

# ANNUAL REPORT



# Annual Report

## Contents

A. Organization & Management	3
GENERAL	3
MISSION	3
Study programs offered by the Department	5
B. Resources	6
Finance	20
IT Resources, Physical Infrastructure and Library Resources	25
Graduate Teaching	53
C. Teaching, Learning, Assessment & Research	65
Research Areas and Research Groups	85
List of Publications	85
Training	87
Support, Resources & Representation	88
List of Students' Internships	88
Office Holders	93
Acknowledgements	93

## **A. Organization & Management**

### **Introduction**

Assoc. Prof. Dr. Arban Uka

Head of Department

### **GENERAL**

Computer Engineering covers a wide range of engineering applications from hardware, software, networking, system administration, database managements systems, etc. Computer Engineering is distinguished as being one of fastest developing area and the most required in the job market. It is related to all sciences, being able to push them forward from their current status by providing automatic control, improved computational speed and better optimization.

### **MISSION**

The mission of the Department of Computer Engineering is to educate the students to gain an understanding of the fundamentals of science and engineering so that they can develop solutions to Computer Engineering problems and enhance their computing, engineering, and research skills. It is aimed to especially emphasize teamwork, independent and innovative thinking and leadership qualities. In particular, the Computer Engineering Program aims to:

- Train the students to have theoretical background in basic sciences and engineering and to be equipped with necessary technical skills,
- Provide practical experience which will enable students to utilize and enhance their engineering knowledge,
- Promote students' self-discipline and self-assurance and the ability to learn on their own,
- Encourage teamwork, collaboration and development of interpersonal skills,
- Motivate the students towards contributing to the progress of science and technology,
- Teach the importance of ethical behavior in social and professional life,
- Produce graduates for the engineering and the business communities who are observant, inquisitive and open to new technologies for developing better solutions,

- Produce graduates for the engineering and business communities with integrity, determination, judgment, motivation, ability and education to assume a leadership role to meet the demanding challenges of the society.
- Develop students' competency in reading, writing and oral communication,
- The vision of the Department of Computer Engineering is to be a department whose graduates are highly preferred in worldwide IT industry and to gain a leadership position in Albania and Balkans.

## **Study programs offered by the Department**

The Department of Computer Engineering offers undergraduate and postgraduate study programs in Computer Engineering, Electronics and Digital Communication Engineering and Software Engineering. The undergraduate programs are based on the three-year bachelor system and the students graduate with Bachelor's in Computer Engineering, Electronics and Digital Communication Engineering, and Software Engineering. The postgraduate study programs include Master of Science, Professional Master and PhD in Computer Engineering and Master of Science in Electronics and Communication Engineering.

## **B. Resources**

### **Department Staff**

#### **Full time Academic Staff**

##### **Assoc. Prof. Dr. Arban UKA**

Arban Uka – holds the PhD degree in Physics from University of Texas at Austin, United States of America, 2009. He has been awarded from the Holland Research School of Molecular Sciences (HRSMC) fellow, Leiden University and University of Amsterdam, Summer 2015. Has offered courses: Electromagnetic Waves, Electromagnetic Field Theory, Antennas and Propagation, Numerical Analysis in the Bachelor level; Advanced Numerical Methods and Digital Image Processing in the graduate level. His current interests include i) image acquisition using portable microscopy techniques such as digital in line holography, phase contrast microscopy, and lens-free microscopy, ii) image analysis using both intensity information and machine learning approaches, iii) pattern recognition with a focus on biometrics. He uses deep learning algorithms for medical image classification, cell detection, cell counting and cell segmentation. His research interest is based on: Image acquisitions, Point of Care Microscopy, Image Analysis, Computational Imaging, Deep Learning Techniques for Image Analysis. Some of the projects that Dr. Uka has been part are Horizon 2020: PANBioRA- Personalized And/or Generalized Integrated Biomaterial Risk Assessment, EPOKA University, Project coordinator, 01/2018 – ongoing. COST Project: MULTI-modal Imaging of Forensic Science Evidence - tools for Forensic Science (MULTIFORSEE), EPOKA University, Project coordinator, 09/2017 – ongoing. COST Project: Biomaterials and Advanced Physical Techniques for Regenerative Cardiology (BIONECA), EPOKA University, Project coordinator, 09/2018 – ongoing. Currently, he holds the position of Head of the Computer Engineering Department and at the same time is full – time lecturer.

### **Prof. Dr. Betim ÇIÇO**

Prof. Betim Çiço has been graduated as a distinguished student from Polytechnic University of Tirana in Electronic Engineering and 1983 he received his PhD degree in Nuclear Physics. In 1999 he has been awarded full professorship. He has been working in several institutions as below mentioned: 1971-1972, Engineer in Shijak Broadcasting. From 1972 -1998, Scientific Researcher in the Institute of Nuclear Physics in the field of nuclear electronics. 1972 - 1998 part time professor in PUT. From November 1998 -2012, full time Professor in Electronic Department at PUT, 10 years Head of Computer Engineering Section (1998 -2008) and 4 years Head of Computer Department (2008 2012). 2012- 2014 - Dean of the CST Faculty in SEEU, Tetovo, Macedonia. 2014- 2016 October full time Professor in Aleksander Xhuvani University, Elbasan, Albania. From October 2016 professor in EPOKA University (2009 - September, 2016 part-time professor in EPOKA University). During this period, Prof.Dr. ÇIÇO teaches different courses in bachelor, master and PhD study related to Electronic Systems, Digital Design, Computer Architecture, Advance Computer Architecture, Research Methodology, and Artificial Intelligence in PUT and as an invited professor in many Universities in Albania, Kosovo (Prishtina University) and Macedonia (SEEU University, Tetovo). Participation in many trainings, workshops, and scientific visits in China, Germany, France, United Kingdom, Turkey, Italy, Greece, etc. Member of more than 55 different Programmes Committee in Scientific Conferences. Supervisor of 20 PhD students. From 2007 - 121 papers in Proceedings of Conferences (IEEE, ACM, Springer Verlag, etc) and 44 papers in Scientific Journals. Member of Project Group, MoES, for the implementation of the Education Management Information System (EMIS) Component under the Transition Education Reform Project in Albania 1999 – 2001. National consultant of the World Bank in this Education Reform Project in Albania, financed by the World Bank.

### **Prof. Dr. Gëzim KARAPICI**

Prof. Dr. Gezim KARAPICI has received his Bachelor's degree in Electrical Engineering at the University of Tirana, a Candidate of Engineering Sciences in Milan, Italy, and he obtained his PhD degree in 1990 from University of Tirana. He has been working in several institutions as below mentioned: Responsible of Electrical Sector Oil Processing Plant – Fier, from 1969 – 1971 Electrical Engineer, General Directorate of Power Systems (today Electrical Energy Corporation of Albania). 1971 – 1979 Assistant Pedagogue, Pedagogue at the University of Tirana, Faculty of

Mechanical & Electrical. During 1985 – 2003 Responsible of the Chair of Automatic Control, University of Tirana & Polytechnic University of Tirana, Faculty of Electrical Engineering”, 1989 – 1991 Dean of the Faculty of Mechanical and Electrical Engineering at the University of Tirana, 1991 –Professor of Automatic Control and Power System Control, Polytechnic University of Tirana, Faculty of Electrical Engineering, 1991 – 1995 Rector, Polytechnic University of Tirana, 1995 – 1998 National Contact Point for Distance Education, Head of National Board for Distance Education.

**Prof. Dr. Bekir Karlik**

Professor Bekir Karlik earned his PhD from Yildiz Technical University in Istanbul, Turkey, "Myoelectric Control of Multifunctional Prosthesis Using Neural Networks." Since 2000, he has worked as a lecturer at various universities across different countries. In October 2023, he joined EPOKA University as a full-time faculty member in the Computer Engineering department. At EPOKA University, he teaches courses such as Artificial Intelligence, Machine Learning, Signals and Systems, and Introduction to Neural Networks.

**Assoc. Prof. Dr. Dimitrios Karras**

Dimitrios A. Karras received his Diploma and M.Sc. Degree in Electrical and Electronic Engineering from the National Technical University of Athens, Greece in 1985 and the Phd Degree in Electrical and Computer Engineering, from the National Technical University of Athens, Greece in 1995, with honours. From 1990 and up to 2004 he collaborated as visiting professor and researcher with several universities and research institutes in Greece. Since 2004, after his election, he has been with the Sterea Hellas Institute of Technology, Automation Dept., Greece as associate professor in Digital Systems and Signal Processing as well as with the Hellenic Open University, Dept. Informatics as a visiting professor in Communication Systems (the latter since 2002 and up to 2010). Since 10/2018 he has been with the EPOKA University, Computer Engineering Department with a primary appointment as Lecturer.

**Dr. Shkëlqim HAJRULLA**

Shkëlqim Hajrulla is a lecturer of the Department of Computer Engineering since 2019. He has received his B.Sc degree in University of Tirana “Teacher of Math at High School Level” and his M.Sc degree in Applied Mathematics at “University of Vlora” and his PhD in Water Wave Equation. Numerical Methods and Application- “University of Vlora”. The courses he is teaching are: Numerical Analysis, Mathematics for Engineering, Calculus I, Differential Equations, Probability and Statistics, Basic Mathematics. His research experience is: Differential forms for water wave equations in Applied Sciences. Dr. Shkëlqim Hajrulla has been teaching from 2003.

**Dr. Valmir BAME**

Valmir Bame has received a B.A, M.Sc., and PhD degree in mathematics engineering from the Polytechnic University of Tirana. He is a lecturer in the department of Computer Engineering, EPOKA University starting from the 2021 academic year. The courses that he is teaching are as follows: Calculus, Linear Algebra. He has published different articles named: “Numerical Solution for Semi Linear Hyperbolic Differential Equations”, “Numerical Solution for Semi Linear Hyperbolic Differential”, “Numerical Solution for Semi Linear Hyperbolic Differential”, “Optimizing of Damping Parameters to Suppress Oscillations in Flexible Structures”.

**Dr. Emre EROGLU**

Dr. Emre Eroğlu holds a Ph.D. in Mathematics from the Gebze Institute of Technology, completed in 2011. He earned his Master’s degree in Mathematics from Sakarya University (in collaboration with Yıldız Technical University) in 2004. His undergraduate studies were completed at Uludağ University in 2000, where he received a Bachelor’s degree in Mathematics.

Between 2012 and 2017, he served as an Assistant Professor at the Faculty of Arts and Sciences at Kırklareli University in Turkey, following over a decade of teaching mathematics and geometry at the high school level in Istanbul from 2000 to 2012.

In addition to his academic roles, he held several important administrative positions. He was the Assistant Director and later Vice Director of the Institute of Sciences at Kırklareli University between 2012 and 2016. During the same period, he served as the Founding Head of the Mathematics Department, leading departmental development and academic coordination until 2017.

### **M.Sc. Hashmet DURMISHI**

Hashmet Durmish full time assistant lecturer in the Department of Computer Engineering since September 2020. He has finished his B.Sc. and M. Sc. Degrees in Tirana University, Natural Science Faculty 1991-1995. M.Sc. Durmishi has been teaching at several institutions such as: Physics teacher to grades 9-12 and Mathematics teacher to grades 12 between 1995-1998. Interpreter of English-Albanian and Albanian-English at “Children’ Aid Direct” Foundation between April 1999 and November 1999. Interpreter to a “Solicitor Company” dealing with Political Asylum and Civil Issues in the town of Northampton, United Kingdom from 2000 till 2004. Physics teacher for “Turgut Ozal” Tirana and Durrësi Colleges and “Mehmet Akif”Boys and Girls Colleges teaching grades 9, 10, 11 and 12 from 2005 until August 2020. Assistant lecturer teaching Physics course at EPOKA University from September 01 2020 and ongoing.

### **M. Sc Sabrina BEGAJ**

M.Sc. Sabrina Begaj holds a Master of Science degree in Computer Engineering from EPOKA University in Tirana, a program she began in October 2018. She previously earned a Bachelor’s diploma in Information and Communication Technology from the University of Tirana, graduating in July 2017. Alongside her academic journey, she has developed a strong professional background in both the tech industry and education. From November 2014, she worked as a freelance web developer in Tirana, specializing in front-end and back-end development using technologies such as HTML, CSS, JavaScript, C#, and Bootstrap. She worked with platforms like Visual Studio, WordPress, and Elementor, and contributed to projects including ara.al, desa.al, alcomm.al, and cwp.al. She was also actively involved with AIESEC in Tirana, where she served as Vice President of the Projects Department. In this leadership role, she managed a team of 15 members and two team leaders, established partnerships with organizations such as UNFPA and educational institutions, and oversaw the development of project proposals and budgets.

### **M.Sc Eriselda GOGA**

Eriselda Goga full time assistant lecturer in the Department of Computer Engineering starting from 2021-2022 academic year. She received her master’s degree as well as her bachelor’s degree in Mathematics at the Faculty of Natural Sciences, University of Tirana. Her research interests are

focused mainly on the numerical analysis of partial differential equations and in the theory of electromagnetic wave scattering.

**M. Sc. Redjola MANAJ**

Redjola Manaj - Full time Assistant Lecturer in the Department of Computer Engineering, Faculty of Architecture and Engineering, EPOKA University, starting from October 2021. Prior to that she has worked as Data Analyst and has been engaged as Assistant Lecturer in Department of Mathematics, Faculty of Natural Sciences, University of Tirana since 2019. She has a Master of Science degree in Mathematics from University of Tirana, Faculty of Natural Sciences, and from July 2022 she is a PhD Student in Mathematics, where her research is focused in Elliptic Partial Differential Equations. The courses that she is teaching are: Calculus, Linear Algebra, Probability, Discrete Mathematics and Differential Equations.

**M.Sc Ari GJERAZI**

Ari Gjerazi – Full-time assistant lecturer in the Department of Computer Engineering, Faculty of Architecture and Engineering, EPOKA University, starting at academic year 2021-2022. Prior to that he was engaged as a Teaching Assistant from 2019-2021. He has a Bachelor of Science degree from EPOKA University and a Master of Science degree from the same institution. His work so far has covered teaching courses mostly focusing on Object Oriented Programming, Software Engineering and Database Management Systems. He has had minor involvement with the Panbiora and V-Tech projects.

**M.Sc. Edlira CANI**

M. Sc. Edlira Cani is a full-time assistant lecturer in the Department of Computer Engineering. She finished her bachelor's study in Business Informatics at EPOKA University and from 2009 to 2011, she finished her master's degree in Computer Engineering at EPOKA University. She has worked as a Functional implementer in Oracle E-Business Suite Financial Applications at the Intech+ shpk where she was responsible for Requirement analysis, process design, system configuration, testing, and user training. During 2012-2013 she worked as a Researcher in Systems Science, and during June 2013 she was a lector assistant in Data

Mining at the Faculty of Computer Engineering, Canadian Institute of Technology in Tirana. Also, Ms. Cani has worked as a Software Business Analyst at Infosoft Business Solution, Tirana where she was responsible for gathering and analysis for the sector in local tax administration and modeling of main processes using BMPN. During 2014-2017 she worked as a Software Functional Analyst at Communication Progress, Tirana and since October 2019 the assistant lecturer has been working at EPOKA University at the Department of Computer Engineering at the Faculty of Architecture and Engineering where she is responsible for teaching courses in Software Engineering Analysis and Design, Web Development , Software Project Management.

### **M.Sc. Stela LILA**

Stela Lila - Full time assistant lecturer in the Department of Computer Engineering, Faculty of Architecture and Engineering at EPOKA University, starting from September 2023. High awarded in Electronics and Digital Communication Engineering at Bachelor level. Recently graduated with Erasmus Mundus Joint Master Degree in the field of Medical Imaging and Applications with high honors on June 2023. For 6 months she worked as Graduate Researcher at VICOROB Research Institute, Girona, Spain. The courses that she is teaching are: Signals and Systems, Computer Network, Artificial Intelligence, C-programming, Digital Signal Processing and Machine Learning.

### **M.Sc. Griselda ALUSHLLARI**

M. Sc. Griselda Alushllari is currently a PhD candidate at the University of Tirana, Faculty of Natural Sciences, where the focus of the doctoral research is on Computational Microscopy and Image Analysis using Neural Networks.

Prior to this, Griselda completed a Master of Science in Computer Engineering at EPOKA University between October 2022 and June 2024. The Master's thesis involved evaluating the effects of biomaterials on A549 cells using deep learning techniques. The academic background also includes a Bachelor's degree in Business Informatics from the same university, completed between September 2019 and July 2022.

Since September 2024, she has been serving as an Assistant Lecturer, contributing to both teaching and academic development at the university level. For the academic year 2024–2025, the teaching

responsibilities include courses across three semesters. The subjects taught are Introduction to Programming and Algorithms, and Data Mining. During the Spring semester, the focus shifts to Programming Language Paradigms and Software Project Management, while the Summer semester includes Object-Oriented Programming and Data Structures.

### **M. Sc. Ketjona SHAMETI**

M. Sc. Ketjona Shameti received her B. Sc degree in Business Informatics at EPOKA University from 2019 to 2022, and from 2022-2024, she finished her master's degree in Computer Engineering at EPOKA University. She was engaged as a Teaching Assistant during the 2024 academic year. She has worked as an IT specialist at the Student Registrar's sector at the Educational Services Center, Ministry of Education and Sports. She reviews diagnostics and assesses the functionality and efficiency of systems, and offers technical support to company staff and troubleshoot computer problems. And during the 2022-2023, she has worked as a business analyst at the Engage3 Powered by Dexi. At EPOKA University, she has covered teaching courses, mostly focusing on C Programming.

### **M. Sc. Genti RUSTEMI**

M. Sc. Genti Rustemi was employed at Vodafone Albania in Tirana, where he worked in the Corporate and Analytics division since September 2019. In this role, he contributed to data-driven decision-making processes and business analysis within a leading telecommunications company. Before joining Vodafone, he worked as a Graduate Teaching Assistant at EPOKA University from 2017 to 2019, supporting academic instruction and student engagement in engineering courses. His academic background includes a Master of Science in Electronic and Communication Engineering, completed at EPOKA University in 2019, following a Bachelor's degree in Electronic and Digital Communication Engineering from the same institution, completed in 2017. Throughout his studies and professional experience, he has developed strong technical skills, particularly in simulation, programming, and data analysis tools. He is proficient in software such as Multisim, Vivado, MATLAB, OrCAD, Code::Blocks, Eclipse, TexMaker, Wireshark, PyCharm, and Adobe Dreamweaver, as well as productivity tools like Microsoft Word, Excel, and PowerPoint.

## **M. Sc. Shkumbin FIDA**

M.Sc. Shkumbin Fida received his B.Sc. degree in Communication Technologies and Computer Science from SEE University from 2001-2005. He worked as an IT Professional and Teaching Assistant at SEE University in the IT Department from 2005 to 2021. He offers Computer Networks and Operating Systems.

## **Part time Academic Staff**

### **Prof. Dr. Polikron DHOQINA**

Assoc. Prof. Dr. Dhoqina is a part-time lecturer in the department of Computer Engineering at EPOKA University. From 1982- 1986- Second Level Integrated Diploma, University of Tirana, Faculty of Natural Sciences, 1990-1993- Postgraduate qualification, University of Tirana, Faculty of Natural Sciences, 1994-1997- Doctor of Science in Physics, University of Tirana, Faculty of Natural Sciences. In 2007 he was awarded with the title of Associate Professor. His working experience is as follows: Lecturer of Physics, University of Tirana, Faculty of Natural Sciences, Department of Physics, Lecturer of Physics University of Gjirokastra, Department of Physics.

### **Assoc. Prof. Dr. Blerina ZANAJ**

Assoc. Prof. Dr. Zanaj is a part-time lecturer of the Computer Engineering Department. From 2002-2008-has finished her bachelor's degree and master's degree in Telecommunication Engineering - Polytechnic University of Tirana. In 2010-2013- he was awarded with the title of PhD in Electronics, Electrical and Telecommunication Engineering- Università Politecnica delle Marche Dipartimento di Ingegneria dell'Informazione, Ancona, Italy. 2015-2016- Post Doctorate Training. In 2020 she was awarded with the title of Associate professor. She works as a full-time professor in the Department of Mathematics and Informatics, Faculty of Economy and Agribusiness, Agricultural University of Tirana, Tirana, Albania since 2014.

### **Dr. Erind BEDALLI**

Dr. Erind BEDALLI has received his B.Sc. degree in Computer Engineering from Hacettepe University, Ankara, and his M.Sc. degree in Informatics from University of Tirana. He completed his doctoral studies in the field of fuzzy logic and exploratory data analysis at the University of Tirana in 2014. His research experience and interests are mainly in the areas of: Fuzzy Logic, Data Mining, Mathematical Modelling, Artificial Intelligence, Expert Systems and Large-Scale Computing.

### **Dr. Rrezart BOZO**

Dr. BOZO studied Computer Sciences, Informatics (2001-2006) at Faculty of Natural Sciences, University of Tirana. During 2021-2022 he completed PhD thesis "WEB Application for monitoring seismic activity in Albania", Faculty of Geology and Mine, Polytechnic University of Tirana.

From 2008 he works as scientific researcher in the Institute of Geosciences, Tirana. He is also the main lecturer for "Software Engineering" in Geoinformatics at Faculty of Geology and Mine. The research interests are focused on research and teaching at the Polytechnic University of Tirana.

Dr. Bozo conducts research in Information Technology, Seismology, Web Applications, Software Engineering.

### **Dr. Klaudio PEQINI**

Klaudio Peqini is a part – time lecturer in the Department of Computer Engineering. He has finished his B.Sc. and M.Sc. degree in the Department of Physics, Faculty of Natural Sciences, University of Tirana, Tirana, Albania. He hold a PhD degree in in the Department of Physics, Faculty of Natural Sciences, University of Tirana (Albania): "Modeling of the variations of the geomagnetic field" (May 2018), evaluated 97/100. He teaches different courses such as: Basics to Statistical Physics, Analytical Mechanics, Computational Physics, General Physics I (Mechanics, Tirana and EPOKA University), General Physics III (Electromagnetism, Tirana and EPOKA University), and Lecturer in Fluid dynamics. He gained fourth place in the National Physics Olympiad held on March 2008 in the Faculty of Natural Sciences. Dr. Peqini has been part of some scientific projects: 2012-2014 Participant in the project: "Study of the stability of fluid dynamic systems in cylindrical and spherical geometry", project included in the Executive Program of Scientific and Technological Cooperation between Albania and Italy, for the years 2012 – 2014. 2013-2015 Participant in the project: "Numerical experiments on the natural convection of the fluids between coaxial cylinders and concentric spheres (NUM-EXP-NAT-CONV)", a winning project of "hp-see-pilot-call-awarded-applications" (High Performance Computing in South East Europe). 2015-2017 Participant in the project: "Using ground and satellite data to study the variations of the geomagnetic field over Austria and Albania". This Project is in collaboration between University of Tirana and ZAMG (Zentrale Anstalt für Geophysik und Geodynamik), Vienna, Austria.

### **M. Sc. Ervis Trupja**

M.Sc. Ervis Trupja has received his B.Sc. degree in Math and Computer Engineering from the University of Tirana and his master of science degree in Math and Computer Engineering from the University of Tirana. He works as an instructor in dotNet: How? With more than 50 successful projects with 5 rating stars. Turpja is author of different courses of 20 courses on LinkedIn, 14 courses in Pluralsight, and 10 courses on Udemy. He joined EPOKA University as part-time assistant lecturer on Fall Semester 2023-2024 academic year

### **M. Sc. Andia Tafa**

M. Sc. Andia Tafa received her bachelor's degree in Computer Engineering at EPOKA University and from 2014-2016 she received a master's degree in the same study program at EPOKA University. Her working experience are as follows: webmaster at RTSH - Radio Televizioni Shqiptar, Tiranë, she teaches the course Web Design in WordPress platform and HTML/CSS technologies at Tirana Center of Technology. Her experience as a webmaster has helped her on website building and maintenance, mainly in WordPress platform.

### **M. Sc. Olsi Shehu**

M.Sc. Olsi Shehu is a part-time assistant lecturer in the Department of Computer Engineering. He finished his bachelor's study in Multimedia & Digital Television at "Aleksander Moisiu" University of Durrës at the Faculty of Information and Technology. He graduated in a Master of Science in Informatics Engineering at the Metropolitan University of Tirana at the Faculty of Computer Sciences and IT and in 2022 he graduated in a Master of Science in Electronics Engineering at the Polytechnic University of Tirana at the Faculty of Information and Technology. He worked as an assistant lecturer at the Metropolitan University of Tirana, as a part-time assistant lecturer at Aleksandër Moisiu" University, Durrës and since October 2023 he has been working as a part-time lecturer at Western Balkan University, May 2018 has worked a Senior Programmer at Pineal and since October 2022 is working at Beder University.

### **M. Sc. Erdjana DIDA**

M. Sc. Erdjana Dida holds a Master of Science degree in Electronics and Communication Engineering from EPOKA University, completed in October 2018. She earned her Bachelor of Science degree in Electronic Engineering from the Polytechnic University of Tirana in July 2016. Since September 2019, she has been serving as a Senior Engineering Instructor at the American College of the Middle East in Kuwait, within the Department of Computer Engineering Technology. In this role, she teaches both lecture and laboratory components of various core engineering courses, including Introduction to Digital System Design I and II, among others.

Prior to that, she worked as a Lecturer at Qiriazi College University in Tirana from September 2018 to August 2019, where she contributed to undergraduate education in electronic and communication engineering. From 2016 to 2018, she served as a Research Assistant at EPOKA University, within the Faculty of Architecture and Engineering. During this time, she was part of a research team focused on enhancing the performance of fiber optic systems through advanced digital signal processing (DSP) techniques.

## **Administrative Staff**

### **Ms. Fjona TOPÇIU**

Fjona Topçiu is the Coordinator of the Department. She has finished her bachelor's in business informatics and master studies in Business Administration study program and since August 2020 works as Department Coordinator at EPOKA University.

She exercises her duties in coordination with the Faculty Administrator and Head of Department. The Coordinator of the Department is responsible for management of the department activities with administrative character and incoming and outgoing correspondences.

### **Ms. Brikena HASA**

Brikena Hasa is the Coordinator of the Department. She has finished her Bachelor and master studies in Banking and Finance study program and since October 2021 works as Department Coordinator at EPOKA University.

She exercises her duties in coordination with the Faculty Administrator and Head of Department. The Coordinator of the Department is responsible for management of the department activities with administrative character and incoming and outgoing correspondences.

## Finance

During this academic year the Department has been strongly supported both from internal and external funds to enrich its capacities.

- Miscellaneous revenues and financing for **BA in Computer Engineering** Study Program during the 2024-2025 academic year:

<b>The revenues from:</b>	Year 2024-2025
Local/Central government	
Non-Public Funds:	
Grants on research and contracts	30,784.96
Consultations, services	
Tuition fees for and during studies	914,843.50
Sponsorships	
Training services (life-long qualifications)	
Donations, assurance activities, foundations etc.	
Commercial activities (cafeterias, fast-food, residential quarters)	
<b>TOTAL</b>	<b>945,628.46</b>

- Miscellaneous revenues and financing for **BA in Electronics and Communication Engineering** Study Program during the 2024-2025 academic year:

<b>The revenues from:</b>	Year 2024-2025
Local/Central government	
Non-Public Funds:	
Grants on research and contracts	7,792.69
Consultations, services	

Tuition fees for and during studies	198,653.78
Sponsorships	
Training services (life-long qualifications)	
Donations, assurance activities, foundations etc.	
Commercial activities (cafeterias, fast-food, residential quarters)	
<i>TOTAL</i>	<b>206,446.47</b>

- Miscellaneous revenues and financing for **BA in Software Engineering** Study Program during the 2024-2025 academic year:

<b>The revenues from:</b>	Year 2024-2025
Local/Central government	
Non-Public Funds:	
Grants on research and contracts	29,627.63
Consultations, services	
Tuition fees for and during studies	1,075,703.15
Sponsorships	
Training services (life-long qualifications)	
Donations, assurance activities, foundations etc.	
Commercial activities (cafeterias, fast-food, residential quarters)	
<i>TOTAL</i>	<b>1,105,330.78</b>

-Miscellaneous revenues and financing for **Msc in Computer Engineering** Study Program during the 2024-2025 academic year:

<b>The revenues from:</b>	Year 2024-2025
Local/Central government	
Non-Public Funds:	
Grants on research and contracts	6,326.73
Consultations, services	
Tuition fees for and during studies	121,795.81
Sponsorships	
Training services (life-long qualifications)	
Donations, assurance activities, foundations etc.	
Commercial activities (cafeterias, fast-food, residential quarters)	
<b>TOTAL</b>	<b>128,122.54</b>

- Miscellaneous revenues and financing for **PM in Computer Engineering** Study Program during the 2024-2025 academic year:

<b>The revenues from:</b>	Year 2024-2025
Local/Central government	
Non-Public Funds:	
Grants on research and contracts	231.47
Consultations, services	
Tuition fees for and during studies	1,999.86
Sponsorships	
Training services (life-long qualifications)	2,231.33
Donations, assurance activities, foundations etc.	

Commercial activities (cafeterias, fast-food, residential quarters)	
<i>TOTAL</i>	

- Miscellaneous revenues and financing for **Msc in Electronics and Communication Engineering** Study Program during the 2024-2025 academic year:

<b>The revenues from:</b>	Year 2024-2025
Local/Central government	
Non-Public Funds:	
Grants on research and contracts	2,391.81
Consultations, services	
Tuition fees for and during studies	37,032.70
Sponsorships	
Training services (life-long qualifications)	
Donations, assurance activities, foundations etc.	
Commercial activities (cafeterias, fast-food, residential quarters)	
<i>TOTAL</i>	39,424.51

- Miscellaneous revenues and financing for **PhD in Computer Engineering** Study Program during the 2024-2025 academic year:

<b>The revenues from:</b>	Year 2023-2024
Local/Central government	
Non-Public Funds:	
Grants on research and contracts	308.62
Consultations, services	
Tuition fees for and during studies	1,553.89
Sponsorships	

Training services (life-long qualifications)	
Donations, assurance activities, foundations etc.	
Commercial activities (cafeterias, fast-food, residential quarters)	
<i>TOTAL</i>	1,862.51

## IT Resources, Physical Infrastructure and Library Resources

ICTC Office Services:



The Information and Communication Technologies Coordinating Office (ICTCO) provides informatics services needed in the University. It plans the informatics infrastructure of the University, provides its security and ensures the continuation of its functions. ICTCO works on the project for effective, legal and extensive usage of the informatics services for students and personnel.

**The Information and Communication Technologies Coordinating Office (ICTCO) provides:**

### **Teaching Services:**

- **Turnitin** software helps you to understand and avoid plagiarism and develop your understanding of how to cite sources as part of an academic argument. ICTC office manages the users and train the staff about how to use Turnitin.

- **Learning Management System (LMS)** – A service based on Moodle offered for students and instructors in order to access, coordinate and organize course materials online. Students and instructor can login on LMS using the provided official email account.
- **Library Automation System (Koha)** - Koha is an open-source Integrated Library System in use today by hundreds of libraries worldwide. Koha is web based, so there is no software to install on desktop computers. Users can check the books online and reserve them via web. Its features are more than enough to manage the EPOKA Library effectively and efficiently.
- **DSpace** – The institutional repository of EPOKA University: DSpace is an open source repository software package typically used for creating open access repositories for scholarly and/or published digital content. The proceedings of the conferences which are organized by EPOKA University can be accessed from this repository. EPOKA University is the only university who has digital repository in Albania (<http://repositories.webometrics.info/en/Europe/Albania>). We also provide services to other international journals to publish their publications (<http://dspace.epoka.edu.al/handle/1/1378>) in our digital repository.

#### **Google Services:**

- **Webmail (Google account)** – EPOKA University is using Google Apps for Education services and all students and academic and administrative staff are provided with an email address under epoka.edu.al domain which is a Google account. Beside official communication which is done through this email address, this account can be used for authentication to other online systems offered by university.
- **Google Classroom** – A more interactive service offered by Google as part of Google Apps for education in order to access, coordinate and organize course materials on cloud. By using Google Classroom, course materials can be integrated with other Google services where assigned users can collaborate. Students and instructors can access this service using the provided account.

**Education Information System (Curriculum)** – a website containing information related to study programs, curriculum and course syllabus.

**Smart Card:** All students and staff are provided with Smart Card identification cards. The Smart Card is put as an e-ID application at three buildings, two PC labs, one Electronics Lab, and campus gate entry turnstiles and barriers. The e-wallet application is active for staff but has not started yet for students.

**Help Desk:** ICTCO is also responsible for the maintenance of personnel and PC Lab computers in respect to software and hardware. Its staff monitors the personal computers within the frame of distribution of duty and authority and brings the issues to a conclusion. At the same time, ICTCO plans servers and cabling services of the University. Staff can open ticket via [help.epoka.edu.al](http://help.epoka.edu.al) for their ICTCO related problems and follow the process from here. You can share your opinions on every subject related to information technologies and informatics with [help@epoka.edu.al](mailto:help@epoka.edu.al) and you can also write your complaints and suggestions for a better campus life.

### **Software Opportunities**

EPOKA University has a subscription of Microsoft Program which is called DreamSpark. It supports technical education by providing access to Microsoft software for learning, teaching and research purposes. Epoka family members can download software through [www.dramspark.com](http://www.dramspark.com) website at no cost. EPOKA University also provides Office 365 accounts to all staffs and students which includes all office applications for free.

### **Network**

**Wireless:** EPOKA University provides wireless internet connection to all Epoka members in the campus. As ICTCO, we ensure that the wireless signal is strong and covers everywhere in campus.

**Wired:** Besides wireless, there are three PC labs, one Civil Engineering lab, one Electronics lab, one PhD study room, and library where PCs serve students and staffs with wired internet. In the Epoka Library and one of the classroom, there are plug and use stations next to each table where students and staff can use for wired internet and electricity for their laptops.

**Digital Signage:** There are four TVs in the campus, they are used to inform Epoka members about latest news and announcements.

### **Epoka Interactive Systems (EIS)**



Recognizing the needs of campus community, Epoka has made a strategic decision to replace its aging, cumbersome, and vendor-supported student, instructors, and staff systems with a modern, nimble and effective internally built system that includes admissions, enrollment, registration, financial aid, student, instructor, and staff accounts, and advising in one platform.

EIS is developed by ICTCO at EPOKA University. From the user interface, EIS is an online interactive system where users can log in using the provided official email account. It is a modular system organized by roles and respective units at the university and the information is stored in a centralized database. All users have access to their personal information, can update general details and CV and they can manage job related tasks and activities according to their role and job position.

- **Students:** Students in their profile can access their personal information and information related to their study program. Course registration is done through the system and after that,

students can view the ongoing academic activity of the registered courses during the semester. They can check attendance, exam dates, interim grades and final grades. Also in the system, they can access the program curriculum, transcript, grade calculation, weekly schedule, requests and notifications. The EIS prompts students when they are in the “warning zone” for financial or academic issues. It empowers students to create course plans to ensure timely graduation.

- **Instructors:** Academic staff including full-time and part-time lecturers, can have access to their courses assigned in the current semester and can also view previously assigned courses. Lecturers can update the syllabus, complete student attendance, assign and finalize grades. Advisor lecturers can have access to academic information of the students assigned for advisory and they can approve student course registration.
- **Coordinators:** The opening of courses according to course appointment in each semester is done by department coordinators and approved by faculty coordinators. Coordinators can monitor the academic activity of the lecturers under respective department.
- **Admissions and Registrar’s Office:** Admissions Office enters all pre-registered student information and assigns scholarships. After the student has completed the registration, all the related information entered by Admissions office, is managed by Registrar’s office.
- **Finance:** Finance office can manage and follow up all student financial information related to tuition fees and scholarship.
- **Human Resources:** Human resources office can manage all staff information data and assigns roles and job position for each staff.
- **Curriculum:** a website containing information related to study programs, curriculum and course syllabus.

All users have access to their personalized reports according to their roles and respective units. Faculties and units are liberated from tedious manual tasks. EIS supplies them with new and most updated information that will empower them to make informed decisions based on data.

EIS can be continuously updated with new modules according to the university needs. EIS can be accessed via: [https:// eis.epoka.edu.al](https://eis.epoka.edu.al) and users can log-in by their Epoka Mail account credentials.

**Measurable indicators:**

Number of PCs for students	217
Number of PC furnished labs for students	9
Number of PCs for academic staff	88
Number of PCs for administration	53
Number of printers	19
Number of photocopying machines	19
Number of head projectors	1
Number of video-projectors	30
Number of scanners	19
Number of TV Screen	10

**PHYSICAL INFRASTRUCTURE**

EPOKA University is located on the Tirana-Rinas road, on the 12th kilometer. The campus extends over a total area of 67,000 m2. The 2019-2020 academic year is being conducted regularly in the premises of two buildings with a total area of 14352 m2.

The E-building has a modern infrastructure and a central heating and cooling system. The classrooms are equipped with video projectors and smart boards that enable the normal conduct of the learning process.

On September 2013, the construction of A-Buiding the “Cultural Social Object of EPOKA University” was completed. In addition to classes, there are plenty of recreational facilities for students such as cafeterias, libraries, Wi-Fi, facilities for the Student Council and student clubs, sports facilities, etc. Below are shown current picture of the building.

On October 2021, the reconstruction of “D-Buiding” was completed. In addition to classrooms, offices and lab, there are plenty of recreational facilities for students such as cafeterias, Wi-Fi,

leisure facilities etc. There are also 11 staff offices and a meeting room. Below are shown current picture of the building.

**Measurable indicators:**

Premises of the Faculty

<b>Premises for the Faculties (FAE)</b>	<b>Quantity</b>	<b>Surface (m<sup>2</sup>)</b>
Auditoria/Classrooms for lectures	7	955.9
Classrooms for seminars	9	871.6
Premises for promotion activities	1	128
Classrooms for course/professional practice	5	496.6
Laboratories for courses	5	496.6
Informatics laboratories	4	218.7
Internet Room	4	218.7
Library Hall	1	400
Premises for photocopying, bookshop etc.	1	33.6
Student information office	2	71
Corridors/halls	12	1426.4
Sports premises	4	2100
Premises for service to third parties	1	56
Restrooms (WC) for students	20	138.5
Total Surface		7611.6
<b>Ratio m<sup>2</sup>/students</b>	<b>7611.6 m<sup>2</sup> / 1384 std = 5.5 m<sup>2</sup>/std</b>	

<b>Premises for personnel:</b>	<b>Quantity</b>	<b>Surface</b>
Offices for the Dean/Vice-Dean	1	32
Office for the Administrator	1	22.5
Office for Vice Rector	1	31.5
Offices for the Department Coordinators	1	60.8
Offices for departments/research centres	4	36.2
Offices for the academic personnel	14	347.2
Office for the Finance Office	2	37
Office for the Internal Quality Assurance Unit	1	13
Meeting rooms	2	27.5
Premises for service personnel	8	143
Premises for the activities of the Student Council	1	30
Recreation premises:cafeteria/fast food/ restaurant	2	537
Restrooms (WC) for academic personnel	11	64.7
Total Surface		1382.4
<b>Ratio m<sup>2</sup> per person</b>	<b>1382.4 m<sup>2</sup> / 89 pers = 15.53</b>	

During the academic year 2024-2025, in the EPOKA University Campus, are in use:

24 classes: (E-B31, E-B32, E-B33, E-211, E-311, E-312, A-118, A-119, A-120, A-127, A-128, A-129, A-130, A-131, D-101, D-102, D-103, D-104, D-201, D-202, D-203, D-204, D-301, D-302).

10 Auditories: E-012, E-110, E-212, E-213, E-214, E-313, E-314, A-005, A-117, A-212) and one conference room (E-B01).

5 Computer laboratories (E-011, E-015, E-B30, D005 and A-126).

5-Laboratory for courses: Electronic laboratory (E-010), Architecture laboratory (A-120/1), Projects laboratory (A-027), Panbiora laboratory (E-B02) and Civil Engineering Laboratory (I-001).

There are 2 internet rooms as it is reflected in the table above, but the University offers wireless internet all over its space. The capacities used are given in the table below.

Classes used during the 2024-2025 academic year.

No.	Name of the Class	Surface (m2)	Capacity
1	E-B31	75	40
2	E-B32	75	40
3	E-B33	75	40
4	E-211	64	36
5	E-311	63.46	35
6	E-312	81.32	60
7	A-118 Studio II	138	35
8	A-119 Studio III	138	35
9	A-120 Studio IV	138	35
10	A-127	72.41	56
11	A-128	73.53	56
12	A-129	73.71	56
13	A-130	72.02	56
14	A-131	72.02	56
15	D-101	72	47

16	D-102	66	40
17	D-103	50	33
18	D-104	52	24
19	D-201	72	47
20	D-202	66	41
21	D-203	50	26
22	D-204	52	27
23	D-301	94	67
24	D-302	66	45
<b>total</b>	<b>24</b>	<b>1851.47</b>	<b>1033</b>

Auditoriums used during the 2024-2025 academic year

<b>No.</b>	<b>Name of Auditorium</b>	<b>Surface (m2)</b>	<b>Capacity</b>
1	E 012	131.54	70
2	E 110	130.82	136
3	E-212	51.32	72
4	E-213	81.72	72
5	E 214	154.32	150
6	E-313	81.72	70
7	E 314	154.32	134
8	A-005	145.2	70

9	A-117 Studio I	138	35
10	A-212	85	72
<b>total</b>	<b>10</b>	<b>1153.96</b>	<b>881</b>

The facilities are equipped with heating-cooling system and video projectors. The construction materials and laboratory tools found in the Civil Engineering Laboratory are also being used in the teaching and research process.

The capacity of the laboratories used is given in the table below.

Laboratories used during the 2024-2025 academic year

<b>Name</b>	<b>Laboratories</b>	<b>Surface (m2)</b>	<b>Capacity</b>
E 015	Computer Laboratory 1	77.9	40
E 011	Computer Laboratory 2	96.6	42
E B30	Computer Laboratory 3	123.7	47
A-126	Computer Laboratory 4	72.4	42
D-005	Computer Laboratory 5	95.0	36
E 010	Electronic Laboratory	132.0	50
A 120/1	Architecture Laboratory	27.6	12
I 001	Civil Engineering Laboratory	283.0	40
A-027	Projects Laboratory	39.0	25
D-104	Courtroom (salla e gjyqit)	52	25
E-B02	Panbiora Laboratory	15.0	12
<b>Total</b>	<b>11</b>	<b>1014.3</b>	<b>371</b>

**Civil Engineering Laboratory** is used for study of various materials, especially concrete and the study of the earthquakes and its elements. This lab is one of the most important assets of the Department of Civil Engineering. Along with the use of different subjects, students can use laboratory facilities for different scientific research either individually or in groups. Civil Engineering Laboratory has a total area of 283 m<sup>2</sup>

EPOKA University has a conference hall with a surface of 128 m<sup>2</sup> and a capacity of 99 persons. The conference hall is used more for social, cultural and various national and international conferences. The hall is equipped with central heating-cooling system, video projector, sound system and two cabins for simultaneous translation. Also, in the premises of the “Cultural Social Object” building is a conference hall with a surface of about 400 m<sup>2</sup> and a capacity of 300 persons.

## **LIBRARY**

The EPOKA University Library, which is located on the first floor of A-Building in the Rinas Campus, was founded to support the education and research activities of the university by providing and organizing the needed documents.

With its 100-seating capacity, our library has a 400 square meters area of use. Our University Library is composed of the entrance, Library and reading hall. In the entrance, there is a check out desk and research center. The periodicals, including the exhibition of new arrivals, are also shelved in this section. The reading hall is equipped for students to study and to do research.

We collaborate with academic staff to help students and faculties with vital content by reducing costs and increasing opportunities for better and more practical study, providing independent researchers with free and low-cost access.

Our library collection is enriched by purchases and donations. The books to buy are chosen in accordance with the needs and requests of the students, administrative and academic staff. Under the Library Unit and Documentation, the library has a total of about 25000 printed books

### **Digital Databases**

EPOKA University has full membership in JSTOR, a shared digital library created in 1995 that includes more than 12 million academic journal articles, books, and primary sources in 75

disciplines. JSTOR helps to explore a wide range of scientific content through a powerful research and teaching platform. JSTOR is part of ITHAKA, a not-for-profit organization.

JSTOR was founded to help libraries and academic publishers transition their activities from print to digital operations, to expand access to scholarly content around the world and to preserve it for future generations. JSTORE is offered free to our students and academic staff.

Every member of Epoka staff can access JSTOR's collections by going to <http://www.jstor.org/> and searching or browsing for content.

### **Using the Library**

Our library works on an open shelf system enabling you to reach the books directly. The books in the open shelves are topically sorted in the book hall according to LC classification method. To find the book you are looking for, you should follow these steps:

Through the catalog search computers in the library; you can search author name, book name, and publisher, topic, or keyword areas.

To get the book, you can go to the shelves with the classification and location numbers of the books appearing on the screen as a result of your search.

**Example of LC number** for the book: "Exchange rates and international finance", Laurence S. Copeland / Financial Times, 2008 **HG 3821.C78 2008**

The first part of the LC number "**HG**" represents the category of the book by its topic. In the LC system, the first letter **H** stands for **Social Science** class. Each subsequent letter indicates next level of subcategories of the main topic. In the given example **G** stands for **Finance**, **3821** indicates subcategories included between 3810-4000 (Foreign exchange, international finance, International monetary system), **C78** indicates the first letter of authors surname, **2008** indicates book publication year.

### **Regulations**

Students of PHD, Associate Degree, Bachelor's Degree and Master Students and academic and administrative personnel are the members of the library. They can borrow library materials in accordance with the rules.

Researchers coming from outside the university are not lent books, they are only allowed to use them in accordance with the rules.

Readers in this group are requested to fill up the related form Lending Service.

## Circulation Rules

<b>Resource</b>	<b>Patron</b>	<b>Loan period(days)</b>	<b>Maximum number of check-outs(items)</b>
<b>Book</b>	Pre-undergraduate/Undergraduate students	15	3
	Graduate students	15	5
	Staff	20	5
<b>Bound Journal</b>	Graduate students Staff	5	2
<b>Visual/Audio Resources</b>	Pre-undergraduate/Undergraduate students Graduate students Staff	3	3

## A. The Curriculum

### Undergraduate Teaching

**FACULTY OF ARCHITECTURE AND ENGINEERING**  
**DEPARTMENT OF COMPUTER ENGINEERING**  
**3 (THREE) YEARS BACHELOR DIPLOMA IN COMPUTER ENGINEERING**

#### First Year

##### First Semester

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Lecture and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
CEN 105	Linear Algebra	A	Compulsory	3	0	0	3	3	48	0	0	77	0	125	5
CEN 109	Introduction to Algorithms & Programming	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
MTH 101	Calculus I	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
PHY 101	General Physics I	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
ENG 103	Development of R. & W. Skills In English I	D	Compulsory	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	4	2	21	18	240	64	32	414	0	750	30

#### First Year

##### Second Semester

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
MTH 106	Discrete Mathematics	B	Compulsory	3	0	0	3	3	48	0	0	77	0	125	5
CEN 110	C Programming	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
MTH 102	Calculus II	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
PHY 104	General Physics II	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
ENG 104	Development of R. & W. Skills In English II	D	Compulsory	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	4	2	21	18	240	64	32	414	0	750	30

**Second Year**

**Third Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab	Site W.	Other	Total	
CEN 215	Object Oriented Programming	B	Compulsory	3	0	2	3	4	48	0	32	95	0	175	7
CEN 217	Electrical & Electronic Circuits	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
CEN 219	Computer Organization	B	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
MTH 207	Fundamentals of Probability	B	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
	Non Technical Elective	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				13	4	4	21	17	208	64	64	414	0	750	30

**Non technical electives**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract	Lab	Total	Credits	Lect.	Pract	Lab	Site W.	Other	Total	
BUS 103	Introduction to Business	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 201	Turkish I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 203	German I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 205	Italian I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 207	French I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4

**Second Year**

**Fourth Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab	Site W.	Other	Total	
CEN 202	Database Management Systems	B	Compulsory	2	1	1	4	3	32	16	16	86	0	175	6
CEN 204	Digital Design	B	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7

CEN 206	Data Structures	B	Compulsory	2	0	2	5	4	48	0	32	95	0	150	7
MTH 206	Numerical Analysis	B	Compulsory	4	0	0	4	4	64	0	0	86	0	150	6
	Non Technical Elective	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	3	3	21	18	240	48	48	414	0	750	30

### Non technical electives

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract .	Lab .		Credits	Le ct.	Pract .	Lab .	Site W.	Other		
BUS 103	Introduction to Business	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 202	Turkish II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 204	German II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 206	Italian II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 208	French II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4

### Third Year

#### Fifth Semester

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab .	Site W.	Other		
CEN 307	Computer Networks	B	Compulsory	3	0	2	5	4	48	0	32	70	0	150	6
CEN 351	Professional Practice	D	Compulsory	0	0	0	0	0	0	0	0	128	22	150	6
CEN 311	Web Technologies and Programming	B	Compulsory	3	0	2	5	4	48	0	32	70	0	150	6
	Technical Elective	C	Elective	2	2	0	4	3	32	0	0	118	0	150	6
	Technical Elective	C	Elective	2	2	0	4	3	32	0	0	118	0	150	6
Semestral Total				10	4	4	18	14	160	0	64	504	0	750	30

**Third Year  
Sixth Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab	Site W.	Other	Total	
CEN 308	Operating Systems	B	Compulsory	3	0	2	5	4	48	0	32	70	0	150	6
CEN 302	Software Engineering	B	Compulsory	3	0	2	5	4	48	0	32	70	0	150	6
CEN 390/ CEN 399	Graduation Project/ Final Comprehensive Exam	E	Compulsory	2	2	0	4	3	32	32	0	118	0	150	6
	Technical Elective	C	Elective	2	2	0	4	3	32	32	0	118	0	150	6
	Technical Elective	C	Elective	2	0	2	4	3	32	0	32	86	0	150	6
Semestral Total				12	4	6	22	17	192	64	96	462	0	750	30

**Technical Electives**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab	Site W.	Other	Total	
CEN 326	Fundamentals System Administration	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 328	Programming Languages I	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 330	Parallel Programming	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 332	Simulation and Modeling	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 336	Computer Graphics	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 338	Management Information Systems	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 346	Mobile Programming	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 348	Internship	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6

CEN 350	Theory of Computation	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 352	Artificial Intelligence	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 354	Web Engineering	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 356	XML and WEB Services	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 358	Computer Graphics	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 366	Digital Data Communication	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 368	Network Security	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 370	Distributed Systems	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 374	Mobile and Wireless Networking	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 376	Data Mining	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 380	Machine Learning	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 386	Management Information Systems	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 389	Embedded Systems	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 340	Smartphone Applications	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6
CEN 309	Analysis of Algorithms	C	Elective	2	2	0	4	3	32	32	0	86	0	150	6

**FACULTY OF ARCHITECTURE AND ENGINEERING**

**DEPARTMENT OF COMPUTER ENGINEERING**

**3 (THREE) YEARS BACHELOR DIPLOMA IN ELECTRONICS AND DIGITAL COMMUNICATION ENGINEERING**

**First Year**

**First Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka	Semestral Course and studying hours						ECTS	
Code	Course Name			Theory	Pract	Lab	Total	Credits	Lect	Pract	Lab	Site W.	Other	Total	
MTH 103	Linear Algebra	A	Compulsory	3	0	0	3	3	48	0	0	77	0	125	5
CEN 109	Introduction to Algorithms & Programming	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
MTH 101	Calculus I	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
PHY 101	General Physics I	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
ENG 103	Development of Reading and Writing Skills in English I	D	Compulsory	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	4	2	21	18	240	64	32	414	0	750	30

**First Year**

**Second Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka	Semestral Course and studying hours						ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
MTH 106	Discrete Mathematics	C	Compulsory	3	0	0	3	3	48	0	0	77	0	125	5
CEN 110	C Programming	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
MTH 102	Calculus II	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
PHY 104	General Physics II	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
ENG 104	Development of Reading and Writing Skills in English II	D	Compulsory	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	4	2	21	18	240	64	32	414	0	750	30

**Second Year  
Third Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
ECE 201	Signals and Systems	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
ECE 203	Circuit Theory	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
CEN 219	Computer Organization	B	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
MTH 207	Fundamentals of Probability	C	Compulsory	4	0	0	4	4	64	0	0	86	0	150	6
	Non technical elective	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	2	4	21	18	240	32	64	414	0	750	30

**Non-technical electives**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
BUS 103	Introduction to Business	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 201	Turkish I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 203	German I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 205	Italian I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 207	French I	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4

**Second Year  
Fourth Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
ECE 202	Electromagnetic Field Theory	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 204	Electronics I	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
ECE 206	Digital Electronics I	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
ECE 208	Numerical Analysis	C	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
	Non technical elective	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4

Semestral Total	13	2	6	21	17	208	32	96	414	0	750	30
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### Non technical electives

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
BUS 103	Introduction to Business	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 202	Turkish II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 204	German II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 206	Italian II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
FL 208	French II	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4

### Third Year

#### Fifth Semester

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
ECE 301	Electronics II	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 303	Electromagnetic Waves	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 305	Digital Communication I	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 307	Computer Networks	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 351	Professional Practice	D	Compulsory	0	0	0	0	0	0	0	0	128	22	150	6
Semestral Total				8	0	8	16	12	128	0	128	472	22	750	30

### Third Year

#### Sixth Semester

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
ECE 302	Antennas and Propagation	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 304	Control Systems	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 306	Power Electronics	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
ECE 3xx	Technical Elective	C	Elective	2	0	2	4	3	32	0	32	86	0	150	6
ECE 390	Graduation Project	E	Compulsory	1	4	0	5	3	16	64	0	70	0	150	6

ECE 399	Final Comprehensive Exam	Compulsory	1	4	0	5	3	16	64	0	70	0	150	6
Semestral Total			9	4	8	21	15	144	64	128	414	0	750	30

### Technical electives

COURSES		Compulsory /Elective	Course Type	Weekly Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
ECE 310	Communication Theory	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
From CEN	Web Technologies and Programming	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 325	Telecommunication Circuits	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 318	Multimedia Signal Distribution	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 320	Computer Graphics	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 324	Computer Animation	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 326	Digital Photography	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 330	Microwaves	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 332	Introduction to Optical Fibers	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 334	Digital Data Transmission	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 336	Digital Signal Processing	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 338	Satellite Communication	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 384	Microcontrollers	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 342	Fundamentals of Audio Engineering	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 340	Internship	Elective	C	0	0	0	0	0	0	0	0	150	0	150	6
ECE 346	Television Technique	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
CEN 308	Operating Systems	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 358	Information Theory and Coding	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6

ECE 366	Introduction to Nanoscience and Nanotechnology	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
CEN 370	Distributed Systems	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
CEN 328	Programming Languages I	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 312	Digital Multimedia	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6
ECE 348	Communication Theory	Elective	C	3	0	0	3	3	48	0	0	102	0	150	6

**FACULTY OF ARCHITECTURE AND ENGINEERING**  
**DEPARTMENT OF COMPUTER ENGINEERING**  
**3 (THREE) YEARS BACHELOR DIPLOMA IN SOFTWARE ENGINEERING**

**First Year**

**First Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Lecture and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
CEN 105	Linear Algebra	A	Compulsory	3	0	0	3	3	48	0	0	77	0	125	5
CEN 109	Introduction to Algorithms & Programming	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
MTH 101	Calculus I	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
PHY 101	General Physics I	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
ENG 103	Development of R. & W. Skills In English I	D	Compulsory	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	4	2	21	18	240	64	32	414	0	750	30

**First Year**

**Second Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
MTH 106	Discrete Mathematics	A	Compulsory	3	0	0	3	3	48	0	0	77	0	125	5
CEN 110	C Programming	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
MTH 102	Calculus II	A	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
SWE 101	Introduction to Software Engineering	B	Compulsory	3	2	0	5	4	48	32	0	95	0	175	7
ENG 104	Development of R. & W. Skills In English II	D	Compulsory	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				15	4	2	21	18	240	64	32	414	0	750	30

**Second Year**

**Third Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab	Site W.	Other	Total	
CEN 215	Object Oriented Programming	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
CEN 203	Database Management Systems	B	Compulsory	3	1	1	5	4	48	16	16	95	0	175	7
CEN 219	Computer Organization	C	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
MTH 207	Fundamental of Probability	A	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
	Non Technical Elective	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				13	5	3	21	17	208	80	48	414	0	750	30

**Second Year**

**Fourth Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka		Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab	Site W.	Other	Total	
SWE 202	Software Modeling and Design	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
SWE 211	Programming Language Paradigms	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
CEN 206	Data Structures	B	Compulsory	3	0	2	5	4	48	0	32	95	0	175	7
CEN 311	Web Technologies and Programming	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
XXX	Non Technical Elective	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
Semestral Total				13	0	8	21	17	208	0	128	414	0	750	30

**Non technical electives**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
BUS 103	Introduction to Business	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
BUS 114	Communication Skills	C	Elective	3	0	0	3	3	48	0	0	52	0	100	4
LAW 105	Introduction to Law	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4

**Third Year**

**Fifth Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
CEN 307	Computer Networks	C	Compulsory	3	0	2	5	4	48	0	32	70	0	150	6
CEN 309	Analysis of Algorithms	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
SWE 303	Software Testing and Quality Assurance	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
CEN 376	Data Mining	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6
CEN 3XX	Technical Elective	C	Elective	2	2	0	4	3	48	32	0	86	0	100	6
Semestral Total				11	2	8	21	16	176	32	128	414	0	750	30

**Third Year**

**Sixth Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
CEN 308	Operating Systems	B	Compulsory	3	0	2	5	4	48	0	32	70	0	150	6
SWE 302	Software Project Management	B	Compulsory	2	0	2	4	3	32	0	32	86	0	150	6

CEN XXX	Technical Elective	C	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
CEN XXX	Technical Elective	C	Compulsory	2	2	0	4	3	32	32	0	86	0	150	6
CEN 390	Graduation project/ final exam	E	Compulsory	1	4	0	5	3	16	64	0	70	0	100	6
Semestral Total				10	8	4	22	16	160	128	64	398	0	750	30

### Technical electives

COURSES		Compulsory /Elective	Course Type	Weekly Distribution			Epoka Total	Semestral Course and studying hours						ECTS Total	
Code	Course Name			Theory	Pract.	Lab.		Credits	Lect.	Pract.	Lab.	Site W.	Other		
CEN 326	Fundamentals of System Administration	Elective	B	2	2	0	4	3	48	0	0	77	0	125	6
CEN 328	Programming Languages I	Elective	B	2	2	0	4	3	48	0	0	77	0	125	6
CEN 336	Computer Graphics	Elective	B	2	2	0	4	3	48	0	0	77	0	125	6
CEN 338	Management Information Systems	Elective	B	2	2	0	4	3	48	0	0	77	0	125	6
CEN 352	Artificial Intelligence	Elective	B	2	2	0	4	3	48	0	0	77	0	125	6
CEN 351	Multimedia and Graphic Design	Elective	C	2	2	0	4	3	48	0	0	77	0	125	6
CEN 366	Digital Data Communication	Elective	C	2	2	0	4	3	48	0	0	77	0	125	6
CEN 389	Embedded Systems	Elective	C	2	2	0	4	3	48	0	0	77	0	125	6
CEN 340	Smartphone Applications	Elective	C	2	2	0	4	3	48	0	0	77	0	125	6
CEN 342	User Interface Design	Elective	C	2	2	0	4	3	48	0	0	77	0	125	6

## Graduate Teaching

**FACULTY OF ARCHITECTURE AND ENGINEERING  
DEPARTMENT OF COMPUTER ENGINEERING  
MASTER OF SCIENCE PROGRAM IN COMPUTER ENGINEERING**

### FIRST YEAR

#### First Semester

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution				Epoka Credits	Semestral Lecture and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total		Lect.	Pract.	Lab.	Site W.	Other	Total	
CEN 409	Research Methods	A	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 571	Data Mining	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 575	Computer Vision	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				12	8	0	20	16	192	128	0	430	0	750	30

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution				Epoka Credits	Semestral Lecture and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total		Lect.	Pract.	Lab.	Site W.	Other	Total	
CEN 462	Network Security	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 411	Advanced Object Oriented Programming	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

### FIRST YEAR

#### Second Semester

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution				Epoka Credits	Semestral Course and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total		Lect.	Pract.	Lab.	Site W.	Other	Total	
CEN 583	Advanced Computer Architecture	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 552	Advanced Database Management System	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 578	Machine Learning	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 543	Digital Image Processing	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				12	8	0	20	16	192	128	0	430	0	750	30

## SECOND YEAR

### Third Semester

COURSES		Course Type	Compulsory /Elective	Weekly Distribution				Course	Epoka	Semestral Lecture and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total			Credits	Lect.	Pract.	Lab.	Site W.	Other	
ECE 433	Introduction to Neural Networks	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5	
CEN 535	Advanced Mathematics for Computer Science	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5	
CEN 563	Advanced Concepts in Computer Networks	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5	
CEN XXX	Elective	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5	
Semestral Total				12	8	0	20	16	192	128	0	430	0	750	30	

### List of Elective Courses:

COURSES		Course Type	Compulsory /Elective	Weekly Distribution				Course	Epoka	Semestral Lecture and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total			Credits	Lect.	Pract.	Lab.	Site W.	Other	
CEN 594	Term Project	C	Elective	1	6	0	7	4	16	96	0	75.5	0	187.5	7.5	

## SECOND YEAR

### Fourth Semester

COURSES		Course Type	Compulsory /Elective	Weekly Distribution				Course	Epoka	Semestral Course and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total			Credits	Lect.	Pract.	Lab.	Site W.	Other	
CEN 599	Thesis	E	Compulsory	0	0	0	0	0	0	0	0	450	0	450	18	
CEN 499	Professional Practice	D	Compulsory	0	15	0	15	0	0	240	0	60	0	300	12	
Semestral Total				0	0	0	15	0	0	240	0	510	0	750	30	

**List of Elective courses:**

COURSES		Course Type	Compulsory / Elective	Weekly Distribution				Course	Epoka	Semestral Lecture and studying hours					ECTS
Code	Course Name			Theory	Pract.	Lab.	Total			Credits	Lect.	Pract.	Lab.	Site W.	
CEN 553	Theory of Computation	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 514	Randomized Algorithm	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 567	Advanced Algorithms & Data structures	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 415	Information Retrieval	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 592	Knowledge Management	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 564	Wireless Networks	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 531	Information Security and Computer Forensics	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 461	Network Programming	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 539	Nano-Science and Nano-Technology	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 565	Bioinformatics	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 555	Nano biomaterials	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 509	Tissue Engineering	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 545	Advanced Numerical Methods	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 403	Software Project Management	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 405	Operating System Design	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 421	Introduction to Web Engineering	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 425	E-Business and E-Commerce	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 487	Introduction to Cryptography	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 501	Special Topics in Software Engineering	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 506	Distributed Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

CEN 516	Mobile Applications Programming	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 572	Special Topics in Artificial Intelligence	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 573	Artificial Neural Networks	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 576	Management Information Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 584	Design of Embedded Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 544	Multimedia Signal Processing	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 546	Multimedia and Computer Animation	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 453	Security Auditing and Penetration Testing	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 556	Cybersecurity	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 508	Big Data Architectures and Data Analytics	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 579	Intelligent Agent Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 548	Game Engineering	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 566	Compilers	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 536	Optimization Methods and Algorithms	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 569	Data Science	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 511	Applied Cryptography	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 447	Advanced Control Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

**FACULTY OF ARCHITECTURE AND ENGINEERING**  
**DEPARTMENT OF COMPUTER ENGINEERING**  
**MASTER OF SCIENCE IN ELECTRONICS AND COMMUNICATION ENGINEERING**

**First Year**  
**First Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution				Epoka Credits	Semestral Lecture and studying hours					EC TS	
Code	Course Name			Theory	Pract	Lab	Total		Lect	Pract.	Lab	Site W.	Other		Total
CEN 409	Research Methods	A	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 512	Digital Communication Systems	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 468	Computer Vision	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 464	Automatic Control Systems	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				12	8	0	20	16	192	128	0	430	0	750	30

**First Year**  
**Second Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution				Epoka Credits	Semestral Course and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total		Lect.	Pract.	Lab.	Site W.	Other		Total
CEN 545	Advanced Numerical Methods	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 520	Integrated Systems	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 543	Digital Image processing	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 583	Advanced Computer Architecture	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				12	8	0	20	16	192	128	0	430	0	750	30

**Second Year**  
**Third Semester**

COURSES		Course Type	Compulsory /Elective	Weekly Course Distribution				Epoka Credits	Semestral Lecture and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total		Lect.	Pract.	Lab.	Site W.	Other		Total
ECE 433	Introduction to Neural Networks	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 563	Advanced Concepts in Computer Networks	B	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

ECE xxx	Elective	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE xxx	Elective	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				12	8	0	20	16	192	128	0	430	0	750	30

**Second Year  
Fourth Semester**

COURSES		Course Type	Compulsory / Elective	Weekly Course Distribution				Epoka Credits	Semestral Course and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total		Lect.	Pract.	Lab.	Site W.	Other	Total	
ECE 599	Thesis	E	Compulsory	0	0	0	0	0	0	0	0	450	0	450	18
ECE 499	Professional Practice	D	Compulsory	0	15	0	15	0	0	240	0	510	0	750	12
Semestral Total				0	15	0	15	0	0	240	0	510	0	750	30

**List of Elective courses:**

**List of Elective courses:**

COURSES		Course Type	Compulsory / Elective	Weekly Course Distribution				Epoka Credits	Semestral Lecture and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total		Lect.	Pract.	Lab.	Site W.	Other	Total	
ECE 439	Electronics for Bioengineering Applications	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 445	Advanced Optical Communication	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 472	Special Topics in Artificial Intelligence	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 478	Industrial Electronics	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 533	Advanced Antenna Theory	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 537	Advanced Topics in Mobile Cellular Communication Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 541	Design of Embedded Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 590	Term Project	C	Elective	1	4	0	5	4	16	64	0	107.5	0	187.5	7.5

CEN 535	Advanced Mathematics for Computer Science	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 541	Design of Embedded Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 567	Advanced Algorithms & Datastructures	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 592	Knowledge Management	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 571	Data Mining	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 564	Wireless Networks	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 462	Network Security	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 531	Information Security and Computer Forensics	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 461	Network Programming	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 539	Nano-Science and Nano- Technology	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 565	Bioinformatics	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 555	Nanobiomaterials	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 509	Tissue Engineering	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 403	Software Project Management	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 405	Operating System Design	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 411	Advanced Object Oriented Programming	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 421	Introduction to Web Engineering	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 487	Introduction to Cryptography	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 506	Distributed Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 516	Mobile Applications Programming	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

CEN 573	Artificial Neural Networks	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 578	Machine Learning	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 584	Design of Embedded Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 544	Multimedia Signal Processing	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 453	Security Auditing and Penetration Testing	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 556	Cybersecurity	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 508	Big Data Architectures and Data Analytics	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 579	Intelligent Agent Systems	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 548	Game Engineering	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 566	Compilers	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 536	Optimization Methods and Algorithms	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 569	Data Science	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 511	Applied Cryptography	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

**FACULTY OF ARCHITECTURE AND ENGINEERING**  
**DEPARTMENT OF COMPUTER ENGINEERING**  
**PROFESSIONAL MASTER PROGRAM IN COMPUTER ENGINEERING**

**FIRST YEAR**

**First Semester**

COURSES		Course Type	Compulsory / Elective	Weekly Distribution				Course Credits	Epoka	Semestral Lecture and studying hours					ECTS
Code	Course Name			Theory	Pract.	Lab.	Total			Lect.	Pract.	Lab.	Site W.	Other	
CEN xxx	Elective	A	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				12	8	0	20	16	192	128	0	430	0	750	30

**FIRST YEAR**

**Second Semester**

COURSES		Course Type	Compulsory / Elective	Weekly Distribution				Course Credits	Epoka	Semestral Lecture and studying hours					ECTS
Code	Course Name			Theory	Pract.	Lab.	Total			Lect.	Pract.	Lab.	Site W.	Other	
CEN 590	Term Project	E	Compulsory	1	4	0	5	3	16	64	0	107.5	0	187.5	7.5
CEN 498	Professional Practice	D	Compulsory	1	4	0	5	3	16	64	0	107.5	0	187.5	7.5
CEN xxx	Elective	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				8	12	0	20	14	128	192	0	430	0	750	30

**List of Elective courses:**

COURSES		Course Type	Compulsory / Elective	Weekly Distribution				Course Credits	Epoka	Semestral Lecture and studying hours					ECTS
Code	Course Name			Theory	Pract.	Lab.	Total			Lect.	Pract.	Lab.	Site W.	Other	
CEN 553	Theory of Computation	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 514	Randomized Algorithm	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 567	Advanced Algorithms & Data structures	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

CEN 552	Advanced Database Management System	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 415	Information Retrieval	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 592	Knowledge Management	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 571	Data Mining	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 563	Adv. Concepts in computer Networks	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 564	Wireless Networks	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 462	Network Security	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 531	Information Security and Computer Forensics	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 461	Network Programming	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 593	Nano-Science and Nano-Technology	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 565	Bioinformatics	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 555	Nanobiomaterials	C	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 509	Tissue Engineering	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 545	Advanced Numerical Methods	A	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 535	Advanced Mathematics for Computer Science	A	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

**THE CURRICULUM OF PHD IN COMPUTER ENGINEERING STUDY PROGRAM:**

<b>Year I - First Semester</b>		<b>T</b>	<b>P</b>	<b>C</b>	<b>ECTS</b>
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
<b>Total:</b>		<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>

<b>Year I - Second Semester</b>		<b>T</b>	<b>P</b>	<b>C</b>	<b>ECTS</b>
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
CEN 8xx	ELECTIVE COURSE	3	0	3	7.5
<b>Total:</b>		<b>12</b>	<b>0</b>	<b>12</b>	<b>30</b>

<b>Year II+III</b>		<b>T</b>	<b>P</b>	<b>C</b>	<b>ECTS</b>
CEN 800	PhD THESIS	0	0	0	120
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>120</b>

**Note:**    **T** – Theoretical hours  
               **P** – Practical hours  
               **C** – Credits according to American System  
               **ECTS** – Credits according to ECTS System

**List of elective courses:**

<b>Course Code</b>	<b>Course Name</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>ECTS</b>
CEN 801	Special Topics in Software Engineering	3	0	3	7.5
CEN 802	Complex Systems	3	0	3	7.5
CEN 803	Software Project Management	3	0	3	7.5
CEN 804	Advanced Topics in Computer Engineering	3	0	3	7.5
CEN 805	Operating System Design	3	0	3	7.5
CEN 806	Distributed Systems	3	0	3	7.5
CEN 807	Object Oriented Software Engineering	3	0	3	7.5
CEN 809	Research Methods	3	0	3	7.5
CEN 811	Advanced Object-Oriented Programming	3	0	3	7.5
CEN 813	Formal Languages & Compilers	3	0	3	7.5
CEN 814	Metaheuristics	3	0	3	7.5
CEN 815	Information Retrieval	3	0	3	7.5
CEN 816	Mobile Applications Programming	3	0	3	7.5

CEN 818	System Administration I	3	0	3	7.5
CEN 819	System Administration II	3	0	3	7.5
CEN 820	Theory of Computation	3	0	3	7.5
CEN 821	Web Engineering	3	0	3	7.5
CEN 823	XML and Web Services	3	0	3	7.5
CEN 825	E-Business and E-commerce	3	0	3	7.5
CEN 827	Directed Study I	3	0	3	7.5
CEN 828	Directed Study II	3	0	3	7.5
CEN 831	Information Security and Computer Forensics	3	0	3	7.5
CEN 833	Advanced Simulation and Modelling	3	0	3	7.5
CEN 835	Advanced Math for Computer Science	3	0	3	7.5
CEN 873	Artificial Neural Networks	3	0	3	7.5
CEN 839	Introduction to Nano-Science and Nano-Technology	3	0	3	7.5
CEN 843	Digital Image Processing	3	0	3	7.5
CEN 845	Advanced Numerical Methods	3	0	3	7.5
CEN 848	Programming Languages I	3	0	3	7.5
CEN 849	Programming Languages II	3	0	3	7.5
CEN 850	Programming Languages III	3	0	3	7.5
CEN 851	Speech Processing	3	0	3	7.5
CEN 852	Advanced Database Management Systems	3	0	3	7.5
CEN 853	Design and Analysis of Algorithms	3	0	3	7.5
CEN 855	Bioinformatics	3	0	3	7.5
CEN 856	Introduction to Cloud Computing	3	0	3	7.5
CEN 861	Network Programming	3	0	3	7.5
CEN 862	Network Security	3	0	3	7.5
CEN 864	Wireless Networks	3	0	3	7.5
CEN 865	Tissue Engineering	3	0	3	7.5
CEN 871	Data Mining	3	0	3	7.5
CEN 872	Special Topics in Artificial Intelligence	3	0	3	7.5
CEN 870	Cryptography	3	0	3	7.5
CEN 874	Fuzzy Logic	3	0	3	7.5
CEN 875	Computer Vision	3	0	3	7.5
CEN 876	Management Information Systems	3	0	3	7.5
CEN 877	Nanomaterials	3	0	3	7.5
CEN 878	Machine Learning	3	0	3	7.5
CEN 879	Randomized Algorithms	3	0	3	7.5
CEN 881	Information Theory	3	0	3	7.5
CEN 883	Computer Architecture	3	0	3	7.5
CEN 884	Design of Embedded Systems	3	0	3	7.5
CEN 885	Parallel Computing	3	0	3	7.5
CEN 886	Advanced Computer Architecture	3	0	3	7.5
CEN 887	Advanced Topics in Computer Science	3	0	3	7.5
CEN 863	Advanced Concepts in Computer Networks	3	0	3	7.5
CEN 892	Knowledge Management	3	0	3	7.5
CEN 869	Theory of Computation	3	0	3	7.5
CEN 867	Advanced Algorithms and Datastructures	3	0	3	7.5

# Graduate Teaching

## C. Teaching, Learning, Assessment & Research

### Undergraduate Students' List of Theses

#### BA CEN

1. Alisa Hasa- *SEMG SIGNALS CLASSIFICATION: A COMPARATIVE STUDY OF TIME-DOMAIN FEATURE-BASED MACHINE LEARNING AND DEEP LEARNING APPROACH-*
2. Noel Qato- *Finite Element And Finite Difference Methods For Solving Nonlinear Water Wave Equations-* Dr. Shkelqim Hajrulla
3. Izmedin Jukaj- *SMART TRAFFIC LIGHT-* M. Sc. Genti Rustemi
4. Elvi Mella- *SOCIAL MEDIA WEBSITE-* Dr. Valmir Bame
5. Megi Muçi- *Statistics about Highly Skilled Migrants to the Western Balkans: Approximations about return possibilities-* Dr. Shkelqim Hajrulla
6. Mario Çausi- *Brain Tissue Segmentation Using Different Artificial Intelligence Architectures-* M. Sc. Stela Lila
7. Laert Mema- *NETWORK INTRUSION DETECTION USING MACHINE LEARNING METHODS-* Assoc. Prof. Dr. Dimitrios Karras
8. Arion Petrela- *AUTOMATED DIABETIC RETINOPATHY GRADING USING TWO-STAGE TRAINING WITH CONVOLUTIONAL NEURAL NETWORKS-* Prof. Dr. Bekir Karlik
9. Jona Alushaj- *Rowhammer Attacks And Defenses Against Them-* M. Sc. Genti Rustemi
10. Enea Voj- *DESIGN, SIMULATION, AND PERFORMANCE ANALYSIS OF A FINITE DIFFERENCE SOLVER IN FPGA-* Prof. Dr. Betim Çiço
11. Klendi Zeneli- *Emotion Recognition Using Deep Learning Models-* Prof. Dr. Betim Çiço
12. Klei Qorri- *Data Security Using FPGA-* Prof. Dr. Betim Çiço
13. Gleris Xhoxha- *Evaluation of Deep Learning-Based Algorithms for COVID-19 Classification on CT Images Versus Chest X-Rays-* M. Sc. Sabrina Begaj
14. Alban Plakalliu- *Brain Tumor Classification from MRI Scans Using Deep Learning-* M. Sc. Redjola Manaj
15. Redion Straka- *Design And Implementation Of An FPGA-Based Reaction Timer For Cognitive And Motor Skill Enhancement-* Prof. Dr. Betim Çiço
16. Erblin Boletini- *Text Classification For Automated Star Rating Prediction-* M. Sc. Ari Gjerazi
17. Martin Shameti- *Melanoma Detection Based On Deep Learning Networks-* Prof. Dr. Betim Çiço
18. Alisa Hasa- *SEMG SIGNALS CLASSIFICATION: A COMPARATIVE STUDY OF TIME-DOMAIN FEATURE-BASED MACHINE LEARNING AND DEEP LEARNING APPROACHES-* Prof. Dr. Bekir Karlik
19. Luis Seferaj- *Network Security With Integrated Firewall Using Ubuntu-* M. Sc. Shkumbin Fida
20. Megi Selimi- *Towards Accurate Pigmented Skin Lesion Classification: ResNet50 Based Deep Learning Approach-* Dr. Valmir Bame

21. Andrea Arshimi- *MONTE CARLO SIMULATION FOR OPTION PRICING AND RISK ANALYSIS*- Dr. Shkelqim Hajrulla
22. Jurgen Muça- *ESP-32 Based Wi-Fi Controlled And Line Following Robot Car*- M. Sc. Genti Rustemi
23. Kristaq Mëhilli- *FPGA-Based CHIP-8 Virtual Machine With Real-Time VGU Display*- Prof. Dr. Betim Çiço
24. Endi Rrjolli- *Forecasting Ionospheric TEC Using Piecewise Cubic Bézier Curves*- Dr. Emre Eroglu
25. Reida Koço- *Using AI To Locate, Identify And Track People In Distress During Emergency Situations*- M. Sc. Genti Rustemi
26. Ergeta Vrenozi- *Evaluating Machine Learning Models For Multiclass Intrusion Detection Using The Cic-Ids2018 Dataset*- Prof. Dr. Bekir Karlik
27. Arion Petrela- *AUTOMATED DIABETIC RETINOPATHY GRADING USING TWO-STAGE TRAINING WITH CONVOLUTIONAL NEURAL NETWORKS* - Prof. Dr. Bekir Karlik
28. Erlis Ciko- *Design, Implementation, and Machine Learning Analysis of an EEG-Based Mobile Robotic Control System*- Dr. Florenc Skuka

## **BA SWE**

1. Rosela Berberi- *Brain tumor detection using deep learning*-Dr. Florenc Skuka
2. Thanas Papa- *Coding Challenge Platforms As Learning Tools*- Dr. Florenc Skuka
3. Atea Caslli- *University Regulations Chatbot for Student Support*- Dr. Florenc Skuka
4. Klaudia Tamburi- *Artificial Intelligence Based Logistics Optimization Model To Increase Branch Based Sales And Stock Harmony*- Prof. Dr. Bekir Karlik
5. Daniela Shahini- *Statistical Evaluation And Machine Learning On Health Data Related To Diabetes*
6. Melisa Derveni- *An AI-Powered Platform For Student Career Orientation And Academic Advisement* – Assoc. Prof. Dr. Dimitrios Karras
7. Dea Molla- *Performance Analysis Of Different U-Net Architectures And Batch Sizes For Segmentation On Cell Images*
8. Kristi Samara- *Algolearn - An Interactive Platform For Mastering Java Data Structures*
9. Enio Bica- *Microtrading Platform – A Real-Time Educational Simulator For Stock Trading*
10. Regi Loshi- *Biomaterial Cell Segmentation With U-Net And Automated Confluency Pipeline*- Assoc. Prof. Dr. Arban Uka
11. Daniela Shahini- *Statistical Evaluation And Machine Learning On Health Data Related To Diabetes*- M. Sc. Redjola Manaj
12. Maida Daulle- *Classification Of Weather Conditions With Deep Learning: Three Models, One Dataset, Multiple Approaches*- M. Sc. Sabrina Begaj
13. Joel Bitri- *DIFFERENTIATING MINDS: A CNN-DRIVEN BINARY CLASSIFIER FOR ALZHEIMER'S DISEASE*- M. Sc. Stela Lila
14. Ema Kola- *Hopping From Field To Field With Hopfield Neural Networks*- Assoc. Prof. Dr. Arban Uka
15. Engjëll Abazaj- *DEVELOPING A MUSIC STREAMING WEBSITE WITH EXPLICIT CONTENT FILTERING AND SONG RECOGNITION*- M. Sc. Ari Gjerazi
16. Mikel Vangjeli- *Data Analytics on Diabetes Dataset*
17. Indrit Ferati- *AI-POWERED INTERVIEW COACH*- M. Sc. Ari Gjerazi

18. Alvi Hysa- *Seasonal Demand Forecasting And Supply Delay Risk Analysis With Machine Learning*- Prof. Dr. Bekir Karlik
19. Enio Bica- *Microtrading Platform – A Real-Time Educational Simulator For Stock Trading*- Dr. Hayrettin Sen
20. Denaldo Selala- *NTOLOGY-BASED DATA ACCESS FOR CLIMATE CHANGE KNOWLEDGE REPRESENTATION AND INTEGRATION*- M. Sc. Edlira Cani
21. Keit Nika- *Brain Tumor Detection In MRI Images Using YOLOv8*- M. Sc. Sabrina Begaj
22. Enkel Shehdula- *Simple Library Web App Developed With Spring Boot And Angular*- M.Sc. Redjola Manaj
23. Alvin Kollçaku- *Hopfield Networks and Their Robustness to Noise*- Assoc. Prof. Dr. Arban Uka
24. Arla Zeqaj- *Deep Learning-Based Detection And Classification Of Threat Items In Airport X-Ray Baggage Images Using Yolov10s*- M. Sc. Sabrina Begaj
25. Arion Samarxhiu- *Car Rental System Application*- M.Sc. Ari Gjerazi
26. Saadet Yilmaz- *DEMAND FORECASTING AND STOCK OPTIMIZATION WITH DEEP LEARNING*- Prof. Dr. Bekir Karlik
27. Ziko Muça- *Deep Learning Approach On QR Code: A Focus On YOLOv8 And SSD*- M. Sc. Sabrina Begaj
28. Enia Çerri-*Behavioral Biometrics in Captcha: Enhancing Bot Detection Using Keystroke Dynamics*"- Assoc. Prof. Dr. Dimitrios Karras
29. Layan A. Alateeq- *VENUE, WORKSHOP, KITS, SUPPLIES MANAGEMENT SYSTEM*- M.Sc. Ari Gjerazi
30. Ilian Janopullo- *Car Rental Web Page – Client Module*- Ari Gjerazi
31. Orkida Gjeli- *Semantic Segmentation Of Satellite Images*- MSc. Sabrina Begaj
32. Dea Molla- *Performance Analysis Of Different U-Net Architectures And Batch Sizes For Segmentation On Cell Images*- Assoc. Prof. Dr. Arban Uka
33. Sirena Ahmet- *AUTOMATING TRASH CLASSIFICATION USING DEEP LEARNING*- Sabrina Begaj
34. Vesa Malaj- *Albania's Tourism and Economic Growth*- M. Sc. Shkumbin Fida
35. Aurora Zhibaj- *CELL IMAGE SEGMENTATION USING BUTTERWORTH FILTERING AND ILLUMINATION CORRECTION*- Assoc. Prof. Dr. Arban Uka
36. Nidia Fino- *NeldBand Fall Detection Device For Elderly Care*- Dr. Hayrettin Şen
37. Tea Disho- *Semantic Integration Of Accounts Receivable And Dispatch Systems Using Ontology-Based Data Access*- Edlira Cani
38. Franko Kaloshi -*AI IMAGE DETECTION*- Ari Gjerazi
39. Irvi Rrika-*AUTOMATED BLOOD CELL COUNTING AND CLASSIFICATION IN MICROSCOPY IMAGES*- Dr. Florenc Skuka

## **BA ECE**

1. Elson Bici- *Integration of Chaotic Circuits and Chua Diodes in BioMEMS for enhanced biomedical signal processing*- Assoc. Prof. Arban Uka

**MSC CEN**

1. Arjeta Sinaj - *ANALYSIS OF IRIS RECOGNITION SYSTEM PERFORMANCE UNDER NOISE CONDITIONS: COMPARATIVE STUDY OF 1D AND 2D LOG-GABOR FEATURE ENCODING TECHNIQUES*- Assoc. Prof. Dr. Arban Uka

**Thesis Abstract:** Iris recognition is among the most essential biometric systems. The human iris is a crucial feature of an individual; this is where it has been determined that the iris of two people has never been found to be alike, since it is easily visible and does not change over time, just like the fingerprint does not. Iris recognition is a popular biometric identification technology that uses an individual's iris characteristics to differentiate between the authentic person and the not-authentic one. This work aims to improve segmentation and encoding to increase accuracy through DOF. Transformations are applied to segmentation methods and encoding processes in order to reach enhancements. The aim of the whole process is an increase in DOF that leads to better accuracy. This can benefit the overall system by improving performance in challenging conditions.

2. Fabio Marku - *DEVELOPING A CONVOLUTIONAL NEURAL NETWORK TO CLASSIFY THP1, BALB3T3, AND A549 CELLS*- Assoc. Prof. Dr. Arban Uka

**Thesis Abstract:** With this project we intend to build an image classification system designed to help classifying these three types of cells : THP1, 3T3, and A549 in response to varying concentrations of a specific substance. Utilizing the help of deep learning techniques, especially the convolutional neural networks (CNN). This classification aims to support biomedical research by providing an objective and accurate method to analyze cellular responses also enhancing the understanding of cell dynamics under different treatment conditions. The approach uses a dataset of labeled cells images, employing advanced image processing techniques, and applying machine learning models to achieve high accuracy in the classification tasks. At the end of this project, we expect to significantly display improvements in the experimental efficiency and reliability in biological and medical research settings.

3. Ijad Jukaj - *brain tumor detection and classification using machine learning and deep learning on mri and ct scan data*- Dr. Florenc Skuka

**Thesis Abstract:** Brain tumors represent one of the most complex and dangerous medical conditions, demanding accurate and timely diagnosis for efficient treatment planning. Advances in medical imaging, like Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) scans, have provided detailed anatomical data and insights; however, interpreting these patterns remains challenging and time-consuming for surgeons and medical specialists. This thesis investigates the performance of various machine learning (ML) and deep learning (DL) models for the automated detection and classification of brain tumors, with a focus on optimizing metrics like accuracy, precision, recall across MRI and CT datasets.

A total of 311 experiments were conducted, evaluating models such as Support Vector Machine (SVM) combined with Histogram of Oriented Gradients (HOG), K-Nearest Neighbors (KNN), and Random Forest for Machine Learning (ML) approaches, alongside with Deep Learning (DL) approaches such as Convolutional Neural Networks (CNN), EfficientNet, Xception, ResNet50, and Capsule Networks (CapsNet). Each model was tuned in a systematic and careful way, looking at the most relevant hyperparameters to accuracy optimization. These hyperparameters include Kernel selection, regularization factors, distance metrics, learning rate, batch size, to identify the optimal parameters and mitigate overfitting.

The datasets comprised a heterogeneous MRI dataset with four tumor classes (glioma, meningioma, pituitary, and no tumor) and a CT dataset with cancer, aneurysm, and tumor classes. The results reveal that no single model outperforms others across both imaging modalities; only SVM with optimized HOG features for MRI Dataset, and CNN with HOG feature in CT dataset exhibited superior balance between accuracy and generalization. CapsNet showed strong spatial feature preservation, while CNN-based models excelled in feature extraction efficiency, although with higher computational demands.

The study not only identifies high-performing models but also highlights models with inconsistent and bad performance, providing guidance for their exclusion in future work. Ultimately this research underscores the potential of DL and ML in reducing radiologist workload by augmenting diagnostic workflows from computers, and improving early tumor diagnosis rates, while also addressing the considerations and limitations important for real-world deployment in medical imaging systems.

4. Klea Luka - *Multi-focus and multi-modal image fusion using deep learning: Methods comparison and MACAN model optimization.*- Dr. Florenc Skuka

**Thesis Abstract:** This thesis presents a comprehensive study on deep learning-based image fusion techniques for both multi-focus and multi-modal medical imaging. The research is structured into three key phases. First, a comparative analysis of several state-of-the-art deep learning methods is conducted on multi-focus image datasets to evaluate their effectiveness across twelve established image fusion quality metrics. In the second phase, a similar evaluation is performed on multi-modal datasets specifically CT-MRI, PET-MRI, and SPECT-MRI. The final phase focuses on enhancing the performance of the MACAN fusion model through architectural modifications, including the integration of an adaptive fusion head. The customized model is retrained and tested on the same multi-modal datasets. Results show that the optimized MACAN model improves performance in select metrics such as spatial frequency and gradient-based quality, offering better perceptual and structural fusion in some cases.

5. Fridi Shehaj - *Optimizing Advanced Deep Neural Architectures for Low-Dose CT Image Reconstruction from Sinograms*- Assoc. Prof. Dr. Arban UKa

**Thesis Abstract:** CT image reconstruction is a fundamental task in the field of medical imaging that enables detailed cross-sectional visualization of the body interior. The standard methods of Filtered Back Projection (FBP) and Iterative Reconstruction (IR) fall short of the treatment of low-dose images that introduce noise and artifacts. Low-dose CT scans are used to limit patient exposure to radiation, but generating high quality reconstructions from them has always been a challenge. In this study, we will evaluate the performance of different deep learning and hybrid architectures of recent years. These models are trained on sinograms to reconstruct CT images . Unlike many studies that are based on synthetic data, ours makes use of real-world data, a dataset consisting of sinograms and their respective CT scan reconstructions of dried fruits and nuts. All models make use of a hybrid loss function which combines MSE with a pretrained VGG loss. Quantitative results, such as SSIM, PSNR, MAE and MSE show that FBP-SwinUnet achieves superior performance over U-Net-based architectures, taking advantage of physics-based priors. In general, hybrid models which consist of a combination of physics-informed and deep learning methodologies are proven to generate high quality CT scans from low dose images.

6. Sonja Memi - *Comparative study of GANS and denoising Diffusion probabilistic models (DDPMS) on medical MNIST dataset*- Assoc. Prof. Dr. Arban Uka

**Thesis Abstract:** Content has been transformed by generative artificial intelligence (AI), which creates realistic, high-quality text, images, and other media. Diffusion models and generative adversarial neural networks (GANs) are two of the most widely used models. They have drawn external attention due to their capacity to produce diverse and high-quality inferences. GANs generate outputs quicker but suffer from mode collapse and training instability. On the other hand, DDPMs offer high-quality content and more stable training but require more time and high computational costs. The theoretical underpinnings, benefits, drawbacks, and applications of GANs and diffusion models are compared in this abstract. While Diffusion Models have achieved success in text-to-image synthesis, medical imaging, and AI-generated art, GANs are widely used in image synthesis, deepfake generation, and the production of artistic content. Further development of generative AI should come with the awareness of ethical challenges such as copyright, biases and misinformation. A crucial issue in future research will probably be the hybrid models that will combine the efficiency of GANs with the reliability and stability of DDPMs. In order to help scholars, business leaders, and legislators make wise choices about the creation and application of AI, this study aims to offer insightful information about the rapidly changing field of generative AI.

7. Kejvin Hila -*MATHEMATICAL OPTIMIZATION OF AI-DRIVEN CYBERSECURITY SYSTEMS FOR DATA BREACH PREVENTION AND PRIVACY COMPLIANCE*- Dr. Shkelqim Hajrulla

**Thesis Abstract:** We live in an era where one of the biggest and more significant threats to both organizations and individuals are data breaches. A promising and enhancing solution for enhancing threat detection and ensuring privacy compliance has been introduced with the integration of Artificial intelligence in cybersecurity frameworks. Regulatory data privacy laws such as the California Consumer Privacy Act (CCPA) and the General Data Protection Regulation (GDPR) guide us to investigating the role of Artificial Intelligence (AI) in preventing these threats while also protecting the consumer. We utilize a systematic mapping methodology and analyze the current AI-driven approaches particularly in deep learning, machine learning, natural language

processing and reinforcement learning while highlighting their effectiveness in anomaly detection, intrusion prevention and privacy risk assessment. In this research we also identify the key challenges while we include algorithmic bias, adversarial attacks and the optimization of said systems on effective computing power and resources. Furthermore, while studying emerging trends such as generative AI, federated learning, and autonomous security systems are explored as potential enablers of scalable and privacy-preserving solutions. What we found provide comprehensive insights into the combination and evolution of AI and cybersecurity whom offer strategic guidance for developing different robust, intelligent systems who are effective and respect data privacy regulations.

8. Kleo Kocaqi - *A COMPARATIVE STUDY OF HYPERPARAMETER OPTIMIZATION TECHNIQUES FOR DEEP NEURAL NETWORKS*– Dr.Florenc Skuka

**Thesis Abstract:** Hyperparameter tuning is one of the most difficult tasks to achieve nowadays, due to its complexity as a task and the fact that, the more complex the hyperparameter tuning algorithms get, the more computationally expensive they become, in both space and time terms. In this thesis, several hyperparameter tuning methods are explored, while six of these methods are examined as explored in a detailed manner via a CNN architecture, which is trained on the famous MNIST dataset. Four key parameters that are common to mostly any Deep Learning algorithm, optimizer type, number of hidden units, batch size, and the number of epochs used for training, are taken into consideration, making the evaluation fair and the comparison simpler. The evaluation metrics for each algorithm are also taken into consideration in a common way, focusing on accuracy, time taken, and overall efficiency. The results show that methods like Bayesian Optimization and Particle Swarm Optimization provide better trade-offs between speed and accuracy, achieving up to 97.19% accuracy on MNIST while reducing tuning time significantly compared to traditional algorithms like grid search. In general terms, this study depicts differences between speed and performance of each method and identifies which algorithms is most suitable for each tuning situation.

9. Resia Suvéjda Kiliç- *ENHANCING ODOR CLASSIFICATION IN E-NOSE SYSTEMS USING ADVANCED DEEP LEARNING TECHNIQUES*- Prof. Dr. Bekir Karlık

**Thesis Abstract:** Nowadays electronic nose technology has been in the center of attention for its odor classification usage. We can see e-nose application in different kind of fields like medicine for medical diagnose, food quality checkers and environmental monitoring. Machine learning has been in the market for some time already but it still has issues waiting to be solved. E-nose also does have difficulties with traditional machine learning models, struggling with sensor drift, temporal correlations or complex sensor data. This thesis proposes a hybrid deep learning model to improve these methods in many ways. This purposed hybrid deep learning model integrates Transformer-based attention mechanisms with Long Short-Term Memory networks and Convolutional Neural Networks. The evaluation of this model is done using the Gas Sensor Array Drift Dataset. This dataset has real-world sensor readings and is completed as a benchmark. The usage of LSTM can be seen in its layers that are used to learn with time the changes in sensor data. CNN layers are used to find the patterns in the sensors. And Transformer-based attention mechanism – takes only the important signals and leaves the rest. The model can be evaluated after its training has been done and checked by accuracy and loss number, confusion matrix and f1-score. This hybrid based deep learning method is expected to work better than the traditional models like Random Forest or SVM. Besides more accurate predictions it should also handle sensor drift better. With this thesis, we can see improvement of odor classifications that use electronic nose by seeing how it handles the complex data coming from the sensors. The results are expected to support future researches in this field. Besides the research areas, it is expected to be useful in real-world real-time odor detections in more a user-friendlier way.

*10. Lorena Zito - OBJECT DETECTION FOR UAV-BASED SURVEILLANCE*

*USING YOLOV8: A LIGHTWEIGHT APPROACH FOR AERIAL THREAT PERCEPTION-*

Assoc. Prof. Dr. Dimitrios Karras

**Thesis Abstract:** Modern surveillance systems heavily rely on Unmanned Aerial Vehicles (UAVs) because they provide mobility and altitude benefits and real-time coverage of extensive areas. The applications of UAVs extend across disaster response and traffic monitoring and border security and battlefield reconnaissance. The applications require vision systems that deliver fast and accurate results while operating on edge devices with restricted computational power. This research explores the YOLOv8 family of models for lightweight object detection which focuses on YOLOv8n (nano) and YOLOv8s (small) variants for real-time aerial threat perception from

UAV platforms. The research uses the VisDrone dataset which contains high-resolution drone images of complex urban scenes with small objects and partial occlusions that match realworld aerial surveillance conditions. The preprocessing steps involve resolution adaptation and object class filtering and label reengineering to match detection targets with potential aerial threats including vehicles, people and unknown flying objects. The training and validation experiments are performed under different image sizes and batch configurations to mimic deployment conditions on embedded hardware such as NVIDIA Jetson Nano and Raspberry Pi with Coral TPU. The evaluation of model performance relies on four essential metrics which include precision and recall together with mean average precision (mAP at IoU thresholds) and frames per second (FPS) during inference. The analysis of detection accuracy versus model latency trade-offs leads to the identification of optimal configurations for edge deployment. The experimental findings show YOLOv8n delivers iv faster inference speeds with comparable detection accuracy which makes it suitable for real-time applications operating under power and processing constraints. The research study presents technical benchmarking results alongside potential applications for both civilian (crowd monitoring and traffic control) and defense (drone intrusion detection and tactical reconnaissance) domains. The research adds to existing edge AI UAV studies by showing that optimized modern object detection architectures can solve the dual requirements of real-time performance and lightweight deployment. The research demonstrates a practical method to develop autonomous UAV-based surveillance systems which can operate independently while making quick decisions to detect threats with reduced human involvement.

*11. Arbi Elezi - TUNING DEEPSEEK-CODER-V2-LITE-BASE FOR C# CODE SMELL  
DETECTION: ADVANCING TOWARDS TASK VERSATILITY IN SOFTWARE  
MAINTENANCE- Prof. Dr. BetimÇiço*

**Thesis Abstract:** Code smells, structural defects in source code, violate design principles, increasing technical debt the cumulative cost of suboptimal design and elevating software error risks. Their detection is critical for reliable software, yet their ambiguous nature leads to overlapping categories. Static analysis tools lack contextual adaptability, unlike deep learning models that achieve high accuracy with proper training. This study enhances DeepSeek-Coder-V2-Lite-Base, a 16-billion-parameter open-source model optimized for coding, selected for its efficiency on constrained hardware and permissive licensing. Using Retrieval-

Augmented Generation (RAG) and parameter-efficient fine-tuning (LoRA/QLoRA), it emulates classification of C# code smells Complex Method, Complex Conditional, and Feature Envy via generative processes, preserving task versatility. Unlike specialized models like iSMELL or LLM4CodeSmell, it integrates generative and classification functionalities. The fine-tuned DeepSeek-Coder-V2-Lite-Base model to detect C# code smells, was fine-tuned with varied success, achieving an average accuracy of 65.33%, precision of 70.01%, recall of 62.01%, and F1-score of 65.74% on a 255-sample test set from the DeepLearningSmells dataset, improving upon baseline accuracy of baseline 24.84%.

12. Elda Hysa - *A UNIFIED DECISION-THEORETIC FRAMEWORK FOR BUSINESS-DRIVEN AI MANAGEMENT AND DYNAMIC RISK VISUALIZATION*- Dr. Shkelqim Hajrulla

**Thesis Abstract:** The integration of artificial intelligence (AI) into IT service management (ITSM) processes holds significant promise for improving responsiveness and operational efficiency as AI becomes increasingly embedded in modern business functions. However, many AI-powered systems are deployed with limited alignment to overarching business goals, resulting in reactive decision-making, inefficient resource allocation, and inadequate service delivery. Traditional incident prioritization methods, which often rely on static SLA thresholds, fail to account for the real-time urgency or business impact of IT disruptions. This disconnect underscores the critical need for frameworks that intelligently align AI capabilities with strategic business objectives. To address this gap, this thesis introduces a unified Business-Driven AI Management (BDAIM) framework designed to enhance incident prioritization in ITSM. The framework employs unimodular matrices for dynamic risk visualization and assessment, ensuring that prioritization decisions reflect organizational objectives. These mechanisms are coupled with optimization strategies to guide resource allocation effectively. In evaluating the BDAIM framework, a comprehensive experimental setup simulates real-world IT support environments. Monte Carlo simulation is employed to model uncertainty and variability in incident inflow, resolution times, and impact propagation. This probabilistic approach enables robust scenario analysis, allowing the framework to adaptively refine prioritization based on risk likelihood and potential business disruption. The results demonstrate that risk-aware, business-aligned prioritization not only improves operational outcomes but also supports strategic IT governance. By integrating deep learning, probabilistic modeling, simulation, and decision theory, the study

offers a scalable and holistic approach to intelligent incident management. These findings lay the foundation for future research into real-time prioritization, domain adaptation, and automation within critical infrastructure ITSM systems—validating the advantages of embedding business context directly into AI-driven service processes

13. Gausper Duka - *HANDWRITING CHARACTER RECOGNITION USING DEEP LEARNING*— Prof. Dr. Gezim Karapici

**Thesis Abstract:** The aim of this program is to recognize handwritten characters from sources such as pictures or pdf files. The desktop application will use deep learning to “see” the patterns in the writing. The main idea of the program is capture the patterns of handwritten characters from different people and turn it into digital text. The user will be able to upload a picture or take a picture if the application is being used from a smartphone and after scanning the handwritten text the web app with the use of deep learning will recognize the text in the given image regardless of the format or the quality of handwriting and convert it to digital text.

14. Kevin Haxhi - *OPTIMIZING FOURIER PTYCHOGRAPHIC RECONSTRUCTION THROUGH NOISE REDUCTION AND IMAGE ENHANCEMENT*— Assoc. Prof. Dr. Arban Uka

**Thesis Abstract:** Fourier Ptychography (FP) is a powerful computational imaging technique that overcomes the resolution limitations of traditional microscopy by combining multiple low-resolution images captured under varied illumination angles. It overcomes the limitations of the traditional microscopes numerical aperture and reconstructs high-resolution image. Despite all this, it also has some disadvantages. It relies on the phase retravel algorithm to reconstruct the phase, which requires time, a large dataset of overlapped images and it might introduce artifacts to the phase, if there is noise to the dataset images or calibrations errors. The most common noise that Fourier Ptychography faces is Gaussian noise. In this project, we investigate the impact that Gaussian noise has in the reconstruction algorithm, and step by step we have experimented with filters and powerful mathematical tools such as Wavelet Transform and Singular Value Decomposition to correct the noisy reconstructed image in Real domain. Additionally, we explore the effectiveness of applying WT and SVD during the reconstruction process itself, which is in the Fourier domain. Our comparative analysis reveals how the performance of these strategies varies depending on the stage at which they are applied,

15. Arjola Sinaj - *TINY OBJECT DETECTION USING DEEP LEARNING METHODS*– Dr. Valmir Bame

**Thesis Abstract:** The development of new technological tools requires high accuracy and minimal risk. Computer vision techniques play a crucial role in processing visual data effectively and are especially useful in object detection tasks. Object detection is a highly engaging field that has been widely studied by researchers. One specific area within this field is tiny object detection, which presents certain challenges due to the small pixel size of the objects being identified.

This study aims to evaluate the performance of deep learning models, specifically YOLOv10 and RetinaNet, in detecting tiny objects. By analyzing and comparing both models, we aim to determine which one performs better for identifying small-sized objects. The results show that RetinaNet provided more accurate localization of objects within images, although YOLOv10 demonstrated faster processing and lower inference time.

16. Romario Braho - *SOUND DENOISING USING NEURAL ADAPTIVE FILTER*– Prof. Dr. Bekir Karlik

**Thesis Abstract:** Speech communication is a vital part of human interaction, yet real-world conditions often degrade their quality due to noise interference, particularly from non-stationary sources such as physiological signals. This thesis addresses the problem of sound denoising in environments contaminated by biometrical noises specifically, heartbeats and breathing-by exploring the efficacy of a deep learning approach known as the Convolutional Recurrent Neural Network (CRNN). Traditional methods, including Wiener filtering and Iterative Mean-Square (IMS) adaptive filters, generally assume stationary noise characteristics and struggle with dynamic interference, resulting in reduced intelligibility and limited performance. To overcome these limitations, this work develops a CRNN-based neural adaptive filter that combines convolutional layers for spectral feature extraction with recurrent layers for temporal modeling. The model is trained on a synthetically generated dataset of clean speech mixed with biologically realistic noise to emulate challenging, non-stationary acoustic environments. Comparative evaluations were performed against the IMS filter using objective metrics such as Signal-to-Noise Ratio (SNR), Perceptual Evaluation of Speech Quality (PESQ), and Short-Time Objective Intelligibility (STOI).

The results demonstrate that the CRNN significantly outperforms the IMS filter, offering higher SNR gains and improved intelligibility across all test conditions. Visual analyses of

spectrograms and waveform outputs further confirm the model's superior ability to suppress complex noise without distorting the sound signal. This study not only validates CRNNs as a powerful alternative to classical methods in biomedical noise scenarios but also contributes a reusable dataset and Python-based implementation framework for future research. The findings hold substantial implications for voice-enabled healthcare applications, wearable technology, and digital communications, where clean sound is essential for functionality. Ultimately, this research supports the integration of deep adaptive filtering in real-world speech enhancement systems.

17. Elsa Jolla - *IMPACT OF STEGANOGRAPHY ON IMAGE CLASSIFICATION: A COMPARATIVE STUDY ON MACHINE LEARNING AND DEEP LEARNING MODELS*- Prof.Dr.Betim Çiço

**Thesis Abstract:** Information security helps in protecting the confidentiality, authenticity and integrity of user data. In today's digital era, steganography within the field of information security has become an important data hiding technique, in this way addressing the need for secure data transmission. It enhances information security by providing an additional layer of confidentiality, allowing the sensitive data to be hidden within different media to protect it from detection or access. The type of media that steganography uses to protect the data are videos, audios and images, which is the media carrier that we are going to use. Meanwhile, image classification helps large image datasets to be processed efficiently with machine learning and deep learning models becoming essential in this area. This thesis evaluates the impact of steganographic hiding techniques like Least Significant Bit or Discrete Cosine Transform on the performance of machine learning models like Support Vector Machine, K- Nearest Neighbors, Logistic Regression and Random Forests, but also deep learning models like Residual Network with 50 layers and 18 layers, Vision Transformer and Visual Geometry Group with 16 layers, used for image classification on ImageNet-100 dataset.

18. Marilena Shkurti - *ENHANCING WORKFLOW PROCESSES AND BUSINESS INTELLIGENCE THROUGH ERP SOLUTIONS*– Assoc. Prof. Dr. Dimitrios Karras

**Thesis Abstract:** This thesis explores how modern ERP systems—specifically Microsoft Dynamics 365 Business Central—can enhance workflow automation and business intelligence (BI) in SMEs. It presents the design and implementation of an integrated solution that streamlines

sales and warehouse operations while enabling secure data exchange via web services. A real-world case study illustrates how flexible architecture, AI-based customizations, and tools like job queues, RESTful APIs, and Power BI dashboards support real-time analytics, improved decision-making, and operational transparency. The findings show that tailored ERP solutions can greatly enhance efficiency, data accuracy, and cross-functional collaboration.

19. Mario Sholli- *EVALUATING RETRIEVAL STRATEGIES FOR RAG- BASED ACCESS TO CORPORATE DOCUMENTS* – Assoc. Prof. Dr. Arban Uka

**Thesis Abstract:** This thesis investigates the possibilities of Retrieval-Augmented Generation (RAG) systems to be utilized in corporates, enabling context-aware responses from large language models (LLMs) on proprietary knowledge. Core to RAG's effectiveness is its retrieval component, which directly shapes the relevance, accuracy, and timeliness of the information users receive. Retrieval strategies, which impact RAG architectures, for corporate document search will be evaluated. Due to the constrained amount of compute resources, a collection of lightweight and open models (i.e.: Mistral and Qwen 2.5-coder 1.5B) will be used. The dataset consists of proprietary documents and relevant technical documents, like standards (different series of ARINC, DO-178C, RFCs, etc). Devstral provided more accurate information and used more time to reason, rather than Qwen, which showed overall better performance on distance/speed, which would benefit more resource-constrained systems.

20. Izabela Zyberi- *Rfid Smart Parking Systems: Implementation And Vizualization Of A Miniature System*- Prof. Dr. Bekir Karlik

**Thesis Abstract:** In Tirana, Albania, the number of vehicles has grown significantly, with around 228 cars for every 1,000 people. This means that nearly one in four residents owns a car. As a result, the streets have become very crowded, causing daily traffic problems and making it extremely difficult to find a parking spot. Smart parking systems help reduce traffic and use parking spaces better, so cities are using them more and more. These systems have improved since the 1990s with better sensors and communication technology. This thesis explains how we built an RFID Smart Parking System using Arduino. In this thesis we describe the design and implementation of a RFID Smart Parking System model using the Arduino platform, incorporating infrared sensors, RFID technology, web interface developed with Django Framework (Python), and predictive analytics powered by machine learning.

To effectively manage parking spaces, the system makes use of machine learning models for predictive capacity planning, RFID technology for entry time logging, and real data recording. The Arduino microcontroller is the main component of the system, processing data from the RFID readers and IR sensor, while a Random Forest regression model looks at historical patterns to predict parking occupancy rates. Users can find and reserve parking spaces by using a web platform that shows real-time parking space availability. This system helps people find spots faster and reduces search time by 35–40%. By combining a complex software architecture built with Python code, with a Django web for real-time monitoring and a PostgreSQL to save real data, with hardware components that include IR sensors, RFID, Servo Motor, LCD, Arduino control systems this study aims to offer a solution to parking issues. The use of machine learning models trained on 3.07 million parking records, a development that makes it possible to create predictive dashboards that show hourly occupancy trends and forecast space availability with an accuracy of 80%. The web created with Django provides a easy to use experience for real-time monitoring. The project shows an adaptable approach that could be expanded to support businesses, urban planning, and smart city initiatives. By reducing the search time, it takes to locate available spots and increasing space utilisation, the project's results demonstrate how well the system manages parking spots. The findings suggest that this RFID-based solution, and machine learning can contribute significantly to a more sustainable urban infrastructure by enhancing resource management and traffic flow. Through continuous occupancy trend analysis, the system produces useful long-term data for urban planning, giving municipalities useful information for infrastructure development. Beyond its practical application, this project also represents a personal motivation to explore smart technology systems, automation, and IoT-based solutions. Developing this system has enhanced my understanding of hardware- software integration and real-time data processing, which are essential in smart city technologies. The findings demonstrate that automated smart parking solutions can significantly improve urban mobility, making cities more efficient, well-integrated, and forward-thinking.

## **MSC ECE**

1. Kristian Tanko- *Improvement of Vlan Network Performance in OSHEE Through Simulation And Analysis*- Dr. Shkelqim Hajrulla

**Thesis Abstract:** In the material discussed below, we will encounter a very useful topic today that has brought many benefits to the field of computer networks, such as VLANs and mainly the

802.1Q standard, as well as ways to implement them in everyday work. Long ago, when these technologies were not in operation, network problems were quite large. With the discovery and implementation of these technologies and many others, various network applications have become quite easy. General description of VLAN 802.1 Q technology where we will focus on the overall study of VLAN, its features, its implementation goals, its advantages and disadvantages, and some others. And finally, the implementation of VLAN 802.1 Q technology in a company's network through the use of switches. With this material we aim to give a clearer idea of the computer world that has reached gigantic proportions in technological developments and specifically about VLAN 802.1Q technology.

2. Rikardo Brajha - *QUALITY CONTROL OF OLIVE OIL USING AN ANN+LSTM HYBRID MODEL AND ELECTRONIC NOSE*- Prof. Dr.Bekir Karlik

**Thesis Abstract:** Quality control and authentication of olive oil is and always will be a topic of interest for regulatory institutions but most importantly consumers, especially in Mediterranean regions like Albania where olive oil has both cultural and economic importance. Traditional methods that have been used so far, like chemical analyses or sensory evaluation, even though reliable are costly, time-consuming and require trained personnel. These factors raise the need for a modern and effective solution that can provide rapid assessments. This thesis dives deep into the integration of electronic nose technology with an advanced hybrid machine learning algorithm to give a robust system that can be used for quality control of olive oil. The hybrid model is a combination of Artificial Neural Networking (ANN) and Long Short-Term Memory (LSTM) that leverages LSTM's ability to capture sequential dependencies in sensor signals and ANN's high-level classification ability. The ANN processes high- dimensional and nonlinear sensor data, and LSTM models capture sequential dependencies in VOC signal patterns. This synergistic approach allows real-time classification of olive oil as virgin, extra virgin, refined, or adulterated.

The electronic nose system discussed in this study mimics the human olfactory mechanism with the use of an array of gas sensors capable of capturing Volatile Organic Compounds (VOC) from olive oil samples. These components serve as unique identifiers of olive oil chemicals that assess composition and quality. The system, when combined with machine learning models, enables classification of olive oil samples into quality categories. To ensure reliable analysis, multiple classifiers were included and evaluated: Support Vector Machines (SVM), Decision Trees, Artificial Neural Networks (ANN), K-Nearest Neighbors (k-NN), and an enhanced hybrid

ANN+LSTM model. These supervised classifiers were implemented alongside unsupervised methods such as PCA and SMOTE to enhance class balance and feature extraction. Future integration may also consider hybrid frameworks involving unsupervised clustering to augment supervised learning. Data preprocessing techniques such as Z-score normalization, SMOTE oversampling, and Principal Component Analysis (PCA) were applied to enhance model efficiency and generalization. The dataset consists of 120 samples equally distributed among four olive oil categories (extra virgin, virgin, refined, and adulterated), collected from prior published research and structured into sequential windows for LSTM processing. From the experimental results, it was demonstrated that the hybrid ANN+LSTM model significantly outperformed alternative approaches, achieving a test accuracy of 93.33%. Each Classifier's performance was evaluated using confusion matrices and standard metrics (precision, recall, F1-score, AUC-ROC). These matrices illustrated clear patterns of misclassification, especially between similar classes such as virgin and refined oil, thus improving interpretability. A comparative analysis with relevant literature confirms the performance improvements of the proposed model in terms of classification accuracy and system scalability. Benchmarking results suggest the hybrid model is suitable for real-time deployment with inference times under 100 ms, making it viable for embedded edge devices. Furthermore, unsupervised methods such as fuzzy clustering and autoencoder-based dimensionality reduction followed by k-NN classification were employed to explore data structure, achieving 66.67% and 88.33% accuracy respectively. Contributions of this work not only support advancements in quality assurance protocols in the Albanian olive oil industry, but also lay the foundation for real-time classification systems using e-nose sensor arrays deployed directly in industrial production environments.

3. Anxhela Ahmetaj - *Exploring nonlinear dynamics through analog computing: A study of chaotic behavior in Chua's circuit to enhance secure communication*- Assoc. Prof. Dr. Arban Uka

**Thesis Abstract:** Analog computing refers to the utilization of continuous and variable physical quantities to represent and solve real-life processes based on their corresponding differential equations. Since most physical phenomena can be described as nonlinear dynamical systems, analog computing is an effective approach to mimic and study their behavior. The nonlinear relationship of the variables of such systems, often leads to unpredictable reactions such as bifurcation, limit cycles and chaos. This study presents a version of the Chua's circuit constructed

and simulated in Multisim, where the transitions from periodic regimes to chaotic regimes are analyzed through the parameters of circuit's components. Moreover, the Lyapunov exponent is used to quantify the chaotic nature of the circuit, revealing the divergence of attractor's trajectories and the sensitivity to initial conditions. The work is organized into three parts: Starting with a detailed introduction of mathematical background and theoretical study, followed by the simulation of the Chua circuit in Multisim and analysis of the regimes of operation and output waveforms, proceeding with the hardware implementation in the laboratory using a custom printed circuit board (PCB). The experimental results confirmed the presence of chaos and the formation of double scroll attractor at approximately  $958 \Omega$ , whereas the Multisim simulation results demonstrated the chaotic behavior in  $1780 \Omega$ . Finally, the application of chaos in secure communication systems was demonstrated, using the synchronization of Chua circuits.

4. Esat Gjura- *OPTIMIZING 5G PERFORMANCE THROUGH MACHINE LEARNING ALGORITHMS*- Dr. Shkelqim Hajrulla

**Thesis Abstract:** The deployment of 5G networks introduces new optimization requirements for network performance while meeting rising demands for speed and reliability and reduced latency. The current approaches show limitations when dealing with modern network complexity. Machine learning algorithms presents a promising solution to optimize network performance through data-driven techniques which adapt to changing network environments. This research examines machine learning algorithms for optimizing 5G network performance by studying their applications in traffic management and resource allocation and anomaly detection.

ML algorithms process extensive network data to boost network prediction capabilities for traffic patterns and resource distribution and fault detection capabilities. The network management capabilities become more intelligent and adaptive through these features which are essential for maintaining consistent 5G system operation.

The research examines ML techniques through both theoretical studies and real-world examples to demonstrate their effectiveness in enhancing 5G network operations especially for interference control and fault prediction. The research discusses the implementation difficulties of machine learning models which require extensive computing power and integration with existing network systems and data protection concerns. The paper stresses the necessity of ongoing machine learning development for optimizing 5G networks. The paper proposes a joint effort between telecom providers and researchers and technology developers to maximize machine learning

potential which will determine the future direction of 5G networks to meet rising global connectivity needs.

5. Endri Lumi- *Smart safety in Action: a systems Engineering case Study on fire and Evacuation Solutions in a High-rise Skyscraper*- Prof. Dr. Gezim Karapici

**Thesis Abstract:** In an era where seconds can define survival, the importance of intelligent fire detection and evacuation systems cannot be overstated. This thesis presents a comprehensive case study of the design, deployment, and operationalization of an advanced Bosch-based fire alarm and voice evacuation system at the Intercontinental Hotel in Tirana, Albania. Bridging academic insight with hands-on engineering, the work chronicles the full lifecycle of the project—from conceptualization and EN54-compliant system design, to on-site execution, troubleshooting, and final commissioning.

Acting as the systems engineer, I navigated real-time technical challenges, complex building architecture, and strict international standards to deliver a fully integrated, fail-safe solution tailored to the hospitality sector. Leveraging Bosch’s cutting-edge technologies and adhering closely to its brand manual, the implementation ensured seamless synchronization between detection modules and audio evacuation pathways, maximizing both responsiveness and clarity in emergency scenarios.

Through this real-world lens, the thesis explores the evolving landscape of electronic fire safety, synthesizing contemporary research, practical engineering, and regulatory frameworks. It contributes valuable insights into system scalability, reliability, and the critical balance between technology and human factors—offering a replicable model for future high-risk environments where safety cannot afford compromise.

### List of Incoming & Outgoing Students

(Student Name, & Surname: Name of Home & Host University, Country, Duration of Stay)

Outgoing students

Name	Surname	Study Program	Host University	Country	Duration of stay
Elsa	Shyti	SWE	University of Debrecen	Hungary	Fall and Spring Semesters

## Research Areas and Research Groups

The research group established by the Department of Computer Engineering:

- a. Research Areas: Computer Vision and Machine Learning
- b. Research Groups: Arban Uka, Florenc Skuka, Xhoena Polisi, Griselda Alushllari

## List of Publications

1. **Karlik, Bekir**, and Musa Hawamdah. "Artificial Intelligence enhanced kinematic analysis of basketball free throws." *Journal of Physical Education and Sport* 24, no. 12 (2024): 2216-2222.

### Article link

<https://efsupit.ro/images/stories/december2024/Art%20321.pdf>

2. **Hajrulla S.**, Özen Özer, Taylan Demir. Polynomial Regression and Faster R-CNN Models for University Library Decision Implementation Discovery based on Deep Learning. *WSEAS Transactions on Information Science and Applications*. 2025;22:83-92. DOI: 10.37394/23209.2025.22.9 (Scopus, 2025).
3. Kosova, R., **Hajrulla, S.**, Xhafaj, E., & Kapçiu, R. (2024). URBAN FLOOD RESILIENCE: A MULTI-CRITERIA EVALUATION USING AHP AND TOPSIS. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 8(2), Indonesia 828-841. (Scopus, 2024).

## Participation of Academic Staff in Academic Events

### Conferences

1. **MSc. Ari Gjerazi** has participated in the SPIE Sensors + Imaging Conference 13670, which was held in Madrid, Spain, from September 15-18, 2025.
2. **Prof.Dr.Betim Çiço** has participated in the Mediterranean Conference on Embedded Computing MECO 2025, which was held in Budva, Montenegro, during June 10-14, 2025.

3. **Dr. Emre Eroğlu** has participated in the Alternative Energy Sources, Materials and Technologies Conference AESMT'2, which was held in Sofia, Bulgaria during May 12-15, 2025.
4. **M. Sc. Stela Lila** participated in the 1st International Conference on Computer Science and Information Technology ( <https://csitconf.org/> ), an international conference that brought together researchers and professionals to exchange knowledge and advancements in the field. My contribution was in the area of Artificial Intelligence, where I presented my research work addressing key challenges and developments in the field of brain age prediction. The conference proceedings have been officially published, also attached, and my paper is featured as the first entry in the Book of Proceedings. The conference was held in Durres, Albania during June 19-20, 2025.
5. **M. Sc. Edlira Cani-** International scientific conference " AI Horizon- A new era of creativity and innovation", 8-9 November 2024, Tirana, Albania. Title of scientific article presented during the conference: "Description Logics in Data Integration problem- A state of art". The abstract is published in the proceedings of the conference, <https://akad.gov.al/wp-content/uploads/2024/11/Abstraktet-e-IA-proceedings-12nov2024.pdf>

## Projects

1. **Assoc. Prof. Dr. Arban Uka-** “MSCA Doctoral Networks 2024” project in the framework of the Horizon-MSCA-DN-2024
2. **Assoc. Prof. Dr. Arban Uka-** “Robotics and Automatization” project in the framework of the Digital Europe Programme
3. **Dr. Emre Eroglu GreenWB Project**

From February 18 to 20, EPOKA University students and staff participated in a training event in Gjilan, organized within the framework of the [GreenWB project](#), co-funded by the European Union. The event aimed to promote sustainability through the sharing of green business ideas and practices. A team of three students—Rilinda Korbi, Angela Bajrami, and Irsa Mello—represented EPOKA University, presenting their innovative green business idea. Their initiative was well-received, aligning with the broader goals of sustainable development and environmental responsibility. In addition to the student team, EPOKA University’s staff participated in the event,

including Rector Prof. Dr. Ahmet Oztas, Dr. Emre Eroglu, Dr. Armando Demaj, Director of the Continuous Education Center, and Dr. Besjon Zenelaj, Director of the Yunus Center for Social Business and Sustainability. The training focused on Sustainable Living Labs, a concept that is now set to be implemented at EPOKA University, allowing students and staff to engage directly with sustainability projects and foster a culture of green innovation. This collaboration with the GreenWB project marks a significant step in EPOKA University's commitment to sustainability and the ongoing development of green initiatives in academia and beyond.

## **Training**

1. **Assoc. Prof. Arban Uka** Engages in Erasmus+ Mobility at University of Applied Sciences in Tarnów.

Assoc. Prof. Dr. Arban Uka, head of the Computer Engineering Department at EPOKA University, participated in an Erasmus+ teaching mobility at the University of Applied Sciences in Tarnów, Poland.

There, he taught for eight hours in the Department of Computer Engineering. After the lectures, he met with Professor Anna Stefanowicz-Kocol, who serves both as the Dean and the Head of International Office, and Barbara Derzypolska, Akademia Tarnowska, for organizing everything. Other meetings included meetings with Professor Adam Pieprzycki, Professor Tomasz Potempa, the Dean of Katedra Informatyki Akademii Tarnowskiej and Professor Daniel Król. These discussions fostered new opportunities for future academic cooperation and international exchanges.

2. **M. Sc. Stela Lila** participated in the **BCI & Neurotech Masterclass: Python for Neuroscience**, organized by **g.tec medical engineering**. This training provided valuable hands-on experience in applying Python programming to neuroscience and brain-computer interface (BCI) applications. July 16, 2025.

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## Support, Resources & Representation

### List of Students' Internships

#### *BA SWE*

1. Adi Salaj- Global Security SHPK
2. Albina Kazia- Run Technologies
3. Alvi Hysa- Nullius In Verba
4. Alvin Kollçaku- 91Life
5. Ardian Graçi- ORBIT sh.p.k
6. Arion Samarxhiu- Kreatx
7. Arlind Alliu- Librazhd Municipality
8. Atea Caslli-OSHEE
9. Aurora Zhibaj- ALBSIG Insurance Company
10. Borian Llukaçaj- TekProjekt SH.P.K
11. Daniela Shahini- 91 Life
12. Denaldo Selala- Raiffeisen Bank Albania
13. Denis Lala - Priam Net
14. Edmir Kasapi- SoftExpres
15. Elisai Muraçi- Report TV/C-7
16. Engjëll Abazaj- I 2K SH.P.K
17. Enia Çerri- Tirana Institute of Technology
18. Enio Zeqja - 91 Life
19. Era Fejza- TalentBridge
20. Erdi Koçi- MetaNow SHPK
21. Erlind Dervishi- Tirana Center Of Technology
22. Ermin Lilaj- Linfa Shpk
23. Ersido Dingo- Etronic SHPK
24. Frensis Xhaho- 91Life
25. Gerald Derhemi- Laconis SHPK
26. Gerison Hoxha- Agic Albania Shpk
27. Hedije Jazaj- American Computers
28. Herion Halilaj- InfoSoft Business Solutions
29. Ilian Janopullo- Adamant Solution
30. Indrit Ferati- Kancelari Diti
31. Inva Lybeshari- Climbia Enterprise
32. Irida Lala- ATD SHPK
33. Joel Bitri- Interweb.al SHPK
34. Jona Kovaçi- Autoriteti Portual Durres(APD)

35. Jord Thanasi- InfoSoft Business Solutions
36. Juna Dako- ALBITAL CANON SHPK
37. Juna Pengili- Agic Albania
38. Jusra Gazidede- DevExpress Albania
39. Keit Nika- Kryesia e Kuvendit te Shqiperise
40. Kevi Koro- Bashkia Prrenjas
41. Klavio Katiraj- SoftExpres
42. Klea Faqolli- Librazhd Municipality
43. Kristi Samara- Dominusoft
44. Lenore Kalemasi- Scrap Albania
45. Luis Koni- TiranaIT
46. Maida Daulle- Absolut Technology System Sh.p.k
47. Melvina Baçi- WR ERN BERATUNG
48. Mikel Skenderi- Tola Software Services
49. Mikel Vangjeli- Raiffeisen Bank Albania
50. Nidia Fino - Dominusoft
51. Olsi Lllavanji- Kastrati Energy SH.P.K
52. Regi Loshi - Tirana Institute of Technology
53. Rei Xhemo- Communication Progress
54. Rexhens Balla- Absolut Technology System
55. Rosela Berberi- Team System Tirana
56. Rosilda Bajrami- DevExpress Albania
57. Saadet Yilmaz- American Hospital
58. Sara Onjea- Dominusoft
59. Selma Aksoy- American Hospital
60. Stiv Sinella- Municipality Kavaje
61. Suljon Pashaj- DevExpress Albania
62. Tea Meraj- Raiffeisen Bank Albania
63. Thanas Papa- KNP Solutions
64. Ziko Muca - Lufthansa Industry Solution
65. Arla Zeqaj - INFO-TELECOM SH.P.K.
66. Dea Molla - VODAFONE
67. Deni Frashëri- 2iWEB SH.P.K.
68. Ema Kola - "BANKA KOMBETARE TREGTARE "
69. Enkel Shehdula- smartia
70. Estela Mele- OPEN GOV HUB AL
71. Irvi Rrika- LUMACOM Sh.p.k.
72. Klaudia Tamburi- Fastech sh.p.k.
73. Klejdi Gjyzeli- "Albania Marketing Services "
74. Klevis Simoni- DOMINUSOFT
75. Orkida Gjeli- DevExpress Albania

76. Sara Ahmati- 2RM Lab Sh.p.k.
77. Stefano Beli- Digicom
78. Tea Disho- DevExpress Albania
79. Enio Bica -"Green Leaf Business Consulting and Solutions"
80. Fabio Hysa -"AGJENSIA SHQIPTARE E PUNESIMIT "
81. Franko Kaloshi -"MARINE DATA CLOUD LTD "
82. Klevis Biraçi - iSource AL Sh.p.k.
83. Layan A. Alateeq- EPOKA UNIVERSITY
84. Ledion Lamçe- CODERS
85. Melis Derveni -TRIFOLIUM SHPK
86. Redion Poliçi -ALMOTEC SH.P.K .
87. Sirena Ahmet -Honest Solutions
88. Unejsi Isufaj -"Raiffeisen Bank Albania "
89. Vesa Malaj -ARK IT
90. Xhoni Hasmuça -ARSEL DETERGJENT

## ***BA CEN***

1. Arlind Ismalaja- DronLab Sh.P.K
2. Ester Pire- TiranaIT
3. Redion Ruko- Agna Group
4. Laert Mema- Primus Albania Sh.P.K
5. Klendi Zeneli- Matrics Tech
6. Ani Boria- Boost SHPK
7. Genmand Dulaj- RiseForge
8. Flori Topciu- Gjoka Soft
9. Martin Shameti- Pretera
10. Alisa Hasa- OrionTech Albania
11. Helio Myrteza - Gjergji Kompjuter
12. Megi Selimi- AGNA Group
13. Klaudja Bega- Bashkia Krujë
14. Endri Demaj-Bedër University
15. Enea Voj- Netsapiens Int
16. Uesli Cullhaj- Dominusoft
17. Ion Xhembulla- Albiola.sh
18. Uarda Xhaferaj- Link Tech
19. Mario Caushi- ConsciESG
20. Noel Qato- Keminet
21. Frenki Zelo- Ritech Solutions
22. Erik Veshi- Smart Store
23. Alban Plakalliu- Hazy Nebula Studios SH.P.K
24. Jurgen Balliu- B&R studio
25. Gleris Xhoxha -Hazy Nebula Studios SH.P.K

26. Luis Kadiu- B&R studio
27. Enrald Kadiu- B&R studio
28. Adela Kushta- GeoAlb 2D
29. Redi Golikja- 2RM Lab
30. Klei Qorri- AIEx Tech/Solution
31. Fabian Zeqiri- Imagjino.al
32. Zejna Mema- ClickService GmbH
33. Anxhela Kullafi- Impuls Technology Group
34. Kledisa Çollaku- Impuls Technology Group
35. Albi Zenelaj- EruSoft
36. Eltjon Cifligu- Konstruksion 93
37. Jona Alushaj- Netsapiens Int
38. Pellumb Cela- Tirana Center of Technology
39. Jurgen Muca- 2RMLab
40. Erjon Rrapi- 2RM Lab
41. Alteo Kadriu- Communication Progress sh.p.k
42. Danjel Ramku- ONE ALBANIA SHA
43. Megi Muci- Futura Tech
44. Gesjan Celiku- Data Max
45. Luis Alla- Sirma SHA
46. Izmedin Jukaj- Lufthansa Industry Solutions
47. Arion Petrela- SEI Consulting sh.a.
48. Franceska Keci- Posta Shqiptare
49. Nea Metohu- 91Life
50. Ergeta Vrenozi- 3i Solutions
51. Reida Koço- WR ERN BERATUNG "CERT-ERN"
52. Luis Seferaj- GRID CODING SHPK
53. Kejsi Aliaj- Infosot Solutions
54. Adrian Malka- InfoSoft Systems SH.P.K.
55. Albi Muça- DronLab Group LTD
56. Debora Hoxhaj- ARK IT
57. Elvi Mella- Hazy Nebula STUDIOS
58. Erlis Ciko- Hazy Nebula STUDIOS
59. Frensis Karaj- S2 ALBANIA
60. Joel Hila- "Tirana International Airport SHPK"
61. Kristaq Mëhilli- POS.al SH.P.K.
62. Kristi Hila- OSHEE Group
63. Leola Bora- ONE Albania
64. Regi Tahiri- CodingDuo
65. Alesjo Llazari - "ALBANIAN SATELLITE COMMUNICATIONS Sh.p.k."
66. Andrea Arshimi -NetSapiens Int
67. Denis Zhurka -DOMINUSOFT
68. Elis Bushaj -"QENDRA DIDAKTIKE IRISOFT "

69. Endi Rrjolli -"QENDRA DIDAKTIKE IRISOFT "
70. Enkei Sulo -"Agjensia Kombetare e Arsimit, Formimit Profesional dhe Kualifikimeve"
71. Ergys Kojtari -Techno-Machinery sh.p.k.
72. Erli Halili --"GAZRA TEKNIKE SHQIPTARE sh.p.k."
73. Redion Straka -ONE Albania

***BA ECE***

1. Dionis Gjini- Xpert Systems SHPK
2. Elson Bici- DATECH sh.p.k
3. Fiqiri Plaku- Next Tv

## **Office Holders**

The department would like to first thank all the colleagues for their valuable contribution to teaching, research activities and other student-related activities.

We would like to thank Mrs. Fjona TOPÇIU and Mrs. Brikena HASA for their valuable contribution as department coordinators. Their hard work and patience were essential in fulfilling all the tasks for the support and management of three bachelor programs, three master programs and one PhD program. Their professional communication and timely execution of tasks has been as a strong support for the whole department.

## **Acknowledgements**

In addition to the Office Holders listed above, the department would like to thank the following for their collaboration to make this department offer all the facilities needed for the students.

## **Department of Computer Engineering**

EPOKA University  
Rr. Tirane- Rinas, Km. 12 , 1039, Tirane/Albania  
Phone: +355 4 2232 086  
Fax: +355 4 2222 117  
Email: [info@epoka.edu.al](mailto:info@epoka.edu.al)