Doc. 300.1.2

Higher Education Institution's Response

Date: 04/11/2025

- **Higher Education Institution:** European University Cyprus program offered as franchise at "Nanjing University of Posts and Telecommunications"
- **Town:** Nanjing, Jiangsu Province, People's Republic of China
- **Programme of study Name (Duration, ECTS, Cycle)**

  In Greek:
  Επιστήμη των Υπολογιστών (18 Μήνες/90 ECTS, Μεταπτυχιακό)

  In English:
  Computer Science (18 Months/90 ECTS, M.Sc.)
- **Language(s) of instruction:** English
- **Programme's status:** New
- **Concentrations (if any):**

  In Greek: Concentrations
  In English: Concentrations

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].

A. 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 **without any interference** 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.*

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
1. While the EEC recognises that revising an accredited programme is subject to strict constraints and rules, and therefore is perceived as a herculean (and/or overly bureaucratic) task, the EEC nonetheless observes that the field of computer science moves so rapidly that agility is needed to maintain a programme such that it equips its graduates with the skills that employers are needing (and — of significant importance — therefore also maintaining the programme economically profitable to offer). To this end, while the EEC recognises that the department has recently revised and refreshed the entire programme, the EEC recommends that the department "aggressively" implements the processes that it has laid out in the department handbook for reviewing and revising each course — and annually profits from the ability granted by the accreditation authorities to refresh up to a certain percentage of the syllabi of the courses.	We thank the EEC for this important observation and fully acknowledge the need for agility in Computer Science education. We would like to clarify that, while our programme is accredited for a five-year cycle and the core syllabi cannot be substantially modified during this period as per CY.Q.A.A.'s guidelines, the Department actively implements continuous improvement measures within the permissible framework (as described in the DCSE Faculty Handbook **Annex I**). In this way we ensure academic agility through pedagogical innovation, industry, engagement and continuous improvement of learning outcomes. Specifically: • The programme includes elective courses and flexible teaching components, where emerging trends and technologies are incorporated annually. • Course delivery is dynamically updated through new case studies, tools, programming environments, lab improvements, industry-driven assignments, ensuring that students are exposed to current technological developments without altering the formally accredited syllabus.	Choose level of compliance:
2. Further, making student evaluation forms mandatory and establishing stronger feedback loops	We recognise the value of enhancing student engagement and transparency through mandatory student evaluation forms and	Choose level of compliance:

would significantly enhance student engagement and transparency.	stronger feedback loops. As such, the Department fully supports this recommendation and has formally proposed the implementation of these measures to the Office of the Vice Rector of Academic Affairs, in alignment with university-wide policies and procedures. Even though, as in most universities, student feedback does not reach 100% student participation. Local universities face these realities as such. However, given the new Chinese educational content where structural and institutional guidelines are considered more obligatory, EUC expects that stronger feedback will apply, thus allowing more confidence that students perceptions will be more populous.	

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
1. The EEC recommends considering that key course exams have a second grader.	The Department acknowledges that the practice of a second grader does contribute to a fairer approach to grading. Currently, a second examiner is used in all occasions when a student feels that their exam answers were not marked correctly and a 'Final exams appeals procedure' is followed. Full details in the University Charter, specifically in Annex II, Section 19 of the Charter (please use the hyperlink to go through the specific section). A second examiner is also required for all undergraduate thesis projects. The recognition of the merits of the EEC's recommendation has initiated an internal discussion to explore the feasibility of integrating elements of a second-grader system, where appropriate, within the existing quality assurance and assessment frameworks. Such a change would require careful consideration of practical parameters. These matters will need to be discussed with HR and the Rectorate to ensure that any revised framework is sustainable, adequately resourced, and aligned with institutional policies and contractual arrangements.	Choose level of compliance:

3. Teaching staff

(ESG 1.5)

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For Official Use ONLY
1. The EEC finds the relationship between EUCI and EUI with respect to Senate representation to be inherently unfair. The EEC recommends that they reflect on how EUCI faculty members can be granted representation on the Faculty Senate. Further to the above, the EEC notes that de-facto EUC will have two "groups" of faculty members, working side by side: those at EUC-Cyprus and those at EUCI. The EEC strongly recommends the leadership at EUC to proactively 17 ensure fair and equal consideration of these two groups (especially regarding promotion, but also for funding, representation in university-wide bodies, etc.) so that they — effectively — become one. The risk of not doing so is that the current excellent dynamics that we sense among the faculty members be tarred by jealousy.	We thank the EEC for highlighting this sensitive and important issue. The University is committed to maintaining fairness, transparency, and equal treatment of all academic staff members across its campuses. We fully recognise the importance of ensuring that academic staff in the programme as to be offered at NJUPT are afforded equitable opportunities in terms of representation, promotion, access to funding, and participation in university-wide governance bodies. We can confirm that the following provisions have been already arranged in order to address these issues> **Coordination between EUC and NJUPT:** According to the planned activities of the two institutions, a Joint Management Committee will be responsible for the coordination, management, and teaching supervision of teaching, instruction and research at the European Cyprus Institute (EUCI). Meeting decisions will be made through voting, and general matters shall follow the principle of majority rule, ensuring the scientific and democratic nature of the decision-making process. **In addition, an Academic Committee** will be set up. The Academic Committee is responsible for establishing and improving the	Choose level of compliance:

	academic standard supervision system, developing and implementing academic quality evaluation mechanisms, and ensuring that teaching quality meets established standards. The Academic Committee will be composed of the main members of the academic staff who teach the courses offered. **Joint research agenda:** As an initial step, EUC teaching staff will participate in research events organized by NJUPT, e.g. a "Research Week" in NJUPT. In addition, we plan to explore further opportunities for joint research initiatives, collaborative grant proposals, and co-supervised student projects, with the long-term goal of developing a joint research agenda that will strengthen and sustain the partnership.	
2. Given that the program will be delivered in English, it is crucial to ensure all non-native English speaking teaching staff have the opportunity to both attain a minimum level of proficiency, and to continue — should they so wish — to follow training to improve	We appreciate the EEC's emphasis on language proficiency in support of high-quality English-medium instruction. The University fully recognises the importance of ensuring that all non-native English-speaking faculty teaching in the programme meet the required level of proficiency and are continuously supported in further developing their language skills. To this end, we intend to adopt measures similar to the ones we have successfully applied in Minjang University to ensure that English proficiency is of high level among all academic staff. Specifically, a) during academic staff recruitment, English language proficiency is verified through proper	Choose level of compliance:

	formal certificates aligned with accreditation standards b) all teaching personnel undergo interviews, and a demonstration lecture before being hired c) professional development courses in academic English and English for teaching, will be provided through the University's Language Centre at a bi-annual basis (prior to the beginning of each semester) d) continuous training opportunities, including workshops on English-medium pedagogy, communication skills, and classroom engagement will be also provided. Moreover, continuous monitoring of instructional quality will be implemented in class to ensure that all courses are delivered in clear and consistent English, thereby maintaining the academic standards and learning outcomes of the Computer Science programme.	

4. Student admission, progression, recognition and certification

(ESG 1.4)

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For Official Use ONLY
1. For the reasons enumerated in the Findings, the EEC finds this program to be non-compliant in the sub-area of "Student admission, processes and criteria". In order to be accredited, this situation must be remedied. For the success of the programme — academically, for society, for the graduates, and, consequently, also commercially — it is important that the students who actually need the programme can effectively access the programme. The EEC does not wish to be prescriptive in what approach to take in order to become compliant in this sub-area, for the following reasons: • First, this as the EEC does not fully know what constraints are, or are not, flexible (for example: is the "National Postgraduate Entrance Examination" mandatory? And if it is, is it mandatory that the professional foundation course and "professional core course" be these two?).	We thank the EEC for this observation and for highlighting the importance of ensuring that the M.Sc. programme remains accessible to the students who genuinely need and can benefit from it. Following the EEC's feedback, we have now amended the programme structure and admission criteria so that they are fully aligned with the advanced academic level and intended audience of the programme. Specifically, the revised programme requires that applicants possess prior academic background in Computer Science, ensuring that the students who enter the programme have the necessary foundations to progress successfully. Regarding the two specific points raised by the EEC: **- On whether the National Postgraduate Entrance Examination is mandatory:** Yes, this examination is a mandatory national requirement for admission into postgraduate degrees in Computer Science in China." This examination specifically verifies that candidates possess the core Computer Science foundations (data structures, computer architecture, operating systems, computer networks) that are required for advanced-level Master's studies. Therefore, the requirement to have successfully passed this national examination	Choose level of compliance:

• Second, the EEC has the utmost confidence in the coordinator of the programme to be best positioned to understand and balance the different considerations — and has the capacity and experience to competently do so.	directly supports the correction requested by the EEC, as it ensures applicants already possess the core competencies needed for the revised advanced-level curriculum. **- On whether the two "professional foundation" courses must be these two:** Following the revision of the programme structure (please see below **Section 4.2** of the EEC's response), the content and the learning outcomes of the programme have now been updated so that all courses are delivered at an advanced Master's level. Consequently, the courses included in the programme have been selected specifically to reflect this advanced level, and all syllabi are provided in **Annex IV**. We therefore confirm that the courses included are now academically appropriate to the level of the award and aligned with the required entry profile. Moreover, the revised programme is now fully aligned with the expected learning outcomes, and competency descriptors of EQF level 7. We believe that these changes directly address the concern identified in sub-area "Student admission, processes and criteria" and remedy the non-compliance pointed out by the EEC.	
2. Notwithstanding, the EEC wish to share its thought — collegially and informatively, and not prescriptively — on three different options for resolving this situation: • Align the admission criteria such that the proposed well-designed	We thank the EEC for sharing three reflective options and for presenting them in a collegial and non-prescriptive manner. We carefully considered these suggestions during the programme revision process.	Choose level of compliance:

conversion programme can truly benefit NUPT academically, i.e., to enable that non CS BSc graduates can earn a valuable CS MSc degree. Conversion master programs are widely present in Europe, though are not common in China. Thus the proposed EUCI-NUPT program can become a successful regional trailblazer. • Create a new advanced/specialised CS MSc programme, i.e., a programme targeting primarily CS BSc graduates. This programme would be nationally unique through benefiting from both the vast expertise of NUPT faculty in advanced topics in subareas of CS, and from the student-centred approach to education mastered at EUC. • Revising the currently proposed MSc program (necessarily, both at EUC and at EUCI-NUPT), in order for it to be able to accommodate both non CS and CS BSc graduates. From among these options, the EEC notes that option (1) does not require changes of the proposed program. Options (1) and (2) are not mutually exclusive and can lead to not	We would like to clarify that the M.Sc. in Computer Science at EUC–Cyprus was originally designed as a conversion programme. However, as correctly noted by the EEC, this format is not compatible with the requirements and realities of the Chinese context, particularly given the mandatory *National Postgraduate Entrance Examination* requirements for admission. As a result, we have selected a pathway which is aligned with the spirit of Option (2) — namely, creating an advanced M.Sc. targeting graduates who already possess a strong Computer Science background. **This will be identically offered at the EUC main campus as well.** Accordingly: • We have **aligned the admission criteria** at EUC with the admission criteria applicable at NJUPT, so that students entering the programme now must already hold prior Computer Science knowledge and competencies (both at EUC main campus and NJUPT). • We have **revised the curriculum**, removing/updating introductory and bridging modules, and replacing/updating them with modules that are advanced, specialised, and aligned with modern industry developments and research directions. The listing which follows outlines the changes made. Removal of existing courses: 1) CSC600-Introduction to Programming was a compulsory course and has now been	

one, but in the long-term to two MSc programmes, each successfully targeting different objectives and student populations. Option (3) may from a management perspective appear to be the most logical, the cheapest, and the most straight-forward to develop — however it is the assessment of the EEC that carries multiple significant intrinsic risks and complexities. The analysis behind this assessment is given, for information, below: • Option (1): Align the admissions criteria for the programme as delivered by EUCI to those applied at EUC Cyprus. For example by doing away with the "National Postgraduate Entrance Examination", or by proposing different/other professional foundation and core courses. - To this end, the EEC has consulted Wikipedia. While this certainly is not an authoritative source, it does say the following regarding the "National Postgraduate Entrance Examination": "The preliminary examination generally covers four subjects: English, mathematics, political science, and a subject test in the professional field of the master's program that candidates apply for. The first three subjects are national unified propositions. Depending on the professional fields,	removed. This course was not compatible with an EQF Level 7 Master's programme and, as correctly noted by the EEC, introductory programming content is not appropriate for students who are required to already possess prior Computer Science knowledge upon admission. 2) CSC615-Data Structures & Algorithms was a compulsory course and has now been removed. This foundational content is already covered at Bachelor level in Computer Science and is therefore not appropriate for an EQF Level 7 Master's programme where students are expected to already possess these skills upon entry. 3) CSC604 Data Mining and Machine Learning, was an elective course, and has now been removed. We have instead introduced "CSC614 - Data Science and Big Data Analytics" as a core course. As there was substantive overlap between the two courses, the decision was taken to retain only one advanced module in this domain. The selected core course better reflects current industry requirements, modern toolchains and emerging market trends, while also providing wider coverage of scalable data ecosystems and analytics frameworks appropriate to EQF Level 7. Update of existing courses (all of the following compulsory courses have been updated to advanced courses, aligning also the learning outcomes and the course content):	

some subject tests are propositions by the universities where candidates apply for, and some subject tests are national unified propositions." Thus, it may be a worthwhile option to investigate if it is possible to substitute the "subject test" from these "national unified propositions" (the foundations and core course) to propositions by the university, in alignment with the specificities of this programme. - If this option is pursued, its feasibility may need to be validated with NUPT, and/or with the relevant Chinese accreditation authorities. • Option 2: Create a new MSc to offer at EUCI— which aligns with the profile of the students having passed the "National Postgraduate Entrance Examination" with these professional foundation and core courses successfully. This would no longer be a "conversion programme" but could be either advanced CS or a specialisation thereof (AI, Cybersecurity, Health-informatics, …) — and would, obviously, be subject to separate accreditation. • Option 3: Revise the currently proposed MSc programme for "dual service" to accommodate for both students with and without a strong CS background, and deliver the same programme in both	1) CSC616-Advanced Computer Architecture and Operating Systems 2) CSC622-Advanced Software and Database Engineering 3) CSC618-Advanced Computer Networks & the Internet From Elective to core course: 1) CSC612-Foundation of AI and ML using Python, was an elective course, and has now become a compulsory course (a new course code was also created) Newly introduced courses: 1) CSC614-Data Science and Big Data Analytics, is a newly introduced compulsory course in Year 1, Semester 1. This course bridges AI/ML (CSC612) and Databases (CSC622), complements Computer Networks (CSC618), and prepares students for applied data-intensive projects. It has been introduced as a core component because Data Science has now become one of the main pillars of modern Computer Science. It ensures that all students gain exposure to the concepts, tools and scalable ecosystems that form the basis of contemporary data-driven computing, and provides the required grounding for those who wish to specialise further or progress into doctoral research in Data Science. 2) CYB600-Introduction to Cybersecurity, a new elective course. Cybersecurity is a critical pillar of today's computing landscape and is essential for any advanced computing	

Cyprus and in China, and without aligning the admissions requirements between the two programmes (i.e., without doing Option 1). This is the option which the EEC can understand may appear appealing, but which the EEC believes to multiple significant intrinsic risks. De-facto this option cannot be simply a “cosmetic” change as it will yield multiple entry profiles into the programme, therefore requiring defining multiple paths through the curriculum and adding a significant number of additional new advanced level courses. Consequently such a programme would not be a simple evolution of the programme currently delivered in Cyprus, but a brand new programme requiring major structural changes — and, consequently, a thorough evaluation of what would be a de-facto new program before approval. The EEC is worried that either of the Areas/Subarea that are currently assessed as compliant for the proposed conversion program may become non-compliant if the nature of the program is changed to accommodate both CS and non CS bachelors. The EEC insists that it will not prescribe either, or indeed any, of these three options — which	professional. Offering it as an elective allows students to be introduced to this specialised domain, and those who wish to do so can then continue toward more advanced study, research or doctoral-level work in Cybersecurity. 3) AIN624-Artificial Neural Networks and Deep Learning, a new elective course. It represents one of the dominant scientific and industrial directions of Computer Science today. By offering this elective, students are introduced to this pillar of modern CS, and those who are interested can build deeper expertise, including pursuing advanced research or PhD studies in AI-related topics. The updated structure ensures that the programme is no longer positioned or delivered as a conversion programme, but rather as an advanced M.Sc. designed specifically for graduates coming from Computer Science or closely related disciplines. At the same time, the revised curriculum maintains coverage across the core breadth of the Computer Science discipline, while incorporating modern, high-demand thematic areas aligned with current scientific developments, industry needs and labour market trends. These revisions are documented in: • **Annex II** – (Table 1) Structure of the Programme of Study • **Annex III** – (Table 2) Course distribution per semester • **Annex IV** – Course Descriptions With these changes, the programme is now fully compatible with the	

are, rather, provided as potential inspiration for the program coordinator and her team to decide which path to prioritise.	student profile that can legitimately enter the programme in China (i.e., students with prior CS foundations who have passed the national entrance examination), and at the same time academically coherent and aligned with modern international expectations for an advanced Master's degree in Computer Science. The Programme to its version described in our response here will offered upon approval of the EEC at both EUC main campus and NJUPT. We thank the EEC again for outlining the three reflective options, which contributed meaningfully to the decision path we followed.	

5. Learning resources and student support

(ESG 1.6)

We thank the EEC for recognising these strengths and for acknowledging the high-quality infrastructure, support services, student opportunities and strong stakeholder engagement that will underpin the successful delivery of the programme.

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For Official Use ONLY
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6. Additional for doctoral programmes

(ALL ESG)

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For Official Use ONLY
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7. Eligibility (Joint programme)

(ALL ESG)

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For Official Use ONLY
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B. Conclusions and final remarks

We sincerely thank the EEC for its detailed evaluation of the M.Sc. in Computer Science. We appreciate the positive recognition of the programme's quality, as well as the constructive comments provided. We have reviewed all recommendations carefully and have addressed the noted non-compliance point related to student admissions through the amendments outlined in this document. We remain committed to continuous improvement, safeguarding academic quality, and ensuring the success and relevance of the programme.

In the table below, we repeat each recommendation verbatim and, in the corresponding "Response" column, we reference the specific section(s) and item(s) of this document where our detailed reply is provided.

Conclusions and final remarks **by EEC**	Actions Taken by the Institution	For Official Use ONLY
1. The EEC recognises the quality of the M.Sc. programme in Computer Science, as evidenced by both the student satisfaction and by the documented employability of graduates from its delivery at EUC-Cyprus, and by the curriculum as presented subsequent to the recent (2025) revision and renewal thereof. However, the EEC finds that the context wherein the programme will be delivered in Nanjing is sufficiently different for it sub-area 4.1 "Student admission, processes and criteria" to be considered as non-compliant. The EEC finds that in view of the programme objectives, and the competencies verified by the "National Postgraduate Entrance Examination" which is part of the admissions criteria, the students who can access the programme are those who will neither need nor benefit from the programme — and, at the same time, those who need and can benefit from the programme will not be able to successfully pass that "National Postgraduate Entrance Examination" and thus will not be able to access the programme.	We thank the EEC for this important observation. We fully acknowledge that the original programme structure needed closer alignment between (a) the required student entry profile and (b) the level of the modules offered. Following the EEC's feedback, the programme has now been amended to ensure that all modules are consistently delivered at an advanced Master's level, and that the admission criteria explicitly require prior Computer Science knowledge. The revised admission criteria, programme structure, and advanced content have been fully updated, and are presented in detail in **Section 4.2** of this document. In addition, all updated syllabi are provided in **Annex IV.** With these amendments, the programme now directly targets applicants who already possess the necessary Computer Science foundations and who can genuinely benefit from, and succeed in, an advanced M.Sc.	Choose level of compliance:

	curriculum in Computer Science. We believe that this alignment directly addresses the concern raised by the EEC regarding sub-area 4.1 ("Student admission, processes and criteria").	
2. Notwithstanding, the EEC was impressed by the university level and departmental level support of the proposed program, including the ambitions to recruit dedicated EUC-faculty to be permanently in Nanjing, as part of EUCI — and who will deliver the programme alongside EUC-faculty based in Cyprus. Notwithstanding, the EEC notes that consequently, EUC will de-facto have two "groups" of faculty members, working side by side: those at EUC-Cyprus and those at EUCI. The EEC strongly recommends the leadership at EUC to proactively ensure fair and equal consideration of these two groups.	We thank the EEC for acknowledging the strong institutional support for the programme and our commitment to dedicating EUC academic staff permanently in Nanjing to deliver it alongside colleagues based in Cyprus. We fully recognise the importance of ensuring that these two academic staff groups are treated fairly and equitably, without distinction. As detailed in **Section 3.1** of this response document, the University is committed to maintaining equal opportunities in representation, promotion, access to resources, and participation in governance structures. As also explained in the same section, the coordination between EUC and NJUPT which has formally embedded academic staff representation and decision-making participation from both EUC and NJUPT. We remain committed to explore additional feasible pathways for inclusive representation models, safeguarding collaborative spirit, parity, and cohesion across both campuses, aligned	Choose level of compliance:

	with EUC's strategic vision for global growth and excellence.	
3. The EEC recognises that the strategic partnership between EUC and NUTP is particularly helped by the strong vision of current and former leadership at both institutions, including the long term ties at that the former Rector at EUC maintains to the Chinese academy of social sciences, and the shared vision by the EUC Vice-Rector and the NUPT vice president for the strategic importance of internationalisation.	We thank the EEC for recognising the strong and long-standing strategic partnership between EUC and NUPT, which is indeed grounded in a shared vision for internationalisation and academic excellence. The collaboration has been greatly supported by the leadership and commitment of both institutions, including the former Rector of EUC, whose long-term academic ties with the Chinese Academy of Social Sciences have fostered mutual trust and cooperation, as well as the continued engagement of the EUC Vice Rector and the NUPT Vice President. This sustained alignment at the leadership level ensures the strategic continuity and long-term success of the partnership, supporting the delivery of high-quality joint programmes and the expansion of research, innovation, and mobility opportunities for both faculty and students.	Choose level of compliance:
4. The EEC recognises both short, medium and long-term synergies between EUC and NUPT, and encourages that these be explored to the fullest and to the benefit of both parties. This includes: • Mobility at global level, sharing knowledge and combining strengths. This includes exploring various instruments such as CSC, Erasmus+ — and, in particular, scholarships from industry stakeholders, who during our discussions with them expressed	We thank the EEC for recognising the short, medium, and long-term synergies between EUC and NJUPT, and we fully share the view that these should be explored to their full potential for the benefit of both institutions. **Mobility and Funding Instruments**: As outlined in our response **in B.Sc. in Computer Science (07.14.3222.002_300.1.2), in**	Choose level of compliance:

that they considered international experiences to be important, and a willingness to support this also financially. The EEC praises various current initiatives, including organisation of the seminar, annual conference and summer school series. • Joint co-supervision of students — at all levels, including Bachelors theses and senior projects — with supervisors from both EUC and NUPT can contribute to internationalisation and development of further collaborations. Both EUC and NUPT have had commendable visible success involving undergrad and grad students in research training (typically also leading to publishable output), and the EEC suggests that the "carrot" of internationalisation (such as: a research visit to Cyprus or to Nanjing) might be an additional motivator. • Ethics and values: EUC presented a vision of promoting European values through the education that it provides. Nationally, China has been active in promoting ethical considerations in modern computer science and AI, (e.g., the Position Paper of the People's Republic of China on Strengthening Ethical Governance of Artificial Intelligence, and the recent proposal on ethical governance at UN, e.g., https://www.fmprc.gov.cn/eng/xw/wjbxw/202509/t20250901_11699912.html). The joint EUCI, and the education it offers, can foster the exposition of faculty and students to different perspectives on ethics and core values. Additionally, the EEC suggests introductory / general-ed training,	**Section 3.2**, the Department is already actively pursuing wider mobility opportunities through Erasmus+ instruments, China Scholarship Council (CSC) schemes, and industry collaborations. We appreciate the positive recognition of our current initiatives (including seminars, annual conferences and summer schools) and confirm our intention to expand these further. We have already organised a Blended Intensive Programme (BIP) in AI with participation from China, and we plan to continue this on a recurring basis. **Joint Co-Supervision and Research Training**: We fully agree that co-supervision can meaningfully strengthen internationalisation. EUC and NUPT both have a strong track record in involving undergraduates and graduates in research activities with publishable outcomes. We will therefore prioritise co-supervision arrangements in senior projects and thesis work, and explore the feasibility of linking these to mobility incentives and short research visits. **Ethics and values:** We appreciate the EEC's observation regarding the value of exposing faculty and students to diverse ethical frameworks in AI and computing. The Programme presents an ideal platform to bring European and Chinese perspectives together. Cultural orientation sessions are already	

about cultural differences for students, faculty and support staff.	taking place at MJU, and we will continue to encourage and support such initiatives at both NJUPT and MJU, as a means of strengthening mutual understanding, shared academic values, and responsible AI practice across both campuses. We thank the EEC for these constructive suggestions, which we view as highly aligned with our long-term vision of deep, sustainable collaboration between EUC and NJUPT.	
5. The EEC recognises a strong interest and support of the stakeholder community. They value internationalisation and graduates with experience of studying abroad. While the EEC appreciated that the HR representatives from the stakeholder community expressed strong interest in the graduates, the EEC suggest to involve also technical people in the stakeholder community from the companies — in order to received periodic feedback on the content of the offered program.	We thank the EEC for recognising the strong support of the stakeholder community and we share the view that internationalisation is highly valued by employers. We acknowledge the suggestion to also engage technical professionals from industry in addition to HR representatives, in order to receive more specialised feedback on programme content and to maintain a balance between foundational computer science areas and emerging cutting-edge fields such as AI. It is also worth mentioning few examples of already existing collaborators include the following companies: 1. China Telecommunications Corporation Limited China Teleco) 2. China Mobile Corporation Limited (China Mobile) 3. China United Network Communications Group	Choose level of compliance:

	Corporation Limited (China Unico) 4. China Tower Corporation Limited (China Tower) 5. Huawei Technologies Corporation Limited (Huawei) 6. Zhejiang Tmall Technology Corporation Limited(Tmall) 7. China National Offshore Oil Corporation (CNOOC) 8. Weaver Network Technology Corporation Limited 9. Shanghai Tianma Microelectronics Corporation Limited 10. Beijing NAURA Microelectronics Equipment Corporation Limited To this end, we will strengthen our existing stakeholder engagement mechanisms by expanding the involvement of industry technical experts in periodic consultations. This will enable us to ensure that the programme continues to reflect evolving technological developments and labour market needs while preserving the necessary foundational computer science core.	
6. As part of the reflections on M.Sc. programmes, the EEC suggest that in view of the competencies of the two institutions — and, in particular of the two B.Sc. programmes being targeted for joint delivery by the NUPT and EUC in Nanjing, it would be interesting to explore a M.Sc. in a field such as “Health Informatics”	We thank the EEC for this thoughtful suggestion. We agree that, given the complementary strengths of EUC and NUPT, particularly in Computer Science and Health-related fields, an M.Sc. in Health Informatics could indeed represent a valuable strategic direction. At this stage, however, our immediate priority is the	

	successful launch and delivery of the M.Sc. in Computer Science at NJUPT, as presented in this evaluation and response document. Once the M.Sc. in Computer Science is fully established and operational, the University would be open to examining the feasibility of developing a specialised M.Sc. programme in Health Informatics (or related fields) in a future cycle, taking into consideration demand, capacity, and institutional strategy. We consider this recommendation as a potential pathway for future programme development and thank the EEC for identifying this opportunity.	
7. The EEC wishes to thank both the officers from the CYQAA and the personnel from EUC and NUPT, for making the site visit both pleasant and informative — and wishes the EUC and NUPT success in their exciting endeavour.	We sincerely thank the EEC for their kind words, for the constructive dialogue during the visit, and for the supportive and collegial spirit in which the evaluation was conducted. We also thank the CY.Q.A.A. officers for their coordination and guidance throughout the process. We deeply appreciate the EEC's encouragement and look forward to continuing this exciting joint endeavour together with NJUPT.	

C. Higher Education Institution academic representatives

Name	*Position*	*Signature*
Prof. Apostolos Zaravinos	Dean, School of Sciences, European University Cyprus	Apostolos Zaravinos Apostolos Zaravinos (Nov 5, 2025 15:03:42 GMT+2)
Dr. Yianna Danidou	Chair, Department of Computer Sciences and Engineering, European University Cyprus	Yianna Danidou Yianna Danidou (Nov 5, 2025 15:06:52 GMT+2)
Dr. Anastasia Ioannou	Programme Coordinator, European University Cyprus	

Date: 04/11/2025

Annex I

School of Sciences | Department of Computer Science and Engineering

FACULTY DEPARTMENTAL HANDBOOK

This handbook is property of European University Cyprus/ Department of ***Computer Science and Engineering*** *and is intended to be used by the Full-Time, Special Teaching Personnel and Part-Time Academic Staff of the Department.*

Acknowledgements

This handbook was prepared in response to the 2025 External Evaluation Committee (EEC) review. It reflects departmental policies and practices in alignment with European University Cyprus internal regulations, strategic goals, and quality assurance procedures.

Table of Contents

1 Introduction

The Department of Computer Science and Engineering (DCSE) at European University Cyprus (EUC) is committed to excellence in teaching, research, and service to the academic and wider community. This Faculty Handbook outlines the key responsibilities, procedures, and support mechanisms in place for the Department's faculty. It reflects the University's values of innovation, inclusiveness, academic integrity, and alignment with European quality standards.

In terms of scope, this comprehensive manual encompasses all facets of departmental operations, including but not limited to: undergraduate and postgraduate program administration, faculty recruitment and development protocols, research governance structures, and student support mechanisms. It is designed to serve as both a reference document for current practices and a strategic roadmap for continuous improvement. This document is created in direct response to the 2025 External Evaluation Committee report of the Departmental evaluation.

This handbook operates in conjunction with numerous institutional policies and internal regulations (IR), most notably the EUC Quality Assurance Manual (IR 19) and the Program Evaluation Review procedures (IR 07/08). To access the specific EUC Internal Regulations mentioned in the description please follow the link EUC Internal Regulations.

Where applicable, specific departmental adaptations of university-wide policies have been implemented to address the unique requirements of computer science education and research. All Department related documents can be found in the shared space at https://euccc.sharepoint.com/sites/SharePointSite-DepartmentofComputerScienceandEngineering/SitePages/ProjectHome.aspx .

1.1 Departmental Mission & Vision

Guided by our commitment to excellence and innovation, the Mission, Vision, and Values of the Department of Computer Science and Engineering serve as the foundation for all strategic decisions and initiatives. These core principles reflect our dedication to advancing knowledge, fostering technological leadership, and creating meaningful impact through education, research, and collaboration.

Mission: Provide high-quality, inclusive education in Computer Science and Engineering, fostering critical thinking, innovation, and employability. Empower students and faculty through excellence in teaching, interdisciplinary research, and by cultivating strong industry and societal partnerships aligned with emerging digital challenges.

Vision: To become a regional and international leader in computer science and engineering education, research, and innovation - fostering ethical, inclusive, and sustainable technological advancements that transform lives and industries.

Values:

- Striving for the highest standards in teaching, research, and professional conduct
- Promoting equal opportunities and a supportive environment for all students and staff
- Embracing emerging technologies and foster creativity in solving real-world challenges
- Build strong partnerships with industry, academia, and the broader community to enhance learning and impact
- Prioritizing student success, development, and well-being
- Fostering a mindset of continuous development among students, alumni, and staff

These principles are implemented through our comprehensive Strategic Plan 2025-2030, which specifies measurable objectives, resource allocation strategies, and key performance indicators across all departmental functions.

1.2 Summary of Strategic Plan 2025-2030

The Strategic Plan 2025–2030 outlines a comprehensive roadmap for the Department of Computer Science and Engineering (henceforth the Department) at European University Cyprus to achieve academic distinction, research excellence, and societal impact.

The strategic priorities are structured across short-, medium-, and long-term horizons. Immediate priorities (2025–2026) focus on strengthening academic leadership through targeted recruitment of senior faculty, enhancing student employability via modernized curricula, and deepening industry engagement. Short-term objectives (2026–2028) emphasize infrastructure development, research center expansion, and tailored marketing strategies to support enrollment growth. Long-term goals (2028–2030) aim to solidify the Department's research

output, international reputation, and societal impact through measurable quality indicators, alumni engagement, and interdisciplinary collaborations.

A central pillar of the plan is the advancement of research and innovation, with specific targets to increase high-impact publications, secure competitive funding, and integrate students into research activities. Concurrently, the plan prioritizes educational excellence through the adoption of digital-enhanced learning methodologies, teaching assistant programs, and iterative assessment models to improve student outcomes and satisfaction.

Engagement and reputation-building are addressed through participation in international competitions, public outreach events, and partnerships with industry and societal stakeholders. Faculty development is another critical component, with commitments to reduce administrative burdens, provide professional growth opportunities, and foster a collaborative work environment.

Overall, the plan reflects a forward-looking approach to addressing contemporary academic and technological challenges while fostering a culture of excellence and inclusivity.

For implementation details and metrics, see the full Strategic Plan (found on Department's SharePoint).

2 Governance and Organizational Structure

2.1 Definition of the Department Members

2.1.1 Membership

The Department consists of all full-time faculty who have been appointed under the Charter and the Internal Regulations of the University and who hold the rank of professor, associate professor, assistant professor, or lecturer, as well as all full-time special teaching personnel who likewise have been appointed under the rules of the University (and who hold the rank of full-time Instructor or Senior Instructor). The student constituency of the Department shall be all students who have declared a major or major preference in an academic program of the Department.

2.1.2 Voting Rights

All members eligible to serve on departmental committees have voting rights for all business and elections of the pertinent committees they serve on. Each eligible member shall have one vote in Committee meetings and in Departmental business and elections.

2.1.3 Responsibilities

Department members are responsible to the Chairperson of Department for the exercise of their duties. The responsibilities of the academic members of the Department are primarily in the areas of teaching, engaging in scholarly activity and research in their field of expertise, and providing service specifically to the Department and generally to the School/University as well as to the community.

More specifically Department members are responsible among others for the following:

- Conduct of the educational program of the Department
- Evaluation and implementation of modifications to existing programs
- Design and development of new programs
- Academic support for the student body
- Full participation in Departmental affairs
- Action according to the Internal Regulations

2.2 Officers of the Department

2.2.1 Chairperson

The Chairperson of Department is the chief academic and administrative officer of the Department, and is responsible for the academic operations, the general welfare and the development of the Department. He/she is the Chair of all Department and Department Council meetings (unless he/she designates a faculty member to preside).

The Chairperson of Department shall be a faculty member at the rank of Assistant Professor, with demonstrable experience in teaching and research/scholarly activity, with appropriate management and communicative skills and with a commitment to learning, research, and community service. The Chairperson of Department provides leadership to the departmental members and support to the students within the Department's programs/discipline(s), and also represents the Department in School and University affairs. (The description of the duties and responsibilities of the Chairperson of Department can be found in the EUC Charter, Appendix A).

The Chairperson of Department is an elective post with a two-year term of office. The Chairperson of Department may serve for a maximum of three terms.

2.2.2 Vice Chairperson

The Vice Chairperson of Department has those functions of the Chairperson of Department delegated to him by the Chairperson of Department, and all functions of the Chairperson of Department in his absence or temporary incompetence, and shall be elected (by simple majority) for a period of two years according to the provisions of the Departments Bylaws. The Vice Chairperson of Department may serve for a maximum of three terms, of which no more than two can be consecutive.

2.2.3 Program Coordinator

The term of service of a Program Coordinator shall be for two years with the possibility of re-appointment. The selection, appointment and duties of the Program Coordinator are in (EUC Charter, Appendix B) accordance with the policies of the 'University'.

The Program Coordinator assists the Chairperson of Department on matters pertaining to the academic program(s) that he/she coordinates.

The duties and responsibilities of the program Coordinator are as follows:

- To manage the process of his/her program evaluation by coordinating the preparation of PER process;
- To ensure that the faculty teaching on the program is well aware of all aspects pertaining to updating and further development of the program;
- To organize the timing and agenda of the annual meeting of the Program Advisory Board;
- To take into consideration the suggestions of the PER process and Advisory Board, student feedback, expert opinion and administration input and initiates action plans for revision, update and further development of the program;
- To promote and monitor internationalization of program through the Erasmus
- mobility of faculty and students within the program;
- To ensure that the quality of his/her respective educational program(s) is maintained, by primarily reviewing the course outlines and the examination papers;
- To review, revise and update course syllabi as necessary, in co-operation with the pertinent faculty members;
- To ensure that any revisions or program changes enhance academic and professional recognition of the program;

- To identify needs and make appropriate recommendations on course offerings and teaching allocations to the Chairperson of the Department;
- To advise students and obtain their feedback on matters pertaining to the program;
- To carry out other tasks assigned to him/her by the Dean and/or Chairperson of the Department according to needs arising from the implementation of the University's quality assurance program;
- To participate at the School Council, by invitation of the Dean;
- To attend meetings with other coordinators as hold by the Chairperson of the Department and/or Dean of the School;
- To ensure communication of program's profile and competitive advantage to all relevant internal and external stakeholders.

In fulfilment of the above duties and responsibilities the program coordinator will be assisted by faculty members teaching in the program and the Chairperson of the pertinent department.

2.3 The Council of the Department

The Council shall be the primary decision-formulating body of the Department, exercising governance authority over academic programs and policies allowed by the rules of the University. The Council of Department shall deal with matters as follows:

- Department planning and development;
- Department policy issues;
- Department annual budgets and support/facility requirements;
- Department Faculty development;
- Department Organizational/Structural changes/requirements;
- The nominating and setting of the terms of reference for the formation of task forces outside the domain of existing standing committees to research issues/matters pertinent to the conduct of the Department's business;
- Issues to be discussed at standing committees, such as design/revision of academic/curricular programs;
- Issues/Proposals forwarded by other members of the Department for general discussion;

- The establishment of policies and procedures for hearing student grievances, which are consistent with the policies of the University.

The decisions/recommendations of the Council of Department are subject to approval by the Council of School.

2.3.1 Membership

The Council of the Department shall consist of the following:

- all full-time faculty members;
- one elected representative of the Special Teaching Personnel who is elected by simple majority from their own number;
- student representatives who are elected from their own number and in number that equals 20% of the other members of the Council of Department. The student representatives are elected by simple majority by the students who are registered in one of the academic programs of the pertinent department and receive their academic advising from academic members of the Department. The student members shall not receive papers or be concerned with discussion on appointments, promotions and matters affecting the personal position of faculty members or other teaching or non-teaching personnel of the Department or the admission and academic assessment of individual students. The Chair of the meeting may decide in any case of doubt whether a matter is one to which this paragraph applies and his decision shall be final. Each elected member of the Council (except the student representatives) shall serve a two-year term and may be re-elected/re-nominated. The student representatives shall serve an one-year term.

2.3.2 Council Meetings

The Department Council shall hold a meeting at least once per semester. Ordinarily at least one week's notice shall be given of a forthcoming meeting and an agenda shall be circulated. Meetings may be requested by the Chairperson of Department or by a majority of Council members. It is expected that meetings shall be arranged so as to accommodate the attendance of all Council members. A quorum shall consist of two thirds of the membership. The Chairperson (or other presiding officer designated by the Chairperson) shall vote on matters only in case his/her vote can affect the result, i.e., the presiding officer shall cast the winning vote in case of a tie.

The Chairperson of Department may invite others (whether within or outside of the University) to attend any scheduled meeting. The exact role of the guest is left to the Chairperson – but the guest shall not have voting power.

Minutes of the proceedings of the meetings shall be kept and circulated to all members. At the next meeting the minutes shall be submitted for approval or amendment. A copy shall also be filed in the Department files.

Decisions reached in Department Council meetings shall be communicated to the Dean for final approval.

2.4 Department Meetings

The Department shall meet at least once during each semester. Special meetings may be called by the Chairperson of Department or upon request of three (3) voting members of the Department with one week's advance notice.

An agenda and supporting documents for each meeting shall be prepared by the Chairperson of Department and distributed prior to each meeting. The Chairperson shall preside over the meeting or, in his/her absence, the Chairperson shall designate a faculty member to preside.

Meetings of the Department shall be open only to members of the Department unless for particular meetings guests are invited. At the invitation of any member, people from other Schools within the University, students, administrators, staff or invited external experts on issues on the agenda may attend meetings. The Chairperson must be notified in writing of the invitation of guests at least three days prior to the meeting, and approve the invitation.

A quorum shall consist of 50% of the voting members of the Department.

A motion, to become effective, shall require a simple majority vote of the (voting) members. (The Chairperson shall vote on matters only in case his/her vote can affect the result, i.e., he or she shall cast the winning vote in case of a tie).

Proposals raised at any meeting shall be referred to the agenda of the next meeting unless a two-thirds majority of those present and voting shall determine that the proposal is of such immediate importance as to suspend the rules or that it is a continuation of a matter already before the body and not a new topic.

A secretary shall be appointed by the Chairperson of the meeting to provide an accurate record of the proceedings of each meeting. This record shall be distributed to the members of the Department after the meeting; and at the next meeting they shall be submitted for approval or amendment. A copy shall also be filed in the Department files.

2.5 Department Committees

Ad hoc Departmental committees, as advisory committees, report to the Department (through the Chairperson of the Department). The Chairperson of the Department shall designate membership of committees to appropriate academic members (based on nominations received), whereas the final composition of the committees is subject to final approval of the Department Council. A quorum of the standing or ad hoc committee consists of two thirds of its members. All decisions reached in standing committees are subject to approval during Department Council meetings.

The Department, from time to time, may establish various standing or ad hoc committees, as well as sub committees, which are deemed necessary, aiming to the smooth operation of the Department.

2.6 Department Research Units/Groups

The Department may form research groups aimed at creating opportunities for organizing linkages between research interests and at promoting effectiveness of academic performance. In such cases the Chairperson appoints coordinators (on an annual basis) for the smooth operation of the group(s).

2.7 Participation in School standing committees

Faculty members of the Department, participate in the following School's standing committees:

Senate	School Council	Committee on Research	Committee on Academic Programs	Quality Assurance Committee	Grievance Committee
2 faculty members + 1 STP	**Dept Chairs + 2 faculty members + 1 STP**	**2 faculty members**	**2 faculty members excluding Chair and Program coordinators which are ex-**	**Departmental Committees – Chair+1 faculty member + 1 student rep**	**2 faculty members + 2 admin. members & 1 student rep that will be**

			officio members + 1 STP		**appointed by the Rector**

2.8 University Employee Handbook

This Departmental handbook provides specific guidelines and policies relevant to the Department of Computer Science and Engineering. For comprehensive information regarding broader university-wide employment policies, terms and conditions of employment, benefits, and general workplace conduct, all faculty and staff members are directed to consult the official **European University Cyprus Employee Handbook**. This HR document serves as the primary reference for all employees of the University and can be found here.

3 Teaching & Learning Support

3.1 Teaching Hour Reduction system (THR)

The standard teaching load is 12 contact hours per week. However, faculty engaged in active research may qualify for Teaching Hours Reduction (THR) based on a university-wide point system governed by the Office of the Vice Rector for Research and External Affairs. THR may be granted (and not only) for:

- Participation in funded research projects.
- Publication of peer-reviewed books and articles.
- Organization of conferences or recognized scholarly activity.

THR points remain valid for five years and are reviewed by an ad-hoc committee.

Faculty members are expected to contribute to teaching, research, and community service. Each faculty is responsible for:

- Delivering high-quality instruction and continuously updating course content.
- Engaging in peer-reviewed research and academic publication.
- Supporting student learning and advising.
- Participating in departmental and university committees.
- Maintaining ethical standards in academic conduct.

The details of this process can be found in IR01 Research policy, section 7.

The Department also follows the guidelines to govern the ethical, responsible, and effective use of Generative Artificial Intelligence (GenAI) within its teaching and learning framework. These guidelines emphasize fostering a human-centric, inclusive, and transparent approach that enhances creativity, personalized learning, and accessibility while addressing inherent risks such as academic dishonesty, data privacy concerns, biased outputs, and environmental impact. They advocate for structured student training, faculty engagement, clear communication of AI usage policies, and adherence to legal standards such as GDPR. The guidelines also encourage the integration of GenAI as a pedagogical tool to augment—not replace—academic judgment, ensuring that its use supports critical thinking, academic integrity, and ongoing innovation in educational practices at EUC. For more details refer to IR41.

3.2 Peer Observation and Review

Peer observation and review are integral to maintaining and enhancing teaching quality, especially given the diverse courses taught by faculty members. This process provides constructive feedback and fosters continuous pedagogical improvement. (Refer to IR 36: Peer Observation and Review of Teaching).

3.3 Teaching Evaluation and Student Feedback

Student Feedback on Learning Experience (SFLE) surveys are regularly conducted at the end of each Fall and Spring semesters to gather valuable student input, which informs course improvements and faculty development initiatives.

Once the survey is completed, a compiled report is sent to the instructor by the Departmental secretary. These reports are also released to the Chair of the Department for review and further actions. The reports are then saved and processed during the Performance Appraisal of Faculty & special teaching personnel (STP) process, Faculty promotion evaluation process as well as Program Evaluation Review (PER) process. Additionally, the University offers two awards for Excellence in Teaching (for details see IR 09). The awards refer to the nominee's teaching performance during the preceding academic year. Each award comprises financial support for the awardees' professional development activities. These awards are for full time faculty and STP.

3.4 Grading and Feedback Policies

3.4.1 Timely Feedback and Grade Return Policy

The Department is committed to timely and constructive feedback to enhance student learning.

- **Policy**: Faculty members must strictly enforce the policy of returning marks and feedback on assignments within two weeks of their submission date. This policy is available at the Department's SharePoint.
- **Rationale**: Timely feedback is crucial for student learning, allowing students to understand areas for improvement and apply feedback to subsequent assignments.
- **Procedure**: Instructors are expected to adhere to this timeline for all graded assignments, quizzes, and projects. Any unforeseen delays should be communicated to students with a revised return date.

3.4.2 Final Exams Appeals Procedure

In the case where a student believes that the grade received in the Final Exam is different from what was expected, he/she must exhaust all possibilities of resolving the problem with the pertinent instructor first. If this does not lead to a resolution, the student may appeal against the Final Exam grade by filing a petition with the Office of the Registrar.

The Registrar will forward a copy of the petition to the pertinent Chairperson of Department, who will first ascertain that no error was made by the instructor, and if so will assign an anonymous re-evaluation of the final examination/project to another instructor. In the case of major discrepancy between the instructor's evaluation and the re-evaluation that will require change of grade, the average of the two evaluations will be assigned as the final grade to the final examination/project. Changes of grades resulting from an appeal require the endorsement of the Dean of School.

For a petition to be reviewed, a student must appeal within four (4) weeks from the date the results are announced.

3.5 Use of Course Outline Template and Assessment Rules

Assessment criteria and grading mechanisms are clearly communicated to students via the Course Outline, which is distributed to students at the beginning of each course both in class and on the online platform (BlackBoard Learn Ultra). The Course Outline specifies the types

of assignments, their weighting in the final grade, and expectations around interactive exercises, exams, and continuous assessment. Grading rubrics and percentage breakdowns are included for both graded and non-graded activities, and students are also informed of minimum passing requirements, exam formats, and academic integrity expectations. This ensures that evaluation standards are publicly available and clearly communicated to students from the outset of the semester.

All assignments are uploaded to the Blackboard learning management system in a dedicated 'Assignments' folder within each course shell. Information about the specific task is given in detail, which is visible to students all the time from when they are initially informed of the assignment up until final submission, so that expectations and assessment criteria are fully transparent. 6. All course material and assessments on BlackBoard Learn Ultra will remain on the platform for 14 months. Once this time frame expires the course material will be removed from the platform.

GRADING SYSTEM:							
UNDERGRADUATE				**GRADUATE**			
Letter Grade	**Grade Meaning**	**Grade Points**	**Percentage Grade**	**Letter Grade**	**Grade Meaning**	**Grade Points**	**Percentage Grade**
A	Excellent	4.0	90 and above	A	Excellent	4.0	90 and above
B+	Very Good	3.5	85-89	B+	Very Good	3.5	85-89
B	Good	3.0	80-84	B	Good	3.0	80-84
C+	Above Average	2.5	75-79	C+	Above Average	2.5	75-79
C	Average	2.0	70-74	C	Average	2.0	70-74
D+	Below Average	1.5	65-69				
D	Poor	1.0	60-64				
F	Failure	0		F	Failure	0	
I	Incomplete	0		I	Incomplete	0	
W	Withdrawal	0		W	Withdrawal	0	
P	Pass	0		P	Pass	0	
AU	Audit	0		AU	Audit	0	

(a) The grade "I" is awarded to a student who has maintained satisfactory performance in a course but was unable to complete a major portion of course work (e.g. assignment/paper or final exam) and the reasons given are acceptable to the instructor. It is the responsibility of the student to bring pertinent information to the instructor to justify the reasons for the missing work and to reach an agreement on the means by which the remaining course requirements will be satisfied. A student is responsible, after consulting with the instructor, for fulfilling the remaining course requirements within the first four weeks of the following semester for which an "I was awarded. In very special cases, the instructor may extend the existing incomplete grade to the next semester. Failure of the student to complete work within this specific time-limit will result in an "F" which will be recorded as the final grade.

(b) The grade "W" indicates withdrawal from the course before the specified time as explained in the withdrawal policy.

(c) Grades of "P" will not be computed into a student's cumulative grade point average but will count towards graduation credits.

(d) Grades of "F" will be computed into the student's cumulative grade point average.

(e) Students enrolling for an Audit must designate their intent to enrol on an Audit basis at the time of registration. Students registering for a course on an Audit basis receive no credit

4 Quality Assurance (QA) and Assessment

The Department of Computer Science and Engineering is committed to rigorous quality assurance (QA) and continuous improvement across all its operations, aligning with the European University Cyprus Quality Assurance Manual (IR 19). The Department ensures that its internal QA regulations are formalized, documented, and publicly accessible to conform with University policies while being customized to its unique requirements, directly addressing EEC recommendations.

DCSE's quality assurance is aligned with ESG 2015 and overseen by:

- Program Committees and Advisory Boards
- The Departmental Quality Assurance Committee
- The University Quality Assurance Committee (CIQA)

4.1 Overview of QA structure

Quality assurance within the Department operates at multiple levels:

- University-Level: Oversight by the Internal Quality Assurance Committee (CIQA).
- School-Level: Oversight by the School Council.
- Departmental-Level: Key committees include the Department Council, the Program Committee, and the Departmental QA committee.

This structured framework ensures comprehensive monitoring of academic standards and operational effectiveness and is detailed in the EUC Quality Assurance Policy and Manual (IR 19). The Department ensures its practices are fully aligned with this overarching university policy.

4.2 Departmental QA Processes

The Department is committed to rigorously and continuously monitoring the effectiveness of its quality assurance procedures to assure they operate in accordance with good practice and maintain academic standards. The establishment of this "Departmental Handbook" with QA policies and procedures further strengthen this commitment. The Department's specific contributions to quality assurance are integrated throughout this handbook, particularly in sections related to curriculum development, teaching assessment, and faculty performance. The Department maintains robust internal QA procedures for its core academic activities. These include:

- **Examinations**: Procedures for examination paper setting, moderation, and secure handling, ensuring fairness and consistency.
    - Templates for examination papers (midterm and final) are distributed through the Departmental secretary.
    - Each faculty prepares, proctors, and grades the exam, uploads grades (see the HR Faculty Handbook here for more details on the duties of the faculty).
    - Exam papers are overseen by the Program coordinator and copies of these are kept in the Department's repository.
- **Resit Examinations**: Clear policies and procedures for student eligibility and conduct of resit examinations (see IR 06). The Resit Final Examination is carried out as follows:
    - For Conventional Programs of Study/Courses, it takes place once per academic year prior to the beginning of the new academic year as defined by the academic calendar and it applies only to courses in which the student failed during the Fall Semester and/or the Spring Semester of the preceding academic year.

- For E-Learning Programs of Study/Courses, it takes place during the three final examination periods of the E-Learning Programs of Study (i.e., end of Fall Semester, end of Spring Semester and end of Summer Session) and it will apply only to the courses in which the student failed during the immediately preceding semester.

A student is eligible for a Resit Final Examination when s/he:

1. Has failed a course (i.e. has received an F grade in a course).
2. Has received a total grade in the range of 50-59 (for undergraduate courses) or 60-69 (for masters' courses).
3. Has no outstanding "I" in the other requirements of the specific course (i.e. mid-term, assignments) by the time s/he applies for a Resit Final Examination.
4. Has submitted a written application to the Department of Enrollment (along with the participation fee of 75 euro per course (this fee applies to courses in Conventional Programs of Study/courses), after he/she has been informed about his/her eligibility for a Resit Final Examination by the Department of Enrollment after the official announcement of the final grades of the respective semester.

In order for a student to successfully pass the failed course by taking a Resit Final Examination, the following must apply:

1. The student takes the Resit Final Examination on the specified date. Failure to do so implies the student's disqualification from participating in a Resit Final Examination of the specific course on any other date or on any of the following Resit Final Examination specified dates.
2. The student scores in the Resit Final Examination the mark of at least 60% for an undergraduate course and at least 70% for a masters' course and for the courses of the Doctor of Medicine (M.D.). Regardless of the result of the Resit Final Examination, the maximum final grade that a student may receive for the specific course is the grade of D for undergraduate courses and the grade of C for masters' courses and courses of the Doctor of Medicine (M.D.).

- **Senior Project and Master Thesis guides**: Clear policies, procedures, and templates for student eligibility and conduct of project/thesis are available. Both guides (one for Senior project and one for Master thesis) explain the procedures and state deadlines and deliverables. All templates, forms, and guides can be found at the

- **Use of Course Outline Template and Assessment Rules**: All courses must adhere to the University's standard course outline template, which specifies learning outcomes, assessment methods, and grading criteria. Faculty are required to clearly communicate assessment rules to students at the beginning of each semester.
- Program Updates: A formalized process for reviewing, revising, and updating course syllabi and academic programs, ensuring alignment with contemporary advancements and learning outcomes (see section 4.3 below).

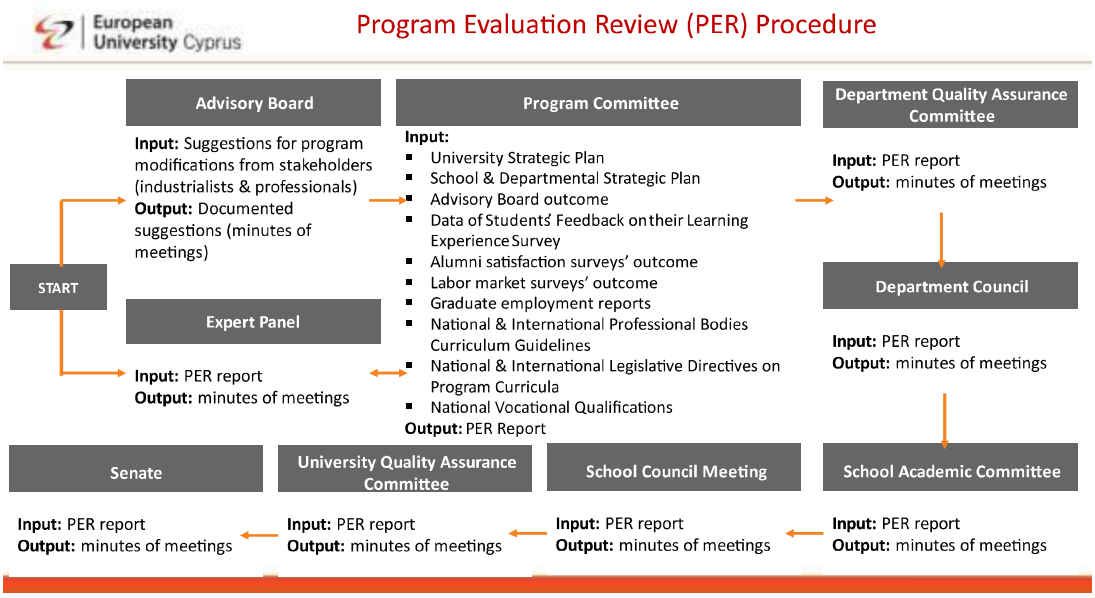
4.3 Program Evaluation Review (PER)

The Department actively participates in the University's Program Evaluation Review (PER) process, as outlined in the EUC P.E.R. Procedures and Template (IR 07/08). This systematic review encourages excellence in academic programs by aligning teaching, learning, and curriculum with program missions and ensures compliance with European Higher Education Area standards. The Department utilizes the P.E.R. framework to continuously assess and enhance the quality and effectiveness of its programs.

The PER framework fosters systematic, evidence-based evaluation of academic programs to:

- Result in the improvement of the program experience of students;
- Follow the standards of the EUC policies and align to accreditation bodies' decisions (e.g. The Cyprus Agency of Quality Assurance and Accreditation in Higher Education; CY.Q.A.A./Φορέας Διασφάλισης και Πιστοποίησης της Ποιότητας της Ανώτερης Εκπαίδευσης; ΔΙ.Π.Α.Ε.);
- Assess the quality and enhance the overall effectiveness of the Programs, Departments, Schools and University 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 University level.

The Department is required to conduct a comprehensive program review using the PER procedures every five (5) years, with allowance for earlier reviews when significant changes arise. The PER process to be followed is illustrated in the diagram below.



For implementation details and metrics, see the full Internal Regulation on Program Evaluation Review (P.E.R.) Procedures and Template.

5 Student Support and Policies

The Department is committed to providing a supportive and inclusive environment for all students, ensuring their academic success and well-being. This section outlines key policies and support mechanisms.

Academic staff are expected to comply with university policies on:

- Academic Integrity and Ethics (see Charter and relevant IRs)
- Disability and Student Support (via the C.S.S.E.N.)
- Appeals for exams and grading (through the Registrar)
- Data Protection (GDPR compliance and research data handling)
- Harassment, bullying, and respectful conduct in teaching

Relevant information is detailed in the EUC Employee Handbook and institutional regulations.

5.1 Admission and Advising Policies

- **Admissions**: The Department adheres to the University's admission criteria, ensuring a fair and transparent process for all applicants. Specific program entry requirements are clearly communicated to prospective students.

- **Academic Advising**: All students are assigned an academic advisor from the University. Advisors provide guidance on course selection, academic progression, career planning, and refer students to other university support services as needed. Regular advising meetings are encouraged to monitor student progress and address concerns

5.2 Disability and Inclusion Framework

The Department is dedicated to creating an accessible and inclusive learning environment. It adheres to University policies (refer to relevant IR on Disability Support) regarding reasonable accommodations for students with disabilities, ensuring equal opportunities in all academic activities. Faculty members are informed about procedures for providing accommodations and support.

5.3 Appeals Procedure

Students have the right to appeal academic decisions (e.g., grades, academic standing) based on established University procedures. The Department ensures that all appeals are handled fairly, transparently, and in accordance with University Internal Regulations. Students are guided through the process by their academic advisors or the Department Administrator.

5.4 Student Grievance Procedure

Any student grievances not covered by the appeals procedure can be formally raised through the University's grievance procedures (refer to relevant IR 27 on The Management of Complaints/Grievances) which establishes procedures for managing complaints and grievances, applicable to all students, academic and administrative personnel, and visitors. It addresses various types of complaints, including academic issues, harassment, and sexual harassment. The procedure consists of two stages: Stage 1 involves mediation by the Conflict Resolution Committee, while unresolved cases are escalated to the School Grievance Committee in Stage 2. Confidentiality is maintained throughout the process, and complainants have the right to appeal decisions to the Vice Rector of Academic Affairs. The Department is committed to addressing student concerns promptly and constructively, maintaining an open-door policy while ensuring formal channels are available when necessary.

5.5 Academic Integrity and Data Protection

5.5.1 Academic Integrity

The Department upholds the highest standards of academic integrity. Students are expected to adhere to the University's policies on plagiarism, cheating, and other forms of academic misconduct. Faculty members are responsible for educating students on these policies and for reporting violations. (Refer to relevant University IR on Academic Integrity). To support these efforts, the Department employs Turnitin for all assignments and projects submitted through the Learning Management System (LMS). Furthermore, the Department adheres to the European University Cyprus Guidelines for the Use of Generative Artificial Intelligence (GenAI) in Teaching and Learning, ensuring that AI technologies are integrated responsibly and ethically to uphold academic honesty (see IR41).

The University has a responsibility to uphold and promote quality scholarship and to ensure that its students understand what academic integrity is. This section outlines the University's policy on dishonest academic performance by its students. Such offences carry penalties. Students should read carefully the Internal Regulations on Academic Ethics and Students' Discipline, and are encouraged to ask Faculty for help and guidance on honest academic practice, particularly in using source material from the Internet. In this way they can avoid any unintentional dishonesty.

5.5.1.1 Originality

For the purposes of this Policy on Academic Ethics 'original' work is work that is genuinely produced specifically for the particular assessment task by the student whose name is attached to it. Any use of the ideas or scholarship of others is acknowledged. 'Work' includes not only written material but also oral, audio, visual or other material submitted for assessment.

5.5.1.2 Academic Dishonesty

Academic dishonesty is determined by the extent and the level of intent. In assessing the extent or scale of the dishonesty the instructor will evaluate how much of the work is the student's own after all unacknowledged source material has been removed. In no case can work that is plagiarized be taken into account in determining a grade. Intent to deceive is the single most significant aspect of academic dishonesty. Repeated instances of deception will incur heavy penalties for the student and the violation will be officially and permanently recorded in the student's record.

5.5.1.3 Plagiarism

Plagiarism is representing the work of somebody else as one's own. It includes the following:

(a) submission of another student's work as one's own;

(b) paraphrasing or summarizing without acknowledgement of source material;

(c) direct quoting or word copying of all or part of a work, ideas, or scholarship of another without identification or acknowledgement or reference;

(d) submitting as one's own work purchased, borrowed or stolen research, papers, or projects.

5.5.1.4 Cheating

Cheating is giving or receiving unauthorized help for unfair advantage before, during, or after examinations, tests, presentations or other assessments, such as:

(a) collaboration beforehand if it is specifically forbidden by the instructor

(b) verbal collaboration during the examination, unless specifically allowed by the instructor;

(c) the use of notes, books, or other written aids during the examination, unless specifically allowed by the instructor;

(d) the use of electronic devices and mobile telephony to store, transmit or photograph information to or from an external source;

(e) the use of codes or signals to communicate with other students in the examination room;

(f) looking upon another student's papers and / or allowing another student to look upon one's own papers during the examination period;

(g) passing on any examination information to students who have not yet taken the examination;

(h) falsifying exam identification by arranging with another student to take an examination in their place or in one's own place;

(i) pretending to take the exam but not submitting the paper, and later claiming that the instructor lost it.

5.5.1.5 Collusion

Collusion is false representation by groups of students who knowingly assist each other in order to achieve an unfair assessment advantage. It involves:

(a) representation of the work of several persons as the work of a single student with both parties knowingly involved in the arrangement;

(b) representing the work of one student as the work of a group of students with both parties knowingly involved in the arrangement;
(c) willing distribution of multiple copies of one's assignments, papers, projects to other students for submission after re-labeling the paper as their own original work.

5.5.1.6 Fabrication

Fabrication is the false representation of research data or 'performance' material as original, authentic work for submission for assessment. Examples are:

(a) invention of data;
(b) willfully omitting some data to falsely obtain desired results

A faculty member, after evaluating the extent of the dishonesty and the level of intent and proving academic dishonesty, may use one or a combination of the following penalties and procedures:

(a) requiring rewriting of a paper containing some plagiarized material;
(b) lowering of a paper or project grade;
(c) giving a failing grade on a paper;
(d) lowering a course grade;
(e) giving a failing grade in a course;
(f) referring the case to the Senate for further action that may include academic suspension or expulsion.

Should an instructor announce a failing grade in the course because of academic dishonesty, the student under penalty shall not be permitted to withdraw from the course.

One can find the relevant academic regulations in the following link https://euc.ac.cy/en/academics/academic-regulations/

5.5.2 Data Protection

The Department adheres strictly to the University's data protection policies and the General Data Protection Regulation (GDPR) regarding student personal data. Faculty and staff are trained on handling sensitive information, ensuring confidentiality and privacy.

6 Faculty Development and Appraisal

The Department is committed to fostering a vibrant academic environment that supports the continuous professional growth, scholarly productivity, and overall well-being of its faculty

members. This commitment is underpinned by a comprehensive framework for appraisal, professional development, and strategic recruitment.

6.1 Performance Appraisal Framework

Faculty performance appraisal is a vital component of professional development, governed by University Internal Regulation 26 ("Performance Appraisal of Faculty and Special Teaching Personnel"). This regulation mandates a biennial, developmental review process focused on professional growth through self-assessment and constructive feedback across three key areas:

- Teaching Excellence: Evaluated through student feedback, innovation in pedagogy, and peer observation.
- Research Productivity: Assessed based on peer-reviewed publications, citations, research funding secured, and overall scholarly impact.
- Contribution to Academic Governance and Community Service: Recognition for active participation in departmental, school, and university committees, as well as engagement with the wider community.

The appraisal process includes:

- A Departmental Performance Appraisal Review Committee, composed of senior academic staff (Professors or Associate Professors, or appointed equivalents where necessary), oversees the process.
- Faculty complete an online Performance Appraisal Report (Section A), submitted biennially to the Department Chair and subsequently to the Review Committee.
- The Review Committee conducts an evaluation, provides feedback, and meets individually with appraisees to discuss outcomes and jointly prepare Section B of the report, which includes agreed goals for the forthcoming appraisal period.
- The process fosters a dialogic and supportive environment aimed at professional development rather than punitive measures.

The completed appraisal documents are forwarded through school administration channels, and the Review Committee provides a departmental developmental report to inform broader academic planning.

The appraisal process encourages faculty to reflect on their achievements, set future goals, and identify areas for further development. For more details and full description see IR 26, found in Appendix C.

6.2 Professional Development and THR

The University provides various opportunities and resources for faculty growth:

- Induction Program: New faculty members participate in a 35-hour induction program, which includes orientation, technology training (e.g., Blackboard Learn Ultra), and seminars on research policies and procedures.
- Advance HE 'New to Teaching' Programme: This program offers foundational pedagogical training for newly appointed academic staff.
- Seminars, Webinars, and Workshops: Regular professional development sessions are organized by the office of the Vice-Rector of Academic Affairs to enhance teaching methodologies, research skills, and other professional competencies.
- Conference Attendance and Research Development: An approved budget exists for faculty to travel and present at international conferences, supported by an internal regulation for research activities. This promotes dissemination of research findings and networking.

6.3 Mentoring

Mentoring is a cornerstone of faculty development, particularly for newly hired academic staff. The University offers structured support through:

- The Mentoring Scheme for Newly Hired Faculty (IR 32): This scheme provides structured support including onboarding assistance, one-on-one mentorship from senior faculty, and peer group collaboration.
- Peer Observation and Review of Teaching (IR 36): This process, while serving as a quality assurance mechanism, also functions as a developmental tool, providing constructive feedback on teaching practices.

6.4 Faculty Promotion Procedures

Faculty members undergo performance appraisal every two years based on teaching, research, and service. The process is governed by Internal Regulation 26 and includes self-assessment, peer review, and departmental feedback. Eligible faculty members can apply for promotion annually based on criteria outlined in the EUC Charter (Annex 6, pages 74–79). Promotion is merit-based and evaluated on:

- Excellence in teaching (student feedback, innovation, peer review)

- Research productivity (publications, citations, impact)
- Contribution to academic governance and community service

The Department supports faculty in preparing their promotion dossiers through the School Administrator and provides guidance on career progression pathways through the Performance Evaluation Process.

6.5 Sabbatical

The University recognizes the importance of dedicated time for intensive research and scholarly activity. Policies regarding sabbatical leave and other forms of academic leave are in place (refer to relevant IR15 on Sabbatical Leave), allowing faculty members to pursue significant research projects, writing, or advanced study. Sabbatical Leaves are granted for planned travel study, formal education, research, writing of papers, monographs and books or other activities of academic value.

A Sabbatical Leave, as distinguished from a terminal leave, a leave without compensation, or a leave for reasons of health, is defined at European University Cyprus as a leave for encouraging faculty members to engage in scholarly research and international networking that will increase their scholarly achievement or their capacity for service to the University internationalization policy. A Sabbatical Leave is not granted for taking regular academic or other employment with a financial advantage elsewhere. (See IR15. EUC Policy on Sabbatical Leave).

7 Research and Funding

The Department of Computer Science and Engineering is dedicated to fostering a vibrant research culture, encouraging innovation, and promoting the dissemination of high-impact scholarly work. The Department adheres to the Research Policy of the University (see relevant IR 01).

7.1 Publication Incentives

The Department and University offer various incentives to encourage and reward high-quality research output, including:

- Internal Research Awards: Mechanisms to recognize and reward faculty for significant publications and research achievements (see IR10).

- Travel and Conference Funding: Financial support for faculty to present their research at reputable international conferences (as detailed in Section 6.2 through the Department's budget).
- Research Metrics Recognition: Recognition of publications in high-impact journals and conferences (included in the THR policy).

7.2 Funding Schemes

Faculty members are encouraged to actively seek external research funding. The University provides support for identifying and applying for grants from various sources, including:

- National Funding: Calls from the Research & Innovation Foundation (RIF) in Cyprus, including programs like 'Excellence Hubs'.
- European Union Funding: Opportunities through Erasmus+, Horizon Europe, Marie Skłodowska-Curie Actions, and other EU programs.
- International Collaborations: Encouragement for faculty to engage in research projects with international partners and secure funding from global organizations (e.g., European Space Agency projects).
- University Seed Funding: Internal competitive grants to initiate new research projects or pilot studies (see IR31).

7.3 Research Ethics and Open Access

All research conducted within the Department must adhere to the highest ethical standards and principles of academic integrity, consistent with the University's Ethics and Values Statement and the University's Charter (Annex 3). Researchers are required to obtain necessary ethical approvals for projects involving human subjects, animal welfare, or sensitive data. The Department provides guidance on ethical considerations and ensures compliance with national and international research ethics guidelines.

The Department supports the principles of Open Access to research publications and allocates a dedicated amount of its annual budget specifically to this purpose. Faculty members are encouraged to publish their work in open access journals or deposit their peer-reviewed manuscripts in institutional or subject-specific repositories, adhering to funder and university open access policies.

8 External and Industrial Engagement

The Department recognizes the critical importance of strong ties with industry, alumni, and the wider community to enrich its academic programs, enhance student employability, and increase its societal impact.

8.1 Advisory Board Involvement

The Department maintains an active Advisory Boards for all its program of studies comprising leading professionals from industry, academia, and relevant organizations. This board provides invaluable external perspectives on curriculum relevance, industry needs, and emerging trends, ensuring that the Department's programs remain current and responsive to the demands of the job market.

8.2 Alumni and Industry Connections

The Department fosters strong relationships with its alumni, who serve as mentors, guest lecturers, and potential employers for current students. Active engagement with industry partners through internships, collaborative projects, and guest speaker series enriches the student learning experience and facilitates career opportunities.

8.3 Outreach, EU projects, and Internationalization

The Department is committed to amplifying its outreach efforts, particularly with regard to international student recruitment and industry collaboration. This commitment aligns with the University's broader internationalization strategy and includes:

- Expanding Academic Partnerships Abroad: Developing collaborations with international universities for student and faculty exchange, joint research, and dual degree programs. Currently the Department offers the following fully-accredited degree programs at the International Digital Economy College (IDEC) of Minjiang University in Fujian, China:
    - Computer Engineering (4 Years/240 ECTS, BSc)
    - Electrical and Electronic Engineering (4 Years/240 ECTS, BSc)

  A second collaboration in China has been announced with Nanjing University of Posts and Telecommunications (NJUPT)for the offering of
    - Computer Science (4 Years/240 ECTS, BSc)

- Computer Science (1.5 Years/90 ECTS, MSc)

- Participation in EU Projects: Actively seeking and participating in European Union-funded research and educational projects (e.g., Erasmus+, Horizon Europe) to enhance international collaboration and secure additional resources.
- Collaboration and Visibility: Collaborating closely with companies and organizations through active Memorandum of Understanding (MoU).

9 Contact points and Administration Support

For efficient communication and access to support services, faculty members can utilize the following key contacts:

- Chair, Department of Computer Science and Engineering: For all academic and administrative matters related to the Department.
- Vice Chairperson: For delegated functions and in the absence of the Chairperson.
- Program Coordinator (BSc, MSc, PhD): For program-specific academic matters.
- Administrators: For day-to-day administrative support, room bookings, general queries.
- Dean, School of Sciences: For School-level academic and administrative matters.
- Vice Rector for Academic Affairs: For university-wide academic policies and procedures.
- Quality Assurance Office: For matters related to internal and external quality assurance.
- Research Office: For support with research grant applications, ethical approvals, and research policies.
- Human Resources Department: For employment-related matters, benefits, and staff welfare.
- IT Services: For technical support, network access, and software issues.
- Library Services: For access to academic resources, databases, and research support.

The Department's and School's Administrative staff is the following:

Ms. Anna Stavrou
Administrative Assistant of the Department
Email: ann.stavrou@external.euc.ac.cy

Telephone: 22-713293

Ms. Flora Theodorou
School Administrator
Email: f.theodorou@euc.ac.cy
Telephone: 22-713205

In addition, for any further information or policies, you may refer to the EUC charter, at the link EUC Charter.

All EUC Internal Regulations (IR #) are available at the internal SharePoint Site – Rectorate Office under the link here.

ANNEX II

Table 1 – STRUCTURE OF THE PROGRAMME OF STUDY

In the following listing

- Courses marked with an asterisk (*) are new or newly introduced
- Courses marked with an at symbol (@) have been moved from elective category to compulsory
- Courses marked with a hash symbol (#) have been updated or retitled

PROGRAMME REQUIREMENTS	**ECTS**
All students pursuing the Master in Computer Science program, must complete the following requirements:	
Compulsory Courses	**50**
Elective Courses	**20**
Master Thesis	**20**
Total ECTS	**90**

	Compulsory Courses			**50 ECTS**
		Code	**Course Title**	**ECTS**
@	1.	CSC612	Foundations of AI and ML using Python	10
*	2.	CSC614	Data Science and Big Data Analytics	10
#	3.	CSC616	Advanced Computer Architecture and Operating Systems	10
#	4.	CSC618	Advanced Computer Networks & the Internet	10
#	5.	CSC622	Advanced Software and Database Engineering	10
	Master Thesis			**20 ECTS**
	6.	CSC694	**Master Thesis**	20 ECTS
	Elective Courses (Select **two)**			**20 ECTS**
	1.	CSC628	Web Technologies and Development	10
	2.	CSC632	Algorithms and Complexity	10

*	3.	CYB600	Introduction to Cybersecurity	10
*	4.	AIN624	Artificial Neural Networks and Deep Learning	10

European University Cyprus

ANNEX III

Table 2 – COURSE DISTRIBUTION PER SEMESTER

A/A	Course Type	Course Title	Course Code	Periods Per Week	Period Duration in Minutes	Number of Weeks/ Academic Semester	Total Hours/ Academic Semester	Number of ECTS
1st Academic Year/1st Semester								
1.	Compulsory	Foundations of AI and ML using Python	CSC612	3	50	14	42	10
2.	Compulsory	Data Science and Big Data Analytics	CSC614	3	50	14	42	10
3.	Compulsory	Advanced Computer Architecture Operating Systems	CSC616	3	50	14	42	10
1st Academic Year/2nd Semester								
4.	Compulsory	Advanced Software and Database Engineering	CSC622	3	50	14	42	10
5.	Compulsory	Advanced Computer Networks & the Internet	CSC618	3	50	14	42	10
6.	Elective		------	3	50	14	42	10
2nd Academic Year/3rd Semester								
7.	Elective		------	3	50	14	42	10

8.	Compulsory	Master Thesis	CSC694	--	--	--	--	20

*** Elective courses**

Students choose two (2) courses from the following list of courses:

1	CSC628 - Web Technologies and Development	10
2	CSC632 - Algorithms and Complexity	10
3	CYB600 – Introduction to Cybersecurity	10
4	AIN624 – Artificial Neural Networks and Deep Learning	10

ANNEX IV – COURSE DESCRIPTIONS

Index

Course Title	**Foundations of AI and ML using Python**				
Course Code	CSC612				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	3rd Year / 5th Semester				
Teacher's Name	Dr. Anastasia Ioannou				
ECTS	6	Lectures / week	2 hours / 14 weeks	Laboratories / week	1 hour / 14 weeks
Course Purpose and Objectives	The course introduces the foundational skills necessary for understanding and implementing basic Artificial Intelligence (AI) and Machine Learning (ML) concepts using Python. Students will learn the essentials of Python programming, fundamental AI principles and basic optimization techniques. The course emphasizes on hands-on experience through practical examples, ensuring students are prepared for more advanced AI and ML courses. By the completion of the course, students will have a solid understanding of Python, AI concepts and the ability to implement basic AI algorithms.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Write and debug Python programs using essential programming constructs such as variables, loops, functions and data structures. • Understand, explain and apply basic principles of AI and the role of intelligent agents. • Implement simple AI algorithms in Python, including search algorithms and basic problem-solving techniques. • Apply basic optimization techniques to improve the performance of AI algorithms. • Use Python libraries and tools such as NumPy, Pandas, and Matplotlib for data manipulation and visualization. • Develop simple ML models using Python and understand the difference between supervised and unsupervised learning. • Work on real-life examples that involve applying Python programming and basic AI concepts to solve problems.				

Prerequisites	None	Co-requisites	None
Course Content	**1) Introduction to Python Programming:** Overview of Python and its applications, setting up the Python environment, basic syntax, variables, and data types, simple input/output operations. **2) Control Structures and Functions:** Conditional statements (if, elif, else), loops (for, while), functions (definition, parameters, return values). **3) Data Structures in Python:** Lists, tuples, and dictionaries, list comprehensions, basic operations on data structures (append, remove, access elements), iterating through data structures. **4) Introduction to Numpy and Pandas:** Understanding arrays and matrices with NumPy, basic operations with NumPy arrays, introduction to Pandas for data manipulation, DataFrames: creation, indexing, and basic operations. **5) Data Visualization with Matplotlib:** Basics of Matplotlib, plotting data (line plots, scatter plots, bar charts, histograms), customizing plots (labels, titles, legends), saving and displaying plots. **6) Introduction to AI and Intelligent Agents:** Definition and scope of AI, intelligent agents (structure and behavior), types of intelligent agents, simple problem-solving agents. **7) Search Algorithms in AI:** Problem formulation and state space, uninformed search strategies (BFS, DFS), informed search strategies (A*, greedy best-first search), implementing search algorithms in Python. **8) Introduction to Optimization Techniques:** Definition and importance of optimization, basic optimization problems and solutions, gradient descent algorithm, simple implementation of gradient descent in Python. **9) Basic Machine Learning Concepts:** Definition and types of ML, supervised vs. unsupervised learning, common ML tasks (classification, regression, clustering), overview of ML pipeline. **10) Supervised Learning Algorithms:** Introduction to linear regression, introduction to decision trees, implementation of linear regression and decision trees in Python, evaluating model performance (accuracy, precision, recall, f1-score). **11) Unsupervised Learning Algorithms:** Introduction to clustering (K-means), introduction to dimensionality reduction (PCA), implementation of K-means and PCA in Python, evaluating clustering results. **12) AI Applications, Case Studies and advanced AI topics:** Real-world applications of AI, case studies (AI in healthcare, finance, and robotics), neural networks and deep learning basics, natural language processing fundamentals, implementing simple neural networks in Python.		

	All lectures will consist of a theoretical part presenting concepts and techniques and a practical part were the AI and ML techniques will be applied for problem-solving.
Teaching Methodology	Face- to- face
Bibliography	Deitel and Deitel: Intro to Python for Computer Science and Data Science, Learning to Program With AI, Big Data and the Cloud. Latest Edition. Pearson. "Python Crash Course" by Eric Matthes "Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig, 4th edition Hands-on Machine Learning with Scikit-Learn, Keras & TensorFlow, Aurelen Geron, O'Reilly, Latest Edition Machine Learning, Tom Mitchell, McGraw Hill, Latest Edition Pattern Recognition and Machine Learning, Christopher Bishop, Springer, Latest Edition
Assessment	Class Participation and Attendance 10% Assignments 30% Examinations 60% 100%
Language	English

Course Title	Data Science and Big Data Analytics				
Course Code	CSC614				
Course Type	Compulsory				
Level	Master (2nd Cycle)				
Year / Semester	1st Year / 1st Semester				
Teacher's Name	TBA				
ECTS	10	Lectures / week	2 hours / 14 weeks	Laboratories / week	1 hour / 14 weeks
Course Purpose and Objectives	The course provides an in-depth understanding of the theoretical foundations and methodologies of data science and big data analytics used for extracting meaningful insights from large and complex datasets. It bridges the gap between data engineering, statistics, and machine learning, emphasizing both theoretical principles and practical implementation. Students will explore the full data lifecycle, from acquisition and storage to analysis, visualization, and scalable processing, using modern frameworks such as Python, Spark, and cloud-native data platforms. By the end of the course, students will be able to manage large-scale data workflows, build predictive analytics pipelines, and apply advanced analytical methods to real-world problems in domains such as finance, healthcare, IoT, and cybersecurity.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Explain the fundamental principles, processes, and architecture of data science and big data systems. • Understand the mathematical and algorithmic foundations of data cleaning, exploration, modeling and implementing them using Python and relevant libraries (NumPy, Pandas, Scikit-learn, PySpark). • Design and implement scalable data processing workflows using distributed computing frameworks such as Apache Spark. • Apply descriptive, predictive, and prescriptive analytics to large datasets using statistical and machine learning methods.				

	• Visualize data effectively and communicate analytical results through dashboards and reports. • Evaluate data models using appropriate performance metrics and validation techniques. • Understand the concept behind cloud-based data storage and processing solutions and be able to apply them in modern cloud platforms (e.g. AWS, Azure, Google Cloud). • Discuss data ethics, governance, and responsible AI use within big data environments. • Work independently and collaboratively on end-to-end data science projects using real datasets.		
Prerequisites	None	Co-requisites	CSC612
Course Content	**1) Introduction to Data Science and the Data Lifecycle:** Overview of data science and introduction to theoretical foundations; roles (data engineer, data analyst, data scientist); data-driven decision-making; types of data and analytics (descriptive, predictive, prescriptive). **2) Data Acquisition and Preprocessing:** Data collection from APIs, web scraping, IoT streams; handling structured, semi-structured, and unstructured data; data cleaning, transformation, and integration using Python (NumPy, Pandas). **3) Exploratory Data Analysis (EDA):** Data summarization, visualization (Matplotlib, Seaborn, Plotly); identifying correlations, outliers, and trends; feature engineering and selection. **4) Big Data Concepts and Ecosystems:** Definition of Big Data (Volume, Variety, Velocity, Veracity, Value); overview of architectures and ecosystem components; introduction to Apache Spark. **5) Distributed Data Processing with Spark:** RDDs, DataFrames, and Spark SQL; transformations and actions; distributed ML pipelines using PySpark MLlib; optimization and cluster configuration. **6) Data Storage and Management:** NoSQL databases (MongoDB, Cassandra); data lakes vs. warehouses; ETL (Extract, Transform, Load) processes; overview of data pipelines and orchestration concepts. **7) Statistical and Predictive Modeling:** Inferential statistics; regression and classification models; cross-validation; regularization; model interpretability.		

	8) Machine Learning for Big Data: Applying supervised and unsupervised learning in large-scale settings; ensemble methods; streaming analytics; introduction to deep learning in big data. **9) Data Visualization and Storytelling:** Dashboards with Power BI / Tableau / Plotly Dash; communicating findings effectively; narrative visualization techniques. **10) Cloud Computing for Big Data:** Overview of cloud data platforms (AWS, Azure, GCP); distributed storage (S3, Azure Blob); cloud-native analytics services and scalable data processing on cloud platforms. **11) Data Governance, Ethics, and Privacy:** GDPR, data security, bias in data-driven systems; responsible data science practices; explainable and ethical analytics. **12) Case Studies and Capstone Project:** End-to-end analysis using a real-world dataset (e.g., healthcare, finance, smart cities); students design, implement, and present their complete analytics pipeline. All lectures will consist of a theoretical part presenting concepts and techniques and a practical part emphasizing practical implementation using real datasets and modern tools (Python, Spark, SQL, Power BI/Tableau). Group projects simulate industry data challenges.
Teaching Methodology	Face- to- face
Bibliography	Foster Provost & Tom Fawcett, *Data Science for Business: What You Need to Know About Data Mining and Data-Analytic Thinking*, O'Reilly, Latest Edition. Joel Grus, *Data Science from Scratch: First Principles with Python*, O'Reilly, Latest Edition. Avrim Blum, John Hopcroft and Ravindran Kannan, *Foundations of Data Science*, Cambridge University Press. Rajkumar Buyya et al., *Big Data: Principles and Paradigms*, Morgan Kaufmann, Latest Edition. Wes McKinney, *Python for Data Analysis*, O'Reilly, Latest Edition. Viktor Mayer-Schönberger & Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work, and Think*, Eamon Dolan, Latest Edition. Bill Chambers & Matei Zaharia, *Spark: The Definitive Guide*, O'Reilly, Latest Edition.

Assessment	Class Participation and Attendance	10%
	Assignments	30%
	Examinations	60%
		100%
Language	English	

Course Title	**Advanced Computer Architecture and Operating Systems**				
Course Code	CSC616				
Course Type	Compulsory				
Level	Master (2nd Cycle)				
Year / Semester	1st year/1st Semester				
Teacher's Name	Dr. Konstantinos Katzis and Pericles Leng Cheng				
ECTS	10	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	This course integrates advanced concepts of modern computer architecture and operating systems, focusing on high-performance, secure, and scalable computing environments. It examines how contemporary processors, heterogeneous compute units, virtualization layers, and cloud-oriented operating system services interact to provide efficient execution and resource management at scale. The course prepares students to analyse, design, optimize, and evaluate next-generation computing systems, by critically understanding architectural innovations, parallel and distributed system abstractions, and OS-level mechanisms that enable secure multi-tenant computation in modern platforms.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Analyse and compare modern CPU microarchitectures, pipeline techniques, speculative execution mechanisms and branch prediction strategies. • Evaluate the impact of memory hierarchy design on system performance, including NUMA configurations and modern cache coherence protocols. • Assess the design principles and programming implications of heterogeneous architectures such as GPUs, TPUs and FPGAs. • Investigate and evaluate OS-level scheduling, resource management and synchronization techniques in multicore and manycore environments. • Compare virtualization and containerization technologies, including hypervisor architectures, OS-level isolation mechanisms and workload deployment models.				

	• Examine and critique distributed OS architectures, distributed file systems, consistency models and cloud-native OS abstractions. • Identify OS-level security threats and vulnerabilities, and evaluate protection, hardening and trusted execution mechanisms. • Critically appraise architectural and system-level design trade-offs when engineering secure, scalable and high-performance computing systems.		
Prerequisites	None	Co-requisites	None
Course Content	**Module 1 – Modern CPU Microarchitecture** Superscalar processors, out-of-order execution, pipeline hazards, speculation, branch prediction strategies, microarchitectural performance metrics. **Module 2 – Multicore and Manycore Architectures** SMP vs NUMA, memory wall, cache coherence protocols (MESI family), interconnect topologies, scalability issues. **Module 3 – Heterogeneous Computing Architectures** GPU/TPU acceleration, vector processors, FPGA-based acceleration, programming paradigms (CUDA, OpenCL – conceptual level). **Module 4 – Memory Hierarchy & Advanced Memory Systems** HBM, NVM, memory tiering, memory contention analysis, prefetching strategies, impact on latency and throughput. **Module 5 – Virtualization and Hypervisor Technologies** Hardware virtualization extensions (Intel VT-x / AMD-V), type-1 vs type-2 hypervisors, nested virtualization, para-virtualization. **Module 6 – Containers and OS-Level Virtualization** Namespaces, cgroups, container runtimes (Docker), container orchestration foundations (Kubernetes concepts), sandboxing. **Module 7 – OS Scheduling and Resource Management in Multicore Systems** Advanced scheduling algorithms (completely fair scheduler), thread migration policies, NUMA-aware scheduling, QoS policies. **Module 8 – Advanced Synchronization and Lock-free Algorithms** Atomic operations, memory models, lock-free / wait-free structures, transactional memory, scalability under contention. **Module 9 – Distributed Operating Systems Concepts** Distributed OS architecture, distributed file systems (GFS / HDFS conceptual), consistency models, eventual consistency & CAP trade-offs. **Module 10 – OS Security and Trusted Execution** Secure boot, TPM/TEE, SELinux and AppArmor policies, container security boundaries, kernel hardening, intrusion detection basics. **Module 11 – Case Studies and Emerging Architectures** Linux kernel internals vs Windows kernel models, cloud OS (AWS EC2 virtualization stack – conceptual), serverless execution environments, future directions (RISC-V, confidential computing).		
Teaching Methodology	Face-to-Face		

Bibliography	• John L. Hennessy & David Patterson, *Computer Architecture: A Quantitative Approach*, Morgan Kaufmann (Latest Edition). • Avi Silberschatz, Peter Baer Galvin, Greg Gagne, *Operating System Concepts*, Wiley (Latest Edition). • Remzi Arpaci-Dusseau & Andrea Arpaci-Dusseau, *Operating Systems: Three Easy Pieces* (OSTEP) – Latest Online Edition. • Andrew S. Tanenbaum & Herbert Bos, *Modern Operating Systems*, Pearson (Latest Edition). • Brendan Burns, *Designing Distributed Systems: Patterns and Paradigms for Scalable, Reliable Services*, O'Reilly (Latest Edition). • Kelsey Hightower, Brendan Burns, Joe Beda, *Kubernetes: Up and Running*, O'Reilly (Latest Edition). • David Chisnall, *The Definitive Guide to the Xen Hypervisor*, Pearson (Latest Edition).
Assessment	Examinations 60% Assignments/Lab 30% Class Participation and Attendance 10% 100%
Language	English

Course Title	**Advanced Software and Database Engineering**				
Course Code	**CSC622**				
Course Type	Compulsory				
Level	Master (2nd Cycle)				
Year / Semester	1st Year / 2nd Semester				
Teacher's Name	Dr. Michael A. Georgiou, Dr Kostas Iordanou				
ECTS	10	Lectures / week	2 Hours (14 weeks)	Laboratories / week	1 Hour (12 weeks)
Course Purpose and Objectives	This course provides advanced knowledge in modern software engineering and database engineering with emphasis on architecting scalable, distributed and data-intensive systems. Students will explore contemporary architectural patterns, microservices, CI/CD pipelines, container-based deployment, and data engineering across heterogeneous database ecosystems. The course focuses on designing, implementing, and evaluating robust software and data solutions at scale, integrating relational, NoSQL, and graph data stores, while applying principles of reliability, consistency, performance and security.				
Learning Outcomes	Upon successful completion of this course, students will be able to: **Software Engineering** 1. Critically evaluate and select appropriate software development methodologies for complex, large-scale projects. 2. Model domain knowledge and architect advanced system structures using UML and/or domain-driven design patterns. 3. Design microservice architectures and apply container-based deployment practices. 4. Apply systematic verification and validation strategies, including automated testing, CI/CD pipelines and quality assurance metrics. **Database Engineering** 5. Architect relational schemas optimized for performance, concurrency and transactional consistency. 6. Analyse and evaluate distributed data models, comparing the trade-offs of relational, NoSQL and graph databases using CAP and PACELC.				

<table>
<tr><td></td><td colspan="3">7. Engineer distributed data processing pipelines integrating event streaming platforms (e.g. Kafka) and polyglot persistence.
8. Design and implement secure, scalable RESTful APIs and services that integrate hybrid storage backends.</td></tr>
<tr><td>Prerequisites</td><td>None</td><td>Co-requisites</td><td>None</td></tr>
<tr><td>Course Content</td><td colspan="3">
Software Engineering Topics:

Advanced Software Process Models and Agile at Scale (Scrum, SAFe):
Scaling agile development within large teams and enterprise environments; governance, monitoring, sprint metrics, and cross-team coordination.
Domain-Driven Design (DDD), microservices architecture, API gateways:
Strategic and tactical DDD patterns, bounded contexts, microservice decomposition, service registries, service mesh concepts, and gateway design patterns.
Cloud-native deployment fundamentals: containers, Docker, Kubernetes (conceptual):
Container build pipelines, image registries, container orchestration fundamentals, stateless vs stateful workloads, and cloud-native design principles.
CI/CD pipelines, DevOps principles, automated testing strategies:
Continuous integration, continuous delivery, automated unit/integration testing, infrastructure-as-code principles, automated rollback strategies, quality gates.
Documentation standards for maintainability, observability and auditability:
API documentation (OpenAPI), architectural decision records (ADR), log aggregation, distributed tracing, standardized reporting, coding conventions and style guides.

Database Engineering Topics:

Advanced relational schema design, indexing, query planning and performance tuning:
Index selection strategies, join performance optimization, query plan inspection, cost-based query planning, and physical schema tuning.
Transaction processing, isolation levels, concurrency control and ACID vs BASE:
Locking mechanisms, MVCC, phantom reads, serializability, optimistic vs pessimistic concurrency, performance implications of consistency.

</td></tr>
</table>

	• **Distributed data systems: CAP & PACELC, sharding, replication, consistency models:** Trade-offs between consistency and latency, partition tolerance, leader-follower replication, quorum reads/writes, eventual vs strong consistency. • **NoSQL domains: Document (MongoDB), Column (Cassandra), Key-Value (Redis), Graph (Neo4j):** Data modelling in each paradigm, query languages/DSLs, use-cases suitability, performance characteristics and scaling behaviour. • **Graph Data Models & Cypher: graph traversal, pattern matching, graph-based recommendations:** Cypher queries, subgraph extraction, pathfinding, knowledge graph construction, real-time recommendation engines via graph analytics. • **Hybrid transactional/analytical systems (HTAP):** Combining OLTP + OLAP within single systems, real-time analytics, materialized views, and streaming aggregation for decision-making. • **Data Engineering & Streaming: integrating Kafka (conceptual), ETL vs ELT pipelines:** Event-driven architectures, message brokers, stream ingestion, transformation strategies, batch vs streaming analytics trade-offs. • **RESTful API design for polyglot persistence systems:** Service endpoints spanning multiple storage backends, consistency enforcement, pagination, schema evolution, security (OAuth2/JWT) and versioning.
Teaching Methodology	Face-to-face
Bibliography	• Sommerville, I. (2015). *Software Engineering* (10th ed.). Addison-Wesley. • Ramakrishnan, R., & Gehrke, J. (2003). *Database Management Systems* (3rd ed.). McGraw-Hill. • Kleppmann, M. (2017). *Designing Data-Intensive Applications*. O'Reilly. • Bass, L. et al. *Software Architecture in Practice*. Addison-Wesley (Latest). • Newman, S. *Building Microservices*. O'Reilly (Latest). • Fowler, M. et al. *Patterns of Enterprise Application Architecture*. Addison-Wesley. • Robinson, I. et al. *Graph Databases*. O'Reilly (Latest).

Assessment	Midterm Exam	20%	
	Final Exam	40%	
	Labs & Assignments	30%	
	Class Participation and Attendance	10%	
	Total	100%	
Language	English		

Course Title	**Advanced Computer Networks & the Internet**				
Course Code	**CSC618**				
Course Type	Compulsory				
Level	Master (2nd cycle)				
Year / Semester	1st Year / 2nd Semester				
Teacher's Name	Dr. Katerina Papanikolaou				
ECTS	10	Lectures / week	3 Hours/ 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	This course explores advanced computer networking technologies, protocols, architectures and performance engineering at scale. It covers core Internet technologies and extends into modern domains such as software-defined networking (SDN), network function virtualization (NFV), 5G/6G cloud-native networking, IoT networks, and advanced network security. Students will learn to design, optimize, secure and evaluate large-scale, cloud-based and distributed networks aligned with current industry standards.				
Learning Outcomes	Upon successful completion of the course, students will be able to: • Analyse modern Internet architectures, layered protocols and emerging communication paradigms. • Critically evaluate 5G/6G and IoT networking architectures, edge computing, and low-power wireless protocols. • Design advanced routing strategies, traffic engineering policies, and congestion control mechanisms. • Assess cloud networking models, including virtual private clouds, SDN-based architectures and NFV deployments. • Analyse transport layer behavior under high concurrency, mobility conditions and impaired networks. • Identify network security threats and apply advanced cryptographic protocols, secure communication standards and zero-trust network principles. • Perform performance modelling and simulation of network protocols using contemporary tools. • Architect secure, scalable network solutions suitable for enterprise, cloud and IoT environments.				
Prerequisites	CSC628	Co-requisites	None		

Course Content	**Advanced Networking Fundamentals** Communication architectures and advanced Internet models; role of IETF, ICANN, IEEE standards. Evolution from classic client-server to microservices over networks. **Data Transmission & Physical Layer Innovations** Fibre, Wi-Fi 6/6E fundamentals, mmWave concepts, 5G backhaul/front-haul implications on data communications. **Advanced MAC & Link Layer** Modern Ethernet, link aggregation, QoS-aware MAC, scheduling in wireless networks, channel access in IoT networks (LoRaWAN, Zigbee concepts). **Advanced Routing & Internet Control Plane** Path vector routing, BGP operations, traffic engineering with MPLS/Segment Routing, anycast routing, QoS prioritization, latency-sensitive routing for IoT. **Transport Layer at Scale** Modern TCP variants (BBR, CUBIC), QUIC protocol (HTTP/3), congestion control in high bandwidth-delay products, streaming media transport. **SDN & NFV** Control-plane vs data-plane separation, OpenFlow, high-level controller design, virtualization of network functions, service chaining, network slicing (5G). **Cloud Networking** Virtual Private Clouds (AWS/Azure/GCP), overlay networks, service meshes, microsegmentation, load balancers, traffic steering in cloud-native architectures (Istio conceptually). **IoT Networking Architectures** Edge and fog computing, IoT-specific protocols (MQTT, CoAP), constrained network environments, energy-aware communications. **Network Security & Zero Trust** Zero Trust architectures, API security, TLS 1.3, DNSSEC, DDoS mitigation at scale, secure routing, VPN vs SD-WAN, Zero Trust posture for cloud networks. **Performance Evaluation & Simulation** Queuing theory at Internet-scale, simulations in NS3/Mininet, traffic models, latency/throughput measurements, security-performance trade-offs. **Current Trends & Emerging Directions** 6G vision, satellite Internet (Starlink), quantum-safe cryptography and post-quantum network protocols, network automation via AI/ML (AIOps), intent-based networking.
Teaching Methodology	Face- to- face

<table>
<tr><td>Bibliography</td><td>W. Stallings, Computer Networking with Internet Protocols and Technology, Prentice Hall

J.F. Kurose and K.W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, Addison-Wesley

Behrouz A. Forouzan Data Communications and Networking, 4/e, Mc Graw-Hill

L.L. Peterson and B.S. Davie., COMPUTER NETWORKS, A SYSTEMS APPROACH, Morgan Kaufmann Publishers

Evan Gilman , Doug Barth, Zero Trust Networks: Building Secure Systems in Untrusted Networks, O'Reilly Media, Latest Edition.

Betsy Beyer et al. (Google SRE team), Site Reliability Engineering: How Google Runs Production Systems, O'Reilly Media, Latest Edition.</td></tr>
<tr><td>Assessment</td><td><table>
<tr><td>Mid – Term Examination</td><td>20%</td></tr>
<tr><td>Final Examination</td><td>40%</td></tr>
<tr><td>Assignments/Lab</td><td>30%</td></tr>
<tr><td>Class Participation and Attendance</td><td>10%</td></tr>
<tr><td></td><td>100%</td></tr>
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<tr><td>Language</td><td>English</td></tr>
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Course Title	**Master Thesis**				
Course Code	**CSC694**				
Course Type	Compulsory				
Level	Master (2nd Cycle)				
Year / Semester	2nd Year / 1st Semester				
Teacher's Name	Any faculty member				
ECTS	20	Lectures / week	N/A	Laboratories / week	N/A
Course Purpose and Objectives	The aim of the course is the students to: • develop an ability to organize and carry out an extended, independent and novel scientific research work at postgraduate level, employing concepts and methods learned in the program. • To synthesize concepts and methods learned in more than one course, and exhibit awareness of previous work in the area of study. • To gain a deeper knowledge of the subject at hand and to give an insight into the working processes used within a company, other institutions or within a department. • Extend the knowledge and skills developed in the taught components of the courses of the program • Prepare the student for a doctorate program of studies.				
Learning Outcomes	Upon succesful completion of this course students should be able to: • Work individually to undertake a major project • Identify real-world problem and formulate it in a rigorous and formal way, utilizing suitable theoretical and technological tools and methods. • Select and use effectively the methods and techniques appropriate for particular cases • Plan and manage their work • Evaluate a proposed solution and prove its worth to the client. • Critically evaluate the project and the proposed solution				

<table>
<tr><td></td><td colspan="3">• Demonstrate an ability to engage in academic and professional communication with others in their field through report and presentation.
• Demonstrate professional skills (Communication, presentation, writing and time management).</td></tr>
<tr><td>Prerequisites</td><td>None</td><td>Co-requisites</td><td>None</td></tr>
<tr><td>Course Content</td><td colspan="3">There is no set syllabus.Projects are offered by instructors and students select which project they want (therefore, also selecting supervisor). At the completion of the project, students must present their work to the whole of the department. Students eligible to ‘take’ the master thesis are those that have satisfied minimum requirements for starting work on the thesis.

The project subjects are offered by faculty members (internal or external). Each member brings forward a project (or possibly more if required by student numbers). Usually the subject matters related to the research interests of the faculty or deal with solving a problem and producing a solution (for the department or otherwise).

The specific deliverables for each individual’s project must be discussed and decided upon in consultation with the academic and industrial supervisors. The roles and responsibilities are outlined below:

Student:
• To plan the project
• To carry out the necessary work
• To review and evaluate the work done
• To prepare and present the project deliverables
• To initiate and maintain contact with the academic supervisor

Academic Supervisor:
• To identify a suitable problem
• Explain the value of the research
• To discuss the mapping of the project onto the course requirements
• To discuss the project plan
• To discuss and approve the intended deliverables
• To suggest starting points for consideration of background research
• To discuss the nature of the thesis and comment on early drafts
• To provide advice on issues associated with the project such as design, implementation, and proof of concept as appropriate.
• To attend any presentation or demonstration of the project.</td></tr>
</table>

Teaching Methodology	Face-to-face
Bibliography	Specified by the instructor Howard, K. & Sharp, J.A., THE MANAGEMENT OF A STUDENT RESEARCH PROJECT, Gower Turk, C. & Kirkman, J., EFFECTIVE WRITING: IMPROVING SCIENTIFIC, TECHNICAL AND BUSINESS COMMUNICATION, Chapman & Hall
Assessment	The specific deliverables for each individual's project must be discussed and decided upon in consultation with the academic and industrial supervisors. However, each project must involve deliverables falling into the following general categories: • A proposed solution to a real-world problem. • A proof of concept, which demonstrates the validity of the proposed solution. • Clear indication of knowledge of relevant work by others in the field. • The selection and application of appropriate theoretical concepts and methods. • A project thesis of between 12,000 to 16,000 words. Projects will be marked in two ways. Firstly, according to the following scheme: • Project justification including its relationship to the current state of the art • Ability to select and use appropriate methods and techniques • The clarity, coherence and succinctness with which the solution is developed • Novelty. Does the work improve significantly the current state of the art? • Ability to critically review the project and assess its implications for future work in view of the project recommendations and conclusions • Project Management: Ability to plan and control the project In addition students are reminded about presentation issues: Is the document format (including spelling) of good quality? Is it well organized into appropriate sections? Is the style of language used appropriate for an academic report?

	Project	100%	
Language	English		

Course Title	**Web technologies and development**				
Course Code	**CSC628**				
Course Type	Elective				
Level	Master (2nd cycle)				
Year / Semester	1st Year/2nd Semester or 2nd Year/1st Semester				
Teacher's Name	Andreas Grondoudis				
ECTS	10	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	The purpose of this course is to introduce student to principles and practical aspects relating to the design, implementation and maintenance of websites. The first aspect is to introduce Web Engineering; a systematic, disciplined and quantifiable approach towards successful development of high-quality, ubiquitously usable web-based systems and applications. Emphasis will be given on latest trends on Web engineering through research literature The aspect is to introduce web development using HTML5, CSS and JavaScript programming. This will introduce students to the possibilities that exist with using the latest HTML5 draft and manipulating the content by means of CSS and/or JavaScript.				
Learning Outcomes	After competing this course students should be able to: • Describe the web engineering process • Explain how to gather requirements for the design of web-apps • Recall the modelling activity, analyze the importance of design elements and quality. Compare various technologies and tools for developing web-apps • Describe the process of creating a packaged app, Manage application state and manipulate application data storage • Select and configure HTML5 tags to display text, graphics or play media files; Build a user interface using HTML5 • Use cascading style sheets to: a) control content positioning, flow and overflow; b) arrange user interface content; c) manage the flow of text content; d) manage the graphical interface • Use JavaScript to: a) update the user interface; b) animate pages; c) access data; d) program touch enabled interfaces and e) access resources of the device of the operating system • Work with additional HTML5 APIs such as: a) geolocation; b) web workers; c) websockets; and d) file API				

Prerequisites	CSC632	Co-requisites	None
Course Content	Web Engineering The course of Web programming involves the understanding of key elements such as, Internet technologies, system components as well as programming a dynamic, flexible, robust Web system. Particularly the course includes: The web engineering process, web-based systems and modelling Discussion and contextualizing web-based systems in an ever evolving Web. Process and progressive steps for modeling various aspects of Web-based systems Design and design patterns Understanding Web application design, conceptualizing interaction design, organizing information and structure design and identifying and proposing requirements for functional design. Identifying and recommending patterns for designing Web-based systems. Construction and Deployment Constructing activities for Web-based systems based on functional requirements and design. Identifying the steps required for deployment and effective use of Web-based systems. Technologies and Tools Familiarization with the availability of a variety of tools (proprietary and/or open source) that are used in the industry for the development and implementation of Web-based systems. Testing web-apps, change and content management Standard and practical methods and steps in ensuring the correctness of operation and adherence to specification requirements. Managing and manipulating information and its change after the deployment and utilization of the system. Web development The class will have extensive usage of CSS and JavaScript to manipulate HTML5 content pages and applications. Understanding and managing the application life cycle Creating apps; the run-time environment; app-package; app-container; application states; understanding touch interface and gestures; debugging HTML5 apps; Using HTML5 to build the interface Attributes; elements; nesting; text elements, graphics; the canvas object; using SVG for graphics; media tags (audio, video). Structuring and HTML		

	document (header, selection, nav, article, aside); creating tables and lists; input and forms, validation of input Using CSS Linking CSS to HTML; separating content from style; selectors; fonts; positioning; content flow and overflow; simple layouts; using flexible boxes; grid layouts; using grid template; using regions for text flow management; creating graphic effects (round corners, shadows and more); transformations (2D & 3D); SVG filters Using JavaScript Basics, functions, methods, jQuery and other 3rd party libraries; accessing page element; responding to event; showing and hiding elements; adding and updating content; creating animations; working with images and shapes; sending and receiving data; reading and writing files; input validation; using cookies; working with the touch interface; additional HTML5 APIs (geolocation, web workers et. al.); accessing system resources (memory, location, camera)
Teaching Methodology	Face-to-Face
Bibliography	- Pressman R.; Maxim B.; WEB ENGINEERING: A PRACTISIONER'S APPROACH; McGraw-Hill Higher Education - Felke-Morris T, WEB DEVELOPMENT AND DESIGN FOUNDATION WITH HTML5, Pearson - Kappel G., Proll B., Reich S., Retshitzegger W.; WEB ENGINEERING: THE DISCIPLINE OF SYSTEMATIC DEVELOPMENT OF WEB APPLICATIONS; Wiley & Sons - Mendes E. – Mosley N. (Eds.); WEB ENGINEERING; Springer - Casteleyn S., Daniel F., Dolog P., Matera M.; ENGINEERING WEB APPLICATIONS, Springer
Assessment	Examinations 60% Coursework 30% Class participation and Attendance 10% 100%
Language	English

Course Title	**Algorithms & Complexity**				
Course Code	**CSC632**				
Course Type	Elective				
Level	Master (2nd cycle)				
Year / Semester	1st Year/2nd Semester or 2nd Year/1st Semester				
Teacher's Name	Vicky Papadopoulou Lesta				
ECTS	10	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	The first part of the course introduce the students to the design and analysis of algorithms for computational problems, and how to think clearly about analyzing correctness and running time. The objective of the first part of the course is to provide the intellectual tools needed for designing and analyzing algorithms for new problems the students may face in the future. Specific algorithms for a variety of problems will be studied, such as greedy techniques, divide-and-conquer and others, as well as general design and analysis techniques. The second part of the course includes advanced techniques in the design and analysis of algorithms. The algorithms are presented using a rigorous analytical style. We will be emphasizing various algorithmic paradigms such as dynamic programming, network flows, linear programming and rounding, randomized algorithms, local search and multiplicative weights update and NP and intractability. These techniques will be applied to a wide variety of (well motivated) discrete computational problems with a focus on combinatorial optimization.				
Learning Outcomes	After competing this course students should be able to: • Explain, use and discuss fundamental algorithms and algorithmic techniques. • Explain the use of big-O, Omega, and Theta notation to describe the amount of work done by an algorithm, and apply them to provide tight bounds on algorithmic complexity. • Create correctness proofs and estimate the running time of a given algorithm. • Discuss factors other than computational efficiency that influence the choice of algorithms, such as programming time, maintainability, and the use of application-specific patterns in the input data. • Describe and discuss the basic idea behind the techniques, so that to be are able to develop algorithms for new problems where these techniques can be applied.				

	• Describe and apply the algorithms discussed in class, prove their correctness, and analyze their time complexity in a mathematically rigorous manner. • Given a practical application, identify the computational issues and apply suitable algorithms to solve it effectively. • Identify, describe and use NP-complete problems • Discuss various issues on computability and complexity theory. • Prove a problem is NP-complete using reduction and identify the implications.		
Prerequisites	CSC612	Co-requisites	None
Course Content	**Analysis framework:** O, Θ, Ω notations Mathematical analysis: nonrecursive and recursive algorithms. Graphs, trees and their properties. Breadth- and depth-first search in graphs, topological sort, recurrences. **Divide-and-conquer:** Multiplication of Large Integers and Strassen's Matrix Multiplication, Closest-Pair and Convex-Hull Problems by Divide-and-Conquer. **Sorting and Selection:** Randomization, Median Finding, Quick Sort, Radix Sort, selection, Lower Bound for Sorting **Greedy technique:** Huffman's Codes, Minimum Spanning Tree algorithms: Kruskal's Algorithm, Prim's Algorithm, single pair Shortest Paths algorithm: Dijkstra's Algorithm. Scheduling to Minimize Lateness: An Exchange Argument, The Minimum Spanning Tree Problem, Huffman Codes and the Problem of Data Compression **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 **Iterative Improvement:** The Simplex Method, the Maximum-Flow Problem (Ford-Fulkerson method), Maximum Matching in Bipartite Graphs, the Stable Marriage Problem **Dynamic Programming:** Weighted Interval Scheduling: A Recursive Procedure, Weighted Interval Scheduling: Iterating over Sub-Problems, Segmented Least Squares: Multi-way Choices, Subset Sums and Knapsacks: Adding a Variable, Shortest Paths in a Graph, Shortest Paths and Distance Vector Protocols, Negative Cycles in a Graph. **Network Flow:** Maximum Flows and Minimum Cuts in a Network, Disjoint Paths in Directed and Undirected Graphs, Airline Scheduling. **NP and Computational Intractability:** Polynomial-time Reductions, Efficient Certification and the Definition of NP, NP-Complete Problems, Sequencing Problems, Partitioning Problems, Graph Coloring, Numerical		

	Problems, co-NP and the Asymmetry of NP, A Partial Taxonomy of Hard Problems **Extending the Limits of Tractability:** Finding Small Vertex Covers, Solving NP-hard Problem on Trees, Coloring a Set of Circular Arcs. **Local Search:** The Landscape of an Optimization Problem. The Metropolis Algorithm and Simulated Annealing. An Application of Local Search to Hopfield Neural Networks. Maximum Cut Approximation via Local Search **Approximation Algorithms:** Greedy Algorithms and Bounds on the Optimum: A Load Balancing Problem, the Vertex-cover problem, the traveling salesman problem, the set-cover problem, the vertex-coloring problem. The Center Selection Problem, the Set Cover. The Pricing Method: Vertex Cover. Linear Programming and Rounding: An Application to Vertex Cover.
Teaching Methodology	Face-to-Face
Bibliography	Jon Kleinberg and Éva Tardos. Algorithm Design. Addison-Wesley. S. Dasgupta, C. Papadimitriou, U. Vazirani,ALGORITHMS, McGraw-Hill. T. H. Cormen, C. E. Leiserson, R. L. Rivest and C. Stein INTRODUCTION TO ALGORITHMS, MIT Press. R. Johnsonbaugh, M. Schaefer, ALGORITHMS, Prentice Hall Sanjeev Arora and Boaz Barak, Computational Complexity, A Modern Approach, Cambridge University Press
Assessment	Examinations 60% Assignments 30% Class participation and Attendance 10% 100%
Language	English

Course Title	**Introduction to Cybersecurity**				
Course Code	**CYB600**				
Course Type	Elective				
Level	Master (2nd Cycle)				
Year / Semester	1st Year/2nd Semester or 2nd Year/1st Semester				
Teacher's Name	TBA				
ECTS	10	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	This course introduces the fundamental concepts and terminology of cybersecurity as a whole, and functions as a short introduction to the large number of cybersecurity topics that are covered within this MSc course.				
Learning Outcomes	Upon succesful 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. • Understand the importance and application of IT law and cybersecurity certification				
Prerequisites	None	Co-requisites	None		
Course Content	**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.) **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. **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. **Incident response and forensics** - _ the incident response lifecycle stages, develop an effective incident response plan, understanding of incident detection, containment, and basic remediation techniques, digital forensics principles, forensic tools and techniques, and legal and ethical considerations in incident investigations. **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 ISO/IEC 27001 Information security management. **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
Bibliography	*"Cybersecurity Foundations: An Interdisciplinary Introduction"*, by Lee Mark Zeichner "Management of Information Security" by Michael E. Whitman,Herbert J. Mattord "CISSP Guide to Security Essentials" By Peter Gregory "Principles of Information Security" by Michael E. Whitman, Herbert J. Mattord
Assessment	Examinations 60% Assignments 30% Class participation and Attendance 10% 100%
Language	English

Course Title	**Artificial Neural Networks and Deep Learning**				
Course Code	**AIN624**				
Course Type	Elective				
Level	Master (2nd Cycle)				
Year / Semester	1st Year/2nd Semester or 2nd Year/1st Semester				
Teacher's Name	TBA				
ECTS	10	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	This course has a two-fold purpose: first it presents the fundamental aspects of Artificial Neural Networks (ANN) and second it introduces to more advanced topics such as Deep Learning (DP) Networks. After a short review of conventional neural networks and learning processes, the course will introduce modern practices for deep networks, including training, optimization, convolutional networks, recurrent and recursive nets. Furthermore, the course will focus on practical methodologies concerning the design, data preprocessing, hyperparameter selection, implementation and performance evaluation of a Deep Learning system as well as applications of deep learning techniques to real world problems, such big data mining, image processing and natural language processing.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Recall the basic algorithms and methods of Artificial Neural Networks basics as well as their training algorithms. • Discuss, explain and report various deep learning algorithms for a specific problem. • Choose and interpret a suitable algorithm/method in order to meet problem's specifications. • Analyze and combine known technics in order to face real world problems. • Analyze and preprocessing the given data to fit in ANN and DL algorithms/methods. • Put the different system parts (preprocessed data, implemented, algorithms, user interface) together in order to create a new operational learning system. • Evaluate the performance of the developed learning system.				

	• Discuss the fundamental concepts of several types of deep neural networks. • Apply Deep Learning approaches to a variety of tasks.		
Prerequisites	CSC612	Co-requisites	None
Course Content	Machine Learning Basics: Presentation of some perspectives on traditional machine learning techniques, such as Neural Networks (NNs) that have strongly influenced the development of deep learning algorithms. After a short introduction to NNs, we will discuss the model of a neuron, and network architectures. Then, the different types of learning processes are presented. Finally, the several aspects concerning the training of a single layer perceptron are discussed. Deep Feedforward Networks: Presentation of deep learning neural network modes for function approximation. A simple learning example and the gradient-based learning are discussed, as well as other aspects like hidden units and architecture design. Then follows the foundation of the Back Propagation algorithm for deep learning and its variations. The relative algorithms are analyzed extensively, and implementation aspects are discussed. Regularization for Deep Learning: Presentation of selected advanced techniques for regularization and optimization of deep network models, such as parameter's norm penalization, norm penalties as constrained optimization and dataset augmentation. Furthermore, the semi-supervised learning paradigm and feature extraction techniques, bagging and ensemble methods are discussed. Optimization for Training Deep Models: Several challenges of training optimization, such as parameter optimization and adaptive learning rates will be discussed. Furthermore, the relative algorithms are presented and analyzed as well as optimization strategies and meta-algorithms. Convolutional Neural Networks (CNNs): Introduction to convolutional networks for scaling to large data sets. Presentation of the main building blocks of CNNs such as convolutional filters and their characteristics (stride, depth, width), activation functions, pooling operator. Several aspects of convolution operation are discussed and efficient algorithms for random or unsupervised features are presented as well as the neuroscientific basis of convolution networks. Sequence Modeling: Recurrent and Recursive Neural Nets (RNNs): Deep recurrent and recursive neural networks for temporal sequences processing are presented. The challenge of		

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Practical Methodology: General guidelines for the practical methodology involved in designing, building and configuring an application involving deep learning are discussed. These aspects include performance metrics, baseline models, gathering more data, hyperparameters' selection and debugging strategies. An example shows how these aspects are faced.

Applications: A review of deep learning applications, such as Large-scale deep learning, computer vision, speech recognition. Natural language processing and other applications are presented.</td></tr>
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<tr><td>Bibliography</td><td>"Neural Networks: A Comprehensive Foundation", by Simon Haykin (Pearson Prentice Hall & online at: https://www.pdfdrive.com/neural networks-a-comprehensive-foundationpdf-e18774300.html).

"Deep Learning", by Ian Goodfellow, Yoshua Bengio and Aaron Courville (The MIT Press & online at http://www.deeplearningbook.org/).

"Neural Networks and Deep Learning", by Michael Nielsen (online at http://neuralnetworksanddeeplearning.com/).

"Deep Learning with Python" by Francois Chollet (Manning Publications).</td></tr>
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