chain rules				
Course content	Derivative Applications Derivatives of exponential and logarithmic functions, Higher order derivatives, Absolute derivatives, Logarithmic derivatives, elasticity				
	Curve sketching Relative and Absolute Maximums, First Derivative Test, Cavity, Second Degree Test, Asymptotic, Optimization				
	Integration				

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

🔽 i

	Integrals, Basic rules of integrals, substitution integration, basic calculus				
	theorem, explicit integrals, areas between two cavities				
	Integral Applications				
	Partial integration, some fractions, consumer and producer surplus, Average				
	price, present price, income.				
Teaching	Class Instruction: : 42 nours				
methodology	Student Workload : 98 hours				
	Total : 154 hours				
	Required Bibliography: Budnick, F.S., 1993. Applied Mathematics for Business, Economics, and the Social Sciences. 4th ed. McGraw Hill Higher Education				
	Ganesh, A., 2020. <i>Engineering Mathematics, Vol. I.</i> [ebook]. New age integration (P) limited, publishers. [ebscohost]				
	Boulier, F., etc., 2021. 23rd International Workshop on Computer Algebra in Scientific Computing. Sochi, Russia,13–17 September 2021. Springer 1 st Edition				
	Barnett, R., etc., 2019. <i>Calculus for Business, Economics, Life Sciences, and Social Sciences</i> . 14th ed. Pearson				
Bibliography					
	Recommended Bibliography: OpenStax, 2020. Calculus Volume 1 [e-book]. Rice University				
	Κιζήρογλου, Μ.Ε., 2015. <i>Λογισμός για Μηχανικούς: Θεωρία και Μεθοδολογία</i> <i>Επίλυσης Προβλημάτων</i> . ΣΕΑΒ 1 st Edition				
	Τσίτσας, Ν.Λ., 2015. Εφαρμοσμένα Μαθηματικά: Διαφορικές Εξισώσεις, Μιγαδικές Συναρτήσεις και Ολοκληρωτικοί Μετασχηματισμοί. ΣΕΑΒ 1 st Edition				
	Παπαϊωάννου, Σ. & Βογιατζή, Δ., 2015. <i>Μαθηματικά Ι: Στοιχεία γραμμικής</i> άλγεβρας. Διαφορικός και ολοκληρωτικός λογισμός. ΣΕΑΒ 1 st Edition				
	Mid Term Exam: 30%				
	Final Exam: 45%				
Assessment	Assignments: 15%				
	Participation: 10%				
Language					
	Greek				

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iiii* enqa.

Course title	Database Management Systems					
Course code	CMP305	CMP305				
Course type	Major Requirement					
Level	Bachelor of Science(1s	Bachelor of Science(1st Cycle)				
Year / Semester	3/5					
Teacher's name						
ECTS	6 ECTS	Lectures / week	3	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	Provide information on database management based on hierarchical, relational and network models for logical design. The course focuses on relational database systems. In addition the course teaches proper database management, including database reliability, security and integrity.					
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Distinguishes between different models of database management systems Lists the various actions implemented in the design of relational database systems Create, organize, and manipulate databases with proper procedures, such as creating Entity-Relationship Diagrams, function dependencies, and table normalization Describe database techniques such as security, retrieval system, transaction processing and synchronization control Create queries using Structured Query Language, relational algebra and tuple relational calculus 					
Prerequisites	CMP200		Require	ed	None	
Course content	Introduction to Database Management Systems from the user's point of view. Defining a database system, explaining the business data of a database system, data independence, discussing the architecture of a database system and distributed databases. Data modeling with the Entity-Relationship Chart (ERD) and enhanced Entity- Relationship Chart (EER). Concepts of the model, Inheritance, superclasses and subclasses. Data structures and corresponding bodies. An introduction to the three different approaches? Object-Relational approach? Use of higher level vectors with selected examples.					

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iii* enga.

	Relational data model. An in-depth analysis of the relational data structure including the definition of concepts and models, the symbolism of the relational model, the identification of integrity constraints, information operations and the effects of integrity constraints.				
	Structured Query Language Introduction to a complete database language. Data definition statements, queries, and updates.				
	Relational algebra. An introduction to relational algebra with traditional operations on sets, attribute names for derivatives, and special relational operations.				
	Relational Calculus (tuple relational calculus) Relational calculus with multiples and domains.				
	Query By Example. Overview of a different relational language.				
	Functional Dependencies and Normalization for Relational Databases. Design and guidelines for Relational Designs, functional dependencies. General definitions of the first, second and third Regular Form, Boyce-Codd Regular Form (BCNF).				
	Security and authorization, system reset, transaction processing, synchronization control.				
	Oracle: SQL, basetables, views, embedded functions, data dictionary, SQL forms.				
	Recent developments and current issues related to the subject of the course.				
	Class Instruction: : 42 hours				
l eaching	Consultation : 28 hours				
methodology	Total : 154 hours				
	Required Bibliography:				
	Παπαδόπουλος, Α.Ν., 2020. <i>Συστήματα Βάσεων Δεδομένων</i> . 2η εκδ. Εκδόσεις Νέων Τεχνολογιών.				
Bibliography	Recommended Bibliography:				
	Silberschatz., 2019. Database Systems Concepts. 7th ed. McGraw Hill				
	Elmasri, R., 2022. Fundamentals of Database Systems. 7th ed. Generic				
	Mid Term Exam:30%				
Assessment	Final Exam: 45%				
7.0000011011	Assignments: 15%				
	Participation: 10%				
Language	Greek				

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Ś

Course title	Software Engineering I					
Course code	CMP310					
Course type	Major Requirement					
Level	Bachelor of Science(1st	Cycle)				
Year / Semester	3/5					
Teacher's name						
ECTS	6 ECTS	Lectures / week		3 hours/ 14 weeks	Laboratori week	es/
Course purpose and objectives	The course material is designed to support the first part of a course in software technology. The primary goal of the course is for the student to acquire knowledge related to the process of analyzing a system, identifying problem areas and developing alternative solutions. The main goal of the course is to create the Software Requirements Document that will later be used as the basis for designing and developing a system software.					
Learning outcomes	 Opon completion of the course, the learner is expected to be able to: Describes the principles of Software Technology. Describes the basic models of the software development process. Schedule and monitor the progress of a software development project. Assembles, analyzes, and models functional and non-functional systems software requirements. Creates the software requirements specification document. 					
Prerequisites	CMP125, CMP205, CMP	225	Re	equired		None
Course content	Software technology: What is Software Technology? The need for software development. Software Features. Software reliability, software reuse, software process models: Waterfall model, gradual development model, standardization, RAD model, spiral model, Rational Unified Process. Systems Technology: Complex Systems: concepts, system boundaries, environment, inputs, outputs, characteristics of complex systems. Requirements Engineering: Problem definition, receivables analysis, receivables analysis, receivables negotiation, receivables management, receivables modeling. Claims Extraction Demand extraction techniques: interviews, scripts, use-cases, observation method. Software Analysis Models: Object models, data models, information flow models, behavior models.					

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

	Unified Modeling Language (UML). UML diagrams: class / object activity diagrams, swimlane diagrams, status diagrams.					
	Project management:					
	Management activities, planning, project planning. Team management. Job definition, job distribution. PERT diagrams, Gantt, critical path method (CPM). Risk management, quality management, business process improvement activities.					
	Assessment: Estimate load, time and cost. Resource calculation: human resources, hardware and software for the implementation of software systems, productivity measurements. Cost estimation techniques.					
	Recent developments and current issues related to the subject of the course.					
Teaching methodology	Class Instruction::42 hoursConsultation:28 hoursStudent Workload:91 hours					
	Total : 161 hours					
	Required Bibliography: Foster , E.C., & Godbole, S.V., 2022. <i>Software Engineering: A Methodical Approach</i> . 3 rd ed. Auerbach Publications. Recommended Bibliography:					
	Sommerville I., 2018. Software Engineering. Pearson 1 st Edition					
Bibliography	Pressman, R. S., & Maxim, B., 2020. <i>Software Engineering: Practitioner's Approach</i> . 9 th ed. McGraw Hill					
	Johnsen, E.B., & Wimmer, M., 2022. FASE 2022, 25th International Conference on					
	Fundamental Approaches to Software Engineering, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2022. Munich, Germany, 2–7 April 2022. Springer. 1 st Edition					
	Mid Term Exam: 30%					
Assessment	Final Exam: 45%					
	Assignments: 15% Participation: 10%					
Language	Greek					

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Ś

Course title	Introduction to Cybersecurity						
Course code	CMP315						
Course type	Major Red	quirement					
Level	Bachelor	(1st cycle)					
Year / Semester	3/5						
Teacher's name							
ECTS	6 ECTS	Lectures / week	3 periods / 14 week	Laboratories / week			
Course purpose and objectives	This courcybersect cybersect cybersect	rse introduces the funda curity, and functions as a curity topics that are cove	mental concepts short introductic ered within this M	and terminology of on to the large number ISc course.	of		
Learning outcomes	 Upon successful completion of this course students should be able to: Describe the meaning and position of fundamental cybersecurity concepts and terminology. Explain the position of the different topics within cybersecurity and how they fit into a comprehensive cybersecurity model Classify and describe different cybersecurity components and how they contribute to effective defense. Classify and describe different potential routes for cyber-attacks 						
Prerequisites	CMP110, CMP130, CMP210 Required NONE						
	Introduction: Refresh on fundamental networking principles and devices and distributed systems, the context within which cybersecurity (or lack thereof) can be present. Network structure and ways of communication. History of cybersecurity: important attacks and consequences. Related history (e.g. the important role of cryptography and cryptanalysis in World						
Course content	War II, etc.) Current importance of cybersecurity , given the connectedness of most of our daily lives. Analysis of critical infrastructures and the position of critical information infrastructures within these – importance of the protection of such systems for the smooth operation of essential services in all areas of life. The network as a route for cyberattacks, how the network can be protected, vulnerabilities, threats.						

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iii* enqa.

	Asset protection (including data) as a valuable business operation and its contribution to business survivability.					
	Main principles of cybersecurity – confidentiality, integrity, availability a combinations thereof, resulting in other important cybersecurity concepts and services – accountability, non-repudiation, authenticity, resilience, business continuity and disaster recovery, audit, cybercrime, data / syste network forensics, cyberdefence.					
	Introduction to the phases of cybersecurity – Identify, Protect, Detect, Respond, Recover.					
	Applicable cybersecurity and IT law					
	Software licensing, Data privacy and security, Electronic signatures, Legal and regulatory risks, cyberattacks, digital forensics, liability issues, trust.					
	Introduction to other courses in this MSc (to aid selection of the elective courses).					
	Introduction to specific cybersecurity topics – database security, secure software development, malware analysis, etc.					
	Business case study and lecture: Lecture by invited experts from the cybersecurity industry. Discussion normally focuses on usual network attacks and methods for protection.					
Teaching methodology	Face to Face					
	"Introduction to Computer Networks and Cybersecurity", by Chwan-Hwa (John) Wu and J. David Irwin 1 st Edition					
Bibliography	"Cybersecurity Foundations: An Interdisciplinary Introduction Hardcover", by Lee Mark Zeichner 1 st Edition					
	IEEE Journals, Magazines and Websites 1 st Edition					
	(ISC)2, ISACA, and other cybersecurity websites 1 st Edition					
	Mid Term Exam: 30%					
Assessment	Final Exam: 45%					
	Assignments: 15%					
	Participation: 10%					
Language	Greek					

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Data Mining and Machine Learning				
Course code	CMP320				
Course type	Major R	equirement			
Level	Bachelc	or (1st cycle)			
Year / Semester	3/6				
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 periods / week	14	Laboratories / week
Course purpose and objectives	The objective of this course is to introduce basic concepts, tasks, methods, and techniques in data mining and machine learning. The emphasis is on various data mining problems and their solutions with applications real- world problems. Students will develop an understanding of the data mining process and issues, learn various Machine Learning (ML) techniques for data mining, and apply the techniques in solving data mining problems using data mining tools and systems.				
Learning outcomes	 Upon successful completion of the course, students will be able to: Apply basic ML tasks and types of analysis, such as supervised learning, unsupervised learning, re-inforcement learning, classification and regression, and feature selection. Discuss the inner workings of standard ML classification and feature selection algorithms. Solve the problem of selecting algorithms, tuning their hyper-parameters, and estimating the performance of the final predictive model. Perform and apply Data Mining pipelines to real-world problems, dealing with problems such as representing the problems as a Data Mining task, representing appropriately the data, applying and tuning a Data Mining pipeline, and interpreting results. Discuss, compare, apply and synthesize with key statistical estimation and hypothesis testing concepts, with a focus on the ones that are routinely employed within ML algorithms. 				
Prerequisites	CMP200 Required NONE				



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

V s

Course content	 Introduction. What is Data Mining and Machine Learning, What kind of data can be mined, What kind of patterns can be mined. Data preprocessing. Descriptive Data characterization, Data cleaning, Data integration and transformation, Data Reduction Probability theory and concepts for ML, axioms of probability, conditional probability, Bayes theorem, maximum likelihood estimation, maximum a posteriori estimation Logistic Regression and fitting with gradient descent Hypothesis testing, and permutation-based hypothesis testing Classification: Basic Concepts, Decision Trees, and Model Evaluation, General Approach to Solving a Classification Problem, Decision Tree Induction, Model Overfitting, Evaluating the Performance of a Classifier Classification: Alternative Techniques: Rule-Based Classifier, Nearest-Neighbor Classifiers, Bayesian Classifiers, Artificial Neural Network (ANN), Support Vector Machine (SVM), Ensemble Methods, Class Imbalance Problem Cluster Analysis: Basic Concepts and Algorithms: Overview, K-means, Agglomerative Hierarchical Clustering, DBSCAN, Cluster Evaluation, Characteristics of Data, Clusters, and Clustering Algorithms, Prototype-Based Clustering, Density-Based Clustering Algorithms Association Analysis: Basic Concepts and Algorithms: Problem Definition, Frequent Itemset Generation, Rule Generation, Compact Representation of Frequent Itemsets, Alternative Methods for Generating Frequent Itemsets, FP-Growth Algorithm, Evaluation of Association Patterns 				
	Based Clustering, Density-Based Clustering, Scalable Clusterin Algorithms Association Analysis: Basic Concepts and Algorithms: Problem Definition Frequent Itemset Generation, Rule Generation, Compact Representatio of Frequent Itemsets, Alternative Methods for Generating Frequer Itemsets, FP-Growth Algorithm, Evaluation of Association Patterns				
	Graph Mining, Co-Citation and Bibliographic Coupling, PageRank, HITS Algorithm, Graph Clustering.				
	Metrics of performance, Receiver Operating Characteristic Curves (ROC), and Area Under the ROC curve				
	Estimation of performance and hyper-parameter tuning using cross validation techniques				
	Basics of optimization and constrained optimization				

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Teaching methodology	Face to Face					
	Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data, Bing Liu, Springer, Latest Edition.					
	Introduction to Data Mining: International Edition Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Pearson, Latest Edition.					
	Mining of Massive Cambridge Univers	Mining of Massive Datasets, Anand Rajaraman and Jeffrey Ullman, Cambridge University Press, Latest Edition.				
	Machine Learning,	Tom Mitchell, McGraw Hill, Latest Edition.				
Bibliography	Pattern Recognition and Machine Learning, Christopher Bishop, Springer, Latest Edition.					
	The Elements of Statistical Learning, Jerome H. Friedman, Robert Tibshirani, and Trevor Hastie, 2nd Edition, Springer, Latest Edition.					
	An Introduction to Statistical Learning, with Applications in R, Latest Edition.					
	Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani, Springer, Latest Edition.					
	Mid Term Exam:	25%				
Assessment	Final Exam:	40%				
	Assignments:	25%				
	Participation:	10%				
Language	Greek					

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

1

Course title	Probability & Statistics					
Course code	MTM305					
Course type	General Education	General Education				
Level	Bachelor of Scienc	e(1st Cycle)				
Year / Semester	3/6					
Teacher's name						
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Lab wee	oratories / ek	-
Course purpose and objectives	To introduce the stu of statistics in data basic techniques a	To introduce the student to probability theory and statistics as well as to applications of statistics in data analysis so that the student acquires an acquaintance with the basic techniques and tools required in such analysis.				
	Upon completion o	f the course the le	arner is expecte	ed to	be able to:	
	• Use appropriate s qualitative data as	statistical methods well as methods fo	for the analysis or presenting su	s of qu Ich da	uantitative and ata.	d
	 Identify and interpret numerical position and deviation measures for the sample and the population 					
 Apply basic concepts of probability for correct decision making Describe the properties of binomial distribution, Poisson distribution and distribution and apply the concepts of expected value and random variable to various applications 				naking		
				nd normal able scatter		
	• Explain the conce Theorem in statistic	epts of sample dist cal inference	ribution and the	e role	of the Centra	l Marginal
	 Construct and interpret space estimators for population average value and percentages 					
	Calculate and interpret statistical decisions from hypothesis testing techniques including x2, t-test, correlation test and regression analysis					
Prerequisites	MTM300		Required		None	
	Statistical measures: Central trend measures such as the arithmetic mean, the mean value and the prevailing value. Variation measures such as dispersion, standard deviation and amplitude.			mean, the dispersion,		
Course content						
	Shifts, combination	s and applications	6.			
	Probabilities: Defir Probability, Bayes	nitions, Laws of I Theorem.	Probability and	Rela	ationships, La	aw of Total

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

	Discrete and Continuous Random Variables, Expected Value and Dispersion of Random Variable, Distribution and Cumulative Distribution of Random Variable.				
	Distributions: Bernoulli, binomial, supergeometric, Poisson, uniform, normal.				
	Case checks:X2 control, zero and alternative hypothesis, degrees of freedom, correlation tables, good fit control.				
	Hypothesis checks for the average value of a population, degrees of freedom, control for the difference between the mean values of two populations, type I and II errors, control power, applications.				
	Correlation-Regression: Linear correlation between two variables, line of least squares, applications.				
	Recent developments and current issues concerning the subject of the course.				
Teaching methodology	Class Instruction::42 hoursConsultation:14 hoursStudent Workload::98 hoursTotal:154 hours				
Bibliography	 Required Bibliography: Montgomery, D.C. & Runger, G., 2019. Applied Statistics and Probability for Engineers. 7th ed EMEA. John Wiley & Sons De Groot, M.H. & Schervish, M.J., 2019. Probability and Statistics. 5th ed. Pearson Recommended Bibliography: Grami, A., 2019. Probability, Random Variables, Statistics, and Random Processes: Fundamentals & Applications [ebook]. John Wiley & Sons Inc 1st Edition. Gupta, B.C., etc., 2020. Statistics and Probability with Applications for Engineers and Scientists using MINITAB, R and JMP [ebook]. 2nd ed. John Wiley & Sons, Inc. 1st Edition Wagaman, A.S., & Dobrow, R.P., 2021. Probability: With Applications and R [ebook]. 2nd ed. John Wiley & Sons Inc. 				
	Mid Term Exam: 30%				
Assessment	Final Exam: 45%				
	Assignments: 15%				
	Participation: 10%				
Language	Greek				

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N de

Course title	Smartphone Programming			
Course code	CMP325			
Course type	Major Requirement			
Level	Bachelor of Science (1st Cycle)			
Year / Semester	3/6			
Teacher's name				
ECTS	6 ECTS Lectures / 3 hours/14 Laboratories / week weeks week			
Course purpose and objectives	This course will introduce students to smartphone computing and smartphone application development, which included smartphone technologies, application development, and user interaction. User interfaces, user experience and Smartphone application frameworks/development environments, will be analysed thoroughly to allow students reinforce concepts covered in lectures. For the purpose of the course the students will be introduced into at least one smartphone application development framework (iOS or Android) to implement their assignments and course project(s).			
Learning outcomes	 Describe the basic concepts and principles in smartphone computing. Apply the touch User Interface (UI) controls for effective UI design and development. Create a smartphone application for iOS or Android devices using the Java or Swift programming language. Debug a smartphone application written in the Java or Swift programming language. Test a smartphone application written in the Java or Swift programming language. Deploy smartphone applications to online stores Apple Store or Google Play. 			
Prerequisites	CMP125, CMP200 Required None			
Course content	Basic concepts and principles in smartphone computingIntroduction: the smartphone programming platforms, architecture, capabilities, setting programming environment, tools, history and evolution, application deployment.User Interface Using the user interface (UI) components and patterns for effective UI design and development.Contemporary Smartphone computing and programming Introduction to the modern smartphone's programming languages, similarities to other languages, API description, development platform. Introduction in iOS and			

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

t 🔽 é

	Android Devices, and their corresponding programming languages (Java, Objective-C, Swift).					
	Smartphone Applications Development Create a smartphone application for iOS or Android devices using the Java or Swift programming language.					
	Debugging in Smartphone Applications Debug a smartphone application written in the Java or Swift programming language.					
	<u>Q&A in Smartphone Applications</u> Test a smartphone application written in the Java or Swift programming language.					
	Smartphone Applications Deployment Deploy smartphone applications to online stores Apple Store or Google Play.					
Teaching methodology	Class Instruction::42 hoursConsultation:28 hoursStudent Workload:84 hoursTotal:154 hours					
Bibliography	iOS Development with Swift, Craig Grummit, Manning Publications Co 1 st Edition Head First Android Development, Dawn Griffiths, O'Reilly 1 st Edition iOS 12 Programming for Beginners: An Introductory Guide to iOS App Development with Swift 4.2 and XCode 10, Craig Clayton, Packt. 1 st Edition Android Studio 3.3 Development Essentials – Android 9 Edition: Developing Android 9 Apps Using Android Studio 3.3, Java and Android Jetpack, Neil Smyth,					
	Payload Media Inc. 1 st Edition					
Assessment	Mid Term Exam: 30%					
	Final Exam: 40%					
	Assignments: 20% Participation: 10%					
Language	Greek					

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

V s

Course title	Software Engineering II				
Course code	CMP330				
Course type	Major Requirement				
Level	Bachelor of Science(1st C	ycle)			
Year / Semester	3/6				
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	The course material is designed to complete and complete the first part of the course, Software Engineering I. The course includes software design, development and validation. Completes the software development cycle and provides the student with hands-on experience in developing large software systems. Gaining practical experience in the development of technical software manuals and user manuals.				
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Lists the basic concepts of software design. Creates data design models for software, architecture, user interface systems. Creates the software design document. Implements software based on document design software. Describes the basic concepts of software validation and testing. Designs and performs software tests. Creates technical manuals. 				
Prerequisites	CMP310 Required None				
Course content	Requirements Document Completion of the System Software Requirements document. Software Technology Main elements of the software system design process: architectural design, components design, data design, algorithm design, interface design. Software systems design Coupling, cohesion, layering, partitioning. Systems software architectures Architectural styles: repository, client-server, peer-to-peer, layered, multi-tier, pipe and filter. Architectural decomposition, control. Object-oriented design process				



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

	Development diagrams, software hardware mapping, object design, reuse concepts, design templates, interface system design.				
	 System user interface Types of user interaction with the system, ways of presenting information. The system user interface design process: user analysis, interface standardization, interface evaluation. Software implementation Assign design models to code, refactoring, forward / reverse engineering, use APIs to improve software efficiency and reliability. Software Check Basic concepts: mistakes, errors, defects. Types of tests: white-box, black box, unit tests, completion tests, regression tests, acceptance tests. Test cases. Stubs, drivers. Equivalence partitioning. Debugging 				
	Documents Writing technical manuals Recent developments and current issues related to the subject of the course.				
Teaching methodology	Class Instruction::42 hoursConsultation:28 hoursStudent Workload:91 hoursTotal:161 hours				
	Required Bibliography: Foster , E.C., 2022. <i>Software Engineering: A Methodical Approach</i> . 3rd ed. Auerbach Publications				
	Recommended Bibliography: Sommerville I., 2018. Software Engineering. Pearson 1 st Edition				
Bibliography	Pressman, R. S., & Maxim, B., 2020. Software Engineering: Practitioner's Approach. 9th ed. McGraw Hill				
	Johnsen, E.B., & Wimmer, M., 2022. FASE 2022, Fundamental Approaches to Software Engineering, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2022. Munich, Germany, 2–7 April 2022. Springer 1 st Edition				
	Mid Term Exam: 30%				
Assessment	Final Exam: 45%				
	Assignments: 15%				
	Participation: 10%				
Language	Greek				

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Research Methods in Computer Science				
CMP400				
Major Requirement				
Bachelor of Science(1st Cycle	e)			
4/7				
6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	-
The aim of the course is to give students the necessary knowledge about the design and application of research methods in computer science as well as to train them about the existing statistical methods of analysis. Particular emphasis is placed on the careful examination of various methodologies and types of analysis in order to investigate problems in the business world. Finally, presented statistical methods related to the decision-making process.				
 Upon completion of the course the learner is expected to be able to: 1. applies in practice the principles of research and the methodology of research data and results. 2. knows how to design a questionnaire. 3. makes use of correct methodology and sampling. 4. understands the process of qualitative and quantitative information collection. 5. seeks, explores and utilizes the current literature in relation to its subject 6. analyze data and draw conclusions. 7. knows how to write a scientific paper 8. knows how to present a scientific paper. 9. understands problems and chooses ways to solve them. 10. sets goals, designs strategies and implements them. 11. handles projects with confidence. 12. makes use of research skills. 				
	Research Methods in Comput CMP400 Major Requirement Bachelor of Science(1st Cycle 4/7 6 ECTS The aim of the course is to give and application of research reabout the existing statistical results the careful examination of variation of the course 1. applies in practice the prince and results. 2. knows how to design a que 3. makes use of correct mether 4. understands the process or 5. seeks, explores and utilizer 6. analyze data and draw com 7. knows how to write a scien 8. knows how to present a scien 9. understands problems and 10. sets goals, designs strate 11. handles projects with com 12. makes use of research sk 13. uses critical and creative	Research Methods in Computer Science CMP400 Major Requirement Bachelor of Science(1st Cycle) 4/7 6 ECTS Lectures / week The aim of the course is to give students the and application of research methods in corrabout the existing statistical methods of and the careful examination of various methodo investigate problems in the business world related to the decision-making process. Upon completion of the course the learner is 1. applies in practice the principles of researd and results. 2. knows how to design a questionnaire. 3. makes use of correct methodology and sate understands the process of qualitative and so seeks, explores and utilizes the current litt 6. analyze data and draw conclusions. 7. knows how to present a scientific paper 8. knows how to present a scientific paper. 9. understands problems and chooses ways 10. sets goals, designs strategies and imple 11. handles projects with confidence. 12. makes use of research skills. 13. uses critical and creative thinking. 14. makes use of problem solving skills.	Research Methods in Computer Science CMP400 Major Requirement Bachelor of Science(1st Cycle) 4/7 6 ECTS Lectures / week 3 hours/14 weeks The aim of the course is to give students the necessary ka and application of research methods in computer science about the existing statistical methods of analysis. Particuthe careful examination of various methodologies and ty investigate problems in the business world. Finally, prerelated to the decision-making process. Upon completion of the course the learner is expected to 1. applies in practice the principles of research and the method and results. 2. knows how to design a questionnaire. 3. makes use of correct methodology and sampling. 4. understands the process of qualitative and quantitative in related. analyze data and draw conclusions. 7. knows how to write a scientific paper 8. knows how to present a scientific paper. 9. understands problems and chooses ways to solve ther 10. sets goals, designs strategies and implements them. 11. handles projects with confidence. 12. makes use of research skills. 13. uses critical and creative thinking. 14. makes use of problem solving skills.	Research Methods in Computer Science CMP400 Major Requirement Bachelor of Science(1st Cycle) 4/7 6 ECTS Lectures / week 3 hours/ 14 weeks Laboratories / week The aim of the course is to give students the necessary knowledge about and application of research methods in computer science as well as to about the existing statistical methods of analysis. Particular emphasis is the careful examination of various methodologies and types of analysis investigate problems in the business world. Finally, presented statistic related to the decision-making process. Upon completion of the course the learner is expected to be able to: 1. applies in practice the principles of research and the methodology of reand results. 2. knows how to design a questionnaire. 3. makes use of correct methodology and sampling. 4. understands the process of qualitative and quantitative information colds. seeks, explores and utilizes the current literature in relation to its subjection analyze data and draw conclusions. 7. knows how to present a scientific paper 8. knows how to present a scientific paper. 9. understands problems and chooses ways to solve them. 10. sets goals, designs strategies and implements them. 11. handles projects with confidence. 12. makes use of research skills. 13. uses critical and creative thinking. 14. makes u



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

🔽 į

	 15. organizes and utilizes time for the completion of a scientific project in a given time frame 16. is familiar with working with other students or other members of the interdisciplinary team on the perfect completion and presentation of the work. 17. makes use of effective communication. 		
Prerequisites	CMP235, MTM305 Required		
Course content	 Definition and importance of research, research process, types of research, research proposal. Problem definition, exploratory and bibliographic research and qualitative methods. Quantitative methods, bias, types of bias and systematic error. Information collection methods, advantages and disadvantages. Measurement, behavior measurement and measurement scales. Reliability, validity and sensitivity in measurement. Questionnaire design, types of questions, the art of questions and mistakes to avoid, questionnaire format, pilot research. Sampling and sampling error, sample, population, subtotal, sample selection, selection rules, probability method and non-probability method, sample size, frequency distribution, center voltage, dispersion. Field research, rules, researcher and researcher training, data conversion into information, correction, coding. Data analysis: Selection of statistical method, descriptive and inductive analysis, frequency table, correlation table. Writing and presenting a work. 		
Teaching methodology	Class Instruction: : 42 hours Consultation : 15 hours		

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Bibliography	REQUIRED BIBLIOGRAPHY: Ζαφειρόπουλος, Κ., 2015. Πώς Γίνεται Μια Επιστημονική Εργασία; Επιστημονική Έρευνα Και Συγγραφή Εργασιών. 2η εκδ. Κριτική			
	RECOMMENDED BIBLIOGRAPHY: Tang, H, 2020. Engineering Research: Design, Methods, and Publication [ebook]. John Wiley & Sons, Inc. 1st Edition			
	Azari, R.,& Rashed-Ali, H., 2021. Research Methods in Building Science and Technology [ebook]. Springer Cham. 1 st Edition			
	Carlo Ghezzi, C., 2020. Being a Researcher: An Informatics Perspective [ebook]. Springer Cham. 1 st Edition			
	Schindler, P., 2022. ISE Business Research Methods. 14th ed. McGraw-Hill Education.			
	Hair, J.F.Jr., Page, M., & Brunsveld, N., 2020. Essentials of Business Research Methods. 4th ed. Routledge Taylor and Francis			
	Hague, P., 2021. Market Research in Practice: A Guide to The Basic. 4th ed. Kogan Page			
	Ghauri, P., Grønhaug, K. & Strange, R., 2020. Research Methods in Business Studie. 5th ed. Cambridge University Press			
Assessment	Mid Term Exam: 30%			
	Final Exam: 45%			
	Assignments: 15%			
	Participation: 10%			
Language	Greek			

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Artificial Intelligence					
Course code	CMP405	CMP405				
Course type	Major Re	equirement				
Level	Bachelor	(1st Cycle)				
Year / Semester	4/7					
Teacher's name						
ECTS	6 ECTS	6 ECTS Lectures / week 3 periods /14 Per week Laboratories / week				
Course purpose and objectives	History, t concepts for reaso areas of language	History, theory, and computational methods of artificial intelligence. Basic concepts include representation of knowledge and computational methods for reasoning. The students will also be exposed to different applications areas of AI, such as expert systems, robotics, computer vision, natural language understanding, and planning.				
Learning outcomes	 By the end of the semester, students should be able to: Describe the functions of intelligent agents, and create computational agents in a programming language Identify the major classical and modern AI paradigms, and explain how they relate to each other Explain the concept of planning, and construct planning agents in a programming language. Analyze the structure of a given problem such that they can choose an appropriate paradigm in which to frame that problem Implement a wide variety of both classical and modern AI algorithms 					
Prerequisites	CMP200, CMP300 Required NONE					
Course content	 Introduction to Artificial Intelligence: What is AI; The Foundations of Artificial Intelligence; The History of Artificial Intelligence; The State of the Art; Intelligent Agents; Agents and Environments; Good Behavior: The Concept of Rationality; The Nature of Environments; The Structure of Agents Problem-solving: Solving Problems by Searching; Problem-Solving Agents; Example Problems; Searching for Solutions; Uninformed Search Strategies; Informed (Heuristic) Search Strategies; Heuristic Functions: Bevond 					

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Classical Search; Local Search Algorithms and Optimization Problems; Local Search in Continuous Spaces; Searching with Nondeterministic Actions; Searching with Partial Observations; Online Search Agents and Unknown Environments;
	Advanced Searching Strategies: Adversarial Search; Games; Optimal Decisions in Games; Alpha—Beta Pruning; Imperfect Real-Time Decisions; Stochastic Games; Partially Observable Games; State-of-the-Art Game Programs; Alternative Approaches; Defining Constraint Satisfaction Problems; Constraint Propagation: Inference in CSPs; Backtracking Search for CSPs; Local Search for CSPs; The Structure of Problems;
	Knowledge and Logic: Knowledge-Based Agents; Logic; Propositional Logic: A Very Simple Logic; Propositional Theorem Proving; Effective Propositional Model Checking; Agents Based on Propositional Logic; First-Order Logic; Syntax and Semantics of First-Order Logic; Using First-Order Logic; Knowledge Engineering in First-Order Logic; Propositional vs. First-Order Inference; Unification and Lifting; Forward Chaining; Backward Chaining; Resolution
	Planning: Definition of Classical Planning; Algorithms for Planning as State-Space Search; Planning Graphs; Other Classical Planning Approaches; Analysis of Planning Approaches; Planning and Acting in the Real World; Time, Schedules, and Resources; Hierarchical Planning; Planning and Acting in Nondeterministic Domains; Multiagent Planning;
	Knowledge Representation: Ontological Engineering; Categories and Objects; Events; Mental Events and Mental Objects; Reasoning Systems for Categories; Reasoning with Default Information; The Internet Shopping World; Quantifying Uncertainty; Acting under Uncertainty; Basic Probability Notation; Inference Using Full Joint Distributions; Independence; Bayes' Rule and Its Use; Probabilistic Reasoning; Representing Knowledge in an Uncertain Domain; The Semantics of Bayesian Networks; Efficient Representation of Conditional Distributions; Exact Inference in Bayesian Networks; Approximate Inference in Bayesian Networks; Relational and First-Order Probability Models; Other Approaches to Uncertain Reasoning; Time and Uncertainty; Inference in Temporal Models; Hidden Markov Models; Kalman Filters; Dynamic Bayesian Networks; Keeping Track of Many Objects;
Teaching methodology	Face to Face

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Russel, S. and Norvig, P. Artificial Intelligence: A Modern Approach, Pearson. 1 st Edition			
Bibliography	Neapolitan, R. E. and Jiang, X. Artificial Intelligence: With an Introduction to Machine Learning, CRC Press. 1 st Edition			
	Negnevitsky, M. Artificial Intelligence: A Guide to Intelligent Systems, Addison-Wesley 1 st Edition			
Assessment	Mid Term Exam:	30%		
	Final Exam:	40%		
	Assignments:	20%		
	Participation:	10%		
Language	Greek			

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

1

Course title	Algorithms				
Course code	CMP410	CMP410			
Course type	Major Requirement				
Level	Bachelor of Science (1st	Cycle)			
Year / Semester	4/7				
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	-
Course purpose and objectives	This course deals with the design and analysis of algorithms for computational problems, and the way of thinking about the analysis and operation of an algorithm as well as the calculation of its execution time. The aim of this course is to provide the tools needed for the design and analysis of algorithms and their application for the development of algorithms in new problems. Algorithms are presented for a number of problems categorized according to the techniques they use such as greed, divide and rule techniques, dynamic programming, and others, as well as general design and analysis techniques.				
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Explains and uses fundamental algorithms and algorithmic techniques, such as greed, divide and rule, dynamic programming, iterative improvement and others, as well as general design and analysis techniques. Explains the use of O, Ω, and Θ, to calculate the execution time of an algorithm. Proves the correctness and calculates the operating time of a specific algorithm. Discusses factors that affect the choice of algorithms. Designs new algorithms for specific applications, using the algorithms and algorithmic techniques presented. 				
Prerequisites	CMP200	Requ	ired	None	



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

🔽 i

Bibliography	Total:140 hoursRecommended Bibliography: Neapolitan, R., 2014. Ανάλυση και Σχεδίαση Αλγορίθμων. Μεταφρασμένο από Αγγλικά, 2023. Broken Hill Publishers Ltd. 1 ^η Έκδοση			
Teaching methodology	Class Instruction::42 hoursConsultation:28 hoursStudent Workload:70 hours			
	Dealing with difficult problems Backtracking and Branch-and-Bound techniques. Approximate algorithms for NP- difficult problems (the peak coverage problem, the street vendor problem, the set coverage problem, the peak coloring problem).			
	Algorithm limits Lower limit arguments, decision trees, P, NP and NP-complete problems, approximation algorithms			
	Repetitive Improvement: The Simplex Method, the Maximum Flow Problem (Ford-Fulkerson Method), Maximum Matching Bilateral Graphs, The Fixed Marriage Problem			
	Amortized Resolution: Aggregate Method, Accounting Method, dynamic tables			
Course content	Dynamic Programming: Single Source Shortest Path algorithms: Warshall's and Floyd's Algorithms, Knapsack Problem, Optimal Binary Search Trees, The Knapsack Problem and Memory Functions			
	Dynamic Programming: Minimal Path Algorithms: Warshall and Floyd Algorithms, Backpack Problem, Optimal Binary Search Trees			
	Greedy technique: Huffman codes, minimally overlapping tree algorithms: Kruskal, Prim algorithm, Shortcut path algorithms: Dijkstra algorithm			
	Divide and conquer: Multiplication of large integers and multiplication of Strassen arrays, the nearest- pair problem and Convex-Hull problems. Classification and selection: Find Medium, Quick Sort, Radix Sort, lower Sort Limits.			
	Framework analysis: O, Θ , Ω symbolism Mathematical analysis: non-retrograde and retrograde algorithms. Graphs, trees, breadth-and-depth search, graph search, topology, flashbacks.			

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Chopra, R., 2020. Desig	n And Analysis Of Algorithms. New Age International 1 st Edition		
	Skiena, S.S., 2020. The Algorithm Design Manual [ebook]. 3 rd ed. Springer Cham.			
	 Biere, A., & Parker, D., 2020. TACAS 2020, 26th International Conference on Tools and Algorithms for the Construction and Analysis of Systems, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2020. Dublin, Ireland, 25–30 April 2020, Proceedings, Part I. Springer Cham. 1st Edition 			
	Biere, A., & Parker, D., Algorithms for the Co Joint Conferences on April 2020, Proceedir	2020. TACAS 2020, 26th International Conference on Tools and Instruction and Analysis of Systems, Held as Part of the European Theory and Practice of Software, ETAPS 2020. Dublin, Ireland, 25–30 Ings, Part II. Springer Cham.		
	Mid Term Exam:	30%		
•	Final Exam:	45%		
Assessment	Assignments:	15%		
	Participation:	10%		
Language	Greek			
CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N de

Course title	Senior Project							
Course code	CMP415							
Course type	Senior Project							
Level	Bachelor of Science (1s	t Cycle)						
Year / Semester	4/7							
Teacher's name								
ECTS	12 ECTS	Lectures / week	***	Laboratories week	s /	-		
Course purpose and objectives	The aim of the course is to give the student experience in project design as well as to address problems related to design and information collection to create a complete top-to-bottom design and implementation of the dissertation.							
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Apply the theoretical knowledge acquired in previous courses of computer science in order to design and implement software products Create a work report. 							
Prerequisites	Students must be in the their studies	final year of	Require	d	CMF	P400		
Course content	The student chooses a dissertation in the field of computer science with the approval of a member of the teaching staff. The student will review the bibliography, plan and (if applicable) check the work and present a written report on which he / she will be examined orally. The work will be supervised by a member from the computer science department. Recent developments and current issues related to the subject matter of the							
Teaching methodology	*** Supervision and guidance is provided by a member of the Department of Computer Science and Engineering. Class Instruction: : 14 hours Consultation : 56 hours Student Workload : 196 hours Total : 266 hours							
Bibliography	None							
Assessment	Assignment	100)%					
Language	Greek							

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N s

Course title	Theory of Computation							
Course code	CMP420							
Course type	Major Requirement							
Level	Bachelor of Science(1	st cycle)						
Year / Semester	4/8							
Teacher's name								
ECTS	6 ECTS	Lectures / we	eek	3 hours/ 14 weeks	Laboratories / week			
Course purpose and objectives	To provide students with techniques useful in a wide range of applications and to develop a way of thinking that leads to an understanding of the structure, behavior, limits, and capabilities of logical machines.							
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Describes and explains the operation and limits of the various computer models. Creates deterministic and non-deterministic finite automatic, automatic stack models for different languages. Applies the various forms of pumping entry to receipts. Creates Turing machines for computer problems. Defines the classes P, NP, and describes the NP-completeness. 							
Prerequisites	CMP200		Requ	ired	-			
Course content	Review: Basic algebraic concepts: sets, functions, illustrations, binary operators, relations partially ordered sets, equivalence classes. Introduction to languages and alphabets Finite automatically: Deterministic finite automatically, non- Deterministic finite automatically. Equivalence of deterministic and non-deterministic finite automatically. Language properties accepted by finite automatic, finite automatic and regular expressions. Normal and abnormal languages (proof). Reduce the numbers of the states of an automatic. Automatically stack. Languages and grammars: Properties of regular grammars and languages, The dovecote principle, the pumping entry. Context-free languages, production trees, automatically context- free grammar stack. Properties: closure, periodicity algorithmic properties. Grammar conversion Normal forms (Chomsky, Greibach), membership.							

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

13

	Definition of computers with Turing machines, Turing machine extensions, non- deterministic Turing machines. Turing position					
	Growth rate, NP-completeness					
Teaching methodology	Class Instruction: 42 Hours Consultation 30 Hours					
	Required Bibliography: : Κατσαρός, Ρ., 2015. <i>Θεωρία Υπολογισμού και Εφαρμογές</i> . ΣΕΑΒ. 1 ^η Έκδοση					
	Sipser, M., 2012. <i>Εισαγωγή στη Θεωρία Υπολογισμού</i> . Μεταφρασμένο από Αγγλικά από Χ. Καπουτσης, 2019. Πανεπιστημιακές εκδόσεις Κρήτης. 1 ^η Έκδοση					
	Hou, Z., 2021. Fundamentals of Logic and Computation: With Practical Automated Reasoning and Verification [ebook]. Springer Cham. 1 st Edition					
	Sannella, D., 2021. <i>Introduction to Computation: Haskell, Logic and Automata</i> [ebook]. Springer Cham. 1 st Edition					
	Doerr, B., & Neumann, F., 2020. <i>Theory of Evolutionary Computation: Recent Developments in Discrete Optimization</i> [ebook]. Springer Cham. 1 st Edition					
Bibliography	Recommended Bibliography: Jiménez Laredo, J.L., Hidalgo, J.I., & Oluwatoyin Babaagba, K., 2022. <i>EvoApplications 2022, 25th European Conference on Applications of</i> <i>Evolutionary Computation, Held as Part of EvoStar 2022</i> . Madrid, Spain, 20–22 April 2022, Springer Cham					
	Bampis, E., & Pagourtzis, A., 2021. FCT 2021, 23rd International Symposium on Fundamentals of Computation Theory. Athens, Greece, 12–15 September 2021. Springer Cham.					
	Chen, J., Feng, Q., & Xu, J., 2020. <i>TAMC 2020, 16th International Conference</i> <i>on Theory and Applications of Models of Computation</i> . Changsha, China, 18– 20 October 2020. Springer Cham					
	Mid Term Exam: 30%					
Assassment	Final Exam: 45%					
Assessment	Assignments: 15%					
	Participation: 10%					
Language	Greek					

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Practical Training								
Course code	CIP400								
Course type	Practical Training								
Level	Bachelor of Science (1	st Cycle)							
Year / Semester	4/8								
Teacher's name									
ECTS	6 ECTS	Lectures / week	***	Laboratories / week	-				
Course purpose and objectives	The internship is a learning experience related to working under real working conditions. It is an opportunity to put into practice the academic theory that has been taught. The experience is designed to be completed in companies and organizations approved by the program coordinator.								
Learning outcomes	It is expected that with the completion of the internship the students of the study program "Informatics" will be able to: • perform multiple management tasks under the supervision of a supervisor. • develop the knowledge and skills required for success within the industry. • apply the knowledge gained from the course in real conditions. • gain work experience in a real business environment.								
Prerequisites	Last Year of Studies	Required							
Course content	 The student should perform the duties of the internship, based on the instructions of his supervisor. This will be graded on the supervisor's evaluation after the internship is completed. The contract will be completed as well as all relevant work. (All works must be original student works, which will be produced using a computer). Procedure: Students will complete 8 weekly calendars, which will include an assessment of their academic preparation for the internship. The calendars will be submitted at the end of the 4th week and the 8th week. A personal assessment of each student (two-page summary) must be submitted at the end of the semester. 								

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

N de

	3. The supervisor will compile a summary of the evaluation of the student's internship and will complete the attached evaluation form. You will also be asked to evaluate the student for things such as initiative and creativity, ability to organize and perform tasks, ability to write reports, summaries and ability to perform and operate in contracting companies.
	Role of the Supervisor:
	opportunity to put into practice the academic theory that has been taught. The supervisor / employer will ensure that the student has gained the following experiences within the specific business:
	 Has contact with the public or regular customers of the defined daily routine. Assists in the planning and implementation of activities to be carried out in the respective company.
	Has experience in any financial aspect of the business.
	 Participates in the methods used to promote public relations. Has the opportunity to discuss the ethics and professionalism of each respective
	company.
	• Participates in projects related to the assigned internship.

Teaching methodology	6 hours per week for 8 weeks (48 hours) in a real workplace. 20 hours to complete reports / exams
Bibliography	-
Assessment	Supervisor Assessment50%Examination / Reference Sheets:50%
Language	Greek

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Network Security							
Course code	CMP425							
Course type	Elective -Specialization							
Level	Bachelor of Science(1st Cycle)							
Year / Semester								
Teacher's name								
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week				
Course purpose and objectives	This course introduces important topics related to network and internet security. Encryption (encryption / decryption), web site security, remote links.							
Learning outcomes	 Describes and gives examples of the fundamental concepts of network security Recalls, classifies and reports symmetric and asymmetric encryption procedures and operating details Interprets, classifies and explains computer security threats and countermeasures Mention and describe concepts related to authentication and internet related services (email and web and page security) Recall and explain the details related to commercial applications in 							
Prerequisites	CMP310	Req	uired	None				
Course content	The basic principles of cryptography, encryption / decryption, public key cryptography and symmetric cryptography, the RSA algorithm and the DES algorithm. SSL and PGP encryption. Security of e-commerce transactions, HTTP and HTTPS. Sources of vulnerability in a corporate network, firewalls, software and hardware firewalls, firewall configuration. Closing the security holes with the TCP / IP protocol that remain active, for no reason, detecting other access points to the corporate network Viruses, types of viruses, virus signatures, anti-virus software. Spread viruses by e-mail, executable viruses and macro viruses. Single control point for incoming data. Corporate security policy, the importance of physical security and security processes in the company. Cultivating the sense of responsibility of individual employees. Passwords, authentication.							

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

🔽 é

	Protection of personal data on the Internet. Malicious web browsers, other software that collects personal data while users are connected						
	to the internet.						
	Hackers and their community, their features, the tools they use. How nacker tests are detected to invade the corporate network. How to deal with possible hacker attacks.						
Teaching methodology	Class Instruction::42 hoursConsultation:21 hoursStudent Workload:91 hoursTotal:154 hours						
	Recommended Bibliography: Stallings, W., 2016. Network Security Essentials: Applications and Standards. 6th Ed. Pearson						
	Stallings, W., 2020. Cryptography and Network Security: Principles and Practice. 8th Ed. Pearson						
	Conklin, A., et al., 2021. <i>Principles of Computer Security</i> . 6th. Ed. McGraw-Hill Education						
	Charlie Kaufman, et al., 2021. <i>Network Security, Private</i> <i>Communication in a public world</i> . 3rd ed. Addison-Wesley Professional						
Bibliography	Muniz, J., Chimes, S., & Risler, J., 2021. CCNP Security Virtual Private Networks SVPN 300-730 Official Cert Guide. Cisco press. 1 st Edition						
	Additional studies from proceedings						
	Liu, Q., etc., 2022. <i>ICNCC, Proceedings of the 11th International Conference on Computer Engineering and Networks</i> . Beijing, China, 9-11 December 2022. Springer Singapore. 1 st Edition						
	Ateniese, G., & Venturi, D., 2022. ACNS 2022, 20th International Conference on Applied Cryptography and Network Security. Rome, Italy, 20–23 June 2022. Springer Nature Switzerland AG. 1 st Edition						
	Conti, M., Stevens, M., & Krenn, S., 2021. CANS 2021, <i>20th</i> <i>International Conference</i> on Cryptology and Network Security. Vienna, Austria, 13-15 December 2021. Springer Cham 1 st Edition						
	Mid Term Exam: 30%						
	Final Exam: 45%						
Assessment	Assignments: 15%						
	Participation: 10%						
Language	Greek						

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Computer Graphics							
Course code	CMP430							
Course type	Elective -Specialization							
Level	Bachelor of Science(1st	Cycle)						
Year / Semester								
Teacher's name								
ECTS	6 ECTS	Lecture week	es /	3 hours/ 14 weeks	Laboratories / week			
Course purpose and objectives	The aim of the course is to transmit the basic principles involved in the construction and use of a 2D and 3D graphics system on the computer. The course provides theoretical basics of computer graphics as well as practical knowledge using OpenGL.							
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Recalls the basic principles of Graphics. Explains algorithms for line grid, scanning polygons, creating lighting. Applies theory and practice on creating 3D scenes. Develops computer graphics systems using the Open GL library. 							
Prerequisites	CMP200, MTM200		Requ	ired	None			
Course content	Introduction to Computer Graphics History of computer graphics, applications, process for rendering graphics. Introduction to programming with the Open GL library. Geometry and rendering of lines Points and Lines, levels, line segments, vertical lines, parallel lines, Vectors, inner product, outer product. Detailed analysis of the various properties and their differences. Practical application using OpenGL. Introduction to 3D Graphics 3D geometry, 3D transformations, rotation around an arbitrary axis, parallel projection, perspective projection, conversion to flat coordinates, 3D projection transformation, special projections. Polygons Polygons, polygon representation, polygon insertion, algorithms, polygon coloring. Window and cut The projection transform, projection transformation application, cut, cut polygons, add cut to the system, avoid division, generalized cut, position relative to a random							

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Hidden surfaces Hidden surface removal and algorithms, Z-Buffer, hidden-line methods.
	Transformations Arrays, Zoom in / out, sine and cosine, sum of angles, Rotation, homogeneous coordinates and shift, rotation for a random point, other transformations, transformation routines, rendering procedures.
	Interaction Hardware, input devices, related algorithms, Event handling, sampling devices, Delectability, Abstaining, interactive techniques.
	Lighting Environmental, diffuse, mirror. Light source placement, multiple light sources. Practical application using OpenGL.
	Overview of the material for graphics Introduction to graphics hardware, GPU versus CPU, how hardware is affected by software. Maximizing the efficiency of the material. Recent developments and current issues related to the subject of the course.
Teaching methodology	Class Instruction: : 42 hours Consultation/Consultation : 28 hours Student Workload: 70 hours Total : 140 hours
	Edward, A., & Shreiner, D., 2020. Interactive Computer Graphics, A Top-Down Approach Using Opengl. 8th ed. Pearson.
Bibliography	Gordon, V. Scott., & Clevenger, John L., 2019. Computer Graphics Programming in OpenGL with JAVA [ebook]. 2nd ed. Mercury Learning & Information [ebscohost] 1 st Edition
	Stemkoski, L., & Pascale, M., 2022. Developing Graphics Frameworks with Python and OpenGL [ebook]. CRC Press [ebscohost] 1 st Edition
	Marschner, S., 2021. Fundamentals of Computer Graphics. 5th ed. CRC Press
	Mid Term Exam: 30%
Assessment	FINALEXAM: 45%
	Participation: 10%
Language	Greek

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Human Computer Interaction								
Course code	CMP435								
Course type	Elective -Specialization								
Level	Bachelor of Science(1st	t Cycle)							
Year / Semester									
Teacher's name									
ECTS	6 ECTS	Lectures week	/	3 hours/ 14 weeks	Laboratories / week				
Course purpose and objectives	The aim of this course is to provide students with a basic knowledge of Human- Computer Interaction (HCI) and to explore specific topics related to EAM and interface design. Design methodologies for optimal EAM and evaluation methods of EAM systems will be presented. Current EAM issues (eg alternative human sensory channels for computer interaction, and EAM for groupware) will also be explored.								
Learning outcomes	Upon completion of the course the learner is expected to be able to: • Apply a variety of theoretical human-computer interaction models. • Design interfaces from specifications to completion. • Design manuals for important pieces of software. • Describe non-WIMP interaction styles and their theoretical foundations								
Prerequisites	CMP200 Required None								
Course content	Introduction: What is EAM, the importance of proper EAM in computer systems. Possibilities and limitations of humans and computers - input / output channels, information storage and information processing, logic. Psychology and the design of interactive systems. Interaction models, Ergonomics, Interaction style, universal usability Study of the interaction of the systems: Examples of interaction, Principles for usability support, design process, design rules, usability engineering, iterative design and standardization. User / System Models in Design: Cognitive models, hierarchies of tasks and tasks, language models, physical models and device models. Standard Formalities, Interaction Models, Status - Event Analysis. Task analysis: Decomposition of tasks, knowledge-based analysis, relationships based on task analysis techniques. Application Support:								

CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Evaluation of an interaction system: Objectives of the evaluation style, interaction evaluation, design / implementation								
	evaluation. Choices of evaluation methods.								
	Help and Documentation: User Support Requirements, User Support Approaches, Intelligent Assistance Systems.								
	Contemporary EAM topics: Groupware: Introduction, Meeting and Decision Support Systems, Common, Groupware Application Frameworks. Computer communication.								
Teaching methodology	Class Instruction::42 hoursConsultation:28 hoursStudent Workload:70 hoursTotal:140 hours								
	Sharp, H., Preece, J., & Rogers, Y., 2019. Interaction Design: Beyond Human- Computer Interaction. 5th ed. Wiley.								
	Zoran, G., 2019. Human-Computer Interaction [ebook]. Arcler Press [ebscohost]. 1 st Edition								
	De Gruyter STEM, 2019. Personalized Human-Computer Interaction [ebook]. Ilustr. Ed. De Gruyter Oldenbourg [ebscohost] 1 st Edition								
	Christopher, D., etc., 2019. Applications of Human-Computer Interaction and Robotics Based on Artificial Intelligence [ebook]. Digital del Tecnológico de Monterrey [ebscohost] 1 st Edition								
Bibliography	Kurosu, M., 2022. HCI 2022, Held as Part of the 24 th HCI International Conference on Human-Computer Interaction: Theoretical Approaches and Design Methods. Virtual Event, June 26–July 1, 2022, Proceedings, Part I. Springer Cham. 1 st Edition								
	Kurosu, M., 2021. HCI 2021, Held as Part of the 23 rd HCI International Conference on Human-Computer Interaction. Theory, Methods and Tools. Virtual Event, 24–29 July 2021, Proceedings, Part I. Springer Cham.								
	Kurosu, M., 2020. HCI 2020, Held as Part of the 22 nd International Conference on Human-Computer Interaction. Design and User Experience. Copenhagen. Denmark, 19–24 July 2020, Proceedings, Part I. Springer Cham.								
	Mid Term Exam: 30%								
Assessment	Final Exam: 45%								
Abbesoment	Assignments: 15%								
	Participation: 10%								
Language	Greek								

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	E-commerce and the Internet								
Course code	CMP440								
Course type	Elective -Specializati	on							
Level	Bachelor of Science(1st Cycle)							
Year / Semester									
Teacher's name									
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories , week	/				
Course purpose and objectives	The aim of the course is to examine the foundations, functions and effects of Commerce in the Internet environment. Students are introduced to Web Technologies, online marketing tools, knowledge-based products, smart products and services, pricing in the Internet economy, online auctions and online shopping, e-government, Internet economy policies and forecasts for new economy.								
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Describes the opportunities and cutting-edge practices in Commerce, publishing, sales, electronic distribution, knowledge creation and dissemination. Describes the marketing of individuals and organizations on the Internet Analyzes the strengths and weaknesses of the Internet versus commercial services Evaluates the business opportunities of Internet related companies Clarifies the problems surrounding Commerce in relation to the security and security of personal data 								
Prerequisites	CMP310		Required	None					
Course content	 The E-Commerce Revolution: The Beginning of E-Commerce, the Difference from E-Business and the Basic Concepts. E-Commerce business models and concepts: the main business models and concepts of E-Commerce, the main business models between B2B companies, the catalysts of e-commerce. Required infrastructure: Internet and the World Wide Web, Internet technology background, the current form of the Internet, the future of the Internet, features and services of the World Wide Web, mobile applications. Building an Internet presence: choosing hardware and software, choosing e-commerce website tools, developing a mobile website, and building mobile applications. 								



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

🔽 é

	Electronic Security and Payment Systems: The security environment in E- Commerce, security threats in the e-Commerce environment, technological solutions, management policies, business processes and legislation, payment systems.
	E-Commerce Marketing Concepts: Social, Mobile and Local, Internet Marketing Technologies.
	E-Commerce Marketing Communication: Ethical, Social and Political Issues in E- Commerce, Information Rights and Information Storage, Information Collected on E- Commerce Websites, Social Networks and Privacy, Copyright.
	E-Retail and Services: the e-retail industry, viability analysis, e-mail creation, online travel services, online business promotion services.
	Online Materials and Media: online publications, online entertainment industry, Social Networks, Auctions and Portals: Social Networking and Communities, Online Auctions and E-Commerce Portals.
	B2B e-commerce between companies: supply chain, B2B E-Commerce and Supply Chain Management, online markets, private industrial networks, management and collaboration.
Teaching methodology	Class Instruction::42 hoursConsultation:28 hoursStudent Workload:84 hoursTotal:154 hours
	Laudon, K.C., & Traver, C.G., 2022. <i>Ηλεκτρονικό Εμπόριο: Επιχειρήσεις,</i> <i>Τεχνολογία, Κοινωνία</i> . Μεταφρασμένο από Αγγλικά από Κ. Φραϊδάκη, 2022. 6 th ed. Παπασωτηρίου
	Wirtz, B.W., 2021. <i>Digital Business and Electronic Commerce: Strategy, Business Models and Technology</i> [ebook]. Springer Cham. 1 st Edition
Bibliography	Lian, J., 2021. Application of Computer Network Security Technology in Electronic Commerce. In: 2nd International Seminar on Artificial Intelligence, Networking and Information Technology (AINIT). Shanghai, China, 15-17 October 2021. IEEE.
	Naunthong, P., 2022. Understanding Characteristics of Organizations for E- Commerce Adoption in the New Normal Era. In: <i>7th International Conference on Business and Industrial Research (ICBIR)</i> . Bangkok, Thailand, 19-20 May 2022. IEEE
	Mid Term Exam: 30%
	Final Exam: 45%
Assessment	Assignments: 15%
	Participation: 10%
Language	Greek

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Search Engine Optimisation and Internet Marketing					
Course code	CMP445	CMP445				
Course type	Elective -Specialization	n				
Level	Bachelor of Science(1	st Cycle)				
Year / Semester						
Teacher's name						
ECTS	6 ECTS	Lectures / we	eek	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	Introduce the concept of search engine optimization so that specific web pages will appear higher in the search engine results. In addition, methods of promoting websites on the Internet will be analyzed. Students will have internships with specific parameters that need to be implemented so that student websites will appear higher in search engine results. Students will also build a comprehensive online advertising campaign using various promotional channels as well as social media use.					
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Optimizes a web page to appear on the first page of search engine results Analyzes visitor statistics of a website Advertise on the Internet through Google AdWords, Facebook Ads and other promotional channels Implement promotion through social networks on Facebook, Twitter, LinkedIn, etc. as part of a comprehensive marketing campaign 					
Prerequisites	CMP230		Requ	ired	None	
Course content	Part I: Search Engine Optimization Important parameters for a website: Quality content, frequent content change, web service provider issues, registration in Cyprus and abroad, primary domain, company email & FTP account, secondary domains, parked domains, uploading web pages to the server, hyperlink control, server uptime control, permanent redirect of primary and secondary domains. Website traffic analysis: OpenTracker, WebAlizer, AWStats, Google Analytics, visitor audience, demographics, location, new and repeat visitors behavior, frequency of visits, website time, web browser, operating system, traffic sources, citations, most popular pages, in-page analytics.					



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

1

	Links & Sitemaps:
	Internal links, external links (free & paid), webmasters, HTML & XML, XML webmaster indexing in search engines.
	Keywords:
	Keywords in the addresses (address friendliness), keywords in images, keywords in titles, keywords in descriptions, keywords for "keywords" of the website, how to write keywords, word density, illegal ways of using keywords.
	Part II: Internet Marketing
	Ad on Google:
	Comparison between traditional advertising channels and Internet, reasons to invest in Internet advertising, conversion rate, organic vs paid search results, Google AdWords campaign, auction, budget, scheduling, ad types, campaigns - groups - ads, bugs in ads, keywords in ads, cost per click (CPC), maximum cost per click, average cost per click, impressions, click through rate (CTR), average position, broad vs phrase vs exact keyword match, negative keywords, Adwords campaign creation, Google AdSense.
	Social media:
	The power of Facebook, creating an account, creating a page and group, linking a website to a Facebook page, advertising on Facebook, targeted ads, creating Facebook advertising, using other social media (Blogger, LinkedIn, Twitter, Google+). Other ad channels:
	YouTube, videos about the company and its products, linking to YouTube, paid banner ads, celebrity websites offering such services, free or paid email advertising, bulk email marketing.
Teaching methodology	Class Instruction::42 hoursConsultation.:35 hoursStudent Workload::84 hoursTotal:161 hours
	Papagiannis, N., 2021. Effective SEO and Content Marketing : The Ultimate Guide for Maximizing Free Web Traffic [ebook]. John Wiley & Sons. 1 st Edition
	Reis, J.L., etc., 2022. Marketing and Smart Technologies: Proceedings of ICMarkTech 2021, Volume 1 [ebook]. Springer.
Bibliography	Reis, J.L., etc., 2022. Marketing and Smart Technologies: Proceedings of ICMarkTech 2021, Volume 2 [ebook]. Springer.
	Chunjiang, C., 2021. E-commerce Search Engine Marketing Mechanism Analysis and Optimization. In: 13th International Conference on Intelligent Computation Technology and Automation (ICICTA). Xi'an, China, 24-25 October 2020. IEEE

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

🔽 é

	Matta, H., Gupta, R., & Agarwal, S., 2020. Search Engine optimization in Digital Marketing: Present Scenario and Future Scope. In: International Conference on Intelligent Engineering and Management (ICIEM). London, 06 August 2020. IEEE 1 st Edition
	Aryshandy, G., etc., 2021. How Does Search Engine Optimization Affect Outcomes of Electronic Marketing Strategy? In: 3rd International Conference on Cybernetics and Intelligent System (ICORIS). Makasar, Indonesia, 25-26 October 2021. IEEE
	Andonov, A.D., etc., 2020. The Application of Search Engine Optimization in Internet Marketing. In: The 2nd International Conference on Computer and Automation Engineering (ICCAE). Singapore, 19 April 2010. IEEE
	Shibata, H., 2020. Introduction of Boolean Operation into Context Search Engine [e- conference paper]. In: International Symposium on Community-centric Systems (CcS). Tokyo, Japan, 23-26 September 2020. IEEE 1 st Edition
	Varsha., Grover, P.S., & Ahuja, L. 2021. An Overview of Search Engine Optimization. In: 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO). Noida, India, 15 November 2021.IEEE
	Sellamuthu, K., etc., 2022. On Page SEO Techniques for Better Ranking in Search Engines. In: 8th International Conference on Smart Structures and Systems (ICSSS). Chennai, India, 01 June 2022.IEEE.
	Mid Term Exam: 30%
A	Final Exam: 45%
Assessment	Assignments: 15%
	Participation: 10%
Language	Greek

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Management Information Systems				
Course code	CMP450				
Course type	Elective -Specialization	Elective -Specialization			
Level	Bachelor of Science(1st Cyc	cle)			
Year / Semester					
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	Recognize the current state of Management Information Systems (MIS), understand their uses and the tools that will assist in the decision-making process. Students to understand the relationship between information systems and the organizational level and to define their role in management and decision making. Recall the goals and applications of a company's personal, team and information systems, their data and the role of professionals in their development.				
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Identify the types of information systems to support the structures and processes, management, and strategic success of organizations. Explains the basic components of an organization's information system infrastructure: hardware and software, information, telecommunications and networks, and the Internet. Solves management problems using IT tools Explains Knowledge Management and describes how Knowledge Management supports organizational decision making and influences strategic success. Evaluates key issues of Management Information Systems, including security and control and global systems issues. 				
Prerequisites	CMP330	Required		None	
Course content	The role of information systems in business today. Opportunities for globalization. Strategic goals of a company's information systems. Perspectives of information systems. Business processes and information systems. Types of information systems of a company and their operation. Organizations and information systems. Use of information systems to achieve a competitive advantage. Ethical and social issues related to systems. Ethics in the information society.				



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	IT infrastructure. Hardware platform and emerging technologies.					
	Foundations of business intelligence. Databases and information management.					
	Telecommunications and networking in today's business world.					
	Communication networks, the Internet and the wireless revolution.					
	Information Systems Security. Cybercrime and cyber terrorism. Technologies and tools for security.					
	Corporate systems. Supply of chain management systems.					
	Customer relationship management. Corporate applications.					
	E-commerce and the Internet. Types of e-commerce.					
	Payment systems.					
	Knowledge management and knowledge management systems at business level. Intelligent techniques.					
	Decision making and information systems. Decision support systems. Executive support systems. Decision support team systems. Data visualization and geographic information systems.					
	Development systems and organizational change. Improvement process.					
	Overview of the systems development process. Component-based systems and web services.					
	Project management. Establishing the business value of information systems. Project risk management.					
	The development of international information systems. Organization of international information systems. Management of global systems. Technology issues and opportunities for global chains.					
Teaching methodology	Class Instruction::42 hoursConsultation:35 hoursStudent Workload:98 hoursTotal:175 hours					
	Stair, R. & Reynolds, G., & Chesney, T., 2021. Principles of Business Information Systems. 4th ed. Cengage Learning Laudon, K. C., 2021. Πληροφοριακά συστήματα Διοίκησης. Μεταφοασμένο απο					
Bibliography	Αγγλικά από Π. Καναβος, 2021. 14η Αερικάνικη έκδ. Κλειδάριθμος					
	Sharma, N., 2021. Information Systems for Management [ebook]. Laxmi Publications Pvt Ltd. [ebscohost] 1 st Edition					



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

	Laudon K.C. & Laudon J.P., 2022. Management Information Systems: Managing the Digital Firm. 17th Ed., Pearson			
Assessment	Mid Term Exam:	30%		
	Final Exam:	45%		
	Assignments:	15%		
	Participation:	10%		
Language	Greek			

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Contemporary Topics					
Course code	CMP455					
Course type	Elective -Specializ	zation				
Level	Bachelor of Scien	ce(1st Cycle)				
Year / Semester						
Teacher's name						[
ECTS	6 ECTS	Lectures / week	3 hours/ 14 weeks	Laborat week	ories /	
Course purpose and objectives	The aim of this co trends and develo not fixed and depe and the research	ourse is to give s opments in Comp ends on the resea interests of the te	tudents a mee uter Science. urch that takes aching staff.	chanism f The cont place at	for learnin tent of the an interna	g the latest courses is ational level
Learning outcomes	 Upon completion of the course the learner is expected to be able to: Defines, explains and uses material related to topics in the field of Computer Science that are not included in the regular curriculum, but rather come from the research of the school staff Recognizes and classifies trends in the field of Computer Science Identifies and explains developments in the field of Computer Science 					
Prerequisites	Fourth year student or teacher's consent. Required None					
Course content	The exam material for this course will be different for each semester that the course will be offered. It is the department's responsibility to prepare the syllabus at least three months before the start of each semester. Recent developments and current issues related to the subject of the course.					
Teaching methodology	Class Instruction: Consultation Student Workload Total	: 42 hc : 21 hc : 91 hc : 154 h	urs urs urs ours			
Bibliography	Depending on the	content of the co	urse			
Assessment	Mid Term Exam: Final Exam: Assignments: Participation:	30% 45% 15% 10%				
Language	Greek					

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Course title	Wireless and Mobile Networks					
Course code	CMP460					
Course type	Elective -Specialization					
Level	Bachelor of Science(1st	t Cycle)				
Year / Semester	4th / 2nd					
Teacher's name						
ECTS	6 ECTS	Lectures week	/	3 hours/ 14 weeks	Laboratories / week	
Course purpose and objectives	The aim of the course is to examine the structure and architecture of wireless and mobile networks, systems and applications. Also examine the mobility of nodes and end users and the effects they have on the layers of the OSI reference model from the data link layer (Data Link Layer) to the application layer (Application Layer). Handling and adjusting to mobility requires changes to the protocol stack. It also studies emerging applications created through mobility.					
Learning outcomes	Upon completion of the course the learner is expected to be able to: • Recalls, classifies and describes wireless technologies • Analyzes topologies of cellular wireless networks • Analyzes and calculates the physical properties of wireless networks • Recalls and evaluates radio frequency management techniques • Compares and evaluates various wireless communication protocols					
Prerequisites	CMP310		Requ	ired	None	
Course content	Introduction Wireless technology, tra coding techniques, codi Satellite communication Classification of satellite resource allocation stra Wireless Cellular Netwo Cellular network organiz and measurements, vol intensity, wireless cellul services. Wireless LANs Wireless LANs Wireless LAN technolog their operation, handoff, hoc networks, routing	ansmissior ing and err is e orbits: Gl tegies. orks zation, free ume contr ar network gies, appli , fast hand in ad-hoc	a princ for cor EO, LE quency ol, net c syste cation off. Ad netwo	iples, antenna itrol. EO and MEO, v reuse, hand work traffic en ms and GSM s for WLANs l-hoc network orks, coding i	as and propagation radio link efficient off or handover str ngineering, networ , GPRS, SMS and , IEEE 802.11 sta s and issues addre n ad-hoc network	n, signal cy factors, rategies k traffic I UMTS undards and essed in ad- cs. Wireless

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

1

	Sensor Networks: network architecture and protocols.
Teaching methodology	Class Instruction::42 hoursConsultation:28 hoursStudent Workload:70 hoursTotal:140 hours
	Required Bibliography: Stallings W. & Beard C., 2015. Ασύρματες Επικοινωνίες, Δίκτυα και Συστήματα. Μεταφρασμένο από Αγγλικά από Θ. Γιαννάκη, 2016. New International ed. 2η εκδ.Τζιόλα
	Raghunandan, K., 2022. Introduction to Wireless Communications and Networks: A Practical Perspective [ebook]. Springer Cham 1 st Edition
Bibliography	Recommended Bibliography: Grieco, L.A. etc., 2020. Ad-Hoc, Mobile, and Wireless Networks. In: ADHOC-NOW 2020, 19th International Conference on Ad-Hoc Networks and Wireless. Bari, Italy, 19–21 October 2020. Springer Cham. 1 st Edition
	Cory, B & Stallings, W., 2016. <i>Wireless Communication Networks and Systems</i> , Global ed. Pearson. 1 st Edition
	Zhong, S., 2019. Security and Privacy for Next-Generation Wireless Networks [ebook]. Springer. 1 st Edition
	Zungeru, A.M., Subashini, S, & Vetrivelan, P., 2019. <i>Wireless Communication Networks and Internet of Things</i> [ebook]. Springer 1 st Edition
	Mid Term Exam: 30%
	Final Exam: 45%
Assessment	Assignments: 15%
	Participation: 10%
Language	Greek

ANNEX 7: NEW COURSES SYLLABI

ДІПАЕ СУQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

Ś

Course title	Introduction	Introduction to Cybersecurity				
Course code	CMP315	CMP315				
Course type	Major Red	quirement				
Level	Bachelor	(1st cycle)				
Year / Semester	3/5					
Teacher's name						
ECTS	6 ECTS	Lectures / week	3 periods / 14 week	Laboratories / week		
Course purpose and objectives	This cour cybersec cybersec	rse introduces the funda curity, and functions as a curity topics that are cove	mental concepts short introductic ered within this M	and terminology of on to the large number ISc course.	of	
Learning outcomes	Upon su Des cond Exp they Class conf Class	 Upon successful completion of this course students should be able to: Describe the meaning and position of fundamental cybersecurity concepts and terminology. Explain the position of the different topics within cybersecurity and how they fit into a comprehensive cybersecurity model Classify and describe different cybersecurity components and how they contribute to effective defense. 				
Prerequisites	CMP110,	CMP130, CMP210	Required NO	NE		
	Introduce and distri- thereof) of History (end) War II, of	Introduction: Refresh on fundamental networking principles and devices and distributed systems, the context within which cybersecurity (or lack thereof) can be present. Network structure and ways of communication. History of cybersecurity: important attacks and consequences. Related history (e.g. the important role of cryptography and cryptanalysis in World War II. etc.)				
Course content	War II, etc.) Current importance of cybersecurity , given the connectedness of most of our daily lives. Analysis of critical infrastructures and the position of critical information infrastructures within these – importance of the protection of such systems for the smooth operation of essential services in all areas of life. The network as a route for cyberattacks, how the network can be protected, vulnerabilities, threats.					

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar*iii* enqa.

	Asset protection (including data) as a valuable business operation and its contribution to business survivability.					
	Main principles of cybersecurity – confidentiality, integrity, availability and combinations thereof, resulting in other important cybersecurity concepts and services – accountability, non-repudiation, authenticity, resilience, business continuity and disaster recovery, audit, cybercrime, data / system / network forensics, cyberdefence.					
	Introduction to the phases of cybersecurity – Identify, Protect, Detect, Respond, Recover.					
	Applicable cybersecurity and IT law					
	Software licensing, Data privacy and security, Electronic signatures, Legal and regulatory risks, cyberattacks, digital forensics, liability issues, trust.					
	Introduction to other courses in this MSc (to aid selection of the elective courses).					
	Introduction to specific cybersecurity topics – database security, secure software development, malware analysis, etc.					
	Business case study and lecture: Lecture by invited experts from the cybersecurity industry. Discussion normally focuses on usual network attacks and methods for protection.					
Teaching methodology	Face to Face					
	"Introduction to Computer Networks and Cybersecurity", by Chwan-Hwa (John) Wu and J. David Irwin 1 st Edition					
Bibliography	"Cybersecurity Foundations: An Interdisciplinary Introduction Hardcover", by Lee Mark Zeichner 1 st Edition					
	IEEE Journals, Magazines and Websites 1 st Edition					
	(ISC)2, ISACA, and other cybersecurity websites 1 st Edition					
	Mid Term Exam: 30%					
Assessment	Final Exam: 45%					
	Assignments: 15%					
	Participation: 10%					
Language	Greek					

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Data Mining and Machine Learning				
Course code	CMP320				
Course type	Major Requirement				
Level	Bachelc	or (1st cycle)			
Year / Semester	3/6				
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 periods / week	14	Laboratories / week
Course purpose and objectives	The objective of this course is to introduce basic concepts, tasks, methods, and techniques in data mining and machine learning. The emphasis is on various data mining problems and their solutions with applications real- world problems. Students will develop an understanding of the data mining process and issues, learn various Machine Learning (ML) techniques for data mining, and apply the techniques in solving data mining problems using data mining tools and systems.				
Learning outcomes	 Upon successful completion of the course, students will be able to: Apply basic ML tasks and types of analysis, such as supervised learning, unsupervised learning, re-inforcement learning, classification and regression, and feature selection. Discuss the inner workings of standard ML classification and feature selection algorithms. Solve the problem of selecting algorithms, tuning their hyper-parameters, and estimating the performance of the final predictive model. Perform and apply Data Mining pipelines to real-world problems, dealing with problems such as representing the problems as a Data Mining task, representing appropriately the data, applying and tuning a Data Mining pipeline, and interpreting results. Discuss, compare, apply and synthesize with key statistical estimation and hypothesis testing concepts, with a focus on the ones that are routinely employed within ML algorithms. 				
Prerequisites	CMP200		Required	NONE	



CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

eqar/// enga.

V s

Course content	 Introduction. What is Data Mining and Machine Learning, What kind of data can be mined, What kind of patterns can be mined. Data preprocessing. Descriptive Data characterization, Data cleaning, Data integration and transformation, Data Reduction Probability theory and concepts for ML, axioms of probability, conditional probability, Bayes theorem, maximum likelihood estimation, maximum a posteriori estimation Logistic Regression and fitting with gradient descent Hypothesis testing, and permutation-based hypothesis testing Classification: Basic Concepts, Decision Trees, and Model Evaluation, General Approach to Solving a Classification Problem, Decision Tree Induction, Model Overfitting, Evaluating the Performance of a Classifier Classification: Alternative Techniques: Rule-Based Classifier, Nearest-Neighbor Classifiers, Bayesian Classifiers, Artificial Neural Network (ANN), Support Vector Machine (SVM), Ensemble Methods, Class Imbalance Problem Cluster Analysis: Basic Concepts and Algorithms: Overview, K-means, Agglomerative Hierarchical Clustering, DBSCAN, Cluster Evaluation, Characteristics of Data, Clusters, and Clustering Algorithms, Prototype-Based Clustering, Density-Based Clustering Algorithms Association Analysis: Basic Concepts and Algorithms: Problem Definition, Frequent Itemsets, Alternative Methods for Generating Frequent Itemsets, FP-Growth Algorithm, Evaluation of Association Patterns 		
	Algorithms Association Analysis: Basic Concepts and Algorithms: Problem Definition, Frequent Itemset Generation, Rule Generation, Compact Representation of Frequent Itemsets, Alternative Methods for Generating Frequent Itemsets, FP-Growth Algorithm, Evaluation of Association Patterns		
	Graph Mining, Co-Citation and Bibliographic Coupling, PageRank, HITS Algorithm, Graph Clustering.		
	Metrics of performance, Receiver Operating Characteristic Curves (ROC), and Area Under the ROC curve		
	Estimation of performance and hyper-parameter tuning using cross validation techniques		
	Basics of optimization and constrained optimization		

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Teaching methodology	Face to Face			
	Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data, Bing Liu, Springer, Latest Edition.			
	Introduction to Data Mining: International Edition Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Pearson, Latest Edition.			
	Mining of Massive Datasets, Anand Rajaraman and Jeffrey Ullman, Cambridge University Press, Latest Edition.			
	Machine Learning, Tom Mitchell, McGraw Hill, Latest Edition.			
Bibliography	Pattern Recognition and Machine Learning, Christopher Bishop, Springer, Latest Edition.			
	The Elements of Statistical Learning, Jerome H. Friedman, Robert Tibshirani, and Trevor Hastie, 2nd Edition, Springer, Latest Edition.			
	An Introduction to Statistical Learning, with Applications in R, Latest Edition.			
	Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani, Springer, Latest Edition.			
Assessment	Mid Term Exam:	25%		
	Final Exam:	40%		
	Assignments:	25%		
	Participation:	10%		
Language	Greek			

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Course title	Artificial Intelligence				
Course code	CMP405				
Course type	Major Re	Major Requirement			
Level	Bachelor	Bachelor (1st Cycle)			
Year / Semester	4/7	4/7			
Teacher's name					
ECTS	6 ECTS	Lectures / week	3 periods /14 Per week	Laboratories / week	
Course purpose and objectives	History, theory, and computational methods of artificial intelligence. Basic concepts include representation of knowledge and computational methods for reasoning. The students will also be exposed to different applications areas of AI, such as expert systems, robotics, computer vision, natural language understanding, and planning.				
Learning outcomes	 By the end of the semester, students should be able to: Describe the functions of intelligent agents, and create computational agents in a programming language Identify the major classical and modern AI paradigms, and explain how they relate to each other Explain the concept of planning, and construct planning agents in a programming language. Analyze the structure of a given problem such that they can choose an appropriate paradigm in which to frame that problem Implement a wide variety of both classical and modern AI algorithms 				
Prerequisites	СМР200,	СМР300	Required N	IONE	
Course content	 Introduction to Artificial Intelligence: What is AI; The Foundations of Artificial Intelligence; The History of Artificial Intelligence; The State of the Art; Intelligent Agents; Agents and Environments; Good Behavior: The Concept of Rationality; The Nature of Environments; The Structure of Agents Problem-solving: Solving Problems by Searching; Problem-Solving Agents; Example Problems; Searching for Solutions; Uninformed Search Strategies; Informed (Heuristic) Search Strategies; Heuristic Functions; Beyond 				

ΔΙΠΑΕ CYQAA

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Classical Search; Local Search Algorithms and Optimization Problems; Local Search in Continuous Spaces; Searching with Nondeterministic Actions; Searching with Partial Observations; Online Search Agents and Unknown Environments;
	Advanced Searching Strategies: Adversarial Search; Games; Optimal Decisions in Games; Alpha—Beta Pruning; Imperfect Real-Time Decisions; Stochastic Games; Partially Observable Games; State-of-the-Art Game Programs; Alternative Approaches; Defining Constraint Satisfaction Problems; Constraint Propagation: Inference in CSPs; Backtracking Search for CSPs; Local Search for CSPs; The Structure of Problems;
	Knowledge and Logic: Knowledge-Based Agents; Logic; Propositional Logic: A Very Simple Logic; Propositional Theorem Proving; Effective Propositional Model Checking; Agents Based on Propositional Logic; First-Order Logic; Syntax and Semantics of First-Order Logic; Using First-Order Logic; Knowledge Engineering in First-Order Logic; Propositional vs. First-Order Inference; Unification and Lifting; Forward Chaining; Backward Chaining; Resolution
	Planning: Definition of Classical Planning; Algorithms for Planning as State-Space Search; Planning Graphs; Other Classical Planning Approaches; Analysis of Planning Approaches; Planning and Acting in the Real World; Time, Schedules, and Resources; Hierarchical Planning; Planning and Acting in Nondeterministic Domains; Multiagent Planning;
	Knowledge Representation: Ontological Engineering; Categories and Objects; Events; Mental Events and Mental Objects; Reasoning Systems for Categories; Reasoning with Default Information; The Internet Shopping World; Quantifying Uncertainty; Acting under Uncertainty; Basic Probability Notation; Inference Using Full Joint Distributions; Independence; Bayes' Rule and Its Use; Probabilistic Reasoning; Representing Knowledge in an Uncertain Domain; The Semantics of Bayesian Networks; Efficient Representation of Conditional Distributions; Exact Inference in Bayesian Networks; Approximate Inference in Bayesian Networks; Relational and First-Order Probability Models; Other Approaches to Uncertain Reasoning; Time and Uncertainty; Inference in Temporal Models; Hidden Markov Models; Kalman Filters; Dynamic Bayesian Networks; Keeping Track of Many Objects;
Teaching methodology	Face to Face

СУДАА

ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

CYQAA CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

	Russel, S. and Norvig, P. Artificial Intelligence: A Modern Approach, Pearson. 1 st Edition			
Bibliography	Neapolitan, R. E. and Jiang, X. Artificial Intelligence: With an Introduction to Machine Learning, CRC Press. 1 st Edition			
	Negnevitsky, M. Artificial Intelligence: A Guide to Intelligent Systems, Addison-Wesley 1 st Edition			
Assessment	Mid Term Exam:	30%		
	Final Exam:	40%		
	Assignments:	20%		
	Participation:	10%		
Language	Greek			

ANNEX 8: REVISED INTENDED LEARNING OUTCOMES (ILOS)



B. PROGRAM'S CONTENT

1. Program's purpose and objectives:

- Provide the student with education leading to an academic degree in computer science
- To develop the student's ability to think, write and speak effectively and creatively
- To develop the student's appreciation and respect for social and moral values, as the foundation of his relationship with his fellow human beings and his responsibilities towards society
- To develop the student analytical thinking, decision-making ability and communication skills that along with the development of autonomy, responsibility, integrity of character and self-knowledge will promote his personal development and contribution to any organization
- To build the perspective of social, academic and professional development of the student through the provision of the most basic general and specialized knowledge

2. Intended learning outcomes:

- Recognize, express and explain the essential facts, concepts, principles, and theories relating to Computer Science and software applications.
- Use such knowledge and understanding to design and to apply on computer-based systems in a way that demonstrates comprehension of the trade-off involved in design choices.
- Identify and analyze criteria and specifications appropriate to specific problems, and plan strategies for their solution. Appraise the extent to which a computer-based system meets the criteria defined for its current use and future development.
- Describe and express the elements of computational thinking.
- Employ appropriate theory, practices, and tools for the specification, design, implementation, and maintenance as well as the evaluation of computer-based systems.
- Approach problems in a systematic way and use abstraction to identify tasks and select appropriate strategies to generate solutions.
- Recognize and be guided by the social, professional, legal and ethical, as well as cultural issues involved in the use of computer technology.
- Report the basic principles of information management and employ these principles for effective information organization and retrieval in a secure environment.
- Create written and oral communications on technical issues related to computer based systems and present them to a range of audiences.
- Apply and practice project management and organization skills related to computer based systems on self and team-work.
- Apply a wide variety of both classical and modern Al algorithms



eqar////

6009

- Design and implement module-based solutions and event-driven user interface applications for mobile computing devices.
- Apply Machine Learning tasks and types of analysis.
- Design and implement data-mining algorithms and applications.
- Analyze, design, and implement desktop and web-based applications in different environments and languages
- 3. Program's language of instruction:

GREEK

4. Detailed curriculum, including the structure of the program, courses per semester, and the content of each course analytically (in Greek or in English depending on the program's language of instruction (See Specific Instructions):

SEE (TABLE 1 AND TABLE 2)

- 5. Student admission requirements (See Specific Instructions): Admission criteria
 - 1) The candidate student should send to or visit the Office of Admissions, 56 Arch. Makarios III Avenue, 3065, Limassol with the following:
 - a) A filled Application Form with the required amount of \in 52.
 - b) The original or copy of the high-school Leaving Certificate.
 - c) A photograph (passport size)

All applicants must have completed a secondary (high)school education or twelve years of schooling or the equivalent to be considered for admission.

- 2) When the candidate student becomes accepted at Cyprus College, he or she will receive an Acceptance Letter from the Office of Admissions. Then, he or she will have to pay €500 as a down payment of his or her fees.
- Finally, there is the registration in courses from the field of study the candidate student has chosen under the guidance of advisors. The Office of Admissions notifies all students of the exact registration day.

Transfer Students

Students who have started their College studies elsewhere and want to transfer to Cyprus College must follow the admission procedure. In addition the following should be sent to the Office of Admissions: a) An official transcript of their previous academic record together with a completed application form of

the College.

b) Official course descriptions or syllabi in English or Greek for all work completed at a College or College previously attended. An evaluation for transfer credits will only be done if the above requirements are met.

Transfer Credits

ANNEX 9: PROGRAM EVALUATION REVIEW (PER) PROCESS



PROGRAM EVALUATION REVIEW (P.E.R.) PROCEDURES AND TEMPLATE

Program Evaluation Review (PER) Procedures

1. Rationale and Scope

The Program Evaluation Review (PER) encourages excellence in academic and vocational programs by aligning teaching and learning, curriculum, and other academic processes and activities with the mission of individual programs. The process is an essential part of Cyprus College (CYC) continued effort to ensure that its mission is met through the delivery of its programs, that CYC programs of study comply, on institutional level, with Standards and Guidelines in the European Higher Education Area, and that CYC programs' structure, content and delivery mode meet stakeholders expectations and needs.

More specifically, the PER's goal is to provide a framework for developing,

implementing, and maintaining an ongoing effective program evaluation review process that will:

- Result in the improvement of the program experience of students.
- Follow the standards of the CYC policies and align to accreditation bodies' decisions (e.g. CY.Q.A.A. The Cyprus Agency of Quality Assurance and Accreditation in Higher Education/ΔΙ.Π.Α.Ε. Φορέας Διασφάλισης και Πιστοποίησης της Ποιότητας της Ανώτερης Εκπαίδευσης).
- Assess the quality and enhance the overall effectiveness of the Programs, and College as a whole.
- Identify the strengths and weaknesses in each program under evaluation review and offer opportunities for improvement.
- Establish program action plans and strategies for continuous and ongoing improvement.
- Utilize the information collected through the PER process to better plan and set priorities at the College level.

2. Sources of Information

The aim of every program is to satisfy the needs and expectations of its stakeholders. As a result, continuous monitoring of needs and expectations is essential. The table below shows the way by which the PER process monitors and collects information from the program stakeholders.
STAKEHOLDER	SOURCES OF INFORMATION	DOCUMENTATION
Students	Course Evaluation	Full report of questionnaires output
	Questionnaires	shall be available at the end of each
		semester
	Program Committee	Students' representation in the
		Program Committee. Minutes of
		meetings
Alumni	Alumni Questionnaires (e.g.	Full report of questionnaires output
	Έρευνα Αποφοίτων)	should be available
	Graduate Employment Reports	Reports
Faculty Members	Program Committee	All faculty members teaching in the
· ····,		program are members of the
		Committee.
		Minutes of meetings
		Students' representatives in the
		Committee. Minutes of meetings
Professionals –	Advisory Board	Professional Bodies, Industrialists
Industrialists		representation on the Advisory
		Board. Minutes of meetings
	National & International	Established guidelines
	Professional Bodies Curriculum	
	Guidelines	
	National & International	Directives on program curricula
	Legislative Directives on	
Callaga	Program Curricula	Organization atratagia plan de surrest
College	Drganization Strategic Plan	Organization strategic plan document
wanagement	Program of Study Strategic Plan	Department Strategic Plan.
Other		

In order to facilitate the collection of information from the stakeholders and the development of the PER report, the following Committees/Bodies need to be in place:

(a) Program Committee:

The College Management appoints the Program Committee that monitors the academic and other issues of each program.

- Terms of reference: The Program Committee shall report to the College Management (CM) and the Quality Assurance Committee (QAC) accordingly. For the purposes of the PER procedure the Committee meets at least once per semester. It shall have the following specific responsibilities:
 - To oversee and monitor the implementation of the Organization policies and guidelines.
 - To monitor curriculum development, delivery and assessment; and make recommendations to the CM and QAC for proposed changes in regulations through the development of the PER report.
 - To monitor students' admission and progress.
 - To monitor the career path of the Alumni and maintain strong ties between the Alumni and the College.
 - To receive and consider the summary results of students evaluation

questionnaires, as available.

- To provide a forum for discussion of general matters relating to the program;
- To submit the PER report of the program to the CM and QAC.

The Program Committee comprises the following members:

- The Program Coordinator
- The Program's full time teaching personnel, plus selective part time teaching personnel, if necessary;
- Representative of the Administration personnel according to the specific administrative needs.
 - Administrative Head
 - Admissions Advisor
 - o Librarian
 - Student Affairs Officer
 - o Registrar
- Student representatives.

(b) Program Advisory Boards:

Each program sets up an Advisory Board with the following broad terms of reference and membership.

(a) Terms of reference:

The aim of the Advisory Board is to support the Undergraduate Programs of the College through an independent evaluation of its activities, feedback and constructive criticism. Overall, the Advisory Board will review and contribute in several areas, including the following:

- 1. Improvement(s) on academic teaching.
- 2. Evaluation and provision of suggestions regarding the Undergraduate Programs of the College, structure and content; thus, providing students with an enhanced learning experience and a high quality educational program;
- 3. Proposition of courses that link the College's programs with the needs of the local and global industries, promote internationalization, academic and professional qualification and foremost employability of graduates.
- 4. Develop mutually beneficial relationships between the faculty, the industry, stakeholders and authorities, aiming to facilitate constructive exchange of ideas, as well as strengthen the links between them;
- 5. Contribution of unique and innovative ideas for research and its implementation;
- 6. Promotion of the faculty's work profile outside the College.
- (b) Membership: C/o Departments.

(c) Expert Review Panel (ERP):

The PER process refers to the evaluation of the report by an Experts' panel with the following terms of reference and membership:

(i) <u>Membership</u>

The Program Review Panel comprises of academic and subject experts, namely:

• Two External Faculty members who are experts on the program thematic areas.

The Program Coordinator (on behalf of the Program Committee) appoints the two external experts.

(ii) <u>Terms of reference</u>

The Expert Review Panel provides a written review report by commenting and evaluating the findings and implementation plan presented in the PER, as well as by providing relevant recommendations. The role of the Expert Review Panel is to provide feedback only on the academic elements of the Program Evaluation Review. Decisions about the viability and other aspects of the program remain within the remit of the College.

3. The PER Process

The PER process to be followed is illustrated in the diagram below. The PER process is a continuous process. It is expected that each Department implements the PER procedure and prepares the PER report (see Template attached) every five (5) years. The Program Committee can initiate a PER procedure at any time within the five-year period suggesting documented program changes.

Diagram: PER Procedure



4. Timeframe

Program Evaluation Review is a continuous process. It is expected that every program should complete a PER process every five (5) years. However, the Program Committee is not restricted with regards to the exact time, as it can initiate a PER report at any time within the five-year period suggesting documented program changes. Since the review process is an ongoing process, the Department shall follow all procedures so that the report with the associated documentation is approved in its first meeting of the following calendar year.



Program Evaluation Review (PER) Template

"Program Title"

Last Review Date: DD/MM/YY

1. Background/Contextual Information

Briefly describe the **status** of the Program in review (provide **headline** information in terms of student numbers, profiles and accreditations). Focus on any significant developments since the last program review.

Briefly present the actions taken since the **last Program Review**, and the progress of the suggested Program Action Plan (if any).

(Provide references wherever this is applicable / appropriate)

2.PER methodology

Briefly describe the **methodology** used for the implementation of this review. Refer to how this review is related to the overall College's QA process.

(Provide references wherever this is applicable/appropriate)

3. PER Data Sets & Other Sources of Information

List the **data sets** and **other sources of information**, which were used for the implementation of this review. Provide as appendix all the documentation.

4. Curriculum Structure, Objectives, and Learning Outcomes

Briefly describe and review the **general structure/content** and **rationale** of the Program Curriculum in Review. Possible review tasks, which may be undertaken, are the following:

- Review the relevance and adequacy of the current Objectives / Learning Outcomes of the Program in review in relation to the latest research, professional and technological developments (wherever applicable).
- Review how the Curriculum structure and content satisfies the current Objectives and Learning Outcomes of the Program in review (cross-reference matrices of 'Courses vs Learning Outcomes' can be designed / used for this purpose).
- Review how the Curriculum's structure / learning outcomes satisfy the requirements of international standards and professional organisations, as well as any legislative requirements (if applicable).
- Review how the Curriculum structure / learning outcomes address stakeholders' (students, alumni, professionals) considerations and expectations.

Feel free to implement any additional / alternative review task you consider appropriate for the Program in review.

(Provide references this is applicable / appropriate) Teaching and Learning

Briefly describe and review the **teaching and learning methods**, **teaching and learning materials**, **academic personnel**, **resources**, **and academic support**, which are provided for the Program in review. Possible review tasks, which may be undertaken, are the following:

- Review the relevance and adequacy of the current teaching, learning, and assessment methods followed, in relation to international standards, stakeholders' feedback, and current educational trends.
- Review the adequacy of the Program's current academic personnel in relation to the teaching and learning needs of the Program Curriculum, international standards,

stakeholders' feedback, College Strategy, and requirements from professional bodies.

 Review the relevance and adequacy of the Program's current teaching resources and academic support in relation to international standards, stakeholders' feedback, and current educational trends.

Feel free to implement any additional / alternative review task you might feel is appropriate for the Program in review.

(Provide references wherever this is applicable / appropriate)

5. Sustainability

Briefly describe and review the **Sustainability** aspects of the Program in review. Possible review tasks, which may be undertaken, are the following:

- Review the **student recruitment / retention policy**, which is followed for the Program in review, in relation to the latest enrolment, retention, and marketing data.
- Review the employability dimension of the Program in review, in relation to the latest alumni satisfaction and graduate employment reports, and in relation to the feedback provided by industrial stakeholders.
- Review how the Program in review fits and contributes to the satisfaction of the College's long-term strategic plans.
- Review how the Program in review addresses the latest national and international professional needs and trends.

Feel free to implement any additional / alternative review task you consider as appropriate for the Program in review.

(Provide references wherever this is applicable / appropriate)

6. SWOT Analysis

Based on your review, please provide a Strengths/Weaknesses/Opportunity/ Threats Analysis for the Program in Review:

Strengths	Weaknesses
 Strength x Strength y 	 Weakness x Weakness y
Opportunities	Threats
 Opportunity x Opportunity y 	 Threat x Threat y

7. Proposed Program Modifications

Identify the proposed program modifications by providing the necessary documentation on the following areas:

I. Program modifications:

- (a) Title
- (b) Aim and Objectives
- (c) Learning Outcome(s)
- (d) Curriculum/Program structure
- (e) Entry requirements/criteria

II. Course(s) modifications

- (a) Title
- (b) Aim and Objectives
- (c) Learning Outcomes
- (d) Course Content
- (e) Teaching Methodology
- (f) Assessment Methods
- (g) Recommended Textbook(s)
- (h) Other (ECTS, hours, etc.)

III. Program quality control mechanisms

IV.Other (Specify)

8. Implementation Plan

Describe the proposed action plan for the proposed modifications/changes in a timetable or Gantt Chart.