EPOKA UNIVERSITY | Department of Computer Engineering

ANNUAL REPORT

1 September 2019 – 15 August 2020

Annual Report

1 September 2019 – 15 August 2020

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A. Organization & Management

Introduction

Dr. Ali Osman Topal
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 team work, 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. The undergraduate programs are based on the three-year bachelor system and the students graduate with Bachelor's in Computer Engineering and Electronics and Digital Communication 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

Dr. Ali Osman TOPAL- Head of the Department of Computer Engineering

I have just received my PhD in April 2017. Currently, I am academic coordinator of Electronics and Digital Communication Department, Lecturer at Computer Engineering Department, and head of IT office at Epoka University.

My doctoral dissertation examines the evolutionary computations and nature inspired algorithms (meta-heuristics). In my research, I have developed a new meta-heuristic algorithm for global numerical optimization. It has been extensively evaluated on high-dimensional optimization problems and compared with well-known algorithms. We have developed our own framework in the Python environment to run the tests. The research results have been published in refereed journal publications and presented at conferences. My future research plans are aimed at using meta-heuristic and machine learning techniques on real world problems.

Beyond my research successes (including thirteen papers to date and others in preparation) I have fortunate to obtain a wide-range of teaching experiences. I got my Bachelor's degree in Electrical and Electronics Engineering, Master's and PhD's degree in Computer Engineering, so I had opportunity to give lectures in both programs. Through my experience in two major programs, I have developed confidence and broad view that is useful on analyzing engineering problems with different perspectives.

During my graduate training, I have been fortunate enough to also serve as a head of IT office at the University. I have accomplished many short and long period projects with my team. Developing Student-Staff Information system, installation of Smart-Campus project, and setting up Electronics and Communication laboratory are just some of them.

Project participation:

- As technical expert represents Epoka University in Erasmus + project with the title "Strategic Support on Strengthening the Quality Assurance Structures at the Private Higher Education Institutions in Albania". 2016

- As project team member in “Knowledge for Resilient Society” (K-Force) project financed by Erasmus+ Programme, where Epoka University participated as a partner institution.
- As project team member in “Development and Implementation of Multimedia and Digital TV curricula” (DIMTV) project financed by Erasmus+ Programme, where Epoka University participated as a partner institution.

Dr. Arban UKA

Education

Dr., Physics, University of Texas at Austin, United States of America, Austin, 2009

B.Sc., Mathematics, Middle East Technical University, Turkey, Ankara, 2002

B.Sc., Physics, Middle East Technical University, Turkey, Ankara, 2002

Honors and Awards

Holland Research School of Molecular Sciences (HRSMC) fellow, Leiden University and University of Amsterdam, Summer 2015.

Projects

Horizon 2020: PANBioRA- Personalised And/or Generalised 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

Has offered courses: Electromagnetic Waves, Electromagnetic Field Theory, Numerical Analysis in the Bachelor level; Advanced Numerical Methods and Digital Image Processing in 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.

Prof. Dr. Betim ÇIÇO

Prof. Betim Cico, Diploma Engineer degree in Electronic Engineering (1965-1970), Polytechnic University of Tirana (PUT), Albania as a distinguish student.
1971-1972, 2 years Engineer in Shijak Broadcasting
1972 -1998, 26 years Scientific Researcher in the Institute of Nuclear Physics in the field of nuclear electronics (computer and microprocessor based nuclear systems). 2 years Head of Department.
1972 - 1998 part time professor in PUT.
PhD degree on 1983 in the area of Nuclear Electronics.
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).
1999- Title: Professor
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, I teach different courses in bachelor, master and PhD study related to Electronic Systems, Digital Design, Computer Architecture, Advance Computer Architecture, Research Methodology, Artificial Intelligence in PUT and as invited professor in many Universities in Albania, Kosovo (Prishtina University) and Macedonia (SEEU University, Tetovo).

Participation in many training, workshops, scientific visits in China, Germany, France, United Kingdom, Turkey, Italy, Greece, etc.

- *Member of more than 55 different Programee 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.*

Project participation:

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;

Dr. Julian HOXHA

Education

Dr., Photonics and digital signal processing for optical communications, Roma Tre University, Italy, Roma, 2016

M.Sc., Master of Science in Information and Communication Technologies, Roma Tre University, Italy, Rome, 2012

B.Sc., Bachelor's Degree in Electronic Engineering., Roma Tre University, Italy , Rome, 2010

Additional Affiliations

IEEE

Optical Society of America (OSA)

Honors and Awards

Japan NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (NICT) awardee of the Internship Research Fellowship with the theme "All optical OFDM". Year 2014.

Projects

Rete Ottica di Accesso e Divisione di frequenza e/o di lunghezza d'onda per soluzioni Next Generati, Rome, Italy, Roma Tre University, Optical Frequency/Wavelength Division Multiple Access Techniques For Next Generation Networks. The ROAD-NGN project aims to investigate and experiment new technological solutions to facilitate the migration of wired access systems from copper to optical fiber, considering solutions that enable the unbundling of the local loop and are upgradable toward very ultra wideband systems, within the Horizon 2020., 01/2013 - 2016-01-01

Adaptive Software defined Terabit tRansceiver for flexible Optical Networks (ASTRON), Rome, ASTRON project aims at the design and development of an integrated optical transceiver (Tx/Rx)

that will enable the wide and cost-efficient deployment of flexible core and access networks., 09/2012 - 2016-04-01

Dr. Mirela ALHASANI

Dr. Mirela Alhasani (Dubali) obtained her PhD degree in 2019 from University of Sofia 'St.Kliment Ohriski' in Classic and Modern Philology. Her dissertation was an interdisciplinary case study curriculum reform of foreign languages in compatibility with the professional linguistic needs of EU market as a future target of Albanian university graduates. This crossdisciplianry needs' analysis was scientifically enlightened by the European integration theories mainly social constructivism: an approach to interpreting both international relations and learning/teaching processes. Dr. Alhasani was theoretically equipped with such EU and IR scientific background at her Master program at the Central European University on a full scholarship of excellence by Open Society Institute to attend the Master Program in International Relations and European Studies during time period 2003-2004. As an undergraduate student of excellence at the Foreign Language Faculty in Elbasan, she participated and was trained in curriculum design, pedagogic training and higher education management by Civic Education Project in South-eastern Europe https://www.wrr.nl/binaries/wrr/documenten/publicaties/2000/06/12/educating-for-an-open-society/W108-Educating-for-open-society.pdf, Moreover, due to her distinctive performance at CEU, she was granted full scholarship of participation at Open Society Institute in the Higher Education Project for Returning Scholars known as Brain Gain project in Albania 2004-2005. During this international academic-oriented project, Dr. Alhasani was trained in theories and further course designing in the area of EU and Humanties/ Language policy. Currently, she is involved in CLIL-HET Visegrad+ project 2018-2020; in Cost Action 18209 – European network for Web-centered linguistic data science 2019-2023; Cost Action 18231 – Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation 2019-2023. She is member of the Editorial Board of The International Journal of TESOL Studies https://www.tesolunion.org/editorial_board/ published by Faculty of Foreign Languages at Shanghai Jiao Tong University, China. She is member of Scientific Committee and Editorial Board of The International Conferences on ESP at University of Nis Serbia and of the Journal of Teaching English for Specific and Academic Purposes. http://espeap.junis.ni.ac.rs/index.php/espeap

Indexed in Clarivate Analytics Emerging Sources Citation Index. Dr. Alhasani is also a member of Women Democracy Network- Empowering women for Leadership affiliated to mother instituion International Republican Institute in USA https://www.iri.org/partner/womens-democracy-network. She makes active contribution as a scholar and researcher in gender and political developments locally, regionally and globally.Dr. Mirela Ahasani has been teaching for 14 years at several institutions such as Tirana State University, Durres University, Visiting Lecturer at University of Sofia, and currently she is full staff member of English for Academic and Specific Purposes at Faculty of Architecture and Engineering at EPOKA University, Albania. http://epoka.edu.al/cen-academic-staff.html

Assoc. Prof. Dr. Carlo Ciulla

Carlo Ciulla's former academic appointments were science and technology agency fellow (STA) at the National Institute of Bioscience and Human Technology in Tsukuba – Japan (1995 - 1997), graduate student at RUTGERS and NJIT (1998 - 2002), research associate at Yale University (2002 - 2003), postdoctoral scholar at the University of Iowa (2004 – 2005), postdoctoral scholar at the Wayne State University (2005 - 2007) and assistant professor of computer science at Lane College (2007 - 2009). During the years 2009 to 2012, he had been a self-employed scholar who devoted his time to his research interests related to the development of innovative methods of signal interpolation and also to the development of educational software for students. In 2012, he joined the University of Information Science and Technology (UIST) St. Paul the Apostle, Ohrid, Republic of North Macedonia, as an assistant professor. In 2019, he joined Epoka University's Department of Computer Engineering as lecturer, associate professor.

Dr. Igli HAKRAMA

Igli Hakrama is a lecturer under the department of Computer Engineering for 10 years now. His teaching activity has been focused on courses of Programming, Web and Software Engineering, including here also the Data Mining and System Administration courses. His research focus is on Applied Artificial Intelligence in Information Systems, Data and Process Mining, agent-based software engineering, agent-based modeling and simulation in economy. Igli has already presented in many national and international conferences, and has published many papers in international journals, all of whom are within his research focus areas. Currently he is on verge to finish his PhD on intelligent agent-based methodologies for simulation in economy.

M.Sc. Hakan YOZGATLI

Hakan Yozgatli is a full-time lecturer in the Department of Computer Engineering since September 2017. He is currently a PhD student at Epoka University.

Education

1998: Bachelor of Education in Mathematics, Bosporus University, Istanbul Turkey

2012: Master of Science/Equivalence Degree, Ministry of Education/Republic of Albania

Work Experience

2002-2009: Maths Teacher, Turgut Ozal College

2009-2012: Maths Teacher, ,Head of Maths Department, Mehmet Akif Girls College

2012-2013: Vice Director / Maths Teacher, Mehmet Boys College

2013-2015: Director, Maths Teacher, Mehmet Boys College

2015-2017: Director, Maths Teacher , Turgut Ozal College

M.Sc. Florenc SKUKA

Skuka received a B.A and M.Sc. degree in computer engineering from Polytechnic University of Tirana and Epoka University respectively. Now he is a Ph.D. Student at Erciyes University, Turkey.

He is an Assistant Lecturer in the Department of Computer Engineering at Epoka University since 2016. And has been a member of the research faculty since 2012.

He has published articles and presented papers in International Conference on Information Technology in Jordan. His research interests lie in the area of point cloud data processing, computer vision, image fusion. He has collaborated actively with researchers in several other disciplines of computer science.

M.Sc. Enea MANÇELLARI

Enea Mançellari – is a full-time lecturer in the Department of Computer Engineering at Epoka University where he has been since 2017. He has received his B.Sc. degree in Computer Engineering from EPOKA University, Tirane, and his M.Sc. degree in Computer Engineering from EPOKA University, Tirane. He is a Phd Student at Istanbul Technical University, Istanbul/Turkey. His research experience and interests are mainly in the areas of: Data Compression, Fuzzy Logic, Data Mining and Cryptography.

M. Sc Xhoena POLISI

I was born in Prrenjas in 17.05.1993 and I have lived there until I finished the secondary school. In 2009, I moved to Tirana to study at Mehmet Akif College. After I finished the high school, I started my Bachelor studies in Computer Engineering at Epoka University. During my studies at this university, I have been part of Programming Club and I have participated in different activities such as Mentorship Program, Code Buddies etc. I was awarded with the first prize at Best Thesis awards for my diploma thesis “Observation of Cell Behavior on Patterned Surfaces by Image Processing Algorithms”. I finished my Bachelor studies in 2015. During my bachelor studies I

have done two internships: one in Istanbul, Turkey at Sürat Technology and the other in Tirana at Nettrade Company mostly related to PHP programming. In 2016, I started my studies in Master of Science in Computer Engineering in Epoka University and I just graduated. My master thesis was "Cell Detection Algorithms on Different

Cell Environments". My fields of interest are mostly related to computer vision, bioinformatics and artificial intelligence.

M.Sc. Mukremin OZKUL

Mukremin Ozkul is a full-time lecturer at Epoka University, Department of Computer Engineering.

Research Interests: Intelligent Vehicles, Computer Communications (Networks)

Education:1996 BSc in Electronics and Computer Engineering, Marmara University, ISTANBUL

2011 MSc in Computer Engineering, Epoka University ongoing PhD student in Computer Engineering, Epoka University

Research Projects: Innovation and Implementation of Curriculum Vocational Studies in the Field of Digital Television and Multimedia Tempus Project No: 517022-TEMPUS-1-2011-1-RS-TEMPUS=JPCR, Nov. 2011 - Nov. 2014, Researcher. Development and Implementation of Multimedia and Digital TV Curricula (DIMTV) Project No: 586318-EPP-1-2017-1-AL-EPPKA2-CBHE-JP, Oct. 2017- Oct. 2020, Researcher.

Part time Academic Staff

Assoc. Prof. Dr. Polikron Dhoqina
Education

Position from 2007- Prof. Ass.

1994-1997- Doctor of Science in Physics , University of Tirana, Faculty of Natural Sciences

1990-1993- Postgraduate qualification , University of Tirana, Faculty of Natural Sciences

1982- 1986- Second Level Integrated Diploma , University of Tirana, Faculty of Natural Sciences

Work Experience
Lecturer of Physics

University of Tirana, Faculty of Natural Sciences, Department of Physics

Lecturer of Physics

University of Gjirokastra, Department of Physics

Dr. Isa Erbas

 Dr Isa Erbas has had different academic and administrative positions at Beder University since 2014 such as:

Lecturer, Head of English Department, Vice Rector, Vice Dean, International Relations Office Coordinator, Head of Internal Self Evaluation Report for the Institutional Accreditation, Vice chair of Quality Assurance Council, Member of editorial board at Beder Journal of Educational Sciences, Member of editorial board at International Conference on Language and Literature, Member of executive committee at International Conference on Language and Literature, Chairman of International Conference on Language and Literature.

He has finished his bachelor and master degree in the programme of English language and Teaching at Penza State Pedagogical University, Penza, Russia. In addition to his master degree in the English Language and Teaching, he has finished another master degree in Political Science and International Relations at Epoka University. He has received his PhD degree in Political Science and International Relations at the Tirana European University. He has taken trainings from

the Oxford University Department for Continuing Education and Oxford University Press about the ELT Management and Teaching English to Teenagers.

During his academic career he has published tens of articles, participated in many national and international conferences and supervised tens of theses of master students.

Dr. Isa Erbas has taught the following bachelor and master courses:

- Communication Skills
- British History and Culture
- American History and Culture
- International Relations and Legal Settlements of Disputes
- American Culture and Literature
- Post - Graduating Seminar
- Research Methods
- Psycholinguistics
- Theories of Teaching and Learning
- Stylistics
- Academic writing
- Technology Use and Preparation of Didactic Materials
- The Development of British Novelette

Dr. Besiana Çobani

Education:

1999-2004- Faculty of Natural Science, Mathematics, special profile

2005-2008- Faculty of Natural Science, Post graduate school of Differential Equations

2010-2015- Faculty of: Natorall Science, Doctorate school of Analysisand Algebra, specialty. Differential Equations

Work Experience:

October 2004 - December 2008- Faculty of Natural Science, Department of Mathematics, Lecturer Assistant (full time)

January 2009 and on- Faculty of Natural Science, Department of Mathematics Lecturer (full time)

Conferences and articles

1. "On the product of two dynamical systems" Besiana Hamzallari, Dhimitraq Nicka, AJTS The Albanian Journal of Natural and Technical Sciences, Nrl (27) 2010

2, Interior Mixed Boundary Value Problem for Helmholtz Equation" Besiana Hamzallari, Bulletin of Natural Science,(online) Edition nr 13, 2012 ISSN 2305-882X

"Problemi i jashtém me Viera kufitare té pérziera pér ekuacionin Helmholt." Besiana Cobani Bulletin of Natural Science,(online) Edition nr 15, 2013

"M$ *gjiahjesßé, problemit -tä •yeasfniSiöniV', Besiana Cobani Bulletin of Natural Science,(online) Edition nr 17,

Regularization Techniques for First Kind Integral Equations " Besiana Hamzallari, Fioralba Cakoni AKTET Alb - Shkenca , Volume V, Nr 3, 2012 ISSN 2073 - 2244

Third international conference of algebra and functional analysis , "The Poisson stability in product of dynamical system " , Elbasan, May 2009

Dr. Klaudio Peqini

Education:

2008–2011 BACHELOR studies in the Department of Physics, Faculty of Natural Sciences, University of Tirana, Tirana, Albania.

2011–2013 MSc. studies in the Department of Physics, Faculty of Natural Sciences, University of Tirana, Tirana, Albania.

11.07.2013 Master Thesis: "**The application of "Domino Model" to study the reversals and secular variation of geomagnetic field**" evaluated with grade 10/10.

2015–2018 PhD studies 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.

Teaching Experience:

2013– 2017 Lecturer in: Basics to Statistical Physics

2014– Lecturer in: Analytical Mechanics

2014 – Lecturer in: Computational Physics

2014 – Lecturer in: General Physics I (Mechanics, Tirana and Epoka University)

2016 – Lecturer in: General Physics III (Electromagnetism, Tirana and Epoka University)

2019 – Lecturer in Fluid dynamics

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).
2013-2014 Participant in the project: "Numerical simulations of natural convection in cylindrical cavities and the determination of the indicators of critical phenomena in the time series of the geomagnetic field variation", funded by the Faculty of Natural Sciences, University of Tirana.
2014-2015 Participant in the project: "Optimization and Scalability testing of a new OpenFoam application". Field of research is: Engineering an Energy Sources.
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.

Awards

Fourth place in the National Physics Olympiad held on March 2008 in the Faculty of Natural Sciences.

Dr. Albana Halili

Education:

1998-2002: Middle East Technical University — Chemical Engineering Department— Ankara (Turkey)
Jan. 2004 —Jan. 2007: Middle East Technical University — Biotechnology Department (M.Sc. student) Ankara (Turkey)
Jan. 2007: Middle East Technical University — Biotechnology Department - Ankara (Turkey) (studying as a PhD student)

Work Experience:

1999: 40 days summer practice in Dye and Textile Factory, Istanbul, Turkey.

2000: 40 days summer practice in FAKO Pharmaceutical Factory, Istanbul, Turkey.

2006: 60 days laboratory experience in Tampere University of Technology, Institute of Biomaterials funded by Expertissues Project, Tampere, Finland.

2008: Participance on 'Biophysical and biochemical analysis of collagen' workshop held in Lubeck, Germany (a part of Expertissues project).

2009: PhD thesis accepted as a SANTEZ project to be funded for 2 years by Turkish Ministry of Industry and Bussines (Sanayi ve Ticaret Bakanligi).

Awards:

2 Silver medals from International Mathematics Project Competition held in Turkey in 1997.

Award for the 'Best thesis of the year' given by Middle East Technical University (May 2008).

Dr. Shkelqim Hajrulla

Education

2019- PhD - Water Wave Equation. Numerical Methods and Application-``University of Vlora``

2010- MSc in Applied Mathematics at ``University of Vlora``

1990- (Integrated Diploma)Teacher of Math at High School Level`` University of Tirana``, Albania

Experience

2019-ongoing, Lecturer at Computer Engineering Department, EPOKA University, Albania. Teaching lectures of „" Numerical Analysis, „" Math for Engineering"" , "Calculus I " , "Differential Equations"", „" Probability and Statistics"", „" Basic Mathematics"".

2018- 2019, Researcher, Differential forms for water wave equations in Applied Sciences

2011 – 2012, Spring 2012 -Teaching lectures of "Partial Differential Equations Part II" to undergraduate students at the Faculty of Sciences in University of Vlora, Albania.

Fall 2011 -Teaching lectures of "Calculus II " and "Differential Equations Part I" to undergraduate students at the Faculty of Sciences and Economics in University of Vlora,

2010 – 2011 Fall 2010 -Teaching lectures and seminars of “Calculus I” and “Differential Equations Part I” to undergraduate students at the Faculty of Sciences and Economics in University of Vlora,

Spring 2011 -Teaching lectures and seminars of “Calculus ” and “Differential Equations Part II” to undergraduate students at the Faculty of Sciences in University of Vlora, Albania.

2009 – 2010- Summer 2010 -Teaching lectures and seminars of “Calculus II” to undergraduate students at the Faculty of Sciences in University of Vlora, Albania.

Spring 2010 - Teaching lectures and seminars of “Differential equations Part II ” and “Probability and Statistics” to undergraduate students at the Faculty of Sciences in Univ. of Vlora.

Fall 2009 -Teaching lectures of “Calculus II” to undergraduate students at the Faculty of Sciences in University of Vlora, Albania.

2008 – 2009- Part Time Spring 2008: Pedagogical practice and lectures of educational technology Fall 2008: Lectures of History of education and Didactic of Mathematics

2005 – 2008- Part Time Fall 2005: seminars of Discrete Mathematics and lectures of History of education

Spring 2006: Lectures of Elementary Mathematics. Fall 2006:seminars of Calculus 1 and lectures of Techniques of teaching.

Spring 2007: lectures of Philosophy of education and Bases of mathematical education

Fall 2007: Lectures of Bases of mathematical communication

2003 – 2005- Part Time Spring 2003: seminars of Mathematical Analysis. Fall 2004: lectures of Techniques of teaching and seminars of Calculus - Spring 2005: lectures of Linear algebra.

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 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.

MSc. Erion Saliasi

Education

CELTA International House Budapest, Hungary, Cambridge Certified teacher of English as Second/ Foreign language

Master of Education- Teaching English as A foreign or second language. Aleksander Moisiu University, Faculty of education, Department of English

Mater of Arts- University of Tirana, Faculty of philology, Department of English, Title: Specialist

Work Experience

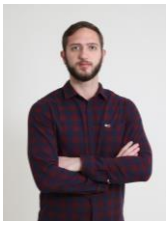
September 2007- July 2012- Position held as an English teacher.

August 2012- July 2016- Teaching English as a foreign language. Also vice director for education (managing all departments) and at the same time he has been a mentor for new teachers. He has worked at the Turgut Ozal Education, Primary and elementary private school.

August 2018- July 2019- Academic Coordinator at the Turgut Ozal Education, Primary and elementary private school.

August 2019- ongoing- Head of Quality assurance, responsible for Turgut Ozal Education Institutions Accreditation.

MSc. Genti Rustemi



Education

Master of Science , Electronic and Communication Engineering, Epoka University, Tirane 2017-2019.

Experience

Graduate Corporate and analytics, Vodafone Albania, Tirane 16.09.2019 Present

Graduate teaching assistant, Epoka University, Tirane 2017-2019

He workis easily with programs like Multisim, Vivado, MatLab,OrCad, CodeBlocks, Eclipse, TexMaker, Wireshark, PyCharm, Adobe Dreamweaver,Word, Excel, Power Point ,

MSc. Ndricim Topalli

Experience

I am a high caliber individual with various experiences in Software/Database Development, IT Support, Web Development, Management and Retail with ability to build high calibre applications in time and budget that meet business needs and assemble strong loyalties within the team and with clients, which I feel could improve your company's profile.

I am adaptable, flexible, highly motivated, efficient team player with excellent communication skills at all levels. I am looking for a role where I can develop my skills further and get involved in new challenges.

Administrative Staff

Ms. Livia PLAKU

Livia Plaku is the Coordinator of Department. She has finished her Bachelor and master studies in Banking and Finance study program and since June 2018 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.

Mr. Gent IMERAJ

Gent Imeraj is a a graduated student currently working in Epoka University, in the department of Computer engineering in the position of Laboratory Specialist. He has started working there in October 2019.

Mr. Imeraj holds a bachelor degree in Epoka University in the department of Computer Engineering for Electronic and Digital Communication engineering study program. He has followed the bachelor studies during the period 2016-2019. Currently he is having his Master studies at Epoka University in Department of Computer Engineering for Electronics and Communication Engineering.

Finance

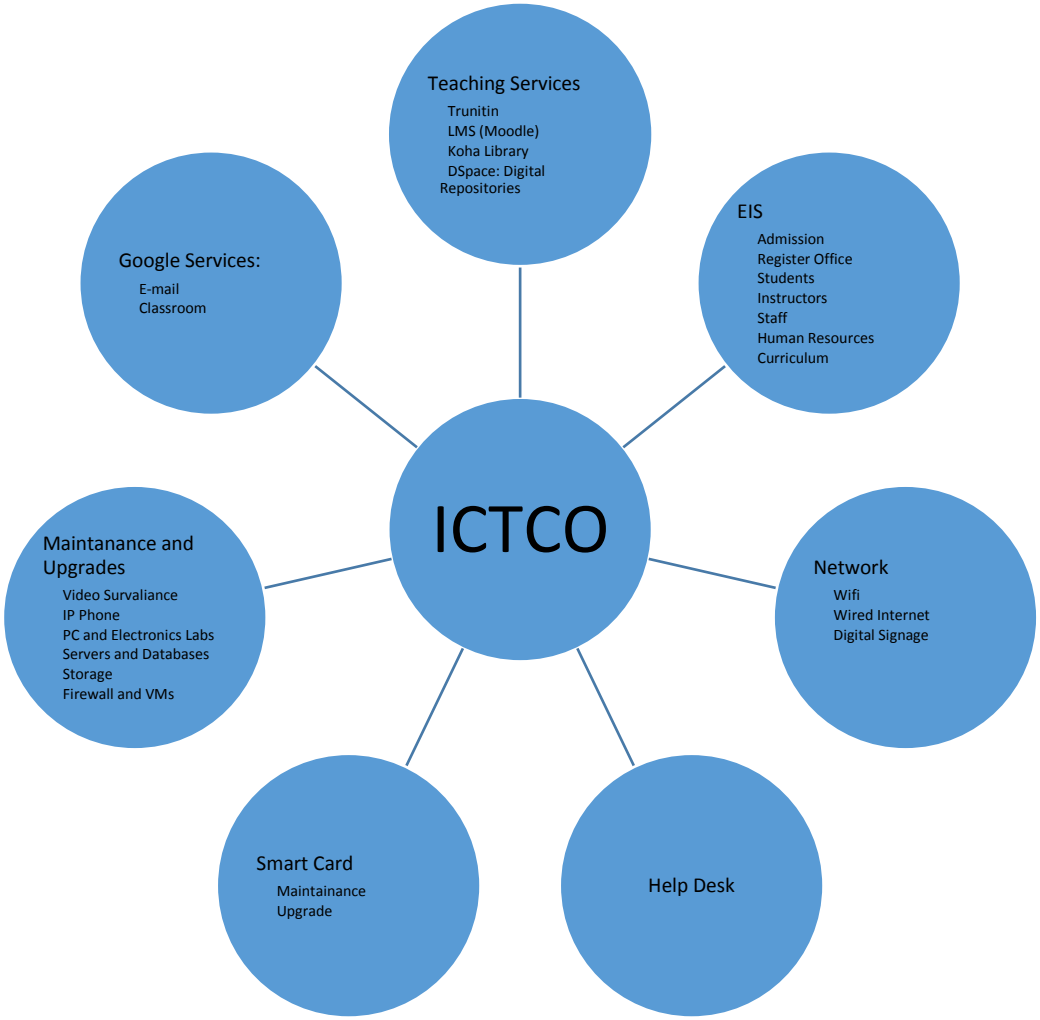
During this academic year the Department has been strongly supported both from internal and external funds to enrich its capacities.

Through internal funds of the institution, an investment of more than 40.000 Euro has increased the experimental instruments of the electronics lab. Technical manuals and new textbooks were added to the library through two large purchases. Also, individual lecturers have requested and purchased textbooks and hardware material for their courses. For example, several FPGA units are purchased for the Digital Design class.

Funding is provided through external resources too through the "Development and Implementation of Multimedia and Digital TV curricula" (DIMTV) Erasmus+ project (~ 80.000 Euro), and one Horizon 2020 Project (~ 320.000 Euro). At the same time, during this academic year, the Department has applied with other collaborating institutions for Erasmus+ project and we expect funds of similar nature in the next academic year.

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 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 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 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 and users can log-in by their Epoka Mail account credentials.

Measurable indicators:

number of PC per doctoral students	120
number of PC furnished labs per students	4
number of PC for academic staff	87
number of PC for administration	53
number of printers for each one	15
number of photocopying machines for each one	15
number of head projectors	1
number of video-projectors	27
number of scanners	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.

Measurable indicators:

☐ Premises of the Faculty

Premises for the Faculties	**Quantity**	**Surface**	**m^2/student**
Auditoria/Classrooms for lectures	5	752	0.40
Classrooms for seminars	17	1545	0.82
Premises for promotion activities	1	128	0.07
Classrooms for course/professional practice	2	258	0.14
Laboratories for courses	3	233	0.12
Informatics laboratories	2	174.6	0.12
Internet Room	2	151.8	0.12
Library Hall	1	322	0.17
Premises for photocopying, bookshop etc.	1	85.2	0.05
Student information office	2	71	0.04
Corridors/halls	25	2707.4	1.44
Sports premises	5	463	0.25
Premises for service to third parties	1	56	0.03
Restrooms (WC) for students	54	327.2	0.17
Restrooms (WC) for academic personnel	35	212.1	2.16
Premises for personnel:	**Quantity**	**Surface**	**m^2/person ratio**
Offices for the Dean/Vice-Dean	5	285.5	40.79
Office for the Administrator	1	25.4	25.40
Offices for the Department Coordinators	2	60.6	20.20
Offices for departments/research centers	12	328.5	27.38
Offices for the academic personnel	40	620	6.33
Office for the Finance Office	2	37	18.50
Office for the Internal Quality Assurance Unit	1	50	50.00
Meeting rooms	2	75	0.77
Premises for service personnel	11		30.33
Premises for the activities of the Student Council	1	30	1.30
Recreation premises such as cafeteria/fast-food/ restaurant	1	337	0.17
Total	234	9335.3	

During the 2019-2020 academic year, the EPOKA University Campus uses for the 17 classes: (E-010, E-011, E-211, E-212, E-213, E-311, E-312 (E-012, E-110, E-214, E-314 and A-005), E-313, A 117, A118, A119, A120, A127, A128, A129, A130, A131) a conference room (E-B01), three computer laboratories (E-011, E-015, A-126), an electronic lab (E-010) and a civil engineering laboratory. There are 3 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 2019-2020 academic year.

No.	Name of the Class	Surface (m2)	Capacity
1	E B10	75	56
2	E B11	104	60
3	E 211	64	36
4	E 212	81.32	72
5	E 213	81.72	72
6	E 311	63.46	40
7	E 312	81.32	48
8	E 313	81.72	40
9	A 117	138.0	35
10	A 118	138.0	35
11	A 119	138.0	35
12	A 120	138.0	35
13	A 127	72.41	56
14	A 128	73.53	56
15	A 129	73.71	56
16	A 130	72.02	56
17	A 131	72.02	56
total	**17**	**1548.23**	**836**

Auditoriums used during the 2019-2020 academic year

No.	Name of Auditorium	Surface (m^2)	Capacity
1	E 012	131.54	66
2	E 110	130.82	136
3	E 214	154.32	150
4	E 314	154.32	134
5	A 005	145.2	65
total	**5**	**716.2**	**551**

Civil Engineering Laboratory is used for study of various materials, especially concrete and the study of the earthquakes and its elements.

Civil Engineering Laboratory has an area of 283 m^2 and contains:

- The ground mechanics laboratory 29 m2
- Mechanical laboratory 83 m^2
- Laboratory of Noisy experiment 30 m^2
- Cutting with carrot 5 m^2
- Granularity analysis of 5 m^2
- Cement and concrete laboratory 45 m^2

Epoka University has a conference hall with a surface of 128 m^2 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^2 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 400 square meters area of use. Our University Library is composed of entrance, book and reading hall. In the entrance, there is a check out desk. 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.

Epoka University is a member of Balkan Libraries Union which was founded on 29 July 2009 with the participation of 10 institutions from 6 Balkan countries.

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 Department of Library and Documentation, the library has a total of about 7500 printed books.

Digital Databases

Epoka University has full membership in JSTOR, a shared digital library created in 1995 that includes more than 2,000 academic journals.

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.

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

Using the Library

Our library works on the 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:

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

2. 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 sub categories of the main topic. In the given example **G** stands for **Finance**, **3821** indicates sub categories 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 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 and copy the materials in the library. Readers in this group are requested to fill up the related form Lending Service.

Circulation Rules

Resource	**Patron**	**Loan period(days)**	**Maximum number of check-outs(items)**
Book	Pre-undergraduate/Undergraduate students	15	3
	Graduate students	15	5
	Staff	20	5
Bound Journal	Graduate students Staff	5	2
Visual/Audio Resources	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	E	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
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	E	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 Lecture 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 217	Electrical & Electronic Circuits	C	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	Fundamental of Probability	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	4	4	21	17	208	64	64	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	
CEN 202	Database Management Systems	B	Compulsory	2	1	1	4	3	32	16	16	86	0	150	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	3	0	2	5	4	48	0	32	95	0	175	7
MTH 206	Numerical Analysis	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	3	3	21	18	240	48	48	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
BUS 114	Communication Skills	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
BUS 105	Introduction to Law	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
		D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
		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		Semestral Lecture and studying hours					ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
CEN 307	Computer Networks	B	Compulsory	3	0	1	4	3.5	48	0	16	86	0	150	6
CEN 309	Analysis of Algorithms	B	Compulsory	3	0	1	4	3.5	48	0	16	86	0	150	6
CEN 311	Web Technologies and Programming	B	Compulsory	3	0	1	4	3.5	48	0	16	86	0	150	6
	Technical Elective	B	Elective	3	0	1	4	3.5	48	0	16	86	0	150	6
	Technical Elective	D	Elective	3	2	1	6	4.5	48	32	16	54	0	150	6
Semestral Total				15	2	5	22	18.5	240	32	80	398	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	1	4	3.5	48	0	16	86	0	150	6
CEN 302	Software Engineering	B	Compulsory	3	1	0	4	3.5	48	16	0	86	0	150	6
	Technical Elective	B	Elective	3	0	1	4	3.5	48	0	16	86	0	150	6
	Technical Elective	E	Elective	3	0	1	4	3.5	48	0	16	86	0	150	6
CEN 390	Graduation Project	F	Compulsory	1	3	0	4	2.5	16	48	0	86	0	150	6
CEN 399	Final Comprehensive Exam		Compulsory	1	3	0	4	2.5	16	48	0	86	0	150	

Semestral Total		13	4	3	20	16.5	208	64	48	430	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 of System Administration	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 328	Programming Languages I	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 330	Parallel Programming	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 332	Simulation and Modeling	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 336	Computer Graphics	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 338	Management Information Systems	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 346	Mobile programming	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 348	Internship	E	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 350	Theory of Computation	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 352	Artifical Intelligence	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 354	Web Engineering	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 356	XML and WEB Services	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 358	Computer Graphics	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 366	Digital Data Communication	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 368	Network Security	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 370	Distributed Systems	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 374	Mobile and Wireless Networking	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 376	Data Mining	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 380	Machine Learning	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 386	Management Information Systems	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6
CEN 389	Embedded Systems	B	Elective	2	2	0	4	3	48	0	0	77	0	125	6

CEN 340	Smartphone Applications	B	Elective	2	2	0	4	3	48	0	0	77	0	125	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	E	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
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	E	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	
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

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	
ECE 202	Electromagnetic Field Theory	C	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

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
BUS 114	Communication Skills	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
BUS 105	Introduction to Law	D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
		D	Elective	3	0	0	3	3	48	0	0	52	0	100	4
		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	Semestral Course and studying hours						ECTS	
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	Lect.	Pract.	Lab.	Site W.	Other	Total	
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
	Technical Elective	D	Elective	2	2	0	4	3	32	32	0	86	0	150	6
Semestral Total				10	2	8	20	15	160	32	128	430	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	
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	E	Elective	2	0	2	4	3	32	0	32	86	0	150	6
ECE 390	Graduation Project	F	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	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	
ECE 310	Communication Theory	Elective	3	0	0	3	3	48	0	0	102	0	150	6
From CEN	Web Technologies and Programming	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 325	Telecommunication Circuits	Elective	3	0	0	3	3	48	0	0	102	0	150	6

ECE 318	Multimedia Signal Distribution	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 320	Computer Graphics	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 324	Computer Animation	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 326	Digital Photography	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 330	Microwaves	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 332	Introduction to Optical Fibers	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 334	Digital Data Transmission	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 336	Digital Signal Processing	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 338	Satellite Communication	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 384	Microcontrollers	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 342	Fundamentals of Audio Engineering	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 340	Internship	Elective	0	0	0	0	0	0	0	0	150	0	150	6
ECE 346	Television Technique	Elective	3	0	0	3	3	48	0	0	102	0	150	6
CEN 308	Operating Systems	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 358	Information Theory and Coding	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 366	Introduction to Nanoscience and Nanotechnology	Elective	3	0	0	3	3	48	0	0	102	0	150	6
CEN 370	Distributed Systems	Elective	3	0	0	3	3	48	0	0	102	0	150	6
CEN 328	Programming Languages I	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 312	Digital Multimedia	Elective	3	0	0	3	3	48	0	0	102	0	150	6
ECE 348	Communication Theory	Elective	3	0	0	3	3	48	0	0	102	0	150	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	Semestral Lecture and studying hours						ECTS
Code	Course Name			Theory	Pract.	Lab.	Total	Credits	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 xxx	Elective	A	Compulsory	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	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 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 xxx	Elective	A	Compulsory	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	B	Compulsory	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	D	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

Third 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 593	Graduate Project	F	Compulsory	1	9	0	10	5.5	16	144	0	215	0	375	15
CEN xxx	Elective	B	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				7	13	0	20	13.5	112	208	0	430	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	
CEN 500	Thesis	F	Compulsory	0	0	0	0	0	0	0	0	750	0	750	30
Semestral Total				0	0	0	0	0	0	0	0	750	0	750	30

The Department offers five different fields of studies:

1. Computational Mathematics
2. Theory of Computation
3. Data Management
4. Network & Security
5. Bioinformatics

A student, in order to acquire a general knowledge in the Computer Engineering area, needs to take at least one course from each field.

List of Elective courses:

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 553	Theory of Computation	F	Elective	1	9	0	10	5.5	16	144	0	215	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 & Datastructures	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 552	Advanced Database Management System	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	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	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	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	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	7.5
CEN 531	Information Security and	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5

	Computer Forensics														
CEN 461	Network Programming	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 539	Nano-Science and Nano-Technology	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	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	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	7.5
CEN 509	Tissue Engineering	B	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**	**Semestral Lecture and studying hours**						**ECTS**
Code	**Course Name**			**Theory**	**Pract**	**Lab**	**Total**	**Credits**	**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 xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE 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 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 545	Advanced Numerical Methods	A	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
ECE xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE xxx	Elective	D	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

Third 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	
ECE 590	Term Project	F	Compulsory	1	4	0	5	5.5	16	144	0	215	0	187.5	7.5
ECE xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
ECE xxx	Elective	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				7	13	0	20	13.5	112	208	0	430	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	
CEN 500	Thesis	F	Compulsory	0	0	0	0	0	0	0	0	750	0	750	30
Semestral Total				0	0	0	0	0	0	0	0	750	0	750	30

List of Elective courses:

Course Code	Course Name	T	P	C	ECTS
ECE 433	Introduction to Neural Networks	3	2	4	7.5
ECE 439	Electronics for Bioengineering Applications	3	2	4	7.5
ECE 445	Advanced Optical Communication	3	2	4	7.5
ECE 464	Automatic Control Systems	3	2	4	7.5
ECE 468	Computer Vision	3	2	4	7.5
ECE 472	Special Topics in Artificial Intelligence	3	2	4	7.5
ECE 478	Industrial Electronics	3	2	4	7.5

ECE 483	Computer Architecture	3	2	4	7.5
ECE 533	Advanced Antenna Theory	3	2	4	7.5
ECE 537	Advanced Topics in Mobile Cellular Communication Systems	3	2	4	7.5
ECE 541	Design of Embedded Systems	3	2	4	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 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 xxx	Elective	B	Compulsory	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	B	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 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 590	Term Project	F	Compulsory	1	4		5	3	16	64	0	107.5	0	187.5	7.5
CEN xxx	Elective	B	Elective	3	2		5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	B	Elective	3	2		5	4	48	32	0	107.5	0	187.5	7.5
CEN xxx	Elective	B	Elective	3	2		5	4	48	32	0	107.5	0	187.5	7.5
Semestral Total				10	10	0	20	15	160	160	0	430	0	750	30

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List of Elective courses:

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 553	Theory of Computation	F	Elective	1	9	0	10	5.5	16	144	0	215	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 & Datastructures	B	Elective	3	2	0	5	4	48	32	0	107.5	0	187.5	7.5
CEN 552	Advanced Database Management System	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	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	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	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	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	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	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	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	F	Elective	1	9	0	10	5.5	16	144	0	215	0	375	7.5
CEN 509	Tissue Engineering	B	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:

Year I - First Semester		**T**	**P**	**C**	**ECTS**
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
Total:		**12**	**0**	**12**	**30**

Year I - Second Semester		**T**	**P**	**C**	**ECTS**
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
Total:		**12**	**0**	**12**	**30**

Year II+III		**T**	**P**	**C**	**ECTS**
CEN 800	PhD THESIS	0	0	0	120
Total:		0	0	0	**120**

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

List of elective courses:

Course Code	**Course Name**	**T**	**P**	**C**	**ECTS**
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

C. Teaching, Learning, Assessment & Research

Undergraduate Students' List of Theses

BA CEN

1. **Aldo Lisi, "Fractal Image Compression Using Neural Networks", Dr. Maaruf Ali.**

Image compression is an interesting field in image analysis that has been around for quite a long time now. This field simply aims to reduce the image size and to maintain a good level of their reconstructed image. In the image compression field there have been a lot of techniques about reducing the image size and reconstructing it as close as the original one. Some of those techniques are quite old now and they are still being used. The main problems in image compression field and those techniques is the encoding and decoding time. Meanwhile the compression ratio is quite impressive even for RGB images. One of those techniques is compressing images using fractals. Here we are going to see fractal image compression based on techniques related to calculating partial distance between domain and range blocks and neural network for feature selection.

2. **Artjola Ganellari "Breast Image Classification Using Ensemble deep Learning Architectures", Dr. Maaruf Ali.**

Breast cancer is one of the most widespread diseases around the world which mostly leads to the death not only in women, but also men. The rapid development of the technology and the disruption era, have contributed into finding feasible solutions to diagnose this type of cancer in its early stages. These have made possible the acquirement of high-resolution breast tissue images. On the other hand, Computed Aided Detection (CAD) Systems have taken advantage of the availability of the datasets, and have somehow overcame the struggles in diagnosing the breast cancer. Being difficult to analyze because of their shape, size, and different contrast levels, breast tissues classifications cannot be utilized by the manual or traditional image processing techniques. Considering the afore-mentioned reasons, there is room for computerized implementations for the classification of the breast tissues into malignant or benign.
Convolutional Neural Networks (CNN) have assisted in the classification of the abnormalities, producing very accurate results. In this study, we examine the ability of such networks in

classifying the breast medical images into two categories: benign or malign. This approach, adapts two pre-trained deep learning architectures such as Densenet201 and VGG16 and ensemble them in a stack learning model. Each of the architectures has been trained separately, and then the outputs of them both, have been fed into a stack model of Multilayer perceptron classifier in order to proceed with the classification of the tissues. For this task, we have used a publicly available dataset of breast histology called BreakHis. It contains a total of 7909 medical images from which 5429 malign and 2480 benign. The proposed ensemble model obtained a higher prediction accuracy than the single implemented classifiers. It achieved accuracy of 91.03%, demonstrating a successful utilization of deep learning architectures in classifying breast tissues.

3. **Klea Xhixho "Bitcoin Price Prediction Using Deep Learning", Assoc. Prof. Dr. Dimitrios Karras.**

Bitcoin is a sort of computerized cash in which a record of exchanges is kept up and new units of cash are produced by the computational arrangement of scientific issues, and which works autonomously of a central bank. The price of a bitcoin is equal to 7000 USD and is growing more day by day. Since this is not a low price, approximately 10 million people are investing on it. This would be exceptionally curiously for investors to figure the Bitcoin esteem but the same time making it troublesome to predict. This study centers on predicting daily Bitcoin prices using some models (MLP, LSTM, CNN, GRU, ARIMA) of deep learning. In each of these models we will interpret the train and test loss, mean squared error, the performance in time and in the end predicted prices. After interpreting all this, we will compare all these results between different models.

4. **David Veliu "Development of a Heuristic search based planner for an ambient intelligent system", Assoc. Prof. Dr. Dimitrios Karras.**

With the improvement of living standards, the aging of society is increased. As the population age, the number of people with cognitive disabilities is growing in various regions of the world. In the context, the traditional architectural forms have been unable to meet the basic needs of people with cognitive dis-abilities. Therefore, in recent years, Artificial Intelligence

(AI) has been rapidly developed. However, the integration of AI in this range of society is lacking.

The main focus of my Master Thesis is to migrate these challenges by developing an AI system with the help of a planning platform called PDDL (Planning Domain Definition Language).

5. **Jola Koci "Threat Object Detection in x-ray images using SSD, R-FCN and Faster R-CNN", Dr. Ali Osman Topal.**

Baggage inspection for threat objects using X-ray images is a priority task that is in charge of making the risk of crime and terrorist attacks more reducible. Nowadays, the checking of baggage is based on a semi-automated system that consists of both human and also image detection. The main purpose of this thesis is to make the automatisation system more reliable. This task is mainly dependent on object detection models and algorithms. However, another part of this problem is mainly prone to the lack of the data. Furthermore, obtaining an X-ray image dataset with many types of threat objects is quite difficult. This is why this thesis is composed of two main parts: data stimulation and object detecting approaches. On the first part, due to the lack of data, an older dataset containing only four classes of threat objects are used as a base for the new objects to be stimulated into. In total, the newly simulated dataset contains seven types of threat objects consisting of: handguns, razor-blades, knife, shuriken, battery, wires and mortar. After generating the new data, they are processed and augmented by applying random types of rotations, flippings, zoomings etc. Once the images are processed, they are passed into transfer learning. Transfer learning consists of using predefined models for training. The models that are taken into consideration are: Single Shot Detector, Regions Fully Convolutional Network (RFCN) and Faster R-CNN. These models are used by applying different techniques of feature extraction, such as: Inception-v2, MobileNet-v2 and ResNet101. Combining the object detection models and object detection architectures in total the images are trained and tested in five different approaches. In conclusion, the best detection was achieved by the combination of Faster-RCNN detection model and ResNet101 feature extractor by 87.58% ± 0.75 accuracy.

6. **Sabrina Begaj "Facial emotion recognition using convolutional neural network", Dr. Ali Osman Topal.**

Over the last years, there is a large number of studies focused in automatic facial expression analysis because of its practical importance in many human-computer interaction Systems. With the transition of facial expression recognition (FER) from laboratory-controlled to challenging in-the-wild conditions and the recent success of deep learning techniques in various fields, deep neural networks have increasingly been leveraged to learn discriminative representations for automatic FER. In this thesis, we study the challenges of Emotion Recognition Datasets and try different parameters and architectures of the Conventional Neural Networks. The dataset we have used is iCV MEFED, a relatively new, interesting and very challenging.

7. **Aleks Tare "Microscopic Image Cell Counting Using Convolutional Neural Networks", Dr. Arban Uka.**

As the field of automation is moving forward at ever-faster rates, cell counting and classification is an omnipresent yet repetitive task that would benefit greatly from this field. The counting of contiguous cells in a specific area could provide crucial contribution to work done in clinical trials. Cell counting, sadly, is most often conducted manually by humans and can be time and resource consuming.

Due to cells touching each other, a non-uniform background, shape and size variations of cells, and different techniques of image acquisition, the task becomes even more difficult. In this paper we describe a convolutional neural network approach, using a Faster-RCNN architecture later also combined with a U-Net neural network, for cell counting and possibly segmentation in a raw microscopic picture.

8. **Fjona Hajdari "Cell Image Classification Using Convolutional Reveal Networks", Dr. Arban Uka**

Medical image processing is a field of great interest, and improvements on this field have made possible better and faster diagnosing of sick organs or tissues. This study's main focus is the classification of healthy and unhealthy cells. In this study we have discussed and compared the behavior of the LeNet network in different given conditions of the network and dataset. There have been considered three different data splitting: the first one having

two classes and a dataset of 9 332 images, the second one having two classes and a dataset of 20 102 cell images and the third data split having three classes and 12 520 images. All these cases were trained and tested in similar and different network conditions and preprocessing methods to be able to evaluate which one of them performs better with the available datasets. The main preprocessing methods used are unsharped masking, median filter and highpass filter. Moreover the models were compared in pairs using AUC and ROC curve, in order to distinguish even the slightest changes and improvements on models.

9. **Ina Panci "Cell Detection Using Deep Learning and Hand-Crafted Features", Dr. Arban Uka**

With the Artificial Intelligence becoming more and more powerful in time, there is a growing interest about scientists focusing in providing answers in the field of medical image analysis. The importance of using AI in the medical field is of great significance for many reasons. Robust algorithms are able to help physicians in processing large amounts of data, assisting in providing diagnosis and mitigating human error while reducing time and cost. This is especially applicable in the case of cell image analysis. Considering the complexity of cells as entities, which derives from their shape and form, it can be quite challenging to detect them in different settings that they are placed. An automated process on cell detection will be very beneficiary for anatomopathologists. In this work, there is cell detection performed, using the state-of-the-art deep learning object detection model, Faster R-CNN and trained on hand-crafted features such as Local Binary Patterns. The dataset used portrayed several challenges that most microscopy images hold, which required histogram and template matching for preprocessing. With cell detection performed, we also count the cells in an image by nuclei localization. There were several experiments conducted that achieve up to 56% mAP.

10. **Ardit Dervishi, "Image Segmentation Using Thresholding Technique FPGA NEXYS A7 Board", Prof. Dr. Betim Çico**

Bitcoin is a sort of computerized cash in which a record of exchanges is kept up and new units of cash are produced by the computational arrangement of scientific issues, and which works autonomously of a central bank. The price of a bitcoin is equal to 7000 USD and is growing more day by day. Since this is not a low price, approximately 10 million people are investing on it. This

would be exceptionally curiously for investors to figure the Bitcoin esteem but the same time making it troublesome to predict. This study centers on predicting daily Bitcoin prices using some models (MLP, LSTM, CNN, GRU, ARIMA) of deep learning. In each of these models we will interpret the train and test loss, mean squared error, the performance in time and in the end predicted prices. After interpreting all this, we will compare all these results between different models.

BA ECE

1. **Danjela Ruci "A Review Study on the Use of High-Level Synthesis for Implementing Deep learning Algorithms in FPGAs", Dr. Julian Hoxha**

2. **Nevisa Patoshi "Cooperative Spectrum Sensing Using Machine Learning – Based Models", Dr. Julian Hoxha**

The unstoppable evolution that has affected mobile telecommunication systems in the last three decades has caused the occupation of the licensed frequencies, but at the same time these frequencies are not being used efficiently. Cognitive Radio is the key technology introduced to overcome the main problems of the spectrum utilization, since it offers the opportunity for other unlicensed users to utilize the licensed band while it is not being used by primary user. Even though it increases the efficiency of spectrum utilization, spectrum sensing in cognitive radios still faces problems for higher-performance and more energy-efficient systems. In this work, are taken in consideration two machine learning algorithms as decision-making tools in the fusion centre of cooperative spectrum sensing network based on energy detection technique. The effectivity of these algorithms is evaluated using Receiver Operating Characteristics (ROC) curve and Area Under The Curve (AUC) values, considering seperately additive white Gaussian noise and Rayleigh fading channel. Moreover, the training period of each algorithm is analyzed to evaluate the execution cost for each of them.

Research Areas and Research Groups

The research group established by the department of Computer Engineering:

Group Name: **Biometrics and Image Analysis Lab (BIAL)**

Members of the group:

1. **Prof. Dr. Betim Cico**
2. **Dr. Arban Uka**
3. **M.Sc. Florenc Skuka (Member)**
4. **MSc. Iva Kertusha**
5. **BA. Xhoena Polisi (Member)**

Bachelor Students

1. **Andel Gugu**
2. **Erisa Hoxha**
3. **Greisa Ajdini**
4. **Klesti Kuka**
5. **Sara Qirko**
6. **Xheni Vogli**

List of Publications

Below is the list of publications that the staff of Computer Engineering during 2019-2020 academic year:

1	**A.O.Topal**. (2020*). Dynamic Virtual Bats Algorithm*. Swarm Intelligence Algorithms – A Tutorial. Chapter 10, 14 pages. **Book Link:** https://www.taylorfrancis.com/books/e/9780429422614 **Chapter Link:** https://www.taylorfrancis.com/books/e/9780429422614/chapters/10.1201/9780429422614-10
2	**A.O.Topal**. (2020*). Improved Dynamic Virtual Bats Algorithm for Identifying a Suspension System Parameters*. Swarm Intelligence Algorithms – Modifications and Applications. Chapter 10, 11 pages. **Book Link:** https://www.taylorfrancis.com/books/e/9780429422607 **Chapter Link:** https://www.taylorfrancis.com/books/e/9780429422607/chapters/10.1201/9780429422607-10
3	Polisi X., Halili A., Tanase CE., **Uka A.,** Vrana N.E., Ghaemmaghami A. (2020) Computer Assisted Analysis of the Hepatic Spheroid Formation. In: Filipovic N. (eds) Computational Bioengineering and Bioinformatics. ICCB 2019. Learning and Analytics in Intelligent Systems, vol 11. Springer, Cham. https://doi.org/10.1007/978-3-030-43658-2_11 **Article link** https://doi.org/10.1007/978-3-030-43658-2_11 **About this journal** https://www.springer.com/gp/book/9783030436575 **About the index** **4th Author among 6 authors: (10/3)% (Corresponding Author)**
4	Uka, A.; **Uka, A**. The Effect of Students' Experience with the Transition from Primary to Secondary School on Self-Regulated Learning and Motivation. ***Sustainability*** **2020**, *12*, 8519. https://www.mdpi.com/2071-1050/12/20/8519 **About this Journal** https://www.mdpi.com/journal/sustainability Impact Factor: **2.576** 2nd Author: 40% of the points.
5	MH Zaghouani, J Sztrik, **A Uka**. Simulation of the performance of Cognitive Radio Networks with unreliable servers Annales Mathematicae et Informaticae. 3rd Author. (**20%**) Journal in Scopus **Information on the Journal:** https://ami.uni-eszterhazy.hu/ **Website on Impact Factor** https://academic-accelerator.com/Impact-Factor-IF/Annales-Mathematicae-et-Informaticae#:~:text=The%20Journal%20Impact%202019%2D2020,is%20just%20updated%20in%202020.
6	Citation to: A. Uka, et al., "Improved segmentation algorithm and further optimization for iris recognition," *IEEE EUROCON 2017 -17th International Conference on Smart Technologies*, Ohrid, 2017, pp. 85-88, doi: 10.1109/EUROCON.2017.8011082. Cherupally, S. K., et al.. (**2020**). ECG Authentication Hardware Design With Low-Power Signal Processing and Neural Network Optimization With Low Precision and Structured Compression. ***IEEE transactions on biomedical circuits and systems***, *14*(2), 198-208. (**IF=4.71**)

	S. Yin *et al*., "A 1.06- 65-nm CMOS for Real-Time Biometric Authentication and Cardiac Monitoring," **in *IEEE Journal of Solid-State Circuits***, vol. 54, no. 8, pp. 2316-232. **2019**, doi: 10.1109/JSSC.2019.2912304. **IF=5.17** Sharifi, F., et al. (**2019**). A Foreign Body Response-on-a-Chip Platform. ***Advanced healthcare materials***, *8*(4), 1801425. (**IF=6.27**) Thorson, T. J., et al. (**2019**). Bijel-templated implantable biomaterials for enhancing tissue integration and vascularization. ***Acta biomaterialia***, *94*, 173-182. (**IF=6.3**) Vrana, N. E., et al. (**2020**). Personalization of medical device interfaces: decreasing implant-related complications by modular coatings and immunoprofiling. (**IF=3.25**) Qin, T., *et al.* An Interactive Integrated Interpretation of GPR and Rayleigh Wave Data Based on the Genetic Algorithm. *Surv Geophys* **41,** 549–574 (**2020**). https://doi.org/10.1007/s10712-019-09543-x (**IF=5.29**) X. Du, Y. Cheng and Z. Gu, "Change Detection: The Framework of Visual Inspection System for Railway Plug Defects," in *IEEE Access*, vol. 8, pp. 152161-152172, **2020**, doi: 10.1109/ACCESS.2020.3017691. **(IF=3.745**) Meşecan, İ., et al. (**2020**). Feature vector for underground object detection using B-scan images from GprMax. *Microprocessors and Microsystems*, 103116. (**IF=1.16**) Liao, S. N., et al. (2019). A robust machine learning technique to predict low-performing students. *ACM Transactions on Computing Education (TOCE)*, *19*(3), 1-19. (**IF=3.04**)
7	İ. Meşecan, B.Çiço, İ. Ömür Bucak Feature vector for underground object detection using B-scan images from GprMax Microprocessors and Microsystems July 2020, Volume 76 Article 103116 First available on 28 April 2020 https://doi.org/10.1016/j.micpro.2020.103116 **About this journal** https://www.sciencedirect.com/journal/microprocessors-and-microsystems **About the index** 3 Cite Score, 1.161 Impact Factor https://www.sciencedirect.com/journal/microprocessors-and-microsystems
8	N. Besimi,B.Çiço,A.Besimi,V. Shehu Using distributed raspberry PIs to enable low-cost energy-efficient machine learning algorithms for scientific articles recommendation Microprocessors and Microsystems October 2020, Volume 78, Article 103252 First available on 29 August 2020 https://doi.org/10.1016/j.micpro.2020.103252 **About this journal** https://www.sciencedirect.com/journal/microprocessors-and-microsystems **About the index** **3 Cite Score, 1.161 Impact Factor** **https://www.sciencedirect.com/journal/microprocessors-and-microsystems**

	https://www.scopus.com/authid/detail.uri?authorId=35811883100
9	Hoxha, J., Shimizu, S. & Cincotti, G. On the performance of all-optical OFDM based PM-QPSK and PM-16QAM. *Telecommun Syst* (2020). **Article link** https://doi.org/10.1007/s11235-020-00687-5 **About this journal** https://www.springer.com/journal/11235/ **About the index** https://mjl.clarivate.com/search-results Search *Telecommunication Systems*) **1.73 impact factor**
10	Polisi, X., Halili, A., Tanase, C. E., Uka, A., Vrana, N. E., & Ghaemmaghami, A. (2019, September). Computer Assisted Analysis of the Hepatic Spheroid Formation. *Computational Bioengineering and Bioinformatics: Computer Modelling in Bioengineering* (Vol. 11). Springer Nature. Pages 117-126 **Book link** https://www.springer.com/gp/book/9783030436575 ISBN 978-3-030-43658-2 **About this book** https://www.springer.com/gp/book/9783030436575#aboutBook
11	Mahdi H. Miraz and **Maaruf Ali**, "Integration of Blockchain and IoT: An Enhanced Security Perspective". Annals of Emerging Technologies in Computing (AETiC), vol. 4, No. 4, 1st October 2020, pp. 52-63. **Article Link** DOI: 10.33166/AETiC.2020.04.006, Available: http://aetic.theiaer.org/archive/v4/v4n4/p6.html. **About the Journal** Annals of Emerging Technologies in Computing (AETiC), Print ISSN: 2516-0281, Online ISSN: 2516-029X. Published by International Association of Educators and Researchers (IAER). **About the Index** Scopus Indexed https://www.scopus.com/sourceid/21101017691
12	Mehdi Imani, Maaruf Ali, Hamid R. Arabnia, "Power-saving Asynchronous Quorum-based Protocols for Maximal Neighbour Discovery", Annals of Emerging Technologies in Computing, 10.33166/AETiC.2020.03.005, vol. **4**, issue 3, 1st July, 2020, pp. 42-60. **Article Link** http://www.aetic.theiaer.org/archive/v4/v4n3/p5.html **About the Journal** Annals of Emerging Technologies in Computing (AETiC), Print ISSN: 2516-0281, Online ISSN: 2516-029X. Published by International Association of Educators and Researchers (IAER). **About the Index** Scopus Indexed https://www.scopus.com/sourceid/21101017691
13	Mahdi H. Miraz and **Maaruf Ali**, "Blockchain Enabled Smart Contract Based Applications: Deficiencies with the Software Development Life Cycle Models", Baltica Journal, Vol. 33, Issue 1, 20th January 2020, ISSN: 0067-3064, pp. 101-116, published by Lithuanian Academy of Sciences. [ISI SCIE Impact Factor 0.5 (Q4); Scopus/SCImago 2019: CiteScore 0.9, SNIP 0.522, SJR 0.218 (Q3)]. **Article Link** http://www.balticajournal.com/baltica/index.php/jTracker/index/IL1qQ **About the Journal** http://www.balticajournal.com/ **About the Index** Impact Factor: 0.500 5-Year Impact Factor: 0.618 Eigen factor Score: 0.00014

	Article Influence Score: 0.117 Indexes: Science Citation Index Expanded Scopus Elsevier EBSCO Web of Science
14	Saleem Issa Al-Zoubi and **Maaruf Ali**, "E-mobile Acceptance Using Unified Theory of Acceptance and Use of Technology (UTAUT): Research on Universities in Jordan", Annals of Emerging Technologies in Computing (AETiC), Print ISSN: 2516-0281, Online ISSN: 2516-029X, pp. 28-38, Vol. 3, No. 4, 1st October 2019, Published by International Association of Educators and Researchers (IAER), **Article Link** DOI: 10.33166/AETiC.2019.04.003, Available: http://aetic.theiaer.org/archive/v3/v3n4/p3.html **About the Journal** Annals of Emerging Technologies in Computing (AETiC), Print ISSN: 2516-0281, Online ISSN: 2516-029X. Published by International Association of Educators and Researchers (IAER). **About the Index** Scopus Indexed https://www.scopus.com/sourceid/21101017691
15	**Book Chapter** **Maaruf Ali** and Mahdi H. Miraz, "A Review of Underwater Acoustic, Electromagnetic and Optical Communications", in Emerging Technologies in Computing, Third EAI International Conference, iCETiC 2020, London, UK, August 19–20, 2020 Proceedings. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol. 332. Mahdi H. Miraz, Peter S. Excell, Andrew Ware, Safeeullah Soomro, **Maaruf Ali**, Eds. Cham, Switzerland: Springer, 2020, pp. 86-97. Print ISBN 978-3-030-60035-8; Online ISBN 978-3-030-60036-5. First Online 29 September 2020. **Article Link** https://link.springer.com/chapter/10.1007%2F978-3-030-60036-5_6 **About the Book** Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 332. Cham, Switzerland: Springer Nature, 2020. **About the Index** Q4, SJR 2019: 0.151. SNIP: 0.211. Cite Score: 0.5. H Index: 40.
16	**Book Chapter** Sadegh Hashemipour and **Maaruf Ali**, "Amazon Web Services (AWS) – An Overview of the On-Demand Cloud Computing Platform", in Emerging Technologies in Computing, Third EAI International Conference, iCETiC 2020, London, UK, August 19–20, 2020 Proceedings. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol. 332. Mahdi H. Miraz, Peter S. Excell, Andrew Ware, Safeeullah Soomro, **Maaruf Ali**, Eds. Cham, Switzerland: Springer, 2020, pp. 40-47. Print ISBN 978-3-030-60035-8; Online ISBN 978-3-030-60036-5. First Online 29 September 2020. **Article Link** https://link.springer.com/chapter/10.1007%2F978-3-030-60036-5_3 **About the Book** Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 332. Cham, Switzerland: Springer Nature, 2020. https://link.springer.com/bookseries/8197 **About the Index** Q4, SJR 2019: 0.151. SNIP: 0.211. Cite Score: 0.5. H Index: 40.
17	Mirela Alhasani (Dubali) 2020. *Developing Specialized English Programs at University Level to Match the Communicative Needs of the European Market,* University of Applied Sciences in Tarnow, Poland.

	The University Press of UAS, Tarnow Poland https://wydawnictwa.pwsztar.edu.pl/ https://wydawnictwa.pwsztar.edu.pl/category/publikacje/ https://wydawnictwa.pwsztar.edu.pl/m-alhasani-dubali-developing-specialized-english-programs-at-university-level-to-match-the-communicative-needs-of-the-european-market-tarnow-2020/ ISBN 978-83-959880-0-4

Projects

1. Projects
    a. Horizon 2020 Project - Panbiora
    b. DIM TV
    c. COST Projects
        i. COST 1
        ii. COST 2
        iii. COST 3
        iv. COST 4
        v. COST 5
2. Mobility

    During this academic year, Computer Engineering Department we have applied for two different Erasmus+ agreements with University of Tartu and Polytechnic University of Bucharest.
    This academic year, a Fullbright scholar received an acceptance to spend one semester in Computer Engineering Department. He will visit during the Spring semester of 2019-2020 academic year.

    We are welcomming one Professor from University of Debrecen as a visiting scholar.

3. Trainings and study visits

Dr. Ali Osman Topal participated in the training related to the K-Force Project[1].

Dr. Ali Osman Topal attended a two-week training visit held at University Of Žilina, Slovakia as part of the Special Mobility Strand program of the Kforce Erasmus+ project, in the period 22-April / 04-May 2018. The attendees were from University of Novi Sad - Serbia, University of Tuzla - Bosnia and Herzegovina, University of Tirana - Albania, University of Banja Luka - Bosnia and Herzegovina, Higher Education Technical School of Professional Studies Novi Sad Serbia, and Epoka University - Albania.

During this visit they have participated in various training courses, laboratory sessions, scientific competitions, and teaching sessions. In the training sessions, they had an opportunity to learn fire simulator CFAST which is an open source application. It helps you to simulate fire in any environment and with every material. It allows you to get data about how fast the heat increases based on the size of the room and the materials used for the walls. This data is used to predict in real life how the fire expands in different environments. In laboratory sessions, they did some experiments about how some special materials applied on wood lag the fire effect.

Every year University of Žilina organizes student scientific competition among their bachelor students. Luckily, it happened during their stay and they were member of the competition panel.
They had opportunity to see students' projects from Fire Engineering and Security Engineering.

The training visits improved the competences, linked to professional profiles; broader understanding of practices, policies and systems in education.

[1] https://www.epoka.edu.al/news-dr-ali-osman-topal-participated-in-a-two-week-training-at-university-of-ilina-slovakia-in-the-framework-of-kforce-erasmus-4070.html

Support, Resources & Representation

List of Students' Internships

Participation in Academic Events

Dr. Mirela Alhasani participated at the CA 18209: European Network for Web-centered Linguistic Data Science.

The department of Computer Engineering, represented by Dr. Mirela Alhasani, lecturer of English for Academic and Specific Purposes (EAP/ESP), joined a new *Cost Action 18209 - European Network for Web-centered Linguistic Data Science.*

The kick-off meeting of this action was held on 28th October 2019 in Brussels, Belgium.

The main proposer of this Action is the Polytechnic University of Madrid in Spain. Its main aim is to promote synergies across Europe between linguists, computer scientists, terminologists and other stakeholders in industry and society, in order to investigate and extend the area of linguistic data science. The target of the Action is the construction of a mature holistic ecosystem of multilingual and semantically interoperable linguistic data science required at Web Scale. Such an ecosystem, unavailable today, is needed to foster the systematic cross-lingual discovery, exploration, exploitation, extension and quality control of linguistic data. The forum argues that linked data (LD) technologies, in combination with natural language processing (NLP) techniques and multilingual language resources (LRs) (bilingual dictionaries, multilingual corpora, terminologies), have the potential to enable such an ecosystem that will allow for transparent information flow across linguistic data sources in multiple languages, by addressing the semantic interoperability problem. Membership in this action offers excellent opportunities of collaboration between Epoka's Computer Engineering department and other leading European counterparts.

EPOKA University Joins COST ACTION 18231: Multi3generation Multi-task, Multilingual, Multi-modal Language Generation

Dr. Mirela Alhasani, lecturer at Computer Engineering Department participated at the kickoff meeting of the Cost Action 18231 held during dates 20-22 January 2020 at the University of Copenhagen in Denmark. Cost Action 1823 entitled *Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation* is another new action that EPOKA University, specifically Computer engineering department becomes an active member.

The Leader applicant of this action is the Computer Science department at the University of Copenhagen, Denmark. The main argument of this action is that language generation technologies can greatly benefit both public and private services offered to EU citizens in a multilingual Europe and, thus having strong economic and societal impacts.

Moreover, language generation is a crucial technology if machines are to communicate with humans seamlessly using human natural language. A great number of different tasks within Natural Language Processing are language generation tasks and being able to effectively perform these tasks implies that machines be equipped with world knowledge that require multi-modal processing and reasoning e.g. textual. visual and auditory inputs. The key scientific areas of expertise involved in this action are interdisciplinary: Computer and Information Sciences (machine learning algorithms); Languages and Literature (linguistics, formal cognitive and computational); Computer and Information Sciences (Artificial intelligence, multi-agent systems). Dr. Mirela Alhasani is making her contribution into the second scientific field of linguistic theories mainly cognitive and psycholinguistics. Participation in this international forum deepens the international dimensions of Computer Engineering Department and of EPOKA University. It offers excellent opportunities for further scientific collaboration in the track of language technology with other renowned international universities.

TechSpace Study Visit

On 13 January 2020, students of Epoka University, accompanied by Dr. Igli Hakrama, visited TechSpace to learn more about the opportunities for startup incubation and support available there. Students from Business Informatics and Computer Engineering Departments participated in the study visit and information session. The information session was held from the manager of Tech Space, who is himself an Alumni of Epoka University and who explained in detail the mission of TechSpace and all the startup support opportunities available there.

The main focus was on the Start-Up Program 2020: Roadmap to Silicon Valley, a unique opportunity in Albania. For students participating in the startup competition, the first step is having an idea. This idea is then developed through stages of incubation. Firstly the interested students should apply online on at https://techspace.al/home/startup-program. These applications will be judged by a jury of both Albanians and qualified external evaluators.

The 20 best ideas will advance to the next stage of the competition and will present their ideas before a jury on the second week of February. In the presentation, which may include a Powerpoint or PDF, students will explain the focus of their focuses, how it incorporates technology , how it solves a problem, and why it should be chosen.

From these presentations again, the same jury will select the 10 best ideas and presentations and

these 10 best will be the winners of the trip to Silicon Valley. From that moment the groups or the people who have developed these ideas will participate in six-week training provided by TechSpace to prepare for the implementation of these ideas. The training is the pre-incubation of the ideas to prepare the needed business models, promotion and marketing. In March students will visit Silicon Valley on a one-week trip for which the program pays the cost. This trip provides winners with an amazing opportunity of seeing the world's best technology center dedicated to innovations and social media.

After the trip, students will be back in Albania, where for 6 intensive months they will work on their Startup ideas to generate the needed applications to make their ideas come to life. Every detail will be taken in consideration. These projects will be undertaken in teamwork so that everyone can contribute to creating the best version of the idea, to make it practical and useful. All stages will be taken in consideration, including design thinking, user interface experience and the creation of the prototype. These will be evaluated by a professional, selected jury.

Mature ideas may be sold to interested investors. The goal of this process is that the final product will be useful, profitable, and solve the problem which generated the idea.
Students who participated in the 13 January study visit to TechSpace had the opportunity to ask their questions which were mainly focused on the needed criteria of the application for the startup and then brainstorming common ideas. Students were also interested in TechSpace itself and asked about its operations and goals. The study visit concluded with a tour around the building, providing students with the opportunity to see TechSpace area, including the various work and meeting spaces and the facilities
offered for students who worked for school project or for the ones who were using this place for generating their Startup ideas. The tour was very interesting and helpful for everyone; students were pleased to find that registration for the use of TechSpace is free and easy.

This study visit to TechSpace was an excellent means of not only learning about the exciting Start-Up Program 2020: Roadmap to Silicon Valley event, but also for getting to know more about TechSpace itself and the other valuable opportunities it provides for entrepreneurial-minded students.

Developer Student Club | A community group for students with an interest in growing as developers

Epoka University is about to establish Developer Student Club (DSC), a community group for students with an interest in growing as developers.

Developer Student Clubs are run by Google Developers globally. By joining a DSC, students grow their knowledge in a peer-to-peer learning environment and build solutions for local businesses and their community. DSC will organize and facilitate workshops in our university to provide students with technical development skills. Interested students get an opportunity to apply their skills for a real-life problem sourced from the local community. In addition, students gain problem solving skills as they understand and develop a solution using technology.

A successful informative session of this club was held this Tuesday, on 29th of October. More than 50 students attended the session, which was organized and presented by Anila Hoxha and Amanda Boci, both second year students of Computer Engineering, with the help of professor Enea Mancellari.

We thank all the students who were present in the session and we are looking forward to seeing you again in our first workshop!

Computer Engineering Department research receives media coverage

Research conducted by the Department of Computer Engineering received media coverage on HIPEAC magazine for its work on medical imaging.

Researchers in this department are working on developing safer medical implants in the framework of Personalized and Generalized Integrated Biomaterial Risk Assessment (PANBioRA) Horizon 2020 project. PANBioRA project consortium is composed of 17 partner institutions from 11 different countries.

Dr. Arban Uka, an assistant professor of the Computer Engineering Department, stated that the focus of the work is image acquisition and image analysis. These two are very up to date research areas and the impact is much higher when applied to medical field. Portable microscopy units using phase contrast and brightfield microscopy are developed to comply with the complete system developed by the PANBioRA Consortium. The challenges regarding the quality of the acquired images requires an additional effort to compute reconstruction which is in itself an interesting research field. The processed images are then analyzed to determine the toxicity of a biomaterial by monitoring the morphology of the cells, counting and segmenting them. The diversity in the morphology of the cellular material requires the use of machine learning techniques for training of convolutional neural networks, which has to be conducted on graphics processing unit up to few days, adds Arban. The training is conducted on images of certain biological components that are relevant to the toxicity of biomaterials.

Development and implementation of Multimedia and Digital Tv curricula - (DIMTV)

Staff from Epoka University attended a training activity in the framework of "DEVELOPMENT AND IMPLEMENTATION OF MULTIMEDIA AND DIGITAL TV CURRICULA"- DIMTV Erasmus+ CBHE project, where Epoka University is a partner.

The third study visit of The Erasmus+ project "DEVELOPMENT AND IMPLEMENTATION OF MULTIMEDIA AND DIGITAL TV CURRICULA"- DIMTV took place during January 21st - 23rd, 2019 in Slovenia at the University Ljubljana, Faculty of Electrical Engineering

During the 3 day event, Department of Computer Engineering Staff Dr. Ali Osman TOPAL and Mukremin OZKUL participated in the training on Modeling and Animation.

The aim of the training was to provide the trainees with international experience on Multimedia for PM education.

In the third day, a visit to lab facilities at University Ljubljana was realized.

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. Livia Plaku for her valuable contribution as department coordinator. Her hardwork and patience was essential in fulfilling all the tasks for the support and management of two bachelor programs, three master programs and one PhD program.

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