BSc Energy Engineering

Syllabuses

<table>
<tr><td rowspan="2">Course</td><td colspan="4">Fundamentals of Electrical Engineering I</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>I</td><td>6</td><td>110-FEE-101</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The aim of the course in Fundamentals of Electrical Engineering is to provide students with a foundational understanding of the principles, theories, and practical applications of electrical engineering and electronics engineering.
This course provides an introduction to basic electrical concepts, including voltage, current, resistance, and power, and develops a basic understanding of electrical circuits and their components, Thevenen and Northon Methods.
This course is designed to teach methods for analyzing and solving electrical circuits using principles such as Ohm's Law and Kirchhoff's Laws.
This course provides the basic concepts related to electrical circuits, DC circuits, transient and steady state solution methods.
In this course explores the principles of semiconductor devices such as diodes, transistors, amplifiers, and their applications in electronic systems.
In the end this course provide hands-on laboratory experiences to reinforce theoretical concepts and develope practical skills in using measurement instruments, troubleshooting circuits, and designing simple electrical systems.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">The aim is for students to be able to:
Possess advanced knowledge of fundamental electrical concepts such as voltage, current, resistance, and power.
Analyze simple electrical circuits using basic circuit laws and theorems.
Understand series and parallel circuits, as well as their combinations.
Differentiate between direct current (DC) and alternating current (AC) circuits.
Demonstrate how are the function of common electronic components like resistors, capacitors, inductors, diodes, and transistors.
Organize laboratory exercises to reinforce theoretical concepts and develop practical skills.</td></tr>
<tr><td rowspan="8">Content</td><td colspan="3">Weekly plan</td><td>Week</td></tr>
<tr><td colspan="3">Presentation of Syllabus and materials</td><td>1</td></tr>
<tr><td colspan="3">Introduction to Basics of Electrical and Electronics</td><td>2</td></tr>
<tr><td colspan="3">Electric charges, Electric Field, Capacitance and capacitors</td><td>3</td></tr>
<tr><td colspan="3">Potential energy, Potential and electrical voltage</td><td>4</td></tr>
<tr><td colspan="3">Constant DC currents, Electrical circuit elements,</td><td>5</td></tr>
<tr><td colspan="3">Conductivity and electrical resistance, Joule's law, The Kirkoff's laws, Connectors of resistors, Capacitor circuits, DC</td><td>6</td></tr>
<tr><td colspan="3">(stationary) composite circuits,</td><td></td></tr>
</table>

	Methods for solving stationary linear electrical circuits; Superposition and theorems of electrical circuits	7
	Solution of electrical circuits according to the method of voltages between nodes or the method of node potentials	8
	Solution of electrical circuits according to the method of contour currents, Method of superposition	9
	Method of reciprocity, Tevenen method, Norton's method	10
	Semiconductors, Diodes, characteristics of diodes. Using Diodes, Zener Diodes, Switching Diodes	11
	Bipolar Transistors	12
	Field effect transistors, transistors as amplifiers and as	13
	Thyristors, optoelectronic elements, Amplifiers	14
	Presentation of projects and preparation for the exam	15

Teaching/Learning Methods	**Activities**	**Weight**
	1. Lectures	50
	2. Numerical Excerices	20
	3. Laboratory Excercises	20
	4. Quiz, Activity	10

Assessment Methods	**Assessment activities**	**Nr.**	**Week**	**Weight**
	1. Attendances at Lectures	2	1-15	5
	2. Attendances Numerical Excerices	1	1-15	10
	3. Attendances Laboratory Excercises	1	1-15	15
	4. Quiz			10
	5. Colloquium	2	7,14	2x30
	6. Exam			60

Course resources	**Resources**	**Nr.**
	1. Classroom	1
	2. Moodle	1
	3. Projector	1
	4. Laboratory	1

ECTS Workload and activities	**Type of activities**	**Weekly**	**Load**
	1. Lectures	2x15	30
	2. Numerical Excerices	1x15	15
	3. Laboratory Excercises	1x15	15
	4. Quiz		2
	5. Independent learning		71
	6. Consultations	1x15	15
	7. Exam		2

Literature/References

Lecture Materials

- Course materials from Lecturer
- Elektroteknika, Bazat Teorike, Lutfi Bina, PhD, 2017
- Sriniovas, Basic Electronic Engineering, I.K. International, 2014.
- Charles K. Alexander and Matthew N.O. Sadiku, Fundamentals of Electric Circuits 7th Edition, Jan 3, 2020
- Reza, Fundamental Concepts in Electrical and Computer Engineering with practical design problems, Universal Publishes, 2007.
- Christopher R Robertson, Fundamental Electrical and Electronic Principles, Newnes, Elsevier, Third Edition,2008.
- Fundamentals of Electrical Engineering I, The Opern University of Hong Kong.

	○ Chen, The Electrical Engineering Handbook, Academic Press, 2004. ○ Jones, Electrical and Electronic Problems and Challenges, Dearborn Trade Publishing, 2004. ○ Nexhat Orana, Bazat e elektroteknikës1, 1995, Prishtinë.
Contact	

Course	**Mathematics I**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	I	5	110-MAT-
Lecturer				
Aims and Objectives	The purpose of this course is to provide a comprehensive review and deepening of mathematical concepts, focusing on key topics from trigonometry to advanced areas like complex numbers, linear algebra, vector algebra, and analytical geometry in space. The course aims to reinforce and expand students' understanding of fundamental mathematical principles, preparing them for more advanced studies and			
Learning Outcomes	At the end of this course students will be able to: • Understand and apply concepts related to complex numbers and the trigonometric form of complex numbers; • Use knowledge of matrices and determinants as well as to solve systems of linear equations; • Understand and apply some concepts of analytic geometry in relation to equations of lines and planes; • Possess knowledge about the use of computer packages for calculation.			
Content	**Weekly plan**			Week
	Introducing students to the course program.			1
	Trigonometry; Apply trigonometric concepts in problem-solving and mathematical analysis.			2
	Exploring of the field of complex numbers and their properties.			3
	Performing of operations with complex numbers in both algebraic and trigonometric forms.			4
	Matrices and matrix operations			5
	Determinant. Inverse matrix			6
	Systems of linear equations; Solution methods: Kramer's rule, Gauss elimination, Gauss-Jordan elimination			7
	Homogeneous systems and their solutions			8
	Definition and elementary properties of vectors. Operations with vectors. Linear dependence of vectors			9
	Investigation of scalar production, vector production, and mixed production of vectors			10
	Equation of planes in space in different forms, reciprocal positions of planes in space			11
	Equation of line in space in general form, in normal form, in segmental form, in canonical form			12
	Reciprocal positions between two lines in space. Reciprocal positions between the line and the plane in space			13
	Integration and Application; Integration of concepts learned across the course,			14
	Problem-solving and application of mathematical techniques			15
Teaching/Learning Methods	**Activity**			**Weight**
	1. Lectures			40
	2. Exercises			40
	3. Homework			20
Assessment Methods	**Assessment Activity**	**Number**	**Week**	**Weight (%)**
	1. Quiz	2	6,12	40

	2. Attendances	15	10
	3. Activity in the lecture	15	15
	4. Final Exam		35
Course resources	**Resources**		**Nr.**
	1. Classroom		1
	2. Moodle		1
	3. Projector		1
	4. Table, marker		1
ECTS Workload and activities	**Type of Activities**	**Weekly hours**	**Load**
	1. Lecture	2x15	30
	2. Exercises	2x15	30
	3. Consultation	1x15	15
	4. Independent Learning		48
	5. Exam		2
Literature/References	Lecture materials o Course materials from Lecturer o Nazmi Misini Ligjërata dhe ushtrime në formë dispense, 2023 o Faton Kabashi Matematikë 1 me përmbledhje detyrash, Prishtinë 2021 o Margaret L. Lial, John Hornsby, College Algebra and Trigonometry, Global Edition Paperback – January 1, 2017. o Hajdar Peci, Matematikë I, 2017. o Razim Hoxha, Përmbledhje detyrash nga Matematika 1, Prishtinë 2011. o Harshbarger R.&Reynolds J.: Mathematical applications, Boston, New York 2004. **Additional recommended literature (updated 2020–2026)** o Stewart, J., Clegg, D., & Watson, S. (2020). Calculus: Early Transcendentals (9th ed.). Cengage. o Lay, D. C., Lay, S. R., & McDonald, J. J. (2021). Linear Algebra and Its Applications (6th ed.). Pearson.		
Contact			

Course	**Fundamental Energy Sources**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	I	5	110-FES-
Lecturer				
Aims and Objectives	In this course will be taught what are the alternative and fossil sources of energy and their description of the mode of operation. Sustainability of conventional as well as renewable energy sources such as Wind Power Systems, Solar Power Systems, Hydro Power Systems, Tidal Power Systems, Hydrogen Power Systems, Geothermal Power Systems, Biomass Power Systems etc.			
Learning Outcomes	Upon completion of this course, students will be able to: • Define the Physical Basis of Energy Processes in Power Plants: Provide an understanding of the physical principles underlying energy processes in electrical power plants. • Classify Direct and Indirect Energy Conversions into Electrical Energy and Useful Forms of Energy: Articulate the processes involved in both direct and indirect conversions of energy into electrical energy and other beneficial forms. • Analyze Open, Closed, Reversible, and Irreversible Systems and Processes • Evaluate Efficiency, Exergy, Ideal, and Real Work in Energy Processes: Perform calculations for efficiency, exergy, as well as ideal and real work in various energy processes. • Demonstrate knowledge and understanding of the Fundamental Parameters of Energy Processes in Power Plants: Examine key parameters of energy processes in thermal power plants (fossil, geothermal, nuclear, solar) and hydroelectric power plants. • Analyze Basic Parameters of Energy Processes in Solar and Wind Power plants • Examine the Operation of Power Plants Based on the Requirements of the Electrical Power Systemthe Operation of Power Plants Based on the Requirements of the Electrical Power System.			
Content	**Weekly plan**			**Week**
	Presenation of sillabuses and materials			1
	First and Second Law of Thermodynamics: Ideal gas processes.Carnot cycle, max work, entropy			2
	Thermal Efficiency, Rankine Cycle with Steam Turbine. Joule Cycle with Gas Turbine, Combustion of Fossil Fuels, Steam Generators (design, operation, effluents)			3
	Analysis of Steam and Gas Turbines; Materials, construction,			4
	Midterm Exam			5
	Conservation Equations for Mass, Momentum, and Energy			6
	Analysis of Water Turbines			7
	Analysis of Wind Turbines and Solar Power Plants			8
	Thermoelectric Effect, Piezoelectricity, Fuel Cells; Applications and efficiency; Rechargeable batteries; Reversible Hydroelectric Power Plants			9
	Other sources of basic atomic energy - hydrogen and nuclear			10
	Three-Phase Systems, Symmetrical Components: Vector and phasor diagrams, Short-circuit calculations, Basic components and topology of power systems			11

	Interdependence of Energy Consumption, Economic Development, and Environmental Impact; Role of energy efficiency in sustainable development; Indicators of energy consumption;Determining consumption and Sankey diagrams (energy analysis); Basic types of energy consumption;	12
	Indicators of energy performance	13
	Indicators of environmental impact	14
	Energy, Environment, and Society Development; Global reserves, production, and consumption of energy; Modeling sustainable development paths; Indicators of sustainable development	15

Teaching/Learning Methods	**Activities**	**Weight**
	1. Lectures	50
	2. Laboratory Excercies	30
	3. Practice	20

Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight**
	1. Attendances at Lecture			10
	2. Attendances at Lab.			10
	3. Group homework			10
	4. Study visit			20
	5. Exam			50

Course resources	**Resources**	**Nr.**
	1. Classroom	1
	2. Moodle	1
	3. Projector	1
	4. Laboratory	1

ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Laboratory Excercises	1x15	15
	3. Study visit		15
	4. Seminars		15
	5. Independent learning		34
	6. Consultations	1x15	15
	7. Exam		1

Literature/References	Lecture materials o Course materials from Lecturer o Masters, G. M., & Hsu, K. F., Renewable and Efficient Electric Power Systems (3rd ed.). Wiley, 2023. o International Energy Agency. (2024). World Energy Outlook 2024. IEA. o Non-Conventional Energy Sources and Utilisation - R.K. Rajput - S.Chand & Company Ltd., 2012. o Non-Conventional Energy Resources - B.H.Khan - Tata Mc Graw Hill, 2nd Edn, 2009 o Non-Conventional Energy Sources - G.D. Rai – Khanna Publishers, New Delhi,1999. o Renewable Energy Sources - Twidell, J.W. and Weir, A. - EFN Spon Ltd., 1986. o Ali Keyhani “Design of Smart Power Grid Renewable Energy Systems 3rd Edition” Wiley-IEEE Press, 2016 o Gilbert M. Masters “Renewable and Efficient Electric Power Systems” 2nd Edition, Wiley-IEEE Press, 2013.
Contact	

Course	**Physics**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	I	4	110-PHY-104
Lecturer				
Aims and Objectives	This course aims to provide a strong foundation in classical mechanics, oscillations, waves, and introductory thermodynamics, preparing students for advanced physics courses and aligning with the requirements of a bachelor's degree program in engineering or related fields.			
Learning Outcomes	Upon completion of this course, students will be able to: • Apply Classical Mechanics Principles: Demonstrate a proficient understanding of classical mechanics, including kinematics, dynamics, and Newton's laws, and apply these principles to solve problems related to motion, forces, and equilibrium. • Quantify Energy, Momentum, and Fluid Mechanics: Analyse and quantify energy concepts such as work, kinetic energy, and potential energy, as well as linear momentum, applying these principles to solve problems related to mechanical systems and extending understanding to basic fluid mechanics. • Understand Linear Momentum and Collisions: Apply the principles of linear momentum and impulse to analyze collisions, both elastic and inelastic, and demonstrate an understanding of the conservation of linear momentum in complex physical scenarios. • Conduct Laboratory Experiments: Demonstrate experimental skills by designing and conducting laboratory experiments, collecting data, and analysing results, fostering an understanding of the scientific method and measurement techniques.			
Course Content	**Weekly Plan**			**Week**
	Introduction to Mechanics			1
	Kinematics: motion in one and two dimensions, Newton's laws of motion			2
	Forces and Free Body Diagrams			3
	Equilibrium of particles and rigid bodies			4
	Friction and Centroids			5
	Kinetic and Potential Energy, Conservation of mechanical energy			6 7
	Conservation of mechanical energy, Power and its applications			8 9
	Linear Momentum and Collisions			10
	Rotation of Rigid Bodies			11
	Rotation of Rigid Bodies Oscillations and Waves			12
	Fluid Mechanics (Properties of fluid, Fluid statics: pressure, buoyancy)			13 14
	Fluid dynamics: continuity equation, Bernoulli's equation Thermodynamics (Temperature, heat, and the zeroth law of thermodynamics)			15
	Work, heat, and the first law of thermodynamics, Thermal expansion and heat transfer			
	Activity			**Weight (%)**
	1. Lectures			30

Teaching/Learning Methods	2. Project 3. Lab Exercises 4. Case studies 5. Problem solving		20 30 10 10
Assessment Methods	**Assessment Activity**	**Week**	**Weight (%)**
	1. Attendances at Lectures and Lab. Exercise	15	10
	2. Activity in the lecture		10
	3. Exam		50
	4. Project	8, 15	30
Course resources	**Resources**		**Nr.**
	1. Classroom		1
	2. Moodle		1
	3. Lab.		1
	4. Projector		1
ECTS Workload activities	**Type of Activities**	**Weekly hours**	**Load**
	1. Lectures and exercise	2x15	30
	2. Lab Exercise	1x15	15
	3. Home work		15
	4. Independent learning		38
	5. Exam		2
Literature/References	Lecture Materials o Course materials from Lecturer o Halliday, D., Resnick, R., & Walker, J., Fundamentals of Physics (12th ed.). Wiley, 2021. o Ling, S. J., Sanny, J., & Moebs, W., University Physics, OpenStax. Rice University, 2016. o Randall D. Knight, Physics for Scientists and Engineers: A Strategic Approach with Modern Physics, Pearson, 2016. o Skender H. Skenderi & Dr. Rashit Maliqi, Ushtrime interaktive dhe laboratorike nga Fizika, Prishtinë, 2011. o David Halliday, Robert Resnick, Jearl Walker, Fundamentals of Physics, Extended 10th Edition, Wiley, 2013. o Hugh D. Young, Roger A. Freedman, University Physics with Modern Physics, 14th Edition, Pearson, 2015.		
Contact			

<table>
<tr><td rowspan="2">Course</td><td colspan="4">Information and Communication Technologies</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>I</td><td>4</td><td>110-ICT-105</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The aims and objectives of a course are to:
Develop a comprehensive understanding of fundamental concepts in information technology, including computer systems, networks, and software applications.
Equip students with hands-on skills in utilizing software applications for effective communication and collaboration in digital environments.
Apply advanced techniques in spreadsheet and text processing applications for data analysis, document creation, and presentation development.
Apply encryption and access control techniques to secure data, practice safe web browsing, and protect personal information in digital communication.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">At the end of this course students will be able to:
Develop a foundational understanding of computer systems, including hardware, software
Understand the basics of computer networks, internet protocols, and network security. e, and operating systems
Possess advanced knowledge with software applications, including advanced spreadsheet techniques and text processing.
Understand the importance of information security and privacy. They will apply encryption and access control techniques to protect sensitive data, etc.</td></tr>
<tr><td>Content</td><td colspan="3">Weekly Plan</td><td>Week</td></tr>
<tr><td></td><td colspan="3">Introduction to Information Technology</td><td>1</td></tr>
<tr><td></td><td colspan="3">Basics of Computer Hardware and Software</td><td>2</td></tr>
<tr><td></td><td colspan="3">Computer Networks</td><td>3</td></tr>
<tr><td></td><td colspan="3">Internet Protocols and Services and Network Security</td><td>4</td></tr>
<tr><td></td><td colspan="3">Software Applications (Office Productivity Suites e.g., Microsoft Office, Google Workspace)</td><td>5</td></tr>
<tr><td></td><td colspan="3">Advanced Spreadsheet Techniques and Text Processing in</td><td>6</td></tr>
<tr><td></td><td colspan="3">Web Technologies and Internet Communication</td><td>7</td></tr>
<tr><td></td><td colspan="3">Safe Web Practices: Browsing and Transactions</td><td>8</td></tr>
<tr><td></td><td colspan="3">Information Security and Privacy (Introduction to</td><td>9</td></tr>
<tr><td></td><td colspan="3">Data Encryption and Access Control and Protecting Personal Information and Privacy</td><td>10</td></tr>
<tr><td></td><td colspan="3">Digital Communication and Collaboration</td><td>11</td></tr>
<tr><td></td><td colspan="3">Social Media Management and Communication, Collaboration Tools: Project Management and Online Meetings</td><td>12</td></tr>
<tr><td></td><td colspan="3">Emerging Technologies, Internet of Things (IoT)</td><td>13</td></tr>
<tr><td></td><td colspan="3">Artificial Intelligence and Machine Learning Basics</td><td>14</td></tr>
<tr><td></td><td colspan="3">Virtual Reality (E-ON XR Platform)</td><td>15</td></tr>
</table>

Teaching/Learning Methods	**Activity**			**Weight (%)**
	1. Lectures			20
	2. Seminars			20
	3. Laboratory			40
	4. Case studies			10
	5. Problem-based learning			10
Assessment methods	**Assessment Activity**	**Nr.**	**Week**	**Weight (%)**
	1. Quiz			10
	2. Seminars			10
	3. Midterm exam		7	30
	5. Final Exam			50
Course resources	**Resources**			**Number**
	1. Class			1
	2. Laboratory			1
	3. Moodle			1
	4. Software Windows 10, MS Office 2016			1
	5. Projector			1
ECTS Workload and activities	**Type of Activitiesy**		**Weekly**	**Load**
	1. Lectures		2x15	30
	2. Seminars			10
	3. IT Lab			15
	4. Independent learning			43
	5. Exam			2
Literature/Reference	Lecture materials o Course materials from Lecturer o V. Rajaraman, Introduction to Information Technology (latest available edition). PHI Learning, 2023. o Kurose, J. F., & Ross, K. W., Computer Networking: A Top-Down Approach (8th ed.). Pearson, 2021. o V. Rajaraman, Introduction to information technology, 2018. o Video lectures in Moodle o B. Skenderi, Windows 8.1, Besnik Skenderi (Moodle) o B. Skenderi, MS Word 2010 dhe MS Excel i avancuar 2010 (Moodle) o B. Skenderi, IT Siguria (Moodle) o MS Excel i Avancuar 2013 (Moodle) o B. Skenderi, Migrimi ne SharePoint,(Moodle) o Shelly, Cashman and Vermatt, Discovering Computers 2004/2003/2002, Thomson Course Tech., 2004/2003/2002. o Rainer, Turban & Potter, Introduction to Information Systems, John Wiley & Sons.			
Contact				

<table>
<tr><td rowspan="2">Course</td><td colspan="4">Engineering Design and CAD</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>I</td><td>3</td><td>110-EDC-106</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">Through this course, students will acquire knowledge related to Engineering Design and Computer-Aided Design (CAD), a primary objective. Specifically, fundamental concepts will be explained individually, starting with instructions for sketching, orthographic drawing, drawing and sectional views, dimensioning, isometric drawing and drafting, match joints, tolerances, and surface texture.
The primary objective of this course is specific and is based on providing students with scientific and engineering knowledge in the relevant field, including theoretical and practical knowledge. Based on this goal, we also aim to achieve the objectives, so that every student can identify and understand the engineering graphics next to the requirements necessary to provide real solution.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">Upon completion of this course, students will be able to:
Understand the fundamental concepts of engineering design and CAD
Drawn the objects in 2D and 3D
Interpret and read engineering drawing
Use CAD technologies for implementation</td></tr>
<tr><td>Content</td><td colspan="4"><table><tr><td>Weekly Plan</td><td>Week</td></tr><tr><td>Introduction to Engineering Drawing</td><td>1</td></tr><tr><td>Geometrical Construction-Coordinate Systems/Basic Entities</td><td>2
3</td></tr><tr><td>Geometrical Construction-Drawing Simple Geometric Objects/Editing</td><td>4</td></tr><tr><td>Introduction to Solid Modeling</td><td>5</td></tr><tr><td>Projection Theory/Projection of Principal Views from 3-D Models</td><td>6
7</td></tr><tr><td>Orthographic Projection-Visualizing Solids and Multiview Drawings</td><td>8</td></tr><tr><td>Orthographic Projection-Projection of the 3rd Principal View From Other Two</td><td>9
10</td></tr><tr><td>Midterm exam</td><td>11</td></tr><tr><td>Principal Views/Auxiliary Views</td><td>12</td></tr><tr><td>Isometric Drawing</td><td>13</td></tr><tr><td>Section Views</td><td>14</td></tr><tr><td>Section Views
Dimensioning and Tolerance Practices
Introduction to Assembly Drawing
Presentation Techniques of Engineering Drawings – Printing, Title Blocks</td><td>15</td></tr></table></td></tr>
<tr><td>Teaching/Learning Methods</td><td colspan="4"><table><tr><td>Activities</td><td>Weight (%)</td></tr><tr><td>1. Lectures</td><td>30</td></tr><tr><td>2. Project</td><td>20</td></tr><tr><td>3. Exercises</td><td>30</td></tr><tr><td>4. Case studies</td><td>10</td></tr><tr><td>5. Problem solving</td><td>10</td></tr></table></td></tr>
</table>

Assessment Methods	**Assessment Activity**	**Week**	**Weight (%)**
	1. Attendances	15	10
	2. Activity in the ecture	15	10
	3. Exam	7,15	40
	4. Project	8, 14, 15	40
Course resources	**Resources**		**Number**
	1. Classroom		1
	2. Moodle		1
	3. Software		1
	4. Projector		1
	5. PC Lab		1
ECTS Workload and activities	**Type of Activities**	**Weekly hrs**	**Load**
	1. Lectures and exercise	2x15	30
	2. Project		25
	3. Independent learning		20
Literature/References	Lecture Materials Basic literature: ○ Course materials from Lecturer ○ Bertoline, G. R., Wiebe, E. N., Hartman, N. W., & Ross, W. A., Technical Graphics Communication (7th ed.). McGraw Hill, 2020. ○ Auto CAD User Documentation and Learning Resources. Autodesk, 2025. ○ Edward E. Osakue, Introductory Engineering Graphics. Momentum Press, LLC. ISBN-13: 978-1-94708-361-5, 2018 Additional literature: ○ Kirstie Plantenberg, Engineering Graphics Essentials, Fifth Edition. SOC Publications. ISBN-13: 978-1-63057-052-l, 2016 ○ K.C. John, Engineering Graphics for Diploma. PHI Learning Private Limited. ISBN 978-81-203-3722-0, 2009 ○ Aleksandr Yurievich Brailov, Engineering Graphics: Theoretical Foundations of Engineering Geometry for Design. Springer International Publishing Switzerland. ISBN 978-3-319-29719-4, 2016 ○ Frederick Giesecke, Shawna Lockhart, Marla Goodman, Cindy M. Johnson, Technical Drawing with Engineering Graphics Fifteenth Edition. Pearson Education, Inc. ISBN 978-0-13-430641-4, 2016 ○ Mitchell, Alva; Spencer, Henry Cecil; Hill, Ivan Leroy; Dygdon, John Thomas; Novak, James E. Giesecke, Frederick E, Technical Drawing. Pearson College Div. ISBN 9780130081834. (UBT Library - Barcode: 002-289077, Biblionumber: 14801), 2003		
Contact			

Course	**English I**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	I	3	110-ENG-107
Lecturer				
Aims and Objectives	This course is an integrated skills course designed to develop student language competencies with systematic work on four skills (speaking, listening, reading and writing) as well as comprehensive work on grammar and vocabulary with basis on professional language. Learners are expected to gain intermediate level of fluency. Class time will develop methodologically using a communicative and task based approach. In this regard, classes will generally start with discussions based on personal experience and opinion and will proceed with activities where the students will be engaged in a student cantered environment. Furthermore, students have to apply lexical terms and grammatical principles in a pragmatic way utilizing English to suit their own needs. Thus, this course aims: • To provide students with opportunities to develop English language skills through listening, speaking, reading and writing activities. • To practice writing skills for compositional, personal and academic purposes. • To help students develop a practical application of English grammar. • To give students opportunities to read and speak about advanced topics, showing understanding of significant ideas, themes, events and characters and refer to the text when explaining their views. • To help students become autonomous learners. • To help students develop ideas thoughtfully, describing events and conveying their opinions clearly. • To equip students with professional terminology.			
Learning Outcomes	By the end of the course students will be able to: • Use English for communication purposes. • Write proper academic papers. • Comprehend English from reading and listening. • Use English sentence structure and grammar tenses accurately.			
Content	**Weekly plan**			**Week**
	Unit 1: A new job			1
	Unit 2: Organizations and Roles			2
	Unit 3: Quality			3
	Movie and Discussion			4
	Unit 4: Money			5
	Unit 5: Import/Export			6
	Unit 6: Travel			7
	Quiz			8
	Unit 7: Career Prospects			9
	Unit 8: Time is Money			10
	Unit 9: The costumers			11
	Debate			12
	Unit 10: Business Online			13

	Unit 11: Not for profit Unit 12: Problem Solving Preparation for Final Exam	14 15
Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. The teaching methodology in this course envisages the student at the centre of the lesson and interactivity to a large extent. This includes student cooperation in groups, work in pairs, self-evaluation by students and evaluation of each other's work. Consequently, the greatest work for this subject will take place during the lectures and exercises that make the active participation of students to be an essential component for achieving the objectives of the course, as well as achieving the expected results.	100

Assessment Methods	**Assessment activity**	**No.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	15	1-15	5
	2. Participation			10
	3. Home work			10
	4. Quiz, Movie, Debate			25
	5. Final exam			50

Course Resources	**Resources**	**No.**
	1. Class	1
	2. Moodle	1
	3. Projector	1

ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Consultations	1x15	15
	3. Mid-term Seminar		4
	4. Independent learning		19
	5. Exam preparation		6
	6. Exam		1

Literature/References	Lecture materials o Course materials from Lecturer o Hewings, M., Advanced Grammar in Use (3rd ed.). Cambridge University Press, 2013. o British Council., LearnEnglish: Skills and Grammar Resources. British Council, 2025. o Profile by Jon Naunton and Mark Tulip, Students' Book, Pre Intermediate, Oxford, 2011 o Profile by Jon Naunton and Mark Tulip, Workbook, Pre Intermediate, Oxford, 2011
Contact	

Subject	**Fundamentals of Electrical Engineering II**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	II	6	
Lecturer				
Aims and Objectives	The aim of the course Scientific Principles of Energy Technology is to provide students with a foundational understanding of the Advanced Circuit Analysis, with application of nodal and mesh analysis to multi-loop and multi-node circuits. This course provides an introduction to AC Circuits and Power Systems, Alternating current (AC) fundamentals and impedance in AC circuits and Three-phase systems. This course provides the basic of power generation, transmission, and distribution. This course is designed to teach Electromagnetic Induction and Magnetic Circuits, Faraday's law of electromagnetic induction, Self-inductance and mutual inductance and Applications of Magnetic circuits. In the end this course student provides Practical laboratory sessions for hands-on experience with circuit components and measurements, to reinforce theoretical concepts.			
Learning Outcomes	The aim is for students to be able to: • Apply of nodal and mesh analysis to multi-loop and multi-node circuits; • Analyze and solve problems related to alternating current (AC) circuits, phasor representation, and basic power systems, showcasing an understanding of electrical power transmission and distribution. • Demonstrate knowledge and understanding of fundamental electromagnetic principles. • Analyze magnetic circuits and transformers. • Use knowledge in theoretical concepts to real-world scenarios through hands-on laboratory experiments, developing practical skills in working with electrical components and measuring devices.			
Content	**Weekly plan**			**Week**
	Presentation of Syllabus and materials			1
	Advanced Circuit Analysis			2
	Review of fundamental circuit analysis techniques Application of nodal and mesh analysis to multi-loop and multi-node circuits; Thevenin's and Norton's theorems for circuit			3,4
	AC Circuits and Power Systems			5
	Alternating current (AC) fundamentals			6
	Phasor representation and impedance in AC circuits			7
	Introduction to three-phase systems			6
	Basics of power generation, transmission, and distribution			8
	Electromagnetic Induction and Magnetic Circuits			9
	Faraday's law of electromagnetic induction Self-inductance and mutual inductance			10
	Magnetic circuits and their applications			11
	Transformers: principles and operation			12

	Practical laboratory sessions for hands-on experience with circuit components and measurements.	13
	Assignments and problem-solving sessions to reinforce theoretical conceptss	14
	Presentation of projects and preparation for the exam	15

Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures	60
	2. Numerical and Laboratory Excerices	40

Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances Lecture		1-15	10
	2. Attendances Numerical and Laboratory Excerices		1-15	20
	3. Exam			70

Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Moodle	1
	3. Projector	1
	4. Laboratory	1

ECTS Workload	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Numerical and Laboratory Excerices	1x15	15
	3. Consultations	1x15	15
	4. Independent learning		63
	5. Exam		2

Literature/References

Lecture materials

- Course materials from Lecturer
- James W. Nilsson, Susan A. Riedel, Electric Circuits, Jan 9, 2018
- Paul C. Krause, Introduction to Electric Power Systems, Feb 28, 2017
- James L. Kirtley, U. S. Parashar, Electric Power Principles: Sources, Conversion, Distribution and Use, 2 nd edition, Mar 9, 2020
- David J. Griffiths, Introduction to Electrodynamics, 4Th Edition, jan 1, 2020.
- William H. Hayt Jr., John A. Buck, Engineering Electromagnetics, Ninth Edition.
- Fawwaz T. Ulaby, Electromagnetics for Engineers, Jul 4 , 2023.
- Elektroteknika, Lutfi Bina, PhD, 2017
- Nexhat Orana, Bazat e elektroteknikës1, 1995, Prishtinë
- Charles K. Alexander and Matthew N.O. Sadiku, Fundamentals of Electric Circuits 7th Edition
- Reza, Fundamental Concepts in Electrical and Computer Engineering with practical design problems, Universal Publishes, 2007.
- Christopher R Robertson, Fundamental Electrical and Electronic Principles, Newnes, Elsevier, Third Edition,2008.
- Fundamentals of Electrical Engineering I, The Opern University of Hong Kong.
- Chen, The Electrical Engineering Handbook, Academic Press, 2004.
- Jones, Electrical and Electronic Problems and Challenges, Dearborn Trade Publishing, 2004.
- Sriniovas, Basic Electronic Engineering, I.K. International, 2014.

Additional recommended literature (updated 2020–2026)

• Masters, G. M., & Hsu, K. F. (2023). Renewable and Efficient Electric Power Systems (3rd ed.). Wiley.

• Çengel, Y. A., Boles, M. A., & Kanoğlu, M. (2019). Thermodynamics: An Engineering Approach (9th ed.). McGraw Hill.

Contact	

Subject	**Mathematics II**			
	Type	Semester	ECTS	Code
	OBLIGATIVE (O)	II	5	110-MAT-152
Lecturer				
Aims and Objectives	The student should be prepared with knowledge of functions, limits of sequences and functions, derivatives of functions, indefinite and definite integrals, as well as knowledge of partial differential equations, which find application in both mathematical disciplines and natural, technical, computer sciences, economic etc. The purpose of the Mathematics II curse is to provide students with a solid foundation in calculus and its applications, with a specific focus on engineering contexts. The course aims to equip students with the mathematical tools necessary to analyze and solve engineering problems.			
Learning Outcomes	At the end of this course students will be able to: • Demonstrate a solid understanding of the fundamental concepts of calculus, including limits, derivatives, and integrals • Apply calculus concepts to solve engineering problems, including optimization, rates of change, and related rates. • Understand and apply techniques of integration, including substitution, integration by parts, and partial fraction decomposition. • Understand and apply first-order linear partial differential equations and recognize their importance in modeling physical phenomena.			
Content	**Weekly Plan**			Weeks
	Introduction			1
	Functions in one variable			2
	Numerical sequence. Limit of sequences			3
	Limit and continuity of a function			4
	Derivative of a function. Derivation rules			5
	Derivative of composite function and higher order derivatives.			6
	Differentials			7
	Indefinite integral			8
	Integration methods			9,10
	Definite integral and its applications			11
	Multivariable functions and their properties			12
	Partial derivatives and differential of a multivariable function			13
	Partial differential equations			14
	First order linear partial differential equations			15
Teaching/Learning Methods	**Activity**			**Weight (%)**
	1 Lectures			30
	2. Exercises			30
	3. Homework			30
	4. Case Study			10

Assessment Methods	**Activities**	**Nr.**	**Week**	**Weight (%)**
	1. Quiz	2	6,12	20
	2. Attendances			10
	3. Activity in the Lectures			10
	4. Final Exam			60
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Moodle			1
	3. Projector			1
	4. Table, marker			1
ECTS Workload and activities	**Type of Activities**		**Weekly hours**	**Load**
	1. Lecture		2x15	30
	2. Exercises		2x15	30
	3. Consultation		1x15	15
	4. Self-Learning			48
	5. Exam			2
Literature/References	Lecture materials o Course materials from Lecturer o Donald Trim, Calculus for Engineers, 4th Edition, 2020. o Ejup Hamiti, Matematika II, Prishtinë,, 2008. o Sadri Shkodra, Matematika II, Prishtinë, 2004. o Laurence D. Hofmann, Gerald L. Bradley: Calculus, Mc Graw Hill, 2000. o Walter A. Strauss: Partial Differential Equations, An introduction, John			
Contact				

Subject	**Measurement Techniques**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	II	5	110-MET-155
Lecturer				
Aims and Objectives	The aim of this course is that students will be provided with basic knowledge of measurements and metrology, as well as the application of measurement techniques. Students will learn how to design and implement measurement models and how to perform their evaluation. In particular, measurements will be treated as an important phenomenon in engineering. The main objectives are summarized as follows: Students will gain the necessary knowledge about different measurements, learning measurement methods and their application in practice, their preparation in the application of contemporary measurement methodologies and instruments.			
Learning Outcomes	Upon completion of this course, students will be able to: • Possess advanced knowledge about different measurements, learning measurement methods and their application in practice, • Compare and contrast the difference between good and bad measurement. • Differentiate between various measurement methods or approaches and instruments. • Apply advanced skills and techniques. • Understand the role, importance and effectiveness of measurements depending on the type of measurement.			
Content	**Weekly plan**			**Week**
	Presentation of Syllabus			1
	Measurement and metrology			2
	Measurement system and formation of units of measurement			3
	Error theory and their concepts			4
	Accuracy and uncertainty of measurements, their concepts			5
	Measurement uncertainty, reliability area and measurement			6
	Etalonization and calibration concepts of measuring instruments			7
	Measuring instruments, analog and digital, generalizations			8
	Circuit elements for measuring electrical resistance			9
	Measuring circuit elements (capacitor and coil)			10
	Methods for measuring electrical quantities (voltage, current)			11
	Methods for measuring resistance, capacity and inductance			12
	Methods for measuring power and electricity			13
	Study visit			14
	Presentation of projects Preparation for the exam			15
	Activities			**Weight (%)**

Teaching/Learning Methods	1. Interective Lectures			60
	2. Workshop			10
	3. Laboratory exercises			10
	4. Numerical exercises			10
	5. Problem-based learning			10
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	2	1-15	10
	2. Attendances in study visits			10
	3. Seminars			20
	4. Colloquium	2		30
	5. Exam			60
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Moodle			1
	3. Projector			1
	4. Table			1
	5. Markers			1
ECTS Workload and activities	**Type of activities**		**Weekly hours**	**Load**
	1. Lectures		2x15	30
	2. Laboratory and Numerical Excercies		1x15	15
	3. Studv visit			6
	4. Independent learning			69
	5. Workshop/Tasks			2
	6. Colloquium			2
	7. Exam			1
Literature/References	Lecture materials ○ Course materials from Lecturer ○ Morris, A. S., & Langari, R., Measurement and Instrumentation: Theory and Application (3rd ed.). Academic Press, 2020. ○ Dr. Ali Gashi, Matjet Elektrike, 2016 ○ Dr. Jusuf Gacaferri, Matjet Elektrike, 1996, ○ Morris A. S, Langari R., Measurement and Instrumentation: Theory and Application, Elsevier, 2012 ○ Tumanski S., Principles of Electrical Measurement. Taylor & Francis group, 2006. ○ JCGM., Evaluation of Measurement Data—Guide to the Expression of Uncertainty in Measurement (JCGM 100:2008).			
Contact				

Subject	**Energy Policies and Regulations**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	II	3	110-EPR-256
Lecturer				
Aims and Objectives	The aims and objectives of course are to provide students with a comprehensive understanding of the principles, frameworks, and dynamics that govern energy policies and regulations. These courses typically aim to equip students with the knowledge and skills necessary to analyze, develop, and implement effective energy policies and regulatory frameworks. This course is to help students to understand the roles and functions of regulatory bodies in overseeing energy markets. Also this course introduce students to methods for assessing and mitigating the environmental and social effects of energy projects. It also provides comprehensive information on energy technology developments, new bases to assess the potential of energy sources, and as the most widely used primary energy consumption from fossil fuels (oil, natural gas and coal) is still present, their geographical distribution, etc. The student should be informed about the structure of Kosovo's industry, Energy Consumption, Energy Management, environmental situation and challenges, Liberalization and the state of transition, etc. In the end of course the aim is to provide the student with basic knowledge about the function of national and international institutions (with a focus on the European Union), harmonization of energy policies, creation of relevant legal and strategic infrastructure for the development of sector but also the fulfillment of contractual obligations that the country has in the process of European integration.			
Learning Outcomes	The aim is for students to be able to: • Understand the fundamental principles of different energy sources, including fossil fuels, renewables, and emerging technologies. • Analyze the roles and responsibilities of different regulatory bodies and government agencies in the energy industry. • Explain the functioning of energy markets and the factors influencing supply and demand. • Apply critical thinking skills to analyze and evaluate energy policies at national and international level.			
	Weekly plan			**Week**
	Presentation of Syllabus Energy management			1
	Electricity consumption and management			2
	Public policies and energy policies			3
	Proactive and Reactive energy policies			4
	Energy policy instruments			5
	The general energy situation in Kosovo and in the world			6

Content	Global energy policies; focus on energy policies and strategic orientations of the European Union - Policies for regional integration - focus on energy sector and environmental policies / Energy Community Treaty	7
	Structure of the Energy Community Secretariat (ECS), its responsibilities and Regional Initiatives	8
	Institutional responsibilities and the role of actors in the energy sector at the national level	9
	Legal infrastructure, Strategic and program infrastructure	10
	Addressing the priorities related to the treatment of efficient energy and renewable energy sources and plans for the	11
	Addressing the priorities related to the treatment of the environment from the perspective of the energy sector: National plan for emission reduction 2018-2027 and plans for the	12
	The state of the environment in Kosovo, the challenges	13
	Market liberalization and the transition of the energy sector	14
	Presentation of projects and preparation for the exam	15

Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures	70
	2. Projects	30

Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	2	1-15	10
	2. Project			30
	3. Exam			60
	Remarks: In conclusion, 40% will be an assessment of attendance at lectures and the project, and the final exam includes 60%, a total			

Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Moodle	1
	3. Projector	1

ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Consultation	1x15	15
	3. Independent learning		29
	4. Exam		1

Literature/References	Lecture materials o Course materials from Lecturer o International Energy Agency, World Energy Outlook 2024. IEA, 2024. o Energy Community Secretariat., Annual Implementation Report, Energy Community, 2024. o Global Energy Policy and Security (Lecture Notes in Energy 16) - Walter Leal o Filho, Vlasios Voudouris (Springer, 2013) o Energy Community Treaty o Energy Strategy of the Republic of Kosovo 2022-2031 o Kosovo Electricity Balance o National Emission Reduction Plan 2018-2027
Contact	

<table>
<tr><td rowspan="2">Subject</td><td colspan="4">Programing and Algorithm</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>II</td><td>4</td><td>110-PRA-154</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">This course aims to equip engineering students who are not specializing in computing with the necessary skills to design and implement simple computer programs of practical use in a popular programming language, Python to solve mathematical and scientific problems. The course aims to overcome the well-known “programming problem” - students’ fear of writing a program from scratch - by teaching the use of a design method that allows program construction to be broken down into a series of manageable steps. The course aims to inculcate good programming habits from the beginning by emphasizing the need for written specifications and the use of documentation and testing tools in development environment, bring the skills to write your own real world non-complex programs by integrating the fundamental blocks of the language.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">Upon successful completion of the course, students will be able to;
Understand the fundamental programming concepts and methodologies which are essential to building good python programs.
Demonstrate an understanding of primitive data types, values, operators and expressions in Python.
Apply good programming principles: Specify contracts, purpose, example sets, implement and test using appropriate documentation and testing tools.
Analyse engineering problems and gain an approach to use skills with support of practical session.</td></tr>
<tr><td rowspan="16">Course Content</td><td colspan="3">Course Plan</td><td>Week</td></tr>
<tr><td colspan="3">Introduction to Programming</td><td>1</td></tr>
<tr><td colspan="3">Algorithm with flowcharts</td><td>2</td></tr>
<tr><td colspan="3">Variables, Expressions and Statements</td><td>3</td></tr>
<tr><td colspan="3">Conditionals (if, else if, switch)</td><td>4,5</td></tr>
<tr><td colspan="3">Loops (while, do while, for loop)</td><td>6,7</td></tr>
<tr><td colspan="3">Functions</td><td>8</td></tr>
<tr><td colspan="3">Strings</td><td>9</td></tr>
<tr><td colspan="3">Sequences: Lists and Tuples</td><td>10</td></tr>
<tr><td colspan="3">Files and Exceptions</td><td>11</td></tr>
<tr><td colspan="3">Classes and Objects</td><td>12</td></tr>
<tr><td colspan="3">Classes and Functions</td><td>13</td></tr>
<tr><td colspan="3">Array-Oriented Programming with NumPy</td><td>14</td></tr>
<tr><td colspan="3">Random and Analysis of Algorithms</td><td>15</td></tr>
<tr><td rowspan="5">Teaching/Learning Methods</td><td colspan="3">Activity</td><td>Weight (%)</td></tr>
<tr><td colspan="3">1. Lectures</td><td>20</td></tr>
<tr><td colspan="3">2. Seminars</td><td>20</td></tr>
<tr><td colspan="3">3. Laboratory</td><td>40</td></tr>
<tr><td colspan="3">4. Case studies</td><td>10</td></tr>
</table>

	5. Problem-based learning			10
Assessment Methods	**Assessment Activity**	**Nr.**	**Week**	**Weight (%)**
	1. Quiz	14	Every week	10
	2. Midterm exam	1	7	30
	3. Final Exam	1	13	60
Course resources	**Resources**			**Number**
	1. Class			1
	2. IT Lab			1
	3. Moodle			1
	4. Software			1
	5. LCD Projector			1
ECTS Workload and activities	**Type of Activities**		**Weekly hours**	**Load**
	1. Lectures		2x15	30
	2. Consultations		1x15	15
	3. Self-learning			53
	4. Exam			2
Literature/References	Lecture Materials ○ Course materials from Lecturer ○ Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming 2nd Edition, 2019 ○ Kalkan, S., Şehitoğlu, O. T., & Üçoluk, G., Programming with Python for Engineers. Springer, 2024, https://doi.org/10.1007/978-3-031-57148-0 ○ Python Software Foundation., Python 3 Documentation, 2025 https://docs.python.org/3/ ○ Allen B. Downey, Think Python, 2nd Edition How to Think Like a Computer Scientist. ○ A.B. Chaudhuri, Flowchart and Algorithm Basics, 2020.			
Contact				

Subject	**English II**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	II	3	110-ENG-156
Lecturer				
Aims and Objectives	The basic idea behind offering this certificate course as a subject at the undergraduate level is to acquaint students with a language held by common consent to be the most popular language and predictably the most used in countries across the globe. The lessons included as part of syllabus, aim to take the nuances of English to students as it reveals its strengths and complexity when used to perform a variety of functions. For prospective engineers, nothing could be more useful or productive than being able to reach out to the world of technology and business through grammar, vocabulary, collocations besides letter-writing, advertisements, posters, technical presentations, report writing, seminars etc. Teachers of English have a special role to play in polishing and honing the linguistic skills of engineers in the making, through a variety of tasks, assignments and role plays that bring alive the language in the classroom and prepare students for the world of work. The mission of taking the language to students is achieved from teaching texts that are rich in vocabulary and grammar, texts that teach learners how to contextualize, situate meaning amidst ambiguity and learn the art of being able to persuade, compel, cajole, complain, narrate, describe etc. through recourse to a range of devices- linguistic and literary- on offer. Besides, the course has in mind the task of preparing students to fulfil basic functions with language that come their way during the course of study, such as being able to compose email effectively in precise writing, essay writing , prepare technical reports/papers, write effective business ,formal and job application letters etc. On completion of this course, the students will be able to: • Talk about business subjects • Understand charts and write short business emails, reports and make notes on simple topics. • Follow short telephone conversations. • Follow simple presentations/demonstrations. • Exchange straightforward opinions and make requests. • Offer advice and state routine requirements.			
Learning Outcomes	Upon successful completion of this course, student will be able to: • Acquire the use of grammar effectively (vocabulary and so on) through extensive course work on writing reports and reading comprehensions, articles, essays, general discussion etc. • Evaluate the skills of writing business letters in various situations and generate skills of writing business letters, essays and memos. • Classify the various structures of reports and compose to use them in the professional scenario.			

	Weekly Plan	Week
Content	UNIT – I (Lectures – Grammar): Introduction to Grammar, Parts of Speech Vocabulary: Technical Vocabulary Listening : Listening for specific information in short, long conversations and monologues. Speaking: Conversation between students in pairs and groups, general interaction and social language. Reading: Reading for the Main idea, finding specific information, reading for detail, Reading and transferring information, Understanding the attitudes. Writing: Writing short messages that include certain information.	1
	Continue: UNIT – I	2
	UNIT – II (Lectures – Grammar) : Sentence and Sentence Construction Vocabulary: Homophones, Homographs, Homonyms Listening : Listening for Gist and detailed meaning and to identify the attitudes and opinions of the speakers Speaking: Mini-presentations on a business theme by organizing a larger unit of discourse & Giving information and expressing opinions. Reading: Reading for Opinion and writer's purpose, Reading for interpreting the visual reading for gist. Writing: Writing a longer piece of correspondence based on another text.	3
	Continue: UNIT – II	4
	UNIT – III (Lectures – Grammar): Verb - Tense Vocabulary : Word Formation – prefix and suffix. Listening: Answering multiple choice questions on short conversations or monologues. Speaking: Two-way conversation between the candidates followed by further prompting from the interlocutor. Reading: Reading for inference and Global meaning, Understanding Vocabulary and grammar in a short text Writing: Writing for functional/ communicative task- e.g. Re-arranging appointments, asking for permission, giving instructions.	5
	Continue: UNIT – III	6
	UNIT - IV (Lectures – Grammar): Voice and Reported speech Vocabulary: Synonyms and Antonyms. Listening : Listening for completing notes based on conversation on a monologue. Speaking: Expressing opinions, Agreeing and Disagreeing, Talking about oneself, ones current situations and plans. Reading: Reading for understanding short, real world messages etc, Writing: Writing for apologizing and offering compensation, making or altering reservations.	7
	Continue: UNIT - IV	8
	Continue: UNIT - IV	9
	Continue: UNIT - IV	10
	UNIT – V (Lectures – Grammar): Concord, Modal Auxiliary, Question Tags. Vocabulary: Business Vocabulary. Listening: Listening for answering multiple choice questions on a longer conversation or interview. Speaking: Giving ones opinion on business situations, talking about some prompts for an extended period of time & Discussion with a business situation with a partner. Reading: Reading for detailed comprehension of detailed material; Skimming and Scanning. Writing: Writing to deal with requests, giving information about a product.	11

	Continue: UNIT – V			12
	Continue: UNIT – V			13
	Preparation for exam			14
	Preparation for exam			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			80
	2. Problem-based learning			20
Assessment Methods	**Assessment Activity**	**Nr.**	**Week**	**Weight (%)**
	1. Final Exam			100
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Projector			1
ECTS Workload and activities	**Type of Activities**		**Weekly hours**	**Load**
	1. Lectures		2x15	30
	2. Independent Study			44
	3. Exam			1
Literature/References	Leecture Materials o Course materials from Lecturer o Hewings, M., Advanced Grammar in Use (3rd ed.). Cambridge University Press, 2013. o ProFile by Jon Naunton and Mark Tulip, Students' Book, Pre Intermediate, Oxford, 2011 o ProFile by Jon Naunton and Mark Tulip, Workbook, Pre Intermediate, Oxford 9, 2011.			
Contact				

<table>
<tr><td rowspan="2">Subject</td><td colspan="4">Ethics at work</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>II</td><td>3</td><td>110-EAW-157</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The Ethics at work course provides knowledge about the importance of ethics in the context of their workplace. This includes the recognition of ethical values and norms which are important for ethical behavior and decision-making. The Work Ethics course helps to apply and integrate ethical principles in different situations in the workplace.

The purpose of the course is to help students develop ethical awareness, making them aware of the ethical consequences of their decisions and behavior in the work environment.

One objective may be to promote the development of an ethical culture in their organization. This may include promoting transparency, ethical awareness of colleagues, and building an environment where ethical values are present.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">Upon successful completion of this course, student will be able to:

• Understand the knowledge of ethical challenges and decisions in place
• Demonstrate greater knowledge about their ethical responsibility in the workplace.
• To analyze related to face different ethical challenges in their jobs.</td></tr>
<tr><td rowspan="12">Content</td><td colspan="3">Weekly plan</td><td>Week</td></tr>
<tr><td colspan="3">Syllabus and organization of the subject</td><td>1</td></tr>
<tr><td colspan="3">Ethics in entrepreneurship and communication</td><td>2</td></tr>
<tr><td colspan="3">Theoretical aspects of business ethics and Management</td><td>3</td></tr>
<tr><td colspan="3">Work ethics in business</td><td>4</td></tr>
<tr><td colspan="3">Conceptual definition of ethics and morality</td><td>5</td></tr>
<tr><td colspan="3">Electricity network ethics Code of ethics in KEK, KOSTT and KEDS</td><td>6</td></tr>
<tr><td colspan="3">The importance of work ethics in contemporary conditions</td><td>7</td></tr>
<tr><td colspan="3">The model of ethical behavior in the workplace</td><td>8</td></tr>
<tr><td colspan="3">General principles of ethics at work,</td><td>9</td></tr>
<tr><td colspan="3">Professional ethics and impact on society</td><td>10</td></tr>
</table>

	Theoretical background on ethics, law and performance	11
	Analysis of the Kosovar system regarding the rules of ethics at work	12
	Code of business conduct	13
	Presentation of case studies	14
	Preparation for the final exam	15

Teaching/Learning Methods	**Activity**	**Weight (%)**
	1. Lectures	60
	2. Consultation	10
	3. Case study, presentations	30

Assessment Methods	**Assessment activities**	**Week**	**Weight (%)**
	1. Attendances at lectures	1–15	10
	2. Case study	14	20
	3. Activity in class	1-15	10
	4. Writen exam		60

Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Table, markers	1
	3. Moodle	1
	4. Projector	1

ECTS Workload and activities	**Type of Activities**	**Weekly hours**	**Load**
	1. Lectures	2 x15	30
	2. Consultations	1x15	15
	3. Case stady		10
	4. Independent learning		19
	5. Exam		1

Literature/References

Lecture Materials

- Course materials from Lecturer
- Raymond S. Pfeiffer (Author), Ralph P. Forsberg, Ethics on the Job: Cases and Strategies
- Arbina Totani.: Etika e punës në institucione publike, Tiranë'2015
- Milan I. Miljević,: Poslovna Etika i Komuniciranje, Singidunum,2014
- Maja Žitinski,: Kultura Poslovnoga Komuniciranja, Dubrovnik,2010
- Ana Aleksić,: Business Ethics – Elements of Successful Business, Zagreb,2007
- Kodi i Etikës së Biznesit ALB telecom
- Kodi i sjelljes dhe etikës KEK
- Paul A. Povlock, Environmental Ethics and The Electric Power Grid:A Case for Technological Momentum, Newport, Rhode Island, March 2016
- Smiljana Kedmenec, Važnost poslovne etike u savremenim uvjetima poslovanja, Čakovec'2016
- Ligji nr.9131, datë 8.9.2003 per rregullat e etikes ne administraten publike
- Ligji i Punës, NR. 03/L-212, 01.12.2010
- Ligji nr. 03/l-149 për shërbimin civil të republikës së Kosovës
- International Organization for Standardization, ISO 37301: Compliance Management Systems—Requirements with Guidance for Use. ISO, 2021.
- International Organization for Standardization., ISO 37000: Governance of Organizations—Guidance. ISO, 2021.

Contact

<table>
<tr><td>Subject</td><td colspan="4">Solar and Wind Energy Conversion</td></tr>
<tr><td></td><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>III</td><td>6</td><td>110-SWE-201</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The aim of this course is to provide students with fundamental theoretical knowledge and practical skills related to the conversion of solar and wind energy into electrical energy. The course focuses on the operating principles, main components, performance characteristics, and applications of photovoltaic systems and wind energy conversion systems, including their integration into modern electrical power systems. It also emphasizes the importance of renewable energy technologies in improving energy efficiency, reducing greenhouse gas emissions, and supporting sustainable energy development.
Course Objectives
Upon successful completion of this course, students will be able to:
Explain the fundamental principles of solar radiation, photovoltaic energy conversion, wind resources, and wind energy conversion.
Describe the main components, operating principles, and characteristics of photovoltaic modules, solar power systems, wind turbines, and wind energy conversion systems.
Evaluate solar and wind energy resources using relevant meteorological data and basic resource assessment methods.
Calculate the basic electrical and energy performance parameters of photovoltaic and wind energy systems.
Identify and select appropriate components for basic solar and wind energy installations according to technical requirements and site conditions.
Explain the principles of grid-connected and stand-alone renewable energy systems, including the role of inverters, controllers, and energy storage.
Analyze the main technical, environmental, and economic factors affecting the design, operation, and performance of solar and wind energy systems.
Apply basic engineering tools and simulation methods to assess the performance of solar and wind energy conversion systems.
Recognize the challenges associated with integrating variable renewable energy sources into electrical power networks and identify basic approaches to addressing them.
Demonstrate an understanding of the contribution of solar and wind energy technologies to energy security, decarbonization, and sustainable energy development.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">Upon completion of this course, students will be able to:
Acquire a comprehensive understanding of the principles and applications of solar energy conversion, including fundamental definitions, direct energy production, and transformation methods.</td></tr>
</table>

	• Demonstrate technical proficiency in conducting heat collector calculations, applying their knowledge to design and assess the performance of diverse solar energy systems. • Evaluate the potential of solar radiation both locally and across Europe. Moreover, they will be able to apply this knowledge in practical scenarios, designing solar energy systems tailored to the needs of civil and industrial sectors. • Acquire a comprehensive understanding of the wind speed-power relationship and its impact on the efficiency of wind energy systems. • Demonstrate the ability to interpret and apply the Weibull Probability Density Function in analysing wind speed distribution. • Apply knowledge of turbine blade design in the selection and optimization of wind turbine systems. • Evaluate the advantages and disadvantages of variable speed and fixed-speed wind turbines.
Content	**Weekly plan** — **Week** Fundamental Definitions, Applications of Solar Energy — 1 Utilization of Solar Energy: Direct Energy Production and Storage Basic Information and Equations — 2 Solar Collectors and Various Applications, Collector Elements — 3 Calculations of Heat Transfer/Thermal Collector, Solar Water Heating Systems — 4 Solar Cooling Systems, Mechanical and Non-Mechanical Systems and other Systems Utilizing Solar Energy — 5 Application Areas of Solar Energy Systems — 6 Introduction, Wind energy presentation, wind energy history, Wind Energy Applications — 7 Wind speed ratio - power/wind pulls maximum power - Betz limit — 8 Wind Speed Distribution / Weibull Probability Density Function — 9 Electric Wind Generators, Types of Turbines, Coefficient, Power - Hellman — 10 Turbine blade design, advantages and disadvantages — 11 Fixed wind turbine speed / synchronous wind turbine. and unsynchronized Wind Turbine System Current Control/ Mathematical Modelling and Simulation / Independent Wind Energy — 12 System Grid-connected Wind Energy Systems — 13 Speed changes of wind turbine / Wind Turbine System Current Control — 14 Case study presentations — 15
Teaching/Learning Methods	**Activities** — **Weight (%)** 1. Lecture — 40 2. Numerical Exercise — 10 3. Lab. Exercise — 10 4. Project (case study) — 20 5. Consultations — 20
Assessment Methods	**Assessment activities** — **Nr.** — **Week** — **Weight (%)** 1. Case Studies — 10 2. Individual Student Tasks on Lab — 10 3. Group Assignments — 30 4. Exam — 50
Course resources	**Resources** — **Nr.**

	1. Class		1
	2. Laboratory		1
	3. Table, markers, erasers;		1
	4. Laptop		1
	5. Model		1
ECTS Workload and activities	**Type of activities**	**Weekly hour**	**Load**
	1. Lecture	2x15	30
	2. Consultation (group work)	1x15	15
	3. Independent learning		44
	4. Numerical Exercise	1x15	15
	5. Lab. Exercise	1x15	15
	6. Project (case study)		30
	7. Examination	1	1

Literature/References

Lecture materials

- Course Materials from Lecturer
- Solar Receivers for Thermal Power Generation Fundamentals and Advanced Concepts 1st Edition - August 13, 2022
- Masters, G. M., & Hsu, K. F., Renewable and Efficient Electric Power Systems (3rd ed.). Wiley, 2023.
- Patel, M. R., & Beik, O. , Wind and Solar Power Systems: Design, Analysis, and Operation (3rd ed.). CRC Press, 2021.
- Solar Heating and Cooling Systems Fundamentals, Experiments and Applications 1st Edition - October 18, 2016
- Photovoltaics: Design and Installation Manual [Paperback] Solar Energy International.
- Robert A. Ristinen and Jack J. Kraushaar, Wind Energy: Renewable Energy and the Environment, 2016.
- Trevor M. Letcher, Wind Energy Engineering: A Handbook for Onshore and Offshore Wind Turbines, 2017.
- Mario Garcia-Sanz and Constantine H. Houpis, Wind Energy Systems: Control Engineering Design, 2017.
- Jun Yan and Yongqian Liu, Wind Energy Generation Modeling and Control, 2019.
- Pramod Jain, Wind Energy Engineering: A Handbook for Onshore and Offshore Wind Turbines, 2017.
- A Ymeri, N Krasniqi, R Shaqiri, Impact of the Wind Power Plant Connection to the Kosovo Power System, Elsevier, Science Direct, IFAC-Papers On-Line, Volume 55, Issue 39, 2022, pp. 393-398, DOI: https://www.sciencedirect.com/science/article/pii/S2405896322031032?via%3Dihub
- N Krasniqi, A Ymeri, Electricity production from solar Energy in Kosovo and Environmental Impacts, Elsevier, Science Direct, IFAC-Papers On-Line, Volume 55, Issue 39, 2022, pp. 302-307, https://www.sciencedirect.com/science/article/pii/S2405896322030798
- A Ymeri, S Mujovic, Impact of Photovoltaic Systems Placement, Sizing on Power Quality in Distribution Network, Advances in Electrical and Computer Engineering (AECE), Vol. 18, No. 4, 2018, pp. 107-112, DOI: 10.4316/AECE.2018.04013, https://aece.ro/abstractplus.php?year=2018&number=4&article=13
- A Ymeri, S Mujović, Optimal Location and sizing of Photovoltaic Systems in Order to Reduce Power Losses and voltage Drops in the Distribution Grid, International Review of Electrical engineering (IREE), Vol.12, Nr.6, November-December 2017, pp.498-504, DOI: 10.15866/iree.v12i6.12553, https://www.praiseworthyprize.org/jsm/index.php?journal=iree&page=article&op=view&path%5B%5D=20840
- A Ymeri, L Dervishi, A Qorolli, Impacts of Distributed Generation in Energy Losses and voltage drop in 10 kV line in the Distribution System,

	Energycon 2014, IEEE International Energy Conference/ Dubrovnik, Croatia, May 13-16, 2014, pp.1385-1389, DOI: 10.1109/ENERGYCON.2014.6850593, https://ieeexplore.ieee.org/document/6850593 ○ A Ymeri, B Jupaj, A Ibishi, Technical Impacts of Distributed Generation in Distribution Network, Voltage Drops, 10th International Conference on Energy Efficiency Engineering, IC - EEE 2021, October 29-30, 2021, Pristina, Koosovo, UBT KNOWLEDGE CENTER, ISBN 978-9951-550-47-5, https://knowledgecenter.ubt-uni.net/cgi/viewcontent.cgi?article=3489&context=conference ○ G Alija, A Ymeri, N Krasniqi, Study Aspects for the Solar-Photovoltaic System with Installation Capacity of 60.3 kWp, 10th International Conference on Energy Efficiency Engineering, IC - EEE 2021, October 29-30, 2021, Pristina, Kosovo, UBT KNOWLEDGE CENTER, ISBN 978-9951-550-47-5, https://scholar.google.com/scholar?oi=bibs&cluster=3304192001626016778&btnI=1&hl=en ○ A Neziri, N Krasniqi, A Ymeri, Component dimensioning for a combined photovoltaic and heat pump system installed in a residential building, 11th International Conference on Energy Efficiency Engineering, IC - EEE 2022, October 29-30, 2022, Pristina, Kosovo, UBT KNOWLEDGE CENTER, https://www.researchgate.net/profile/Armend-Ymeri/publication/366513930_Component_dimensioning_for_a_combined_photovoltaic_and_heat_pump_system_installed_in_a_residential_building/links/63a4703b097c7832ca59061e/Component-dimensioning-for-a-combined-photovoltaic-and-heat-pump-system-installed-in-a-residential-building.pdf ○ N Krasniqi, A Ymeri, A Vokshi, Integration of Photovoltaic Energy in the Electricity System of Kosovo, 11th International Conference on Energy Efficiency Engineering, IC - EEE 2022, October 29-30, 2022, Pristina, Kosovo, UBT KNOWLEDGE CENTER, https://scholar.google.com/citations?view_op=view_citation&hl=en&user=cnj2mPMAAAAJ&citation_for_view=cnj2mPMAAAAJ:_kc_bZDykSQC ○ V Rexhepi, A Ymeri, The performance of the renewable energy sources in the power distribution systems – case study, 8th International Conference on Energy Efficiency Engineering, IC - EEE 2019, October 25-27, 2019, Pristina, Kosovo, DOI 10.33107/ubt-ic.2019.152, https://knowledgecenter.ubt-i.net/conference/2019/events/152
Contact	

<table>
<tr><td rowspan="2">Subject</td><td colspan="4">Thermodynamics and Heat Transfer</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>III</td><td>5</td><td>110-THT-202</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">This course provide students with a foundational understanding of the laws of thermodynamics, thermodynamic variables, and key principles of heat transfer. Delve into the types of heat transfer (conduction, convection, radiation) and their applications, fostering a comprehensive understanding of heat transfer processes. Investigate gas power cycles and steam power cycles, emphasizing thermodynamic variables and efficiency considerations in power generation. Examine cooling cycles, including refrigeration principles, to understand the thermodynamics of cooling processes and applications. Explore and apply the principles of heat transfer elements, including conductivity, convection, and radiation, to analyze and optimize heat transfer in different systems.
Acquire a fundamental knowledge base in thermodynamics and heat transfer, providing a solid groundwork for further studies and practical applications. Apply the laws of thermodynamics to analyze and solve practical problems, demonstrating the application of theoretical concepts. Evaluate the efficiency and performance of gas power cycles and steam power cycles, considering thermodynamic variables and operational factors. Analyze refrigeration and cooling cycles to understand the thermodynamics governing cooling systems and the practical implications of these processes. Apply principles of heat transfer elements to optimize heat transfer in various systems, considering conductivity, convection, and radiation.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">Upon completion of this course, students will be able to:
Acquire a solid foundational understanding of thermodynamics laws, thermodynamic variables, and the principles of heat transfer.
Demonstrate the practical application of thermodynamic concepts and heat transfer principles in solving real-world engineering problems.
Evaluate the efficiency of power cycles and analyze cooling processes, demonstrating the ability to assess and optimize thermodynamic systems.
Apply acquired knowledge to solve complex problems related to heat transfer and thermodynamics, showcasing problem-solving skills in engineering scenarios.</td></tr>
<tr><td rowspan="9">Content</td><td colspan="3">Weekly plans</td><td>Week</td></tr>
<tr><td colspan="3">Basic definitions</td><td>1</td></tr>
<tr><td colspan="3">Thermodynamic variables</td><td>2</td></tr>
<tr><td colspan="3">Laws of thermodynamics</td><td>3</td></tr>
<tr><td colspan="3">Thermodynamic potentials</td><td>4</td></tr>
<tr><td colspan="3">Gas energy cycles</td><td>5</td></tr>
<tr><td colspan="3">Steam energy cycles</td><td>6</td></tr>
<tr><td colspan="3">Cooling cycle</td><td>7</td></tr>
<tr><td colspan="3">Types of heat transfer (conductivity, convection, radiation)</td><td>8</td></tr>
</table>

	Elements and principles of the heat pump calculator	9
	Open and Closed Systems and Circulating Pump	10
	The fluid used in the heat pump	11
	Geothermal and gas heat pumps	12
	Course Overview and Core Concepts Review	13
	Mechanical and non-mechanical systems	14
	Heat pump diagrams and analysis	15
Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures	50
	2. Laboratory Exercise	20
	3. Consultations	10
	4. Project Example	10
	5. Group project	10
Assessment Methods	**Assessment activity** **Nr.** **Week**	**Weight (%)**
	1. Case studies	5
	2. Individual student assignments based on instructional material	5
	3. Group tasks	30
	4. Exam	60
Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Computer	1
	3. Moodle	1
ECTS Workload and activities	**Type of activities** **Weekly hours**	**Load**
	1. Lecture 2x15	30
	2. Laboratory Exercise 1x15	15
	3. Consultation 1x15	15
	4. Independent learning	54
	5. Project (Tasks)	10
	6. Exam	1
Literature/References	Lecture materials o Course materials from Lecturer o Thermodynamics: Basic Principles and Engineering Applications, 2023 o Çengel, Y. A., Ghajar, A. J., & Kanoglu, M., Heat and Mass Transfer: Fundamentals & Applications (6th ed.). McGraw Hill, 2020. o Moran, M. J., Shapiro, H. N., Boettner, D. D., & Bailey, M. B., Fundamentals of Engineering Thermodynamics (9th ed.). Wiley, 2018. o Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner, and Margaret B. Bailey, Fundamentals of Engineering Thermodynamics, 2014. o Yunus A. Cengel and Afshin J. Ghajar, Heat and Mass Transfer: Fundamentals and Applications, 5th Edition, 2014. o Engineering Thermodynamics: Work and Heat Transfer Gordon Rogers (Author), Yon Mayhew.	
Contact		

<table>
<tr><td rowspan="2">Subject</td><td colspan="4">Power electronics and power supplies</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>III</td><td>5</td><td>110-PEP-203</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The aim of this course is to provide students with fundamental theoretical knowledge and practical skills in power electronics and power supply systems, with particular emphasis on the conversion, control, and efficient use of electrical energy. Students will become familiar with the operating principles, characteristics, and applications of semiconductor power devices and power electronic converters used in renewable energy systems, electric drives, energy storage, and modern electrical power systems.
Course Objectives
Upon successful completion of this course, students will be able to:
Explain the fundamental principles of power electronics and the operation of semiconductor power devices, including diodes, thyristors, MOSFETs, and IGBTs.
Analyze the operation and performance of AC–DC rectifiers, DC–DC converters, DC–AC inverters, and AC voltage controllers.
Understand the principles of regulated power supplies, including linear and switching-mode power supplies.
Apply basic analytical methods to evaluate voltage, current, power, efficiency, and losses in power electronic circuits.
Explain the role of power electronic converters in photovoltaic and wind energy systems, battery storage, electric drives, and grid-connected renewable energy installations.
Identify common power quality issues associated with power electronic equipment and understand basic methods for reducing harmonics and improving system performance.
Develop basic skills in the simulation, testing, and evaluation of power electronic circuits using appropriate engineering software and laboratory equipment.
Recognize the importance of electrical safety, energy efficiency, reliability, and appropriate component selection in the design and operation of power electronic systems.</td></tr>
</table>

Learning Outcomes

Upon completion of this course, students will be able to:

- Acquire a comprehensive understanding of semiconductor power devices and various types of AC-DC and AC-AC converters.
- Demonstrate analytical skills through analysis and design exercises when dealing with semiconductor power devices and power electronics systems.
- Interpret the industrial applications of power electronics and recognize their significance in modern technological advancements.
- Apply a solid foundational knowledge of power electronics, encompassing voltage sources, signal generators, and various semiconductor power devices (Diode, SCR, BJT).
- Evaluate the operation principles and properties of power devices, including Diode, SCR, BJT, fostering a critical understanding of their functionalities.

Content

Weekly plan	**Week**
Announcing the syllabus of the subject, its aims, and objectives	1
Direct current power supplies, Direct current motors, Operating principles, Direct current motors types and connection types, Direct current power supply and assembly of engines.	2
Power semiconductor devices with PN junction	3
Power semiconductor devices with PN junction	4
SCR characteristics	5
Triggering devices	6
Triggering devices	7
SCR applications	8
SCR applications	9
Converters	10
Converters	11
Midterm Exam	12
Direct current power supplies	13
Case study presentations	14
Exam preparation	15

Teaching/Learning Methods

Activities	**Weight (%)**
1. Lectures	50
2. Laboratory Exercise	20
3. Individual Projects	20
4. Presentation	10

Assessment Methods

Assessment activity	**Nr.**	**Week**	**Weight (%)**
1. Attendances at lectures		1-15	15
2. Attendances at Exercise		1-15	10
3. Individual Projects			20
4. Final exam			55

Course Resources

Resources	**Nr.**
1. Class	1
2. Laboratory	1
3. Moodle	1
4. Projector	1

ECTS Workload and activities

Type of activities	**Weekly hours**	**Load**
1. Lectures	2x15	30
2. Exercise	1x15	15
3. Consultations	1x15	15
4. Independent learning		64
5. Exam		1

Literature/References	Lecture Materials o Course Materials from Lecturer o Erickson, R. W., & Maksimović, D., Fundamentals of Power Electronics (3rd ed.). Springer, 2020. o • Rashid, M. H. (Ed.)., Power Electronics Handbook (5th ed.). Butterworth-Heinemann, 2023. o Nicolas Patin, Power Electronics Applied to Industrial Systems and Transports, V3: Switching Power Supplies, May 7, 2015. o Yuriy Rozanov, Sergey E. Ryvkin, Evgeny Chaplygin, Pavel Voronin, Power Electronics Basics Operating Principles, Design, Formulas, and Applications, 2016. o Daniel Hart, Power Electronics 1st Edition, 2010. o Ned Mohan, Tore M., William P., Power Electronics: Converters, Applications, and Design, 3rd Edition, 2002.
Contact	

Subject	**Energy Economy**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	III	4	110-ENE-205
Lecturer				
Aims and Objectives	The course covers some basics of electricity markets e.g. day-ahead and balancing markets, ancillary services, impact of renewables on markets, participation of renewable energy producers in electricity markets, as well as impact of Transmission grid in electricity market. This course is designed to provide understanding of the fundamentals of power system economics considering alternative market arrangements for the operation and planning of electricity systems. The key focus is on the modelling and analysis of market participants strategies including market power in a competitive electricity market, the impact of demand elasticity on the market outcomes and prices, operational reliability and ancillary services, network congestion and related locational marginal pricing including transmission access rights, coordination of trading between energy and balancing services, investment in generation and transmission assets.			
Learning Outcomes	Upon completion of this course, students will be able to: • Examine the role of electricity market in supporting efficient system operation and investment in infrastructure; • Demonstrate knowledge and understanding of the market clearing process in a competitive electricity market; • Analyse market driven revenues , including contracts, strategies of market participants and market power; • Solve the business cases for generation companies, transmission networks, and consumptions; • Use integrated knowledge to Co-optimise the energy and reserve in a centralised electricity market; • Define and characterize a profit-driven generation expansion mode.			
Content	**Weekly plan**			**Week**
	Introducing students to the course syllabus			1
	Fundamentals of electricity markets. Regulation			2
	Basic Concept from economics			3

	Organization of Electricity Markets	4
	Participating in Electricity Markets	5
	Overall market perspective	6
	Effects of the Transmission Network on Electricity Markets	7
	Power System Operation	8
	Ancillary services	9
	Generation expansion	10
	Transmission Investment	11
	Introduction of Optimisation	12
	Renewable energy impact in the market	13
	Energy prices and energy economy	14
	Case study presentations and Exam preparation	15

Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures	70
	2. Individual Projects	20
	3. Presentations	10

Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures		1-15	10
	2. Individual Projects		14	20
	3. Final exam			70

Course sources	**Resources**	**Nr.**
	1. Class	1
	2. Moodle	1
	3. Projector	1

ECTS Workloads and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Consultations	1x15	15
	3. Independent learning		54
	4. Exam		1

Literature/References

Lecture materials

- Course materials from Lecturer
- P. Zweifel, A. Praktiknjo, G. Erdmann, Energy Economics, Springer, Mar 1, 2017.
- Kirschen, D. S., & Strbac, G., Fundamentals of Power System Economics (2nd ed.). Wiley, 2018.
- International Energy Agency., World Energy Outlook 2024 , IEA.
- Daniel Kirschen; Goran Strbac. Fundamentals of Power System Economics, 2004.
- Subhes C. Bhattacharyya, Energy Economics (Concepts, Issues, Markets and Governance), Springer Science & Business Media, Feb 28, 2011
- Lester C. Hunt, Joanne Evans, Edward Elgar, International Handbook on the Economics of Energy, Publishing, Jan 1, 2011
- Juan M. Morales , Antonio J. Conejo, Henrik Madsen, Pierre Pinson , Marco Zugno, Integrating Renewables in Electricity Markets. Operational Problems, Springer Science & Business Media, Dec 3, 2013.

Contact

Subject	**Electrical Materials Technology**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	III	4	110-EMT-206
Lecturer				
Aims and Objectives	The aim of the course is to provide students with a comprehensive understanding of the principles and characteristics of electrical materials used in technology applications. Students should be able to: • Equip with the knowledge and skills necessary for the effective application of electrical materials in various technological contexts. • Foster an awareness and appreciation for the latest innovations and emerging technologies in the field of electrical materials. • Emphasize the importance of safety and sustainability in the selection, use, and disposal of electrical materials within technological systems. • Enable to understand and classify the properties and behavior of electrical materials under different conditions and applications. • Develop the ability to select and utilize appropriate electrical materials for specific technological requirements, considering factors like conductivity, insulation, and durability. • Introduce methods for testing and quality assurance of electrical materials, ensuring compliance with industry standards and specifications. • Encourage to explore and analyze emerging technologies in electrical materials, fostering a forward-looking mindset in adapting to technological advancements. • Install a strong awareness of safety protocols and procedures related to the handling and application of electrical materials to ensure a secure working environment. • Educate students about the environmental impact of electrical materials and promote the use of sustainable and eco-friendly options where applicable.			
Learning Outcomes	Upon completion of this course, students will be able to: • Demonstrate understanding of the fundamental principles and characteristics of electrical materials used in technology applications. • Demonstrate proficiency in the application of electrical materials, showcasing the practical use of acquired knowledge in various technological contexts.			

	• Evaluate and compare the properties of different electrical materials, making informed decisions based on industry standards and specifications. • Apply knowledge and skills to select, utilize, and manage electrical materials effectively in diverse technological scenarios, ensuring optimal performance and functionality.
Content	**Weekly plan** — **Week** Announcing the syllabus of the subject, its aims, and objectives — 1 Introduction to Electrical Materials Technology — 2 Fundamentals of Electrical Materials — 3 Classification of Electrical Materials — 4 Selection of Electrical Materials — 5 Application and Use of Electrical Materials — 6 Use of Electrical Materials — 7 Safety in Electrical Materials — 8 Sustainability in Electrical Materials — 9 Midterm Review and Catch-Up — 10 Emerging Technologies of Electrical Materials — 11 Future Trends of Electrical Materials — 12 Continuous throughout the 12 weeks: Assessment and Feedback — 13 Case study presentations — 14 Course review, exam preparation. — 15
Teaching/Learning Methods	**Activities** — **Weight (%)** 1. Lectures — 70 2. Individual Projects — 20 3. Presentations — 10
Assessment Methods	**Assessment activity** — **Nr.** — **Week** — **Weight (%)** 1. Attendances at Lectures — 1-15 — 10 2. Individual Projects — 14 — 20 3. Final exam — 70
Course sources	**Resources** — **Nr.** 1. Class — 1 2. Moodle — 1 3. Projector — 1
ECTS Workload and activities	**Type of activities** — **Weekly hours** — **Load** 1. Lectures — 2x15 — 30 2. Consultations — 1x15 — 15 3. Independent learning — 54 4. Exam — 1
Literature/References	Lecture materials ○ Course materials from Lecturer ○ Callister, W. D., & Rethwisch, D. G., Materials Science and Engineering: An Introduction (10th ed.). Wiley, 2020. ○ C.P. Wong, G.Q. Zhang, and C.P. Tee, Materials for Electronic Packaging, 2019. ○ Paul C. Krause and Oleg Wasynczuk Introduction to Electric Power and Drive Systems, 2018. ○ John Allison and Richard H. Claassen, Electrical Materials and Their Applications, 2014. ○ IEC. (2020, current editions as applicable). IEC 60085: Electrical Insulation—Thermal Evaluation and Designation. International Electrotechnical Commission.
Contact	

<table>
<tr><td rowspan="2">Subject</td><td colspan="4">Energy Storage</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>III</td><td>3</td><td>110-ENS-204</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The aim of this course is to provide students with fundamental theoretical knowledge and practical skills related to energy storage technologies, their operating principles, performance characteristics, and applications in modern energy systems. The course focuses on the role of energy storage in integrating renewable energy sources, improving energy efficiency and power system reliability, balancing electricity supply and demand, and supporting the transition toward sustainable and low-carbon energy systems.
Course Objectives
Upon successful completion of this course, students will be able to:
• Explain the fundamental principles of energy storage and its role in modern energy systems.
• Identify and describe the main energy storage technologies, including electrochemical batteries, pumped-storage hydropower, thermal energy storage, compressed-air energy storage, hydrogen storage, and supercapacitors.
• Explain the operating principles, components, and characteristics of different energy storage systems.
• Evaluate the main technical parameters of energy storage technologies, including capacity, power rating, efficiency, response time, energy density, lifetime, and state of charge.
• Analyze the applications of energy storage in photovoltaic and wind energy systems, microgrids, electric vehicles, and electrical power networks.
• Explain the role of battery management systems, power electronic converters, and control strategies in the safe and efficient operation of energy storage systems.
• Assess the technical, economic, and environmental factors influencing the selection and application of energy storage technologies.
• Understand how energy storage contributes to renewable energy integration, peak shaving, load balancing, frequency regulation, and improved power system stability.</td></tr>
</table>

	• Apply basic engineering calculations and appropriate software tools to evaluate the performance of energy storage systems. • Recognize safety requirements, environmental impacts, and sustainability considerations associated with the installation, operation, and end-of-life management of energy storage technologie
Learning Outcomes	Upon completion of this course, students will be able to: • Demonstrate a deep understanding of energy storage principles and methods across electrical, mechanical, and heat energy types. • Demonstrate the ability to apply acquired knowledge in designing and implementing practical energy storage solutions. • Evaluate and classify various energy storage applications, exploring their effectiveness and categorizing them based on relevant criteria. • Apply problem-solving skills to address real-world challenges in energy storage, showcasing the ability to develop and manage effective solutions.
Content	**Weekly plans** — **Week** Introduction - Types of Energy Storage — 1 General Concepts — 2 Thermal Energy Storage — 3 Energy Storage in Organic Fuels — 4 Mechanical Energy Storage — 5 Electromagnetic Energy Storage — 6 Renewable Energy and Storage — 7 Transmission and Distribution, Retail — 8 Storage of thermal energy and environmental impact — 9 Hydrogen Storage — 10 Electrochemical Energy Storage — 11 Storage of Energy for Vehicle Propulsion — 12 A Look at the Future — 13 Project Example — 14 Preparation for Exam — 15
Teaching/Learning Methods	**Activities** — **Weight (%)** 1. Lectures — 70 2. Project Example — 10 3. Exercise — 10 4. Simulation with software — 10
Assessment Methods	**Assessment activity** — **Nr.** — **Week** — **Weight (%)** 1. Case studies — 5 2. Individual student assignments based on instructional material — 5 3. Group tasks — 10 4. Exam — 80
Course resources	**Resources** — **Nr.** 1. Class — 1 2. Computer — 1 3. Software — 1 4. Moodle — 1
ECTS Workload and activities	**Type of activities** — **Weekly hours** — **Load** 1. Lectures — 2x15 — 30 2. Consultations — 1x15 — 15 3. Independent learning, seminar — 29

	4. Exam 1
Literature/References	Lecture Materials ○ Course materials from Lecturer ○ Xhevat Berisha, Ruajtja e energjisë termike, 2020. ○ Linden, D., & Reddy, T. B. (Eds.)., Handbook of Batteries (5th ed.). McGraw Hill,2022. ○ International Renewable Energy Agency., Electricity Storage and Renewables: Costs and Markets Update. IRENA, 2024. ○ Richard Baxter, Energy Storage: A Nontechnical Guide, 2015. ○ Jianzhong Wu, Rong Cui, and Yonghua Song, Energy Storage in Power Systems, 2015. ○ Robert Huggin, Energy Storage (Hardcover), September 2, 2010. ○ Solar Engineering of Thermal Processes, 4th Edition. ○ Drita Lokaj Qerimi, Cvete Dimitrieska, Sanja Popovska-Vasilevska, Arlinda Alimehaj, Modeling of the Solar Thermal Energy Use in Urban Areas. Civil Engineering Journal, https://www.civilejournal.org/index.php/cej/article/view/2227 ○ Drita Lokaj - Qerimi, Cvete Dimitrieska, Igor Andreevski, Sanja Popovska – Vasilevska, Process System Engineering and Sustainability".. International Journal of Scientific & Engineering Research, Volume 8, Issue 1, January-2017, ISSN 2229-5518, https://www.ijser.org/researchpaper/Process-System-Engineering-and-Sustainability.pdf
Contact	

Subject	**Biomass Energy Production**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	III	3	110-BEP-207
Lecturer				
Aims and Objectives	The aim of the course teach students about Biomass Energy and Technology, providing a foundational understanding of its principles and applications. Explore Biomass Production and Aspects of Biomass as a Renewable Energy source, emphasizing its role in sustainable energy practices. Provide knowledge on Methods and Techniques for the generation of energy from Biomass, enabling students to apply these in real-world scenarios. Delve into Methods and Techniques for Biogas generation from wastes, exploring the current status and future trends in biogas production. Guide students in the formation and evaluation of a Biomass Energy Perspective Course, encouraging critical thinking and strategic planning. Create a comprehensive Textbook of Energy Crops and Forests, consolidating knowledge for future reference. Acquire knowledge of fundamental principles and characteristics of Biomass Energy. Demonstrate understanding of Biomass Production and its role as a renewable energy source. Apply knowledge of Biomass integration in Power Plants and Forests. Explore the current status and future trends in Biogas generation from wastes. Examine and assess Biomass Resources for energy production in Kosova and globally. Possess a comprehensive understanding of Energy Crops and Forests.			
Learning Outcomes	Upon completion of this course, students will be able to: • Acquire knowledge of fundamental principles and characteristics of Biomass Energy. • Demonstrate understanding of Biomass Production and its role as a renewable energy source. • Apply knowledge of Biomass integration in Power Plants and Forests. • Explore the current status and future trends in Biogas generation from wastes. • Assess and examine Biomass Resources for energy production in Kosova and globally.			

Content	**Weekly plan**			**Week**
	Course presentation and syllabus			1
	Biomass - Introduction			2
	Benefits of biomass			3
	Biomass resources			4
	Biomass potential			5
	The biomass potential in Kosovo			6
	Biomass from energetically plants, oils, and waste			7
	Physical conversion of biomass			8
	Thermochemical conversion of biomass, combustion, gasification			9
	Biodiesel produce			10
	Biochemical conversion of biomass			11
	Bioethanol produces from cellulosic material			12
	Economical evaluation of biomass			13
	Presentation of case studies			14
	Exam Preparation			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			70
	2. Individual Projects			20
	3. Presentations			10
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at lectures	15	1-15	10
	2. Individual Projects	1		20
	3. Final exam			70
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Moodle			1
	3. Projector			1
ECTS Workload and activities	**Type of activities**		**Weekly hours**	**Load**
	1. Lectures		2x15	30
	2. Consultations		1x15	15
	3. Independent learning			29
	4. Exam			1
Literature/References	Lecture materials o Course materials from Lecturer o Donald L. Klass, Biomass for Renewable Energy, Fuels, and Chemicals, 2015. o International Energy Agency Bioenergy., Publications and Task Reports on Sustainable Bioenergy. IEA Bioenergy, 2024 o Jay Cheng, Biomass to Renewable Energy Processes, 2014. o Basu, P., Biomass Gasification, Pyrolysis and Torrefaction (3rd ed.). Academic Press, 2018. o Erik Dahlquist, Biomass as Energy Source: Resources, Systems and Applications, 2013.			
Contact				

Subject	**Power systems**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	IV	6	110-POS-251
Lecturer				
Aims and Objectives	The aims and objectives of this course are to providing students with a comprehensive understanding of electrical power systems, including theoretical knowledge, practical skills, and the ability to analyze and solve complex problems in the field. Familiarize students with the various components of power systems, such as generators, transformers, transmission lines, and distribution networks. Provide knowledge and awareness of the integration of renewable energy sources into power systems, including the challenges and opportunities associated with sustainable energy. Introduce students to smart grid technologies and their role in enhancing the efficiency, reliability, and resilience of power systems. Develop skills in power system planning, considering factors, such as: load forecasting, economic analysis, and resource optimization. Offer hands-on laboratory experiences, simulations, and projects to allow students to apply theoretical concepts to real-world power systems scenarios.			
Learning Outcomes	The aim is for students to be able to: • Analyze and model power systems, applying knowledge of load flow, short circuit analysis, and system stability to address complex engineering problems. • Possess advanced knowledge of the various components of power systems, including generators, transformers, transmission lines, and distribution networks. • Understand the challenges and opportunities associated with the integration of renewable energy sources into power systems and be able to propose solutions for sustainable energy generation. • Apply strategies for improving energy efficiency, conservation, and demand-side management in power systems. • Possess the skills to participate in power system planning activities, including load forecasting, economic analysis, and resource optimization. • Uderstand the principles of power system operation and maintenance, emphasizing reliability, safety, and environmental sustainability. • Classify problems and determine appropriate solutions.			
	Weekly Plan			**Week**

Course Content	Presentation of Syllabus	1
	Introduction to Electrical Engineering and Power Systems	2
	Circuit Theory: Ohm's Law and Kirchhoff's Laws, Analysis of DC and AC circuits	
	Electromagnetic Fields and Devices: Transformers and inductors	3
	Principles of electrical power generation; Types of power plants (e.g., thermal, hydro, nuclear)	4
	Renewable energy sources and technologies Integration: Solar power systems; Wind power systems	5
	Power System Components: Generators: types, characteristics, and operation	6
	Transformers: types, configurations, and applications	7
	Transmission lines: parameters, modeling, and analysis	8
	Distribution systems: design and components	9
	Power System Analysis: Load flow analysis Short circuit analysis System stability analysis	10
	Control Systems in Power Systems: Basics of control theory Automatic voltage regulators (AVRs)	11
	Fundamentals of protection in power systems Types of relays and their applications	12
	Introduction to smart grids Communication and information technologies in power systems Smart grid components and applications	13
	Power system losses and efficiency Demand-side management	14
	Operation and Maintenance of Power Systems: Operation and control of power systems Maintenance strategies and practices	15

Teaching/Learning Methods	**Teaching/Learning Activity**	**Weight (%)**
	1. Lectures	50
	2. Numerical and Lab. Exercises	30
	3. Site visit	20

Assessment Methods	**Assessment Activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at lectures		1-15	5
	2. Laboratory and Numercial Excercises		1-15	25
	3. Final exam			70

Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Laboratory	1
	3. Laptop	1
	4. Projector	1
	5. Moodle	1

ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Numerical Exercises	1x15	15
	3. Laboratory Excrcises	1x15	15
	4. Independent learning		88
	5. Exam		2

Literature/References	Lecture materials o Course materials from lecturer

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

Arthur R Bergen,V Vittal, secon edition, Power Systems Analysis, 2000, Dec 19, 2023
Masters, G. M., & Hsu, K. F., Renewable and Efficient Electric Power Systems (3rd ed.). Wiley, 2023.
Grainger, J. J., Stevenson, W. D., & Chang, G., Power System Analysis (updated reprints). McGraw Hill, 2016.
T.K. Nagsarkar, M.S. Sukhija, Second Edition, Oxford, Power Systems Analysis, 2014,
B. M. Weedy, B.J. Cory, N. Jenkins, J.B. Ekanayake, G. Strbac, Wiley, Fifth edition, Electric Power Systems, 2012
Xi-Fan Wang, Yonghua Song, Malcolm Irving, Modern Power Systems Analysis, Springer
Hadi Saadat, Power System Analysis, Mc Graw – Hill
Hadi Saadat, Solutions Manual, Milwaukee School of Engineering, Milwaukee, Wisconsin.
Power Plant Engineering, P.K. Nag, McGraw-Hill Education
Power Plant Technology, M.M. El-Wakil, McGraw-Hill Education
Thermal Engineering, R.K.Rajput, Laxmi Publication
Gas Turbines by V Ganeshan, McGraw Hill Education
Steam Turbine Theory and Practice, William J. Kearton, CBS Publication.

</td></tr>
<tr><td>Contact</td><td></td></tr>
<tr><td>Subject</td><td>Smart Grids and Microcontrollers
<table>
<tr><th>Type</th><th>Semester</th><th>ECTS</th><th>Code</th></tr>
<tr><td>OBLIGATIVE (O)</td><td>IV</td><td>4</td><td>110-SGM-252</td></tr>
</table>
</td></tr>
<tr><td>Lecturer</td><td></td></tr>
<tr><td>Aims and Objectives</td><td>The aims and objectives of course are to provide an overview of the concepts of microcontrollers and smart grids. Thus, by recognizing the operation and design of microcontrollers and their application in the management and integration structure of control equipment and generally smart grids, knowledge is gained about their importance and role, and in particular in controlling and monitoring energy starting from the variety of energy resources, distribution system, transmission, and economical and efficient use of energy by consumers.
Upon successful completion of this course, the student will have gained knowledge of:

Aspects of operation and design of microcontrollers,
The role of microcontrollers and their application in engineering fields and in particular in the configuration and control of relevant equipment and systems,
Aspects of design and structuring of different types of microcontrollers and their performance,
How a smart grid can be designed to meet the needs of the enterprise / country or energy systems
How to adapt new technologies to a smart network configuration,
Introduce to a vision of how smart grids will transform current grids into a reliable and sustainable modern energy system.
Utilizing electricity networks as effectively and efficiently as possible and thus gradually turning them into modern smart grids.

</td></tr>
<tr><td>Learning Outcomes</td><td>The aim is for students to be able to:

Understand advanced knowledge the structure and operation of microcontrollers,
Demonstrate understanding of design, operation and application of microcontrollers,
Analyze structures of the power grid,
Apply advanced skills and computer techniques included in the smart network

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

	• Apply knowledge in the analysis and solution of problems that arise in the architecture of smart grids.

Content

Weekly plan	Week
Presentation of Syllabus	1
Introduction to Smart Grids, Smart Grids Contributions	2
Advantages and Disadvantages of Smart Grids Technologiess	3
Electrical networks, conversion of traditional and new components into networks, Structure and Configuration of Electrical Networks	4
Power System Structure, Power System Configuration	5
Smart Meters, Electricity Metering, Monitoring and Management, Smart Grid (Revolution)	6
Dissemination / Expansion and Implementation of Smart Meters	7
The concept of microcontrollers and their technology	8
Types and structure of microcontrollers	9
Microcontroller designs and their operation	10
The role of equipment and their integration in the operation of microcontrollers	11
Architecture and use of several types of microcontrollers in	12
Application and implementation of microcontrollers in the control of technological equipment, applications and engineering	13
Presentation of case studies/seminars/project/	14
Exam preparation	15

Teaching/Learning Methods

Activities	Weight (%)
1. Lectures	70
2. Case study	30

Assessment Methods

Assessment activity	Nr.	Week	Weight (%)
1. Attendances at Lectures	2	1-15	10
2. Attendances in Excersies	1	1-15	10
3. Case study presentations			20
4. Writen Exam			60

Remarks:
In conclusion, 40% will be an assessment of attendance at lectures, excercies and the case study presentation, and the final exam includes 60%, a total of 100%.

Course resources

Resources	Nr.
1. Class	1
2. Labs	1
3. Moodle	1
4. Projector	1

ECTS Workload and activities

Type of activities	Weekly	Load
1. Lectures	2x15	30
2. Excersies	1x15	15
3. Seminars		25
4. Presentation		1
5. Independent learning		53
6. Exam		1

Literature/References	Lecture Materials ○ Radian Belu, Smart Grid Fundamentals, Taylor & francis group, 17 February 2022 ○ Kamran, M., Fundamentals of Smart Grid Systems. Elsevier, 2022. ○ Belu, R., Smart Grid Fundamentals: Energy Generation, Transmission and Distribution. CRC Press, 2022. ○ Sudip Misra, samaresh Bera, "Introduction to Smart Grid", Published online by Cambridge University Press: 20 October 2018 ○ David Calcutt, Fred Cowan, Hassan Parchizadeh, "Microcontroller – An Applications Based Introduction", Elsevier, 2004. ○ Steven F. Barret and Daniel J. Pack, "Microcontrollers Funndamentals for Engineers and Scientists", Morgan & Claypool, 2006. ○ Mitchell A. Thornton,"Arduino Microcontroller Processing for Everyone", Morgan & Claypool, 2010. ○ Jennie C. Stephens, Elizabeth J. Wilson, Tarla Rai Peterson, "Smart Grid (R)Evolution: Electric Power Struggles", 1st Edition, Nov 17, 2016. ○ J.D. McDonald (2003). Electric Power Substations Engineering, CRC Press (http://ocw.mit.edu/index.html) ○ MIT OpenCourseWare (2005). Introduction to Electric Power Systems, MIT ○ https://ocw.mit.edu/courses/nuclear-engineering/22-081j-introduction-to-sustainable-energy-fall-2010/index.ht.
Contact	

Subject	**Automation and Control of Electrical Circuits**				
	Type		**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)		II	4	110-ACE-151
Lecturer					
Aims and Objectives	Introduce students to the fundamental concepts of automation and control engineering systems, laying the groundwork for a comprehensive understanding of the field. Provide students with a broad overview of automation systems, emphasizing their application in process automation within industrial and power system contexts. Students should be able to: • Understand fundamental control principles and theories applicable to electrical circuits. • Develop the ability to design and implement automated control systems for various electrical circuit configurations. • Apply instrumentation techniques to measure, monitor, and control electrical parameters within a given system. Analyse the dynamic behaviour of electrical circuits under automated control, considering transient responses, stability, and system performance. • Evaluate different control strategies and their effectiveness in optimizing the performance of electrical circuits. • Develop the ability to troubleshoot and diagnose issues in automated control systems applied to electrical circuits. Familiarize with industry standards and best practices in the automation and control of electrical circuits.				

	• Familiarize students with industry standards and best practices in the automation and control of electrical circuits.
Learning Outcomes	Upon completion of this course, students will be able to: • Acquire a comprehensive understanding of fundamental control principles and theories relevant to electrical circuits, enabling a robust theoretical foundation. • Demonstrate proficiency in designing and implementing automated control systems for various electrical circuit configurations, showcasing their practical application of theoretical knowledge. • Apply instrumentation techniques effectively to measure, monitor, and control electrical parameters within a given system, showcasing practical skills in real-world applications. • Examine and evaluate the behaviour of electrical circuits under automated control, considering transient responses, stability, and overall system performance. • Evaluate different control strategies, demonstrating the ability to analyse and choose optimal approaches for optimizing the performance of electrical circuits.
Content	**Weekly plan** — **Week** Announcing to students the syllabus of the subject, its aims, and objectives — 1 Introduction, Understand the need of automation, Classify various types of automated transmission lines and components of automation. — 2 Control System Fundamentals — 3 System Modelling, Laplace Transform — 4 Time domain analysis, transfer functions, Closed Loop Control Systems — 5 Controllers (PI, PD, PID) — 6 Stability Analysis, Routh-Hurwitz Stability Criterion Root Locus — 7 Frequency Domain Analysis, Bode Diagram — 8 State Space Methods for Control System Design — 9 Automated Assembly Systems: Design for Automated Assembly, Types of Automated Assembly Systems, Analysis of a Single Station Assembly Machine. — 10 Control Technologies in Automation: Industrial Control Systems, — 11 Process Industries Verses Discrete - Manufacturing Industries, Continuous Verses Discrete Control, Computer Process Control and its Forms. — 12

	Programmable Logic Controllers (PLCs) Introduction, Micro PLC, Programming a PLC, Logic Functions, Input & Output Modules, PLC Processors	13
	Case study presentations	14
	Course review, exam preparation	15

Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures	50
	2. Numerical and Lab. Exercises	20
	3. Individual Projects	20
	4. Case Study	10

Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	15	1-15	10
	2. Attendances at Num. and Lab. Exercises			20
	3. Individual Projects	1		20
	4. Final exam			50

Course Resources	**Resources**	**Nr.**
	1. Class	1
	2. Laboratory	1
	3. Moodle	1
	4. Projector	1

ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Numerical Exercises	1x15	15
	3. Laboratory Exercises	1x15	15
	4. Consultations	1x15	15
	5. Independent learning		74
	6. Exam		1

Literature/References

Lecture materials

- Course Materials from Lecturer
- Katsuhiko Ogata, Modern Control Engineering, 5th edition, Pearson, July 14, 2021,
- Åström, K. J., & Murray, R. M., Feedback Systems: An Introduction for Scientists and Engineers (2nd ed.). Princeton University Press, 2021.
- Petruzella, F. D., Programmable Logic Controllers (6th ed.). McGraw Hill, 2020.
- Karl J. Aström and Richard M. Murray, Feedback Systems: An Introduction for Scientists and Engineers, 2012
- Nise, Norman S. Control Systems Engineering. John Wiley & Sons, ISBN: 9780470547564. 2010.
- Automation, Production Systems and Computer Integrated Manufacturing-M.P. Grover, Pearson Education.

Contact

Subject	**Heat Pumps and Geothermal Energy**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	IV	4	110-HPG-253
Lecturer				

Aims and Objectives	The aims and objectives of course are to provide necessary and sufficient modern knowledge for future energy engineering engineers regarding geothermal energy and heat pumps, respectively with history, origin, forms, use-advantages and disadvantages, economic value of geothermal resources, degree of use their, the function of heat pumps in relation to the use of geothermal resources and other topics which are related to geothermal energy. Course heat pumps and geothermal energy in addition to being an academic requirement, recently is also a legal and standard requirement which requires all companies to implement methodologies that conserve and save energy and have access to the use of energy and resources renewable energy. The purpose of the course is also to show that the use of geothermal energy is one of the basic components for the management and integrated use of energy resources, which reflect on sustainability and overall development. This course provides future Engineers with a contemporary knowledge and clear understanding of geothermal energy and its advantages in efficient and environmentally friendly development, combined with the most advanced techniques applied today in the European Union and beyond. Students (prospective engineers) also have the opportunity to get acquainted with advanced standards and methodologies related to the use of geothermal energy.
Learning Outcomes	The aim is for students to be able to: • Manage to get the necessary and sufficient knowledge about the aspects of geothermal energy, the type and function of heat pumps and to apply them in their field of specialization. • Receive the knowledge which will serve you in solving many design, evaluation and implementation problems; • Make assessments regarding geothermal energy, know the function and application of heat pumps, as well as interpret the achievements (results) through research and studies related to their specialist field.
Content	**Weekly plan** — **Week** Presentation of Syllabus — 1 Introduction- Heat pump elements; heat pump operation; — 2 Heat pump types, their use, pump cycle definition; — 3 Heat Pump Systems / Used Heat Pump Fluids — 4 Heat sources and comparative analysis, Air-to-air, water-to-air, solar-to-air, and calculation principles Heat pump — 5 Introduction- Background, Basic concepts of geothermal energy; The role and importance of geothermal energy, seminar topics; — 6 Origin of geothermal energy, Geothermal systems; — 7 Geothermal sources, underground water, theories of their origin; — 8 Geothermal phenomena — 9 Exploration of geothermal resources, determination of the drilling site, drilling — 10 Geothermal, research and assessment strategy, research methods, Utilization — 11 Geothermal drilling, use of geothermal energy; — 12 Environmental impacts of geothermal energy — 13 Geothermal energy collection area, rock formations, etc.; Geothermal potentials in Kosovo, rate of use; — 14 Marketing and economics — 15
Teaching/Learning Methods	**Activities** — **Weight (%)** 1. Lectures — 85 2. Interactiv Activities — 10 3. Consultations — 5
Assessment Methods	**Assessment activity** — **Nr.** — **Week** — **Weight (%)** 1. Attendances at Lecture — 2 — 1-15 — 5

	2. Activity and interactivities/seminar work	10
	3. Exam	85
	Remarks: In conclusion, 15% will be an assessment of attendance at lectures and the activities, and the final exam includes 85%, a total of 100%.	
Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Laptop	1
	3. Moodle	1
	4. Projector	1
	5. Wall board, marker	1

ECTS Workload and activities	**Type of activities**	**Weekly hour**	**Load**
	1. Lectures	2x15	30
	2. Consultation	1x15	15
	3. Independent learning		54
	4. Exam		1

Literature/References

Lecture materials

- Course materials from Lecturer
- Heat Transfer Engineering Fundamentals and Techniques 1st Edition - November 21, 2020;
- Lund, H., et al., Renewable Energy Systems: A Smart Energy Systems Approach to the Choice and Modeling of 100% Renewable Solutions (3rd ed.). Academic Press, 2021.
- International Energy Agency., The Future of Heat Pumps. IEA, 2022.
- HVAC for Beginners Simplified: Your Comprehensive Guide to Mastering Heating,Ventilation and Air Conditioning Systems (English Edition), 2023
- Elezaj Z., & Kodra A., Gjeologjia e Kosovës
- Kodhelaj N, Energjia gjeotermale dhe përdorim i saj në vendin tonë (Shqipëri), Jan 1, 2008
- Frashëri A., Kodhelaj N. Burimet e energjisë gjotermale në Shqipëri dhe platëform për shfrytëzimin e saj.
- Zuna A. 2017. Mundësia e përdorimit të burimeve gjeotermike dhe perspektiva e tyre në Republikën e Kosovës, Disertacion, Tiranë. Materiale (ligje, strategji, plane etj) të cilat mund të përdoren
- MZHE, 2017. Strategjia e Energjisë e Republikës së Kosovës
- Plani i Kosovës për burimet e energjisë ripërtrishme të energjisë (pkbre) – draft
- Banka Botërore, 2004. Informacione mbi përdorimin e energjisë gjeotermale.
- UNDP, 2007. Energjia për Zhvillim Faqe interneti që mund të shfrytëzohen për të dhëna dhe informacione www.akm.gov.al/assets/energjite-e-rinovueshme.pdfhttps://mzhe-ks.net/repository/

Materials (laws, strategies, plans, etc.) that can be used

- MZHE, 2017. Strategjia e Energjisë e Republikës së Kosovës
- Plani i Kosovës për burimet e energjisë ripërtrishme të energjisë (pkbre) – draft
- Banka Botërore, 2004. Informacione mbi përdorimin e energjisë gjeotermale.
- UNDP, 2007. Energjia për Zhvillim

Other literature

- Geothermal Heat Pumps: A Guide for Planning and Installing Paperback – November 19, 2007, by Karl Ochsner;
- Small Geothermal Energy Systems and Geothermal Heat Pumps: Guide for the Do-it-Yourselfer (DIY),

	○ Ground Source Heat Pumps, Information Survival Kit for Heat Pump Owners, Energy Program ○ Successes,U.S. Government, Energy Efficiency and Renewable Energy Office, Department of Energy ○ (DOE), Geothermal Technologies Program;
Contact	

Subject	**Hydroenergy**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	IV	3	110-HYE-254
Lecturer				
Aims and objectives	This course aims to provide students (bachelor level) with contemporary knowledge (standard) regarding the use of water potential for electricity generation, knowledge of water capacity, types of dams and hydropower works, ways of use , types of tools, tools and equipment for hydropower. The main objective of this course is to develop students' skills and abilities so that they have a clear understanding of the importance and use of water power, data, information and procedures for the use of water power to generate electricity. Learn students about the potential of water and its importance, the location of renewable energy sources (RES), hydropower plant groups, main mechanical parts of hydropower plants, electrical parts of hydropower plants, types of turbines, turbine materials, power plants, auxiliary units, electrical equipment, control rooms, implementation of electricity tariff.			
Learning outcomes	The students will be able to: • Possess necessary and sufficient knowledge regarding the data, information, ways and methodologies for the construction and use of hydropower works; • Demonstrate knowledge and understanding what are the data, information and procedures for the use of water power, the ways, types and equipment necessary for the construction of hydropower works; • Apply advanced skills and techniques to the work of HPPs, which are the main and auxiliary structural parts of HPPs, the production of electricity			
Content	**Weekly plans**			**Week**
	Syllabus and course organization			1
	Introduction-presentation of the course, basic concepts of use of water resources, hydropower, history of its development;			2
	Hydro resources, available water capacity-water cycle, utilization of water power;			3
	Meteorology, Hydrology, hydrographic network (climatic conditions, levels, flows);			4
	Geological-engineering conditions for the construction of hydropower works, water intake works, dams;			5
	Physical geological processes, erosion, deposits, implications for morphological evolution			6
	Assessment of water resources in the Republic of Kosovo;			7
	Legal regulations and directives of the European Union for the use of water resources, procedures and documentation for the use of water power in our country;			8
	Forms of Energy, Main Parts and Terminology of Hydropower Operations			9
	Knowledge on Hydropower and their separation			10
	Theory of turbines, Classification of hydraulic turbines			11
	Hydro Power Plant Structural Elements, Turbine, Power Generator, Transformer and Power Plant			12
	Economy, Cost structure and Electricity Tariffs at hydropower plants			13
	Presentation of case studies			14
	Preparation for the final exam			15
Teaching/Learning Methods	**Activity**			**Weight (%)**
	1. Lectures			70
	2. Case study			20
	3. Interactive activities			10

<table>
<tr><td>Assessment Methods</td><td colspan="3">Assessment activity | week | Weight (%)
1. Attendances at Lectures | 1–15 | 10
2. Case study | | 20
3. Final exam | | 70</td></tr>
<tr><td>Course Sources</td><td colspan="3">Sources | Nr.
1. Classrom | 1
2. Exercise table, markers | 1
3. Moodle | 1
4. Projector | 1</td></tr>
<tr><td>ECTS workload and activities</td><td colspan="3">Type of Activities | Weekly hours | Load
1. Lectures | 2x15 | 30
2. Consultation | 1x15 | 15
3. Case study | | 10
4. Independent lesson | | 19
5. Exam | | 1</td></tr>
<tr><td>Literature/References</td><td colspan="3">Lecture materials
o Course materials from Lecturer
o Masters, G. M., & Hsu, K. F. , Renewable and Efficient Electric Power Systems (3rd ed.). Wiley, 2023.
o International Renewable Energy Agency, Renewable Power Generation Costs in 2022. IRENA, 2023.
o Pano N. Resurset ujore të Shqipërisë, Tiranë, 2016..
o IH “JÇ”. Pasqyra Hidroekonomike e Kosovës, Prishtinë, 1983.
o Introduction to Hydro Energy Systems: Basics, Technology and Operation (Green Energy and Technology) 2011th Edition;
o Gulliver, John S. Arndt, Roger E.A. 1991. Hydropower Engineering Handbook
o Introduction to Hydro Energy Systems – Hermann-Josef Wagner and Jyotirmay Mathur
o Energy Technologies Subvolume C Renewable Energy – Landolt-Börnstein
o Hidroelektrocentrale I – Xhemal Gjata
o Guidline and Manual for Hydropower Development vol.2, 2011
o Renewable energy in the water, energy &food nexus, 2015
Recomanded
o RAMOSS H., 2000. Small Hydropower Plants
o Ivanoviq D., 2014. Hidroenergjia
o Scott Davis, Microhydro: Clean Power from Water (Wise Living), July 1, 2003.</td></tr>
<tr><td>Contact</td><td colspan="3"></td></tr>
</table>

Subject	**Modeling and Simulation**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	IV	3	110-MOS-255
Course Lecturer				
Aims and Objectives	The aim and objectives of Modeling and Simulation are designed to provide students with a strong foundation in theoretical concepts, practical skills, and the application of modeling and simulation techniques. The goal is to prepare students for careers in Energy Engineering field, where modeling and simulation play a crucial role. The objectives of the BSc course in Modeling and Simulation are: • Introduce students to the fundamental concepts of dynamic systems and the importance of modeling in engineering. • Develop skills in modeling mechanical, electrical, electromechanical, fluid, and thermal systems. • Enable students to perform simulations of dynamic systems using appropriate tools and techniques. • Provide a solid foundation in time domain analysis for dynamic systems. • Familiarize students with transfer functions and their application in system modeling. • Introduce state space methods for modeling and analysis of dynamic systems.			
Learning Outcomes	Upon successful completion of the course, the student is expected to: • Understand and explain the fundamental concepts of dynamic systems, including classification, modeling principles, and the significance of simulation in engineering • Demonstrate the ability to develop mathematical models for mechanical, electrical, electromechanical, and fluid systems, considering both linear and nonlinear aspects. • Utilize appropriate simulation tools to perform numerical simulations of dynamic systems, employing relevant numerical methods for analysis • Conduct time domain analysis for dynamic systems, interpret time responses, and evaluate system performance based on time-domain specifications and measures.			
Content	**Weekly Plan**			**Week**
	Introduction; Definition and classification of dynamic systems			1
	Importance of modeling in engineering and Overview of simulation techniques			2
	Fundamental of mathematical modeling			3
	System representation: Input, output, and state variables and Linear and Nonlinear Systems			4
	Modeling Mechanical Systems			5,6
	Modeling Electrical and Electromechanical Systems			7,8
	Modeling Fluid and Thermal Systems			9,10
	Simulation of Dynamic Systems; Overview of simulation tools			11
	Numerical simulation techniques and Validation and verification of simulation models			12

	Time response analysis of dynamic systems	13
	Case studies in time domain analysis	14
	Transfer Functions State Space Method, Application of transfer functions and state space methods in engineering	15

Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures	70
	2. Case studies	15
	3. Problem-based learning	15

Assessment Methods	**Activity**	**Number**	**Week**	**Weight (%)**
	1. Attendances/Participation			10
	2. Case stydies			20
	3. Midterm Exam		7	30
	4. Final Exam			40

Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Softwer	1
	3. Projector	1

ECTS Workload and Activiries	**Type of Activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Independent Study		43
	3. Exam		2

Literature/References	
	Lecture materials o Course materials from Lecturer o Clarence W. De Silva, Modeling of Dynamic Systems with Engineering Applications, 2023. o Chapra, S. C., & Canale, R. P. , Numerical Methods for Engineers (8th ed.). McGraw Hill, 2021. o MathWorks., MATLAB and Simulink Documentation. MathWorks, 2025. o Craig A. Kluever, Dynamic Systems: Modeling, Simulation, and Control. o John A. Sokolowski (Editor), Catherine M. Banks “Principles of Modeling and Simulation: A Multidisciplinary Approach” Wiley; 1 edition, February 9, 2009. o Bingen Yang (Author), Inna Abramova, Dynamic Systems: Modeling, Simulation. o A.Law “Simulation Modeling and Analysis” Mcgraw Hill Higher Education; 4th edition (August 1, 2006) o John A. Sokolowski (Editor), Catherine M. Banks “Principles of Modeling and Simulation: A Multidisciplinary Approach” Wiley; 1 edition, February 9, 2009.

Contact	

Subject	**Internship**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	IV	6	110-INT-257
Lecturer				
Aims and Objectives	The Internship course aims to ensure that students understand the practical requirements that are organized for each study visit. In the IV semester, as part of the Internship course, study visits to industry (different companies) are planned in order to expand the knowledge related to the problems in the field of Energy Engineering, learned until this semester. At the end of the semester, the students work on paper of one of the topics, which they choose in coordination with the Mentor of the subject, where they will address the problem of any problem, which was addressed during visits to the industry by different companies. They will defend this paper in the last hour in front of the subject mentor and the professors of the field.			
Learning Outcomes	The aim is for students to be able to: • Apply the knowledge and skills learned in the classroom to a work environment • Demonstrate understanding of concepts in practical tasks. • Use integrated knowledge to reach informed judgments about theories and practices. • Apply advanced skills and techniques in Intership • Differentiate between various methods or approaches during the Intership.			
Content	**Weekly plan**			**Week**
	Presentation of Syllabus			1
	General knowledge of the student worksheet instructions on the practical progress of the internship.			2
	KEK – Power Plant			3
	KOSTT – Transmission system			4
	KEDS – Distribution System			5
	IHMK – Meteorlogy Institut			6
	“Monting” Company – Production electrical componenets			7
	“Electra” Company - Production electrical componenets			8
	PV System, “Eco park” Gjakova or “Muqa solar”			9
	Wind Park, “Air Energy”, Kitka			10
	Hydro power plant in Zhur			11
	Biomass Factory Prizren			12
	EON –XR Platform UBT Campus			13
	Work shop			14
	Presentations			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Study visits			80
	2. Workshop			20
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances in study visits			70
	2. Presntation of works (Seminars)			30
Course resources	**Resources**			**Nr.**
	1. Industries (Companies)			1
	2. Class			1
	3. Projector			1
ECTS Workload and activities	**Type of activities**		**Weekly**	**Load**
	1. Study visit			90
	2. Independent learning			30
	3. Workshop/Tasks			30
Literature/References	Lecture materials o International Labour Organization. (2022). Quality Apprenticeships			

	○ Recommendation, 2023 (No. 208) and related work-based learning resources. ILO. ○ European Commission. (2022). European Framework for Quality and Effective Apprenticeships: relevant guidance and resources.
Contact	

Subject	**Fundamental of Electrical Machines**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	V	6	110-FEM-301
Lecturer				
Aims and Objectives	The aims and objectives of a course on the basics of electrical machines are designed to provide students with fundamental knowledge and skills related to electrical machines, preparing them for further studies or professional practice in electrical engineering. Aims and objectives for this course are to: Develop a fundamental understanding of the principles governing the operation of electrical machines, such as: Transformers, DC Machines, 1-phase and 3-phase Induction Machines, 3-phase Synchronous Machines, etc. Familiarize students with the classification of electrical machines based on their operating principles and applications. Impart knowledge about the working principles of key electrical machines such as DC machines, induction machines, and synchronous machines. Explain the performance characteristics of electrical machines and their significance in various applications. Introduce basic analysis techniques for electrical machines, including circuit models and equivalent circuits. Understand the process of energy conversion in electrical machines and its role in various industrial and commercial applications. Discuss the efficiency of electrical machines and the sources of losses, with an emphasis on methods to improve overall efficiency. At the end of the subject the students will have the capability of doing electromechanical design of the major classes of rotating and linear electric machines, and will have an understanding of the principles of the energy conversion parts of engineering. In addition to design, students will also learn how to estimate the dynamic parameters of electric machines and understand what the implications of those parameters are on performance of systems incorporating those machines.			
Learning Outcomes	Up on successful completion of this course, student will be able to: Understand the construction, working principles, and applications of DC machines, such as: Transformers, DC Machines, 1-phase and 3-phase Induction Machines, 3-phase Synchronous Machines, etc. Analyze the performance characteristics of DC machines, induction and synchronous machines. Examine the process of energy conversion in electrical machines. Classify various losses in electrical machines. Apply real-world applications of electrical machines in different industries. Posses practical experience through laboratory sessions or simulations to reinforce theoretical concepts.			
	Weekly Plan			**Week**

Content	Introduction to Magnetic Circuits and Induction Magnetic Circuits Amper's Magnetic Circuital Laws Series and Parallel magnetic circuits Magnetic circuit with air gap B-H relationship (Magnetization Characteristics) Hysteresis with DC and AC excitation Hysteresis Loss and Eddy Current Loss Faraday's Law of Electromagnetic Induction, Statically and Dynamically Induced EMF Force on Current Carrying Conductor	1
	Transformers Introduction Transformer Constructional Details, recent trends Working principle and EMF equation (Faraday's and Lenz;s Laws) Ideal Transformer/Real Transformer No load and load Operation Operation of Transformer with load Determination of Eequivalent Circuits parameters and Phasor Diagram Tests: Polarity Test, Open Circuit test, Short Circuit test and Equivalent Circuit Parameters Performance Characteric of Transformer, Voltage Regulation Losses in a transformer Efficiency, condition for maximum efficiency and all day efficiency Thre phase Tranformers, 3 phase Tranformers connections Auto transformer: construction, working principle and Cu saving Three winding Transformers Instrument Transformers Inrush Current	2
	DC Generator Constructional Details and Armature Winding Working principle and Commutator Action EMF equation Method of excitation: separately and self excited, Types of DC Generator Characteristics of series, shunt and compound generator Losses in DC generators Efficiency and Voltage Regulation	3
	DC Motor Working principle and Torque equation Back EMF Method of excitation, Types of DC motor Performance Characteristics of DC. motors Starting of DC. Motors: 3 point and 4 point starters Speed control of DC. motors: Field Control, Armature Control Losses and Efficiency	4
	Induction Machines Introduction Three Phase Induction Machines Three Phase Induction Motor Constructional Details and Types	5,6

	Operating Principle, Rotating Magnetic Field concept, Synchronous Speed, Slip, Induced EMF, Rotor Current and its frequency, Torque Equation Torque-Slip characteristics Equivalent circuit of an induction motor, stator circuit model, Rotor circuit model, complete equivalent circuit, Tests to determine equivalent-circuit parameters, No-Load Test, DC Test, Blocked-Rotor Test Three Phase Induction Generator Working Principle, voltage build up in an Induction Generator Power Stages	
	Synchronous Machines Introduction Constructional Details, Armature Windings, Types of Rotor, field excitation of synchronous machines, Exciter, Synchronous speeds Synchronous Generator Operation Equivalent circuits Synchronues motor operation, Power and Torque Characteristics Effect of changes in excitation, Synchronous Machine Connected to an Infinite Bus Working Principle Armature Reaction and its effects Alternator with load and its phasor diagram Three Phase Synchronous Motor Principle of operation Starting methods No load and Load operation, Phasor Diagram Effect of Excitation and power factor control	7, 8,9
	Practical exercise: Magnetic Circuits To draw B-H curve for two different sample of Iron Core Compare their relative permeability	10
	Practical exercise: Two Winding Transformers To perform turn ratio test To perform open circuit (OC) and short circuit (SC) test to determine equivalent circuit parameter of a transformer and hence to determine the regulation and efficiency at full load	11
	Practical exercise: DC Generator To draw open circuit characteristic (OCC) of a DC shunt generator To draw load characteristic of shunt generator	12
	Practical exercise: DC Motor Speed control of DC Shunt motor by: (a) armature control method (b) field control method To observe the effect of increasing load on DC shunt motor's speed, armature current, and field current.	13
	Practical exercise: 3-phase Machines To draw torque-speed characteristics and to observe the effect of rotor resistance on torque-speed characteristics of a 3-phase Induction Motot To study load characteristics of synchronous generator with: (a) Resistive load (b) Inductive load, and (c) Capacitive load	14

	Prepararation for Exam			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			50
	2. Numeric Exercise			25
	3. Laboratory Exerise			25
Assessment Methods	**Assessment Activity**	**Number**	**Week**	**Weight (%)**
	1. Attendances at Lectures			5
	2. Attendances at numerical exercises			10
	3. Attendances at Laboratory exercies			10
	4. Individual Project			25
	5. Final Exam			50
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Laboratory			1
	3. Moodle			1
	4. Software			1
	5. Projector			1
ECTS Workload and activities	**Type of Activities**		**Weekly hours**	**Load**
	1. Lectures		2x15	30
	2. Numeric exercise		1x15	15
	3. Laboratory exercise		1x15	15
	4. Consultattions		1x15	15
	5. Project			30
	6. Independent Study			43
	7. Exam			2
Literature/References	Lecture materials o Course materials from Lecturer o I.J. Nagrath & D.P.Kothari," Electrical Machines", Tata McGraw Hill, 2004 o Turan Gonen. "Electrical Machines with MATLAB® 2nd Edition"CRC Press, Nov 16, 2011 o Chapman, S. J., Electric Machinery Fundamentals (5th ed.). McGraw Hill, 2019. o Fitzgerald, A. E., Kingsley, C., & Umans, S. D., Electric Machinery (7th ed.). McGraw Hill, 2013. o S. K. Bhattacharya, "Electrical Machines", Tata McGraw Hill, Aug 27, 2008 o B. L. Theraja and A. K. Theraja, "Electrical Technology (Vol-II)", S. Chand, Apr 12, 2023 o Husain Ashfaq ," Electrical Machines", Dhanpat Rai & Sons			

	o A.E. Fitzgerald, C.Kingsley Jr and Stephen D. Umans,"Electric Machinery", Tata McGraw Hill, Jan 13, 2023 o B.R. Gupta & Vandana Singhal, "Fundamentals of Electrical Machines, New Age International, 2005 o P. S. Bhimbra, "Electrical Machines"' Khanna Publishers, 2003 o Irving L.Kosow, "Electric Machine and Tranformers", Prentice Hall of India. o M.G. Say, "The Performance and Design of AC machines", Pit man & Sons, Dec 1, 2005. o Bhag S. Guru and Huseyin R. Hizirogulu, "Electric Machinery and Transformers" Oxford University Press, 2001.
Contact	

<table>
<tr><td rowspan="2">Subject</td><td colspan="4">Electrical Installation and Lightning Technology</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>V</td><td>6</td><td>110-EIL-302</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The aim and objectives of Electrical Installation and Lightning Technology are designed to provide students with a comprehensive understanding of electrical systems, installation practices, and lightning. These programs typically combine theoretical knowledge with practical skills to prepare students for careers in electrical engineering fields, with a focus on electrical installations and lightning systems.
The objectives are to:
• Develop an understanding of electrical installation practices, regulations, and standards.
• Emphasize safety protocols and procedures associated with electrical installations and lightning technology.
• Practical skills in electrical installation and maintenance through laboratory work, workshops, and practical training, which includes using tools and equipment commonly employed in the field.
• Familiarize students with local and international regulations, codes, and standards related to electrical installations and lightning technology.
• Keep students abreast of the latest technologies and innovations in lighting technology, automation, and smart systems.
• Prepare students for overseeing electrical installation projects, from planning, designing to execution.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">Upon successful completion of the course the student should be able to:
• Demonstrate a comprehensive understanding of the fundamental principles of Electrical Installation and Lightning Technology.
• Possess the knowledge and skills necessary to design and implement Electrical Installation and effective Lightning systems.
• Identify, analyze and solve electrical problems, demonstrating the ability to troubleshoot and rectify faults in electrical systems.
• Work effectively as part of a team, collaborating with other professionals to achieve common goals in the field of electrical engineering.
• Demonstrate a commitment to continuous learning and staying updated on advancements in electrical engineering, including emerging technologies and industry trends.</td></tr>
<tr><td rowspan="16">Content</td><td colspan="3">Weekly plan</td><td>Week</td></tr>
<tr><td colspan="3">Presentation of Syllabus</td><td>1</td></tr>
<tr><td colspan="3">Fundamentals of Electrical Installations</td><td>2</td></tr>
<tr><td colspan="3">Electrical Installation Design and Planning</td><td>3</td></tr>
<tr><td colspan="3">Electrical Loads and Load Assessment</td><td>4</td></tr>
<tr><td colspan="3">Electrical Cables and Conductors</td><td>5</td></tr>
<tr><td colspan="3">Electrical Wiring Systems and Installation Methods</td><td>6</td></tr>
<tr><td colspan="3">Electrical Protection and Protective Devices</td><td>7</td></tr>
<tr><td colspan="3">Earthing and Electrical Safety</td><td>8</td></tr>
<tr><td colspan="3">lectrical Installation in Buildings and Energy Facilities</td><td>9</td></tr>
<tr><td colspan="3">Lighting Technology and Lighting Design</td><td>10</td></tr>
<tr><td colspan="3">Lightning Phenomena and Lightning Protection Systems</td><td>11</td></tr>
<tr><td colspan="3">Inspection, Testing, and Verification of Electrical Installations</td><td>12</td></tr>
<tr><td colspan="3">Energy Efficiency, Maintenance, and Modern Electrical Installations</td><td>13</td></tr>
<tr><td colspan="3">Presentation of case studies</td><td>14</td></tr>
<tr><td colspan="3">Preparation for the final exam</td><td>15</td></tr>
<tr><td rowspan="4">Teaching Learning methods</td><td colspan="3">Activities</td><td>Weight (%)</td></tr>
<tr><td colspan="3">1. Lectures</td><td>50</td></tr>
<tr><td colspan="3">2. Numerical exercises</td><td>20</td></tr>
<tr><td colspan="3">3. Laboratory exercises</td><td>20</td></tr>
</table>

	4. Individual proejcts			10
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures		1-15	10
	2. Attendances at Numerical Exeercses		1-15	10
	3. Attendancea at Laboratory exercies		1-15	10
	4. Case studies			20
	5. Final exam			50
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Moodle			1
	3. Projector			1
	4. Laboratory			1
ECTS Workload and activities	**Type of activities**		**Weekly hours**	**Load**
	1. Lectures		2x15	30
	2. Num. Exercises		1x15	15
	3. Lab. Exercises		1x15	15
	4. Case studies			30
	5. Independent learning			59
	6. Exam			1
Literature/References	Lecture materials o Course Materials from Lecturer o Electrical installation of residential buildings Methodical Guidelines for Practical Works , RTU Press Riga 2019 o K.Bērziņa. Electrical Installation of Residential Buildings. Methodical Guidelines for Practical Works. Riga, RTU Press, 2019, 42 p o Lamps and Lighting – edited by J.R. Coaton and A.M. Marsden, 4th Edition, Arnold. o The scientific basis of illuminating engineering – P.Moon Dover Publications. o Lighting for energy efficient luminous environment – Ronald N. Helms & M Clay Belcher. Prentice Hall. o Lighting by Design. Christopher Cuttle. Architectural Press. o International Electrotechnical Commission. (2019, current amendments). IEC 60364 series: Low-voltage Electrical Installations. IEC. o International Electrotechnical Commission. (2020, current editions as applicable). IEC 62305 series: Protection Against Lightning. IEC.			
Contact				

Subject	**Sustainable development and environment**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	V	3	110-SDE-303
Lecturer				
Aims and Objectives	The course aims to provide students with knowledge of the basic concepts of sustainable development, which aims to improve living standards and preserve the environment. Provide knowledge on energy and environment, different processes on biodiversity, on climate change, on proper infrastructure, sustainable urban planning, knowledge on land property and property rights, pollution and green city, To have knowledge on land resources, resources renewable energy on the framework of environmental management and environmental resources. Gain skills for designing research programs on sustainable energy and environment development. Energy is both an enabler and a challenge for sustainable development. It powers our economies, boosts agriculture to feed billions of families, runs desalination plants in water-scarce countries and keeps our homes cool or warm. Eensuring access to affordable, reliable, sustainable and modern for all, significantly increase the share of renewable energy in the global energy mix, improve energy efficiency and advanced and cleaner fossil fuel technology, and promote investment in energy infrastructure and clean energy technology.			
Learning Outcomes	Upon completion of this course, students will be able to: • Examine environmental problems, with changes in energy and the environment • Demonstrate knowledge of spatial planning, land ownership and property rights • Use modern engineering techniques and tools necessary for planning and development of renewable energy.			
Content	**Weekly plan**			**Week**
	Presentation of the Syllabus			1
	Introduction to Sustainable Development for energy and the			2
	Different concepts on biodiversity, its degradation and			3
	Energy, Wind, Solar, Biomass Energy, and climate change			4
	Sustainable urbanism, pollution and green cities			5
	Basic Concepts on Sustainable Energy and Environmental			6
	Basic concepts on non-renewable energy and sustainable renewable energy			7
	Spatial planning, knowledge of land ownership and property rights			8
	Updated principles of sustainable energy, social, economic			9
	Transmission and network integration, Energy efficiency			10
	The economics of sustainable development			11
	Strategic environmental assessment of energy production and use industries.			12
	Legislation for environmental protection in our country.			13
	Presentation of projects			14
	Exam preparation			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			70
	2. Projects			20
	3. Group/Individual presentations			10
Assessment Methods	**Assessment activity**		**Week**	**Weight (%)**
	1. Attendances at Lectures			10
	2. Project			20
	3. Exam			70

Course resources	**Resources**		**Nr.**
	1. Class		1
	2. Instruments		1
	3. Moodle		1
	4. Projector		1
ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Seminars		14
	3. Independent learning		30
	4. Exam		1
Literature/References	Lecture materials ○ Course materials from Lecturer ○ Environmental Advisory Council. Principles of Sustainable Development. Prince Edward Island. 2013.Available online: https://www.princeedwardisland.ca/sites/default/files/publications/principles_of sustainable_development.pdf (accessed on27 March 2022) ○ Ben-Eli, M. Sustainability: The Five Core Principles, A New Framework. 2009. Available online: http://www.sustainabilitylabs. org/ecosystem-restoration/wp-content/uploads/2015/08/Sustainability-The-Five-Core-Principles.pdf (accessed March 2022) ○ Energjetika dhe mjedisi per zhvillim te qendrueshem ASHAK, 2013, Prishtinë. ○ UNESCO. Sustainable Development. 2017. Available online: https://en.unesco.org/themes/education-sustainabledevelopment/what-is-esd/sd (accessed on 26 March 2022). ○ Rasche, A.; Morsing, M.; Moon, J. Corporate Social Responsibility Strategy: Communication, Governance, Cambridge; Cambridge University Press: Cambridge, UK, 2017. ○ Boyle, C.B.; Coates, G.K.; Macbeth, A.; Shearer, I.; Wakim, N. Sustainability and Engineering in New Zealand, Practical Guide for Engineers. In Engineering New Zealand; IPENZ: Wellington, New Zealand, 2017. ○ United Nations Environment Programme. Emissions Gap Report 2023. UNEP. ○ IPCC. Synthesis Report. Intergovernmental Panel on Climate Change, 2023.		
Contact			

Subject	**Site Planing and GIS**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	V	3	110-SPG-304
Lecturer				
Aims and Objectives	This module provides an introduction to the basic concepts and theories in the field of planning. The module aims to apply the concepts and theories of spatial-location planning and its relation to geographic information systems (GIS). Purpose: To provide standard knowledge suitable for students (future graduates) in the field of site planning and GIS. Provides a theoretical and practical introduction to the concepts of planning, location and application of GIS software tools. Objective: this module aims to develop students' skills and abilities so that they have a clear understanding of the importance and role of site planning, cartographic information, the GIS system, as well as their ability to apply GIS and cartographic information in solving practical problems.			
Learning Outcomes	Upon completion (following) of this module, students (graduates) are able to: • Understand and demonstrate knowledge of the theoretical concepts of planning, location and geographic information systems (GIS). • Possess complete knowledge to apply and implement the geographic information system, relate it to spatial planning and special locations for the requirements of their professional field. • Evaluate, solve and interpret concrete issues of planning, location and GIS, cartographic projections, determine the position of the location on the map, recognize the elements and symbols of the maps, the orientation through the map and the use of all the cartographic information for the performance with the success of drafting, planning and implementation tasks in the field of energy engineering.			
Content	**Weekly plan**			**Week**
	Introduction-presentation of the subject, background and basic concepts of planning;			1
	Understanding the environment as the basis of planning, location and its connection with the geographic information system. Basic theories in the field of urban and regional planning.			2
	Legal framework and strategic planning documents. Participation in planning and location determination. Map and map elements.			3
	Cartographic coordinate systems, projections; Outdoor orientation, map orientation. Measurement of lengths in height; Types of maps, thematic maps, map symbols, as important			4
	Geographic information system (GIS), introduction to desktop			5
	GPS data collection and processing.			6
	Georeferencing, practical example (Demonstration);			7
	Digitization lines, points, polygons;			8
	Spatial database setup and spatial queries;			9
	Line, Point, Polygon practical example;			10
	Table of attributes and its use; Report, formatting, presentation;			11
	Documentation and sharing of maps and analyses; Qualitative data visualization based on GIS.			12
	Basic concepts for the use of drones (airplanes) in the collection of data and information;visualization based on GIS.			13
	Practical work, assignments/task;			14
	Presentation of practical work and assignment;			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			85
	2. Interactive activities			10
	3. Consultations			5

Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	2	1-15	5
	2. Activity and Interactivity			10
	3. Exam			85
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Wall board, marker			1
	3. Laptop			1
	4. Moodle			1
	5. Projector			1
ECTS Workload and activities	**Type of activities**		**Weekly**	**Load**
	1. Lectures		2x15	30
	2. Consultations		1x15	15
	3. Independent learning			29
	4. Exam			1
Literature/References	Lecture materials ○ Course materials from Lecturer ○ Çadraku H, Udhëzues Pune në ArcGIS ArcMap /Hapa Fillestar/ Pjesa e Parë, 2021. ○ Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W., Geographic Information Science and Systems (5th ed.). Wiley, 2021. ○ Hoxha E, GIS parimet themelore pjesa e parë, Tiranë, 2012. ○ Kevin Lynch, Gary Hack, Site Planning, Third Edition 3rd Edition. https://www.amazon.com/Site-Planning-Third-Kevin-Lynch/dp/0262121069. ○ Thomas Russ, Site Planning and Design Handbook, Second Edition 2nd, Edition. https://www.amazon.com/ ○ Nikolli P., Sistemet e Informacionit Gjeografik, shblu, Tiranë, 2011. ○ Muka G., Përdorimi i GPS-së, Tiranë, 2006. ○ M Meha., Hartografia, UP, Prishtinë, 2000. ○ M Meha., Rrjeti Gjeodezik KosovaREF01, Prishtinë, 2006. ○ Ormsby T., et.al., ArcGIS desktop, Second Edition for ArcGIS 9,California, 2004. ○ Grise S., et.al., Water Utilities ArcGIS Data Models, USA, 2001. ○ Jemes reviews Gretchen N. Peterson's GIS Cartography: A Guide to Effective Map Design. 3, Building a GIS, New Edition of Book, 2012. ○ QGIS.org. (2025). QGIS User Guide. https://docs.qgis.org/			
Contact				

Subject	**Project management**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	V	3	110-PMG-305
Lecturer				
Aims and Objectives	The main aim of the course is to prepare students to manage projects in the energy sector by integrating specific knowledge and best practices of project management.Providing knowledge of project management, including planning, execution, monitoring and control phases. Increasing the necessary knowledge in the field of energy, including energy production technologies, infrastructure, energy policies.Development of the necessary skills to manage projects in the field of energy, including communication with work teams as well as relevant institutions in the energy sector, environmental, awareness, development of skills for the use of specialized project management tools and methods. The skills and concepts achieved in this course are applicable to all forms of project management, although emphasis will be placed on the electrical engineering field.			
Learning Outcomes	Upon completion of this course, students will be able to: • Possess advanced knowledge of project evaluation and management • To understand the importance of cooperation to manage professional projects • Demonstrate understanding of technical project management concepts • Ttake responsibility for decisions on the knowledge of potential risks of the project			
Content	**Weekly plan**			**Week**
	Syllabus and organization of the course			1
	Introduction to Project Management			2
	Organizational strategy and project selection			3
	The structure of the project organization			4
	Project management - The role of the project manager			5
	Group project			6
	Project planning			7
	Project risk management			8
	Conflict management and negotiation			9
	Contract management			10
	Resource management			11
	Project evaluation and control			12
	Project closure and completion			13
	Presentation of case studies			14
	Preparation for the final exam			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			70
	2. Projects			30
Assessment Methods	**Assessment activities**		**Week**	**Weight (%)**
	1. Attendances at Lectures		1–15	10
	2. Projects			30
	3. Colloquium (I and II)			60
	4. Exam			60
	Resources			**Nr.**
	1. Class			1

Course resources	2. Table 3. Moodle 4. The Projector		1 1 1
	Type of Activities	**Weekly hours**	**Load**
ECTS Workload and activities	1. Lectures 2. Projects 3. Independent learning 4. Exam	2 x 15	30 10 34 1
Literature/References	Lecture materials o Course materials from Lecturer o Project Management Institute., A Guide to the Project Management Body of Knowledge (PMBOK Guide), 7th ed. PMI, 2021. o International Organization for Standardization. (2020). ISO 21502: Project, Programme and Portfolio Management—Guidance on Project Management. ISO. o Suzana Panariti; Menaxhim Projekti, Tiranë, 2009. o Dennis Lock; Project management, 2013. o Enver Kutllovci; Menaxhimi i projekteve, 2014.		
Contact			

Subject	**Life Cycle Assessment**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	V	3	110-LCA-306
Lecturer				
Aims and Objectives	The aims and objectives of a course are to provide the necessary contemporary knowledge and enough for future engineers of energy engineering in relation to ecological bliss, respectively Life Cycle Assessment which represents an essential technique (methodology) in environmental assessment. The ecology balance module is now a legal and standard requirement which requires all companies to apply methodologies that preserve the environmental system through a cyclical management process from the source-utilization of the raw material to its recycling in friendly conditions for environment. Also, the purpose of the module is to show that the ecological balance, respectively (Life Cycle Assessment) is the basic element for integrated management, which reflects consistently throughout the life of one or more systems. Through this module, future Engineers are provided with a contemporary knowledge and clear understandings about the environmental assessment mechanism combined with the most advanced techniques applied today in the countries of the European Union and beyond. Also, students (future engineers) have the opportunity to get acquainted with the role, importance and primary competencies of the ecological balance starting from the phase of programming, implementation, monitoring to the final stage of closing the process and returning to the state which is acceptable for maintaining the ecological balance, respectively the surrounding environment.			
Learning Outcomes	The aim is for students to be able to: • Acquire an advanced understanding of the basic theoretical principles for life cycle assessment (LCA). • Evaluate the concepts of impact on the environment and those of environmental sustainability. • Manage to get the necessary and sufficient knowledge related to aspects of ecological balance (Life Cycle Assessment) to apply them in their specialist field • Receive the necessary and sufficient knowledge which will serve you in solving many designs, implementation and evaluation problems. • Make aassessments regarding the ecological balance, as well as interpret the achievements (results) through research and studies related to their specialist field. • Execute an independent research project within the competencies related to life cycle assessment in the field of energy.			
Content	**Weekly plan**			**Week**
	Presentation of Syllabus, Introduction-Concepts and development of ecology balance. History of LCA;			1
	The role and importance of ecological balance;			2
	Inventory of ecological balance ;			3
	Life cycle inventory calculation structure;			4
	Inventory of the life cycle in economic input-output;			5
	Environmental Impact Assessment (SEA and EIA), assessment			6
	Carbon balance and ways of calculating it;			7
	Renewable energy, their sources, correlation with the ecological			8
	The role of audit and interaction with the ecological balance			9
	Industrial waste recycling and LCA cycle; LCA application;			10
	LCA information resources;			11
	Methodological framework for LCA;			12
	General knowledge of using software in LCA			13
	Field visit;			14
	Presentation and defense of seminars and assignments			15

Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			85
	2. Interactive activities			10
	3. Consultationss			5
Assessment Methods	**Assessment activity**	**No.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	2	1-15	5
	2. Activity and Interactivity		2-15	5
	3. Seminar work	1	14	10
	4. Exam	1		80
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Wall board, marker			1
	3. Laptop			1
	4. Moodle			1
	5. Projector			1
ECTS Workload and activities	**Type of activities**		**Weekly**	**Load**
	1. Lectures		2 x 15	30
	2. Consultations		1 x 15	15
	3. Independent learning			29
	4. Exam			1
Literature/References	Lecture materials ○ Materials from the Lecturer ○ Michael Z. Hauschild Ralph K. Rosenbaum Stig Irving Olsen. Life Cycle Assessment. Theory and Practice. Springer International Publishing AG 2018. ○ Hauschild, M. Z., Rosenbaum, R. K., & Olsen, S. I. (Eds.)., Life Cycle Assessment: Theory and Practice. Springer, 2018. ○ Environ.Sci. Technol. V. Filimonau, Life Cycle Assessment (LCA) and Life Cycle Analysis in Tourism, DOI10.1007/978-3-319-26224-6_2 .Springer International Publishing Switzerland 2016. ○ Daci N., 2013. Energjia dhe Mjedisi për Zhvillim të Qëndrueshëm. ASHAK, Prishtinë. ○ Jeroen B., Guinee et.al. 2011. Life Cycle Assessment: Past, Present and Future, ○ Murphy W.R. & Mckay G 2006. Energy managment. ○ International Standard. Environmental management ISO 14044-Life Cycle Assessment- Requirements and guidelines; International Organization for Standardization, Geneva, Switzerland, 2006. ○ ISO. (2006, current amendments). ISO 14040 and ISO 14044: Life Cycle Assessment—Principles, Framework, Requirements and Guidelines. International Organization for Standardization. ○ Jensen A. A. Et.al. 1997. Life Cycle Assessment, United Kingdom. ○ C.B.Smith (Pergamon Press). Energy Management Principles. ○ I.G.C.Dryden (Butterworth Scientific) Efficient Use of Energy.			
Contact				

Subject	**Business management**			
	Type	**Semester**	**ECTS**	**Code**
	ELECTIVE (E)	**V**	**3**	110-BMN-307
Lecturer				
Aims and Objectives	In this course students ensure adequate basic knowledge of management among students. Explanation of theories, processes (functions) of management, main functions of the manager. The role and importance of leadership, the organization of work in the enterprise, the environment of competition and the macro-environment, business management and its quality. Explanation of the definition of enterprises, their role and importance in economic development. Organization of businesses by ownership. Demonstration of knowledge on basic notions of management. Developing the appropriate skills of students, so that they are competent for self-employment. Encourage entrepreneurial skills.			
Learning Outcomes	Upon completion of the module, students will be able to: • Understand advanced knowledge in a specific field, theories, contemporary management practices and management processes. • Take responsibility to plan the construction of organizational structures of the enterprise, group work (teamwork) and employee motivation. • Demonstrate enterprise management.			
Content	**Weekly plan**			**Week**
	Syllabus and organization of the subject			1
	Introduction to Management			2
	Management environment			3
	Scheduling			4
	Strategic management - the process of strategic anagement			5
	The basics of decision-making			6
	The organization			7
	Leadership			8
	Knowledge of work teams - control			9
	Creation and organization of business,			10
	Managing the work of a business			11
	Marketing knowledge			12
	The finance			13
	Presentation of case studies			14
	Preparation for the final exam			15
Teaching/Learning Methods	**Activity**			**Weight (%)**
	1. Lectures			50
	2. Seminars			20
	3. Case studies, presentations			10
	4. Role simulation, exercises			20
Assessment Methods	**Assessment activities**		**Week**	**Weight (%)**
	1. Attendances at Lectures		1–15	10
	2. Work - Group projects		5,9,11	10
	3. Colloquiums (I+II)		7-14	40
	4. Writen exam			80
Course resources	**Resourse**			No.
	1. Class			1
	2. Table for exercises, markers			1
	3. Moodle			1
	4. Projector			1

<table>
<tr><td>ECTS Workload and activities</td><td>Type of activities | Weekly hours | Load
1. Lecture | 2 x 15 | 30
2. Seminars | | 10
3. Independent learning | | 34
4. Exam | | 1</td></tr>
<tr><td>Literature/References</td><td>Lecture materials
o Course materials from Lecturer
o Robbins, S. P., & Coulter, M., Management (15th ed.). Pearson, 2021.
o Osterwalder, A., & Pigneur, Y. (2010; current reprints). Business Model Generation. Wiley.
o Robbins & De Cenzo, Bazat e menaxhimit, UET Press, 2011;
o Marsela Robo & Andrea Xhavara, Bazat e sipërmarrjes, Tiranë, 2012; Johnson et al, Projekt MASHT DANIDA: Ndërmarrësi, Prishtinë, 2011
o Muhamet Mustafa, Enver Kutllovci, Petrit Gashi, Besnik Krasniqi, Biznesi i vogël dhe i mesëm – Krijimi, Menaxhimi dhe rritja e bizneseve, RIINVEST, Prishtinë, 2006;
Additional Litterature:
o Ronald J. Ebert/Ricky W. Griffin, Business Essentials, 8th ed. 2012, Pearson Prentice-Hall
o Mason Carpente, Principles of Management, University of Wisconsin,Talya Bauer, Portland State UniversityBerrinErdogan, Portland State University, 2010.
o Tony Morden, Principles of Management (Innovative Business Textbooks) (Innovative Business Textbooks), 2004.
o Isak Mustafa, Drejtori në Udhëheqjen e Biznesit, Prishtinë 1993;
o Isak Mustafa, Ndërmarrja në biznesin bashkëkohorë, Prishtinë1997;
o Shyqiri Llaci: Bazat e Menaxhimit, Tiranë, 2008
o Karam Pa, Management Concepts and Organizational Behaviour, 2007.
o Papers from conferences and international journals</td></tr>
<tr><td>Contact</td><td></td></tr>
</table>

Subject	**Quality Assurance and Standards**			
	Type	**Semester**	**ECTS**	**Code**
	ELECTIVE (E)	V	3	110-QAS-308
Lecturer				
Aims and Objectives	Introduce the concepts and practices that make up the quality infrastructure (IQ), including the main pillars: metrology, standardization and accreditation. Inform students about some quality control methods / techniques. Introduce basic methods for developing measurements. To discuss and analyse the state of quality infrastructure in Kosovo. Quality assurance system, quality management.			
Learning Outcomes	Upon completion of this course, students will be able to: • Know the theoretical, technical and legal aspects of metrology and quality control. • Perform the uncertainty assessment in measurements for different physical quantities. • Distinguish the institutional structure of metrology and other areas of quality infrastructure in Kosovo and internationally as well. • Understand the principles of quality management. • Apply international standard 17025 in laboratory accreditation.			
Content	**Weekly plan**			**Week**
	Syllabus and subject organization			1
	Measurement and Quality Assurance, Metrology Categories and Competences			2
	Quality Assurance System - Concepts, Objectives and Functions			3
	Implementation of the quality management system			4
	ISO 9000 - Concepts and principles of the quality management system			5
	Standards and standardization			6
	Quality management system oversight			7
	Statistical quality control			8
	Quality assurance and standards			9
	SPC statistical process control			10
	Quality improvement tools and techniques used			11
	Statistical distributions			12
	Uncertainty management in testing and measurement processes			13
	Quality control in the energy industry			14
	Quality costs and total quality management			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			100
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures and classroom activities		1–15	10
	2. Final exam			90
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Moodle			1
	3. Projector			1
ECTS Workload and activities	**Type of activities**		**Weekly hours**	**Load**
	1. Lectures		2x15	30
	2. Consultations		1x15	15
	3. Independent learning			29

	4. Exam 1
Literature/References	Lecture Materials o Course materials from Lecturer o P.Konieczka, J.Namiesnik, Quality Assurance and Quality Control in the Analytical Chemical Laboratory: A Practical Approach, Second Edition (Analytical Chemistry), 2020. o G.W. Roberts, Quality Assurance in Research and Development (Industrial Engineering: A Series of Reference Books and Textboo Book 8), 2014. o Terra Vanzant Stern, Lean Six Sigma: International Standards and Global Guidelines, Second Edition, 2016. o D.H. Stamatis, Understanding ISO 9000 and Implementing the Basics to Quality (Quality and Reliability Book 45), 2018. o John K. Taylor, Quality Assurance of Chemical Measurements, 2018. o Camilla Astrand, Mats Zackrisson, Measuring Your Company's Environmental Impact: Templates and Tools for a Complete ISO 14001 Initial Review, 2012. o Electronic Libraries (Ebsco and Jstore) o B. S. Dhillon, Reliability, Quality and Safety for Engineers, CRC Press 2005. o J. P. Holman, Experimental Methods for Engineers, McGraw-Hill, 2012. o R. A. Dunlap, Experimental Physics: Modern Methods, OUP 1988. o Materials from ISO, WTO, MTI and others agencies. o International Organization for Standardization. (2015, current amendments). ISO 9001: Quality Management Systems—Requirements. ISO. o International Organization for Standardization. (2018). ISO 19011: Guidelines for Auditing Management Systems. ISO.
Contact	

Subject	**Industrial ecology**			
	Type	**Semester**	**ECTS**	**Code**
	ELECTIVE (E)	V	3	110-IEC-309
Lecturer				
Aims and Objectives	The objective of the Industrial Ecology course is to provide students with an in-depth understanding and knowledge of the field of industrial ecology. This type of course aims to address the complex relationships between industrial production, the environment, and society. Students will learn the fundamental concepts of industrial ecology, including the connections between industrial processes and their impact on the environment. It will also address product life cycle analysis, including production, use, and the importance of recycling industrial products. The course aims to identify and analyze the environmental impact of industrial operations, including the use of natural resources and various emissions. The course aims to introduce students to the concepts and practices of environmental management systems, including international standards, the links of industrial ecology with social and economic aspects. The objective of the course is the construction of Eco-Industrial Parks, pollution prevention.			
Learning Outcomes	Upon completion of this course, students will be able to: • Possess general knowledge of the concepts, models, and challenges of industrial ecology • Use integrated knowledge to identify, analyze, and evaluate the environmental impact of industrial operations • Demonstrate knowledge of industrial ecology with social and economic aspects,			
Content	**Weekly Plan**			**Week**
	Syllabus and organization subject			1
	Objectives of industrial ecology			2
	Biological and Industrial Ecosystem			3
	Ecological balance principles and examples			4
	Urban ecology and industry			5
	Ecological unity and ecological principles in spatial planning			6
	Eco-Industrial Parks, pollution prevention			7
	Life cycle and risk assessment for Industrial process (LCA)			8
	Utilization of renewable energy for sustainable development			9
	Sustainable engineering and industrial ecology			10
	Electronics Industry: Production, Use and Recycling			11
	Auto Industry: Production, Use, Hybrids, Petroleum Cells, Recycling			12
	Environmental design and recycling			13
	Presentation of case studies			14
	Exam preparation			15
Teaching/Learning Methods	**Activity**			**Weight (%)**
	1. Lectures			70
	2. Case studies			30
Assessment Methods	**Assessment Activities**	**Nr**	**Week**	**Weight (%)**
	1. Attendances at Lectures			70
	2. Case study			20
	3. Classroom activities			10
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Laboratory			1
	3. Moodle			1
	4. Projector			1
	Type of Activities		**Weekly hours**	**Lpad**

ECTS Workload and activities	1. Lectures	2x15	30
	2. Case study		15
	3. Independent learning		29
	4. Exams		1
Literature/References	Lecture Materials o Course Materials from lecturer o Thomas E. Graedel (Author), Braden R. Allenby, Industrial Ecology, 2nd Edition. o T. E. H Graedel, Braden R. Allenby, Industrial Ecology and Sustainable Engineering. o Tilley, D.R., Industrial Ecology and Ecological Engineering: Opportunities for Symbiosis, Journal of Industrial Ecology 7(2), 2003, 13-32. o Adhikary, R., The Promise of Green Design, Design Management Review, Fall 2008. o Hawkins, T.R, Singh, B., Majeau-Bettez, G., Strømman, A.H., Comparative Environmental Life Cycle. o Levine, S.H., Comparing Products and Production in Ecological and Industrial Systems, Journal of Industrial Ecology, 2003. o Daci, N., Energjia dhe mjedisi për zhvillim të qëndrueshëm. Akademia e Shkencave dhe e Arteve e Kosovës, Prishtinë 2013. o Patrick C. Kangas "Ecological engineering- principles and practice. o Sven Erik Jorgensen, Applications in ecological engineering. o Graedel, T. E., & Allenby, B. R. (2010; current reprints). Industrial Ecology and Sustainable Engineering. Pearson. o United Nations Environment Programme, Global Resources Outlook 2024. UNEP International Resource Panel.		
Contact			

Subject	**Transition to a low carbon economy**			
	Type	**Semester**	**ECTS**	**Code**
	ELECTIVE (E)	V	3	110-TLC-310
Lecturer				
Aims and Objectives	The aims and objectives of the "Transition to a low-carbon economy" course is to equip students with knowledge of the principles, challenges and opportunities related to sustainable development towards a low-carbon economy. The aim of the course is to provide BSc-level students with a comprehensive understanding of the transition to a low carbon economy, fostering the knowledge and skills needed to contribute to sustainable practices in various sectors. By achieving these objectives, the course aims to empower students to critically analyse the complexities of transitioning to a low-carbon economy and develop practical skills to contribute to sustainable development in their future careers.			
Learning Outcomes	Upon completion of this course, students should be able to: • Possess advanced knowledge of different energy sources, including their environmental impacts. • Apply advanced skills for policies and initiatives that promote the transition to renewable energy. • Examine emerging technologies that contribute to a low carbon economy. • Understand the importance of global cooperation in combating climate change.			
Content	**Weekly plan**			**Week**
	Introduction and presentation of the syllabus			1
	Introduction to Sustainability and Climate change			2
	Energy Basics and Transition			3
	Renewable Energy Technologies			4
	Sustainable Transportation.			5
	Circular Economy and Waste Management			6
	Carbon Footprint and Emission Reduction			7
	Policy and Regulatory Frameworks			8
	Technological Innovations for Sustainability			9
	Social and Economic Impacts			10
	Global Perspectives and International Collaboration			11
	Practical Implementation and Project Work			12
	Environment, greenery in the city and spatial planning			13
	Presentation of projects			14
	Exam preparation			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			70
	2. Case studies			20
	3. Class activities			10
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	15	1-15	10
	2. Case studies	1		20
	3. Final exam			70
Course Resources	**Resources**			**Nr.**
	1. Class			1
	2. Moodle			1

	3. Projector		1
ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Case study	1	20
	3. Independent learning		24
	4. Exam		1
Literature/References	Lecture materials ○ Course materials from lecturer ○ David J.C. MacKay, Sustainable Energy - Without the Hot Air, Version 3.5.2. November 3, 2008. ○ International Energy Agency (IEA) Reports: ○ Polina Baranova, Elaine Conway, Nicola Lynch, Fred Paterson, The Low-Carbon Economy: Understanding and Supporting a Sustainable Transition, Spronger, Nov 11, 2017. ○ Nicholas Stern, The Economics of Climate Change: The Stern Review, 30 October, 2006 ○ Robert N. Stavins, The Political Economy of Environmental Regulation, Northampton, Massachusetts: Edward Elgar Publishing , Aug 12, 2015. ○ International Energy Agencym World Energy Outlook 2024. IEA. ○ International Renewable Energy Agency, World Energy Transitions Outlook 2024. IRENA.		
Contact			

Subject	**Sustainability of buildings**			
	Type	**Semester**	**ECTS**	**Code**
	ELECTIVE (E)	V	3	110-STB-311
Lecturer				
Aims and Objectives	Course gives basic knowledge about building physics, thermal insulation materials, energy performance of buildings, technical specifications and calculations.			
Learning Outcomes	The aim is for students to be able to: • Demonstrate knowledge and understanding of the energy saving, thermal loss calculations, factors that influence the reduction of energy consumption. • Identify the main components that affect the loss of thermal energy and apply the necessary changes to reduce losses and energy consumption. • Posses a wider range of knowledge of the newest thermal insulation materials, thermodynamics, energy and concrete examples of technical solutions.			
Content	**Weekly plan**			**Week**
	Presentation of Syllabus, Introduction			1
	General knowledge on the sustainability of buildings			2
	Thermal comfort			3
	Geographical Area – Location – Climate – Passive gains			4
	Building shape, Air tightness			5
	Energy – Heat – Thermal conductivity			6
	Calculation of thermal losses in the wall			7
	Calculation of thermal losses in the roof and floor			8
	Quiz for U-value calculations			9
	Thermal Bridges - Thermography			10
	Windows			11
	Smart House			12
	Standards and regulations			13
	Software, simulations			14
	Course summary and exam preparations			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			50
	2. Calculations in class			10
	3. Practical tasks			40
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lecturees	2	1-15	5
	2. Tasks			25
	3. Exam			70
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Moodle			1
	3. Projector			1
ECTS Workload and activities	**Type of activities**		**Weekly**	**Load**
	1. Lectures		2x15	30
	2. Calculations			2
	3. Tasks			42
	4. Exam			1

Literature/References	Lecture materials o Course materials from lecturer o "Tipologjia dhe performanca energjetike ne ndertesat rezidenciale ne Republiken e Kosoves", Dr. Armin Teskeredzic, Dr.techn. Bedri Dragusha, Dipl. ing. mech., Dr. Petrit Ahmeti, Ing.dipl. Arch. Luljeta Hoxha –Osmani, Ing. dipl. Mech. Enver Halimi, Ing.dipl. Elec. Petrit Krasniqi, Ing. dipl. Elec. Bujar Zeneli, Ing. dipl. Mech. Avni Sfishta, 2021 o "Udhëzuesi Teknik i Aplikimit të Masave të Efiçiencës së Energjisë në Ndërtesa Publike", Dr. Sc Petrit Ahmeti, arch, Meral Hallaqi Radoniqi, arch, 2020 o Steven V Szokolay, „Introduction to Architectural Science: The Basis of Sustainable Design" o Built for the future : The Isover Multi – Comfort Hause Daniel E. Williams, FAIA "Sustainable Design: Ecology Architecture and Planning" o Nick Baker and Koen Steemers "Energy and Environment in Architecture" o Austrian Institute for Healthy and Ecological Building "Details for Passive Houses" o Aksic A. A., Burazor M., Delalic N., Gajic D., Gvero P., Kadric Dz., Kotur M., Salihovic E., Todorovic D., Zagora N. "Typology of residentianl buildings in Bosnia and Herzegovina" o Fisher, Jenisch, "Lehrbuch der Bauphysik", Vieweg+Teubner, Wiesbaden, 2008. o Ministria e Mjedisit dhe Planifikimit Hapsinor, "Rregullorja Teknike per Kursimin e Energjise Termike dhe Mbrojtjen Teknike ne Ndertesa" o P. Hoxha & T. Eftimi: FIZIKA E NDËRTIMIT 1& 2, Shtëpia Botuese Tiranë,1991 o "Introduction to Building Physics", Author: Prof Carl-Eric Hagentoft, Chalmers University of Technology, Sweden, 2001 o International Energy Agency, Buildings: Tracking Clean Energy Progress. IEA. o ASHRAE. (2023). ASHRAE Handbook—Fundamentals. American Society of Heating, Refrigerating and Air-Conditioning Engineers.
Contact	

<table>
<tr><td>Subject</td><td colspan="4">Building Envelope and Climatology</td></tr>
<tr><td></td><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>ELECTIVE (E)</td><td>V</td><td>3</td><td>110-BEC-312</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">This course provides the necessary information for the planning and successful implementation of student activities in the achievement of practical Objectives in function of learning and setting standards for the realization of efficiency measures for the Sustainability Buildings according to EU standards.
Where they must meet the design goal, as well as the needs to provide the standards for Building Envelope. The impact of climatology on Buildings and the Building Support as a whole.
The objectives of the Building Envelope by Climatology include:
• Sustainability of buildings and urban culture as well as the building code is achieved Thermal insulation according to EU standards and Building codes.
• Application of Efficient Energy strategies and laws in force, standards for thermal insulation and increasing the energy efficiency of the building according to the climatic conditions of the region.
• Compliance with the codes and regulations in force regarding the Energy Audit and implementation in practice at the Building Maintenance.
• Climatological impact on design and ecology, efficiency and technical envelope of the building. Building envelopes, insulation, adequate materials as well as the reasonableness of the investment, in accordance with the climate and building environment.
• The principles and methodology of the practical implementation of Building Support and the achievement of the coefficient of Near Zero House or (near passive house)
• Testing of thermal insulation, roof, walls, windows and measurements of efficiency and quality of materials
• Certification of buildings with adequate Energy certificates, achievement and issuance of the Energy performance certificate of the building, case studies.
In the end, the student finds it easier to understand the role of climatology, the conditions in the field and the application of technical standards for the thermal envelope of the building.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">After completing this course, the student will be able to:
• Gain knowledge about the concepts, principles and practical applications of building envelopes and understand the climatology of buildings.
• Understand the basic concepts of solar gain and the principles of energy engineering as well as financial calculations, energy efficiency and the application of thermal insulation in buildings.
• Use the technical instruments of energy audit, measurements with thermal camera, laser meter, thermometer (laboratory exercises).
• Apply standards and measures of Efficient Energy in Buildings and learning methods of how to compile a report of Efficient Energy in Buildings as well as the application of new methodologies of smart buildings and their practical implementation with case studies as well as the procedures of issuance of CEPB (Energy Performance Certificate for Buildings) with concrete case studies in ECO-TECT software application groups.</td></tr>
</table>

Content	**Weekly plan**	**Week**
	Presentation of the Syllabus and the materials to be taught.	1
	Introduction to the basic concepts of building envelopes; analysis with practical examples.	2
	Solar benefit - the use of sunlight on the surface of buildings. Solar radiant impact on buildings.	3
	Shadows - The impact on the outside of windows and wall structures during the seasons of the year.	4
	Ventilation – use of natural or forced mechanical airflow, HVAC and impact on thermal comfort.	5
	Building envelope construction from massive heat-retaining material.	6
	Insulation of the walls, floor, ceiling and calculations of the Insulation calculations from economic benefits in buildings	7
	Evaporative cooling – evaporation of water directly into the hot and dry flow of humidity, the impact on the climate of the building.	8
	Impacts of thermal insulation and the lifespan of the building.	9
	Lighting and impact Environmental impact on position against the radiation.	10
	Energy balance, wind, air currents and climatological parameters, environmental impacts. Financial calculations and benefits according to calculations with ECOTECT Software	11
	Determination of the building's energy performance. Simulations and concrete examples of groups and residential buildings	12
	Preparation of seminars and student papers	13
	Discussion and presentation of case studies during the semester	14
	Preparation for the final exam	15
Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures and exercises	60
	3. Projects/seminars	25
	4. Interactive discussions and student testing	15
Assessment Methods	**Assessment activity** **Week**	**Weight (%)**
	1. Attendances at Lectures and Exercises 1-15	10
	2. Project	30
	3. Exam	60
Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Moodle	1
	3. Projector	1
ECTS Workload and activities	**Type of activities** **Weekly**	**Load**
	1. Lectures 2x15	30
	2. Consultations with professors 1x15	15
	3. Project seminar	10
	4. Independent learning	19
	5. Exam	1
Literature/References	Lecture materials o Course Materials from Lecturer o A safe thermal Envelope (SIGA-Swisse), Guide to thermal Envelope (2019) o Building Envelop concept, definition concept and terminology (2016)	

	o Built.com .au. etc., insultion, Building energy. education D. –Sudall -Lande Renewably and sustainable Energy Reviews, Western Norway University, Department of mechanical and Marine engineering o Energy Management in Buildings,Energy Conservation and Energy Efficiency (NTNU-SINTEF) fall 2012, Norwegian University of Science and technology o Zobler, Neil and Caterina Hatcher. Woodruff, E and Thurman, A. (2008) Energy Efficiency Project Financing: Resources and, Strategies. The Fairmont Press o Heating, Cooling: Sustainable Design Methods (3rd Edition, November 2008) by Norbert Lechner. o The Principles of Green Urbanism: Transforming the City for Sustainability Paperback – (October 29, 2010) by Steffen Lehmann (Editor) ISBN-13: 978-1844078172 ISBN-10: 18440781751 o Hoxha, Visar and Pallaska, Elvida, "A study of components predicting smart governance in Prishtina", Kosovo, Urbani Izziv, Vol. 34, no. 2, 2023, pp. 22-26. o ASHRAE. (2023). ASHRAE Handbook—Fundamentals. American Society of Heating, Refrigerating and Air-Conditioning Engineers. o European Parliament and Council. (2024). Directive (EU) 2024/1275 on the Energy Performance of Buildings (recast). Official Journal of the European Union.
Contact	

Subject	**Urbanism**			
	Type	**Semester**	**ECTS**	**Code**
	ELECTIVE (E)	V	3	110-URB-313
Lecturer				
Aims and Objectives	The module is focused on information, elaboration of issues, new concepts, disciplines and notions for planning and management of cities, their development. Since urban development implies greater energy consumption, it is of paramount importance to consider the necessity and type of urban development, urban renewal or its spatial distribution. Trends and good practices in the world will be elaborated and argued through critical review with the student.			
Learning Outcomes	Upon completion of the module, students will be able to: • Possess advanced knowledge of the main concepts of urban and spatial planning; • Understand participatory planning and the role of sustainable development; • Interpret results and planning documents; • Define professional contexts of sustainable construction and architecture in environmental protection and EU standards.			
Content	**Weekly plan**			**Week**
	Syllabus and organization of the subject			1
	Participatory analyses			2
	Intro to Urban planning			3
	GIS in Urban Planning			4
	Energy and Architecture			5
	Landuse destination			6
	Spatial Plan of Kosovo 2010 – 2020			7
	Smart cities			8
	EU directive of Eneregy efficiency			9
	Urbanization of cities			10
	Urban growth			11
	Urban Sprawl			12
	Urban Sprawl			13
	Presentation of case studies			14
	Preparation for the final exam			15
Teaching/Learning Methods	**Activity**			**Weight(%)**
	1. Lectures			60
	2. Seminars			20
	3. Working groups			20
Assessment Methods	**Assessment activities**		**Week**	**Weight (%)**
	1. Attendances at Lectures		1–15	10
	2. Case study			40
	3. Writen exam			50
Course resources	**Resourse**			**No.**
	1. Class			1
	2. Table for exercises, markers			1
	3. Moodle			1
	4. Projector			1
	Type of activities		**Weekly hours**	**Load**
	1.. Lecture		2 x 15	30

ECTS Workload and Actvities	2. Case study 3. Independent learning 4. Exam	15 29 1
Literature/References	Lecture Materials o Course materials from Lecturer o Scott D., The Elements of Architecture - Principles of Environmental Performance in Buildings, Earthscan, ISBN 9781844077175, 2009 o Lechner, N., Heating, cooling, lighting: sustainable design methods for architects. 3rd ed. Hoboken, Neë Jersey: John Wiley & Sons, Inc, 2009 o Baker Nick V., "The handbook of Sustainable Refurbishment", RIBA Publishing, London. ISBN: 978-1- 84407-486-0, 2009 o Bere J., "An Introduction to Passive House". RIBA Publishing, ISBN:978-185-94-6493- 9, 2013 o Bokalders V., Block M., "The Whole Building Handbook: Designing Healthy, Efficient and Sustainable Buildings". Earthscan/RIBA Publishing, London. ISBN: 9781844075232, 2010. o Marion B., "Residential Retrofit: 20 Case Studies". RIBA Publishing. ISBN: 978-185- 94-6501-1, 2013. o VTT Technical Research Centre of Finland., "Sustainability and performance assessment and benchmarking of buildings -Final report". Julkaisija – Utgivare – Publisher. ISBN: 978-951-38-7908, 2012 o Dahl T., "Climate and Architecture". Royal Academy of Fine Arts, School of Architecture Publishers. ISBN13: 978-0-415-56308-6, 2008. o United Nations Human Settlements Programme, World Cities Report 2022: Envisaging the Future of Cities. UN-Habitat. o United Nations. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. UN.	
Contact		

Subject	**Ecology and Urban Energy**			
	Type	**Semester**	**ECTS**	**Code**
	ELECTIVE (E)	III	3	110-EUR-314
Lecturer				
Aims and Objectives	The aim of the course is to provide students with knowledge basic ecological concepts and the importance of each biotic or abiotic environmental component. Another goal is to encourage students to study more about the problems of the living environment but also to be take care of that. This course includes the study of population, community ecology, and the level of plant and animal ecosystems. The course will focus on the interactions of organisms with each other and with their environment abiotic. A special attention will be paid to the relationship of nutrition to living organisms, including the different nutritional levels. The course also contains lectures on the circulation cycle of nitrogen, phosphorus, carbon, oxygen, water, etc. in the environment. Ecosystem classification and biodiversity will be another focus of the course. Ecosphere and its components. Relationships between basic ecological science and current environmental problems. Global warming and its impact on living organisms. Pollution, pollutants and their effects on the environment. Air pollution, Land and water pollution.			
Learning Outcomes	Upon completion of this course, students will be able to: • Demonstrate knowledge and understanding of concepts for population, community and ecology at the level of ecosystems. • Interpret the connections between the main concepts of ecology. • Design an ecological study that addresses relevant questions, conduct the study using appropriate equipment, and interpret and present your study to your peers. • Apply the basic concepts of ecology in practice.			
Content	**Weekly plan**			**Week**
	Presentation of the Syllabus and Introduction to Urban			1
	Historical and conceptual developments in ecology			2
	Ecosystems			3
	Biosphere and its components, Structure of the biosphere, classification of ecosystems			4
	The functioning of ecosystems, Energy in ecosystems, biomass and production			5
	Interactions in ecology			6
	Demoecology, the ecology of populations			7
	Main types of ecosystems,			8
	Terrestrial ecosystems, terrestrial environment, landscape, landscape concept, landscape classification			9
	Agroecosystems, natural resources, human resources, production resources			10
	Ecology and environment, atmospheric environment, toxic environment, technological environment			11
	Ecology of environmental resources, environmental resources and reserves, classification of environmental resources			12
	Environmental degradation and pollution, soil pollution, water pollution, other environmental pollution, noise pollution, light			13
	Preservation and protection of the environment, nature conservation, environmental protection, environmental impact			14
	Exam preparation			15

Teaching/Learning Methods	**Activities**		**Weight (%)**
	1. Lectures		60
	2. Study visit		10
	3. Projects		20
	4. Group/individual presentations		10
Assessment Methods	**Assessment activity**	**Week**	**Weight (%)**
	1. Attendances at Lectures	1-15	10
	2. Project		20
	3. Exam		70
Course resources	**Resources**		**Nr.**
	1. Class		1
	2. Moodle		1
	3. Projector		1
ECTS Workload and activities	**Type of activities**	**Weekly**	**Load**
	1. Lectures	2x15	30
	2. Seminars		12
	3. Study visit in industry		10
	4. Independent learning		22
	5. Exam		1
Literature/References	Lecture materials o Course materials from Lecturer o Molles, M. C., Ecology: Concepts and Applications (8th ed.). McGraw Hill, 2019. o Ecology: Concepts and applications. Manuel C. Molles Jr. University of New Mexico, 2005. o Pequli Velesin, Kopali Albert,Ecology. University of Tirana, 2010. o Perspectives of Urban Ecology. Ecosystems and Interactions between Humans and Nature in the Metropolis of Berlin, DOI:10.1007/978-3-642-17731-6 Publisher: Springer by Wilfried Endlicher (Editor), , January 2011 o Applied Urban Ecology; A Global Framework Mathias Richter (EDITOR), Ulrike Weiland (EDITOR) ISBN; 978-1-4443-3339-8235, Wiley-Blackwell, November 2011. o Ecology: Publisher: McGraw-Hill Science/Engineering/Math, Binding: Paperback Condition: Fair Dust Jacket Condition: No Jacket Edition: 3rd Edition, 2004. o Health Ecology (my university book "Zdravstvena ekologija, Medicinski fakultet University of Tuzli, 2006. translated into Albanian language) January 2015. o UN-Habitat, World Cities Report 2022. United Nations Human Settlements Programme.		
Contact			

<table>
<tr><td>Subject</td><td colspan="4">Systems Engineering/Sustainable System Design</td></tr>
<tr><td></td><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>VI</td><td>5</td><td>110-SES-351</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">The aim and objectives of course on “Systems Engineering/ Sustainable System Design” are designed to provide students with a comprehensive understanding of the principles and methodologies involved in creating and managing complex systems with a focus on sustainability.
The aim of the course is to equip students with the knowledge, skills, and tools necessary to design, analyze, and manage systems in a holistic and sustainable manner. The course aims to integrate principles of systems thinking with sustainable practices, that considers the long-term environmental, social, and economic impacts of systems engineering.
The objectives are:
To analyze the interconnected components and relationships within complex systems engineering;
Develop skills and analyze to model and document of power system, requirements effectively;
Apply life cycle thinking to evaluate the environmental and social impacts of design decisions;
Explore methods for optimizing resource use and reducing environmental impact; Multidisciplinary collaboration in the design and implementation of sustainable systems;
Apply project management principles to the development and implementation of sustainable systems.
By achieving these objectives, the course aims to prepare students for careers in systems engineering, power systems, sustainable design, and related fields, where they can contribute to the development of environmentally friendly and socially responsible solutions.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">The aim is for students to be able to:
Demonstrate knowledge and understanding of the systems engineering, including power systems.
Deal with ethical and professional implications during the system design.
Apply effective communication strategies to ensure a clear understanding of requirements among multidisiplinary systems.
Effectively manage resources, timelines, and budgets to achieve project objectives.
Evaluate the environmental, social, and economic impacts of design decisions throughout the life cycle of a system.
Demonstrate critical thinking skills in analyzing and solving problems related to different power systems and equipments design.
Possess advanced knowledge of cooling cycles; vapor compression, condensation, evaporation and dryin cycles.</td></tr>
<tr><td>Content</td><td colspan="3">Weekly plan</td><td>Week</td></tr>
<tr><td></td><td colspan="3">Presentation of Syllabus</td><td>1</td></tr>
<tr><td></td><td colspan="3">Introduction to System Engineering</td><td>2</td></tr>
<tr><td></td><td colspan="3">Power Systems, Thermal Power Plants</td><td>3</td></tr>
<tr><td></td><td colspan="3">Data needed for Sustainable Systems Design</td><td>4</td></tr>
<tr><td></td><td colspan="3">Generation from renewable energy sources, Design and analysis of energy produced by hydropower plants</td><td>5</td></tr>
<tr><td></td><td colspan="3">Analysis of solar thermal systems and photovoltaic systems</td><td>6</td></tr>
<tr><td></td><td colspan="3">Analysis of wind systems and wind turbine generators</td><td>7</td></tr>
<tr><td></td><td colspan="3">Cooling System Analysis, Compressors and Condensers</td><td>8</td></tr>
<tr><td></td><td colspan="3">Evaporators and expansion equipment</td><td>9</td></tr>
<tr><td></td><td colspan="3">Heating and cooling load calculations; The concept of cooling and its implementation; cooling cycles;</td><td>10</td></tr>
</table>

	Air conditioning, air conditioning equipment, Application of air	11
	Psychometry of air conditioning systems	12
	Greenhouse gases, emissions, environmental problems and their	13
	Presentation of case studies	14
	Exam preparation	15

Teaching/Learning Methods	**Activities**	**Weight (%)**
	1. Lectures	50
	2. Numerical and Laboratory exercises	40
	3. Working group project	10

Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight (%)**
	1. Attendances at Lectures	2	1-15	10
	2. Attendances at Numerical and Laboratory exercises (activity)	1	1-15	20
	3. Working group Project			20
	4. Exam			50

Remarks:
In conclusion, 50% will be an assessment of attendance at lectures, numerical/ laboratory exercise and the project, and the final exam includes 50%, a total of 100%.

Course resources	**Resources**	**Nr.**
	1. Class	1
	2. Laboratory (equipmnets)	1
	3. Moodle	1
	4. Projector	1

ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Numerical and Laboratory exercises	2x15	30
	3. Working group Project		30
	4. Independent learning		58
	5. Exam		2

Literature/References

Lecture Materials

- Course materials from Lecturer
- Kossiakoff, A., Sweet, W. N., Seymour, S. J., & Biemer, S. M., Systems Engineering Principles and Practice (3rd ed.). Wiley, 2020.
- INCOSE, Systems Engineering Handbook (5th ed.). Wiley, 2023.
- Alexander Kossiakoff, William N. Sweet, Samuel S. Seymour and Steven M. Biemer, System Engineering Principles and Practice, 2020 John Wiley & Sons, Inc., 19 June 2020
- David Infield, Leon Freris, Renewable Energy in Power Systems, Wiley, Second Edition, February 2020
- Nicholas Jenkins, Nick Jenkins, Embedded Generation, IET, Technology & Engineering . Jun 30, 2000
- Benjamin S. Blanchard, Wolter J. Fabrycky, Systems Engineering and Analysis (5th Edition) (Prentice Hall International Series in Industrial & Systems Engineering), Jan 27, 2010.
- A Ymeri, S Mujovic, Impact of Photovoltaic Systems Placement, Sizing on Power Quality in Distribution Network, Advances in Electrical and Computer Engineering (AECE), Vol. 18, No. 4, 2018, pp. 107-112, DOI: 10.4316/AECE.2018.04013, https://aece.ro/abstractplus.php?year=2018&number=4&article=13
- A Ymeri, S Mujović, Optimal Location and Sizing of Photovoltaic Systems in Order to Reduce Power Losses and voltage Drops in the Distribution Grid, International Review of Electrical engineering (IREE),

	Vol.12, Nr.6, November-December 2017, pp.498-504, DOI: 10.15866/iree.v12i6.12553, https://www.praiseworthyprize.org/jsm/index.php?journal=iree&page=article&op=view&path%5B%5D=20840
Contact	

Subject	**Project in Smart Solutions**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	VI	4	110-PSS-352
Lecturer				
Aims and Objectives	In this course the students will prepare individual projects on Smart Solutions The course will involve: • Gaining an understanding of the functional operation of a variety of smart systems, • The study of different smart system solutions in houses, transport systems, and grids. • Use of the computer for simulation and evaluation of smart system solutions. The objective will be to gain a hands on working knowledge of several of the main techniques used in smart systems and their applications.			
Learning Outcomes	Upon successful completion of this course the students will be able to: • Take responsibility for decisions to prepare the projects for smart solutions. • Use integrated knowledge to design projects in smart solutions • Apply smart techniques, methods, and tools to solve a real problem.			
Content	**Weekly Plan**			**Week**
	Introduction			1
	Smart Solutions			2
	Smart Houses			3
	Smart Transport Systems			4
	Smart Grids			5
	Designing Smart Projects			6
	Implementation of Projects			7
	Simulation of Projects			8
	Project Presentations I			9
	Project Presentations II			10
	Project Presentations III			11
	Project Presentations IV			12
	Project Presentations V			13
	Project Presentations VI			14
	Project Presentations VII			15
Teaching/Learning Methods	**Activity**			**Weight (%)**
	1. Lectures			25
	2. Seminars			10
	3. Laboratory Exercise			50
	4. Case studies			15
Assessment Methods	**Assessment Activity**	**Nr.**	**Week**	**Weight (%)**
	1. Quiz	1		30
	2. Individual Project	1		70
Course resources	**Resources**			**Nr.**
	1. Class			1
	2. Laboratory			1
	3. Projector			1
ECTS Workload activities	**Type of Activities**		**Weekly**	**Load**
	1. Lectures		1x15	15
	2. Laboratory Exercise		2x15	30
	3. Assignments			28
	4. Independent Study			25
	5. Exam			2

Literature/References	Lecture materials o Course materials from Lecturer o Kamran, M., Fundamentals of Smart Grid Systems. Elsevier, 2022. o Viral, R., Tomar, A., Asija, D., Rao, U. M., & Sarwar, A. (Eds.)., Smart Grids for Renewable Energy Systems, Electric Vehicles and Energy Storage Systems. CRC Press, 2023. o João M F Rodrigues, Pedro J S Cardoso, Jânio Monteiro, "Smart Systems Design, Applications, and Challenges", IGI Global, 2020. o Readings are expected that students will follow on online libraries: Ebsco and Jstore
Contact	

Subject	**Internship/ Project with Industry**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	VI	6	110-IPI-353
Lecturer				
Aims and Objectives	Internship/Project in industry aims to ensure that students hold practical work in public or private companies, with which UBT has Cooperation Agreements. The purpose of this course is for the student to carry out practical work at the end of his studies in a company (15 working days), where he will be accompanied by a mentor appointed by the company, where he is assigned to carry out an internship/project with industry. During this time, the student will work on a paper, which I will defend at the end of the semester in front of the professors of the field and the professor of the "Practice/Project in Industry" subject. Also during the thesis defense, the Mentor from the industry will be present, who accompanied the student during the internship.			
Learning Outcomes	The aim is for students to be able to: • Apply the knowledge and skills learned in the classroom to a work environment • Demonstrate understanding of concepts in practical tasks. • Use integrated knowledge to reach informed judgments about theories and practices. • Apply advanced skills and techniques in Intership. • Differentiate between various methods or approaches during the Intership. • Exercise autonomy, initiative, and take primary responsibility for work and resources • Use knowledge in simulations or role-plays.			
Content	**Weekly plan**			**Week**
	Presentation of Syllabus General knowledge of the student worksheet instructions on the practical progress of the internship.			1
	EON –XR Platform UBT Campus Work shop Inership/Project in industry (Compnies) (15 days) KEK – Power Plant, KOSTT – Transmission system KEDS – Distribution Ssystem Hydro power plant PV System, “Muqa solar” Wind Park, “Air Energy”, Kitka IHMK – Meteorlogy Institution “Monting” Company – Production electrical componenets “Electra” Company - Production electrical componenets			2-14
	Presentation			15
Teaching/Learning Methods	**Activities**			**Weight**
	1. Intership/Project in Industry			80
	2. Workshop			20
Assessment Methods	**Assessment activity**	**Nr.**	**Week**	**Weight**
	1. Attendances in interships			70
	2. Presntation of works			30
Course resources	**Resources**			**Nr.**

	1. Industries (Companies)	1
	2. Class	1
	3. Projector	1
ECTS Workload and activities	**Type of activities** **Weekly**	**Load**
	1. Interhip in companies	90
	2. Independent learning	50
	3. Workshop/Tasks	10
Literature/References	**Additional recommended literature (updated 2020–2026)** • International Organization for Standardization. (2020). ISO 21502: Project, Programme and Portfolio Management—Guidance on Project Management. ISO. • European Commission. (2021). European Skills Agenda and work-based learning resources. European Commission.	
Contact		

Subject	**Energy efficiency improvement and auditing**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	VI	3	110-EIA-354
Lecturer				
Aims and Objectives	This course focuses on the efficient use of energy, primarily in residential, commercial, and industrial environments. Understanding the technical and economic possibilities of energy efficiency in the field of energy systems is vital for all engineers, and especially those involved in management of energy costs and environmental performance of a wide range of organizations, e.g. businesses, government organizations and public institutions. The objectives of this course are to: • Learn the basic notions of energy management, to develop effective systems, the obstacles to success as well as the development of an energy management policy with the roles and responsibilities. • Develop energy basis for performance indicators, such as savings must be calculated to measure performance improvement. • Develop all parts of the management system covered energy planning, implementation with operation and quality control.			
Learning Outcomes	Upon completion of this course, students will be able to: • Evaluate energy, energy efficiency and energy conservation • Understand the principles and actions in the obstacles to success as well as the development of an energy management policy • Develop an action plan, complete with tasks and a timeline, for the completion of an energy audit.			
Content	**Weekly plan**			**Week**
	Presentation of the Syllabus			1
	Introduction to Energy Improvement and Auditing			2
	Energy efficiency in Kosovo			3
	Energy efficiency management energy efficiency			4
	Energy consumers and efficiency measures			5
	Energy efficiency in buildings and Auditing			6
	Basic instruments for energy audit.			7
	Types of methodology and energy audit needs			8
	Energy audit best practices			9
	The current state of the energy sector in Kosovo,			10
	Environmental protection			11
	Mission and vision of the energy strategy			12
	Renewable energy sources.			13
	Transmission and network integration, Energy efficiency			14
	Final preparations for the exam			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			60
	2. Srudy visit			10
	3. Projects			20
	4. Group/individual presentations			10
Assessment Methods	**Assessment activity**		**Week**	**Weight (%)**
	1. Attendances at Lectures		1-15	10
	2. Project			20
	3. Exam			70

Course resources	**Resources**		**Nr.**
	1. Class		1
	2. Moodle		1
	3. Projector		1
ECTS Workload and activities	**Type of activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Seminars		12
	3. Study visit in industry		10
	4. Independent learning		24
	5. Exam		1
Literature/References	Lecture materials ○ Course materials from Lecturer ○ Alaska Building Science News, The Energy Conservation Special Edition, Vol. 13, Issue 4, 2008 ○ Home Energy Magazine, 25th Year Special Edition "Advancing Home Performance", May/June 2009 ○ Robert L. Loftness , Energy Handbook, Von Nostrand Reinhold Company ○ Boyle, Godfrey, Bob Everett, and Janet Ramage (eds.) Energy Systems and Sustainability: Power for a Sustainable Future. Oxford University Press, (ISBN: 0-19-926179-2), Business & Economics, 2012 ○ Sustainable Power Technologies and Infrastructure, 1nd Edition Authors: Galen Suppes Truman Storvick, eBook ISBN: Date: 29th September 2015 ○ Energjetika dhe mjedisi per zhvillim te qendrueshem ASHAK 2013 Prishtinë.Sustainable Development. 2017. Available online: https://en.unesco.org/themes/education sustainabledevelopment/what-is-esd/sd (accessed on 26 March 2022) ○ Boyle, C.B.; Coates, G.K.; Macbeth, A.; Shearer, I.; Wakim, N. Sustainability and Engineering in New Zealand, Practical Guide for Engineers. In Engineering New Zealand; IPENZ: Wellington, New Zealand, 2017 ○ International Organization for Standardization. (2018). ISO 50001: Energy Management Systems—Requirements with Guidance for Use. ISO. ○ U.S. Department of Energy. (2024). Energy Management and Audit Guidance and Resources. DOE.		
Contact			

Subject	**Safety at work**			
	Type	**Semester**	**ECTS**	**Code**
	OBLIGATIVE (O)	VI	2	110-SAW-355
Lecturer				
Aims and Objectives	This course (module) aims to equip students (bachelor level) with contemporary knowledge (standards) related to safety at work, while developing students' skills for planning, organization, etc. for safety at work, resolving and managing injury situations. and accidents at work. Identification and taking measures to minimize risks during the performance of works in the field of energy engineering, etc. The main objective of this course / module is student development and training so that they have a clear understanding of the importance of safety at work and its role in managing and taking measures to avoid injuries and accidents at work during the implementation of works in the field of electrical engineering. Educate students on the selection, proper use, and maintenance of electrical Personal Protective Equipment (PPE). Learn how to assess electrical risks associated with specific tasks and environments.			
Learning Outcomes	The aim is for students to be able to: • Demonstrate a comprehensive understanding of fundamental electrical safety principles, including hazards associated with electrical work. • Apply electrical safety procedures in various workplace scenarios, integrating theoretical knowledge into practical applications. • Deal with ethical decisions related to electrical safety, considering the well-being of individuals and the community.			
Content	**Weekly Plan**			**Week**
	Course presentation – syllabus, Overview of electrical safety principles			1
	The notion of safety at work, Historical development of protection, safety at work			2
	The importance of health and safety at work before and now, Accidents and their effects, Theory of causes of accidents.			3
	Exploration of relevant safety regulations and standards Case studies on incidents related to non-compliance			4
	Techniques for identifying electrical hazards and conducting risk assessments in electrical work environments			5
	Safe Work Procedures for electrical tasks, Case studies on accidents due to inadequate procedures			6
	Types of electrical Personal Protective Equipment (PPE) and their applications, proper usage, and maintenance of PPE Demonstrations of practical exercises with PPE			7
	Hazard Mitigation Strategies Strategies for controlling and minimizing electrical risks.			8
	Regular inspection and maintenance for equipment inspection.			9
	Application of Safety Procedures			10
	Importance of teamwork in electrical safety			11
	Communication strategies for promoting safety in the workplace			12
	Ethical considerations in electrical work			13
	Future trends in electrical safety and potential challenges			14
	Summary and repetition (exam preparation)			15
Teaching/Learning Methods	**Activities**			**Weight (%)**
	1. Lectures			85
	2. Interactive activities			10
	3. Consultation			5
Assessment Methods	**Assessment Activity**	**Number**	**Week**	**Weight (%)**
	1. Attendances at lectures	15	1-15	5
	2. Activity in lectures			5
	3. Seminar work			10

	4. Final exam		80
Course resources	**Resources**		**Nr.**
	1. Class		1
	2. Moodle		1
	3. Wall table; marker		1
	4. Laptop		1
	5. Projector		1
ECTS Workload and activities	**Type of Activities**	**Weekly hours**	**Load**
	1. Lectures	2x15	30
	2. Independent learning		19
	3. Final exam		1
Literature/References	Lecture materials ○ Materials from the Lecturer ○ Hazir S. Çadraku, Muhamet Ahmeti, 2021. Bazat e Vlerësimit të Riskut. ○ Hysenaj H, 2014. Mbrojtja në punë dhe mbrojtja nga zjarri, Prishtinë. ○ Naska N &Kasharaj J, 2007. Teknikë kantieri (nëpunimet e ndërtimit), Tiranë. ○ Nuredini H, 1996. Teknika e sigurimit në minierë, Prishtinë. ○ Probojeviq L, 1987. Bazat e mbrojtjes në punë dhe mbrojtja kundër zjarrit, Beograd. Aditional Literature: ○ Kushtetuta e Republikës së Kosovës, Qershor 2008, Prishtinë. ○ Ligji për Sigurinë dhe Shëndetin në Punë Nr. 04/L-161, Prishtinë. ○ Ligji i Punës Nr. 03/L-212, Prishtinë. ○ Rregullorja Nr. 04/2014 për Kërkesat minimale të sigurisë dhe shëndetit në vendin e punës, Prishtinë ○ Direktiva Kornizë e Bashkimit Evropian për Sigurinë dhe Shëndetin në Punë Nr. 89/391KE (datë 12 Qershor 1989,, Direktiva Nr. 2007/30 KE), http://ec.europa.eu/indexen.htm ○ Direktiva 78/61 KE, http://ec.europa.eu/indexen.htm ○ Direktiva 83/477 KE, http://ec.europa.eu/indexen.htm ○ Direktiva 86/188 KE,(http://ec.europa.eu/indexen.htm ○ Direktiva 89/655 KE, http://ec.europa.eu/indexen.htm ○ Ismajli H, 2014. E drejta e punës, Prishtinë. ○ Çela K, 2000, E drejta e punës I dhe II, Tiranë. ○ Williams S, 2006. Health and safety in construction www.hsebooks.co.uk ○ Trivunić, M., Matijević, Z, 2004. Tehnologijaiorganizacijagrađenja, praktikum, Univerzitet u NovomSadu. ○ David L. Goetsch, Occupational Safety and Health For Technologists, Engineers, and Managers seventh edition ○ The New Job Security, Revised: The 5 Best Strategies for Taking Control of Your Career Paperback – September 7, 2010 ○ International Organization for Standardization. (2018). ISO 45001: Occupational Health and Safety Management Systems—Requirements with Guidance for Use. ISO. ○ International Labour Organization. (2022). Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001; updated resources). ILO.		
Contact			

<table>
<tr><td rowspan="2">Subject</td><td colspan="4">Thesis</td></tr>
<tr><td>Type</td><td>Semester</td><td>ECTS</td><td>Code</td></tr>
<tr><td></td><td>OBLIGATIVE (O)</td><td>VI</td><td>10</td><td>110-TES-356</td></tr>
<tr><td>Lecturer</td><td colspan="4"></td></tr>
<tr><td>Aims and Objectives</td><td colspan="4">Students undertake a research investigation under the supervision of members of the Department academic staff. Students are required to take this subject in conjunction with Capstone Project to achieve the required total ECTS (10).</td></tr>
<tr><td>Learning Outcomes</td><td colspan="4">Upon successful completion of this course, students will be able to:
• Have attained research maturity, including the ability to independently carry out a research survey, and plan, execute, interpret and report on a computational experiment OR demonstrate mastery of the mathematical and logical techniques required for research in Energy Engineering science;
• Have the ability to communicate Energy Engineering science research;
• Have the ability to demonstrate advanced independent critical;
• Enquiry, analysis and reflection;
• Have a strong sense of intellectual integrity and the ethics of scholarship;
• Have in-depth knowledge of their specialist discipline(s);
• Reach a high level of achievement in writing, project activities, problem-solving and communication;
• Be critical and creative thinkers, with an aptitude for continued self-directed learning;
• Be able to examine critically, synthesize and evaluate knowledge across a broad range of disciplines;
• Have a set of flexible and transferable skills for different types of employment.</td></tr>
<tr><td rowspan="2">Content</td><td colspan="3">Weekly plan</td><td>Week</td></tr>
<tr><td colspan="3">A mixture of lectures and workshops and regular meetings with the supervisor for prparing of Thesis,</td><td>1-15</td></tr>
<tr><td rowspan="5">Teaching/Learning Methods</td><td colspan="3">Activities</td><td>Weight (%)</td></tr>
<tr><td colspan="3">1. The subject will comprise a mixture of lectures and workshops (3 hours each week).</td><td>18</td></tr>
<tr><td colspan="3">2. Students are required to attend regular meetings with their supervisor</td><td>12</td></tr>
<tr><td colspan="3">3. Participate in the academic activities of the Department</td><td>10</td></tr>
<tr><td colspan="3">4. Investigative work – Individual project</td><td>60</td></tr>
<tr><td rowspan="5">Assessment Methods</td><td colspan="3">Assessment activity</td><td>Weight (%)</td></tr>
<tr><td colspan="3">1. A written thesis of approximately 8,000 words</td><td>90</td></tr>
<tr><td colspan="3">2. Oral presentation of the project work prior to submission of the thesis</td><td>10</td></tr>
<tr><td colspan="4">Remarks:
The thesis will be examined internally within the Department (10%)</td></tr>
<tr><td></td></tr>
<tr><td rowspan="6">Course resources</td><td colspan="3">Resources</td><td>Nr.</td></tr>
<tr><td colspan="3">1. Class</td><td>1</td></tr>
<tr><td colspan="3">2. Computer</td><td>1</td></tr>
<tr><td colspan="3">3. Projector</td><td>1</td></tr>
<tr><td colspan="3">4. Dashboard</td><td>1</td></tr>
<tr><td colspan="3">5. Laboratory</td><td>1</td></tr>
<tr><td rowspan="4">ECTS Workload and activities</td><td colspan="2">Type of activities</td><td>Weekly hours</td><td>Load</td></tr>
<tr><td colspan="2">1. Lectures</td><td>2x15</td><td>30</td></tr>
<tr><td colspan="2">2. Workshop</td><td>2x15</td><td>30</td></tr>
<tr><td colspan="2">3. Independent learning</td><td></td><td>190</td></tr>
</table>

Literature/References	Lecture materials o Creswell, J. W., & Creswell, J. D., Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (6th ed.). SAGE, 2023. o Evans, D., Gruba, P., & Zobel, J., How to Write a Better Thesis (3rd ed.). Springer, 2014. o Evans, D. and Gruba, P. and Zobel, J. How to Write a Better Thesis, 3rd edition, Melbourne University Press, 2011.
Contact	