FINAL INTERNATIONAL UNIVERSITY
FACULTY OF ENGINEERING

Program	Electrical and Electronic Engineering
Medium of Instruction	English

Category		**Associate Degree**	**X**	**Undergraduate**		**Masters (Project Based)**		**Masters (Thesis)**		**PhD**

CURRICULUM

ABBREVIATIONS

UC: University Core **FC:** Faculty Core **AC:** Area Core
UE: University Elective **AE:** Area Elective

YEAR 1

FALL

Semester	**Course code**	**Course name**	**Course category**	**Credit**			**Pre-requisite**	**ECTS Credits**
				Lec.	**Pract.**	**Tot.**		
1	MATH 101	Calculus 1	FC	4	1	**4**	-	6
1	PHYS 101	Physics 1	FC	3	2	**4**	-	6
1	CHEM 101	Chemistry	FC	3	2	**4**	-	6
1	ELEC 100	Introduction to Electrical & Information Engineering	AC	2	2	**3**	-	3
1	COMP 103	Information Technology and Applications	UC	2	1	**2**	-	3
1	ENGL101	English I	UC	3	0	**3**	-	6
Total Credit						**20**		**30**
SPRING								
2	MATH 102	Calculus II	FC	4	1	**4**	MATH101	6
2	MATH 104	Linear Algebra	FC	3	1	**3**	-	5
2	PHYS 102	Physics II	FC	3	2	**4**	PHYS 101	6
2	COMP 104	Computer Programming	UC	3	2	**4**	-	6
2	ENGL102	English II	UC	3	0	**3**	ENGL101	6
Total Credit						**18**		**29**
YEAR 2								
FALL								
3	MATH 205	Differential Equations	FC	4	1	**4**	MATH101 MATH104	6
3	MATH 207	Engineering Mathematics	AC	3	1	**3**	MATH102 MATH104	6
3	ELEC 211	Digital Logic Design	AC	3	2	**4**	-	6
3	COMP 215	Algorithms and Data Structures	AC	3	2	**4**	COMP 104	6
3	ELEC 231	Circuit Theory I	AC	3	2	**4**	MATH101	6
3	ENGL201	English III	FC	2	0	**2**	ENGL102	4
Total Credit						**21**		**34**

SPRING								
4	MATH 206	Probability and Statistics	FC	3	1	**3**	MATH102	5
4	ELEC 232	Circuit Theory II	AC	3	2	**4**	ELEC231	6
4	ELEC 242	Semiconductor Devices	AC	3	0	**3**	CHEM101	6
4	ELEC 252	Electromagnetics I	AC	4	0	**4**	MATH102 PHYS102	6
4	GEED-01	General Education Elective-I	UE	3	0	**3**	-	4
4	HIST100/ TURK100	History of Turkish Republic/ Turkish as a Second Language	UC	2	0	**2**	-	2
Total Credit						**19**		**29**
YEAR 3								
FALL								
5	ELEC 311	Microprocessors	AC	3	2	**4**	ELEC211	6
5	ELEC 331	Signals & Systems	AC	3	0	**3**	MATH207	6
5	ELEC 341	Electronics I	AC	3	2	**4**	ELEC232 ELEC242	6
5	ELEC 351	Electromagnetics II	AC	3	0	**3**	ELEC252	6
5	GEED-02	General Education Elective-II	UE	3	0	**3**	-	4
Total Credit						**17**		**28**
SPRING								
6	ELEC 322	Data Communication and Computer Networks	AC	3	2	**4**	COMP215	6
6	ELEC 332	Control Systems	AC	3	0	**3**	ELEC331	6
6	ELEC 342	Electronics II	AC	3	2	**4**	ELEC341	6
6	ELEC 362	Communication Systems	AC	3	0	**3**	ELEC331	6
6	ELEC 371	Electrical Machines and Energy	AC	3	0	**3**	ELEC252	6
Total Credit						**17**		**30**
YEAR 4								
FALL								
7	ELEC 401	Engineering Design I	FC	1	4	**3**	-	6
7	ELEC 403	Summer Training	FC	0	0	**0**	-	1
7	ELEC 431	Digital Signal Processing	AC	3	0	**3**	ELEC331	6
7	TE-01	Technical Elective	AE	3	0	**3**	-	7
7	TE-02	Technical Elective	AE	3	0	**3**	-	7
7	GEED-03	General Education Elective-III	UE	3	0	**3**	-	4
Total Credit						**15**		**31**
SPRING								
8	ELEC 402	Engineering Design II	FC	0	8	**4**	ELEC401	8
8	ELEC 404	Engineering Attributes and Ethics	FC	2	0	**2**	-	3
8	TE-03	Technical Elective	AE	3	0	**3**	-	7
8	TE-04	Technical Elective	AE	3	0	**3**	-	7
8	GEED-04	General Education Elective-IV	UE	3	0	**3**	-	4
Total Credit						**15**		**29**

AREA ELECTIVE COURSES

Course Code	Course Name	Credit			ECTS Credits
		Lec.	Pract.	Tot.	
ELEC421	Advanced Computer Networks	3	0	3	7
ELEC422	Information Management	3	0	3	7
ELEC423	Client-Server Computing	3	0	3	7
ELEC424	Computer Simulation	3	0	3	7
ELEC425	Computing Systems	3	0	3	7
ELEC426	Embedded Systems	3	0	3	7
ELEC427	Real-Time Systems	3	0	3	7
ELEC432	Advanced Control Systems	3	0	3	7
ELEC433	Industrial Control	3	0	3	7
ELEC434	Digital Control Systems	3	0	3	7
ELEC435	Introduction to Robotics	3	0	3	7
ELEC441	Industrial Electronics	3	0	3	7
ELEC442	Power Electronics	3	0	3	7
ELEC443	Opto-electronics	3	0	3	7
ELEC451	Microwave Theory	3	0	3	7
ELEC452	Microwave Applications	3	0	3	7
ELEC461	Communication Systems II	3	0	3	7
ELEC462	Wireless Communications	3	0	3	7
ELEC463	Information Theory	3	0	3	7
ELEC471	High Voltage Techniques	3	0	3	7
ELEC472	Power Generation and Distribution	3	0	3	7
ELEC473	Power Systems Analysis	3	0	3	7

COURSE BREAKDOWN

	Total		
	Number	Credit	ECTS Credits
All Courses	**44**	**142**	**240**
University Core Courses	5	14	23
Faculty Core Courses	12	41	68
Area Core Courses	18	63	104
Area Elective Courses	4	12	28
University Elective Courses	4	12	16
Summer Internship	1	0	1
Total	**44**	**142**	**240**

Semester	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Average**
Number of courses	6	5	6	6	5	5	6	5	5.5
Total credits	20	18	21	19	17	17	15	15	17.75
Total ECTS Credits	**30**	**29**	**34**	**29**	**28**	**30**	**31**	**29**	**30**

COURSE DESCRIPTIONS / SYNOPSES

1.	**Course code:** MATH 101	**Course title:** Calculus I
	Functions, limit, continuity and derivative. Mean Value Theorem and applications. Definite and indefinite integrals. Logarithmic, exponential, hyperbolic and inverse trigonometric functions. L'Hopital's Rule. Integration techniques. Area, volume and rotational surface area calculation. Applications in physics. Sequences and series. Power and Taylor series. **Text book:** Thomas' Calculus, 13th Edition, George B. Thomas, Maurice D. Weir, Joel R. Hass, Published by Pearson, 2016.	

2.	**Course code:** PHYS 101	**Course title:** Physics 1
	Measurement standards and units, vectors and coordinate systems, dynamics, work, energy and power, conservation of energy, systems of particles, collisions, rotation, equilibrium of solids, oscillations, gravity. **Textbook:** Sears & Zemansky's University Physics with Modern Physics. 14th Ed., Hugh D. Young, Roger A. Freedman, Pearson Education Limited, 2016.	

3.	**Course code:** CHEM 101	**Course title:** Chemistry
	Atoms molecules and ions; mass relations in Chemistry; stoichiometry. Gases, the ideal gas law, partial pressures, mole fractions, kinetic theory of gases. Electronic structure and the periodic table. Thermochemistry, calorimetry, enthalpy, The First Law of Thermodynamics. Liquids and Solids. Solutions. Acids and Bases. Organic Chemistry. **Textbook:** General Chemistry, Principles and Modern Applications, 11th Ed., Petrucci R.H., et.al., Pearson Education Ltd., 2017.	

4.	**Course code:** ELEC 100	**Course title:** Introduction to Electrical & Information Engineering
	Introduction to Electrical and Electronic Engineering. Professional fields in which EE engineers perform. Professionalism, values, attributes and ethics for EE engineers. Academic integrity and ethical issues in academia and research. Program information and areas of specialisation. Introduction to fundamentals of computer systems; computer organization, hardware and software, operating systems, language processors, user interfaces, computer networks. Introduction to algorithms and programming; machine, assembly and high level languages. Problem solving and algorithm development. The C programming language. Arithmetic and logical statements, data types, input/output, structured programming; sequence, selection and iteration; control structures. **Textbook:** Computers Are Your Future Complete, C. Laberta, 12th Ed., Pearson Education Ltd., 2014. **Secondary Textbook:** C How to Program, 8th Ed., Deitel & Deitel, Prentice Hall, 2016.	

5.	**Course code:** COMP 103	**Course title:** Information Technology and Applications
	This course aims to introduce all students to the basic concepts of information technology and to train them in the skills needed to use the office productivity tools. The aim is to learn to apply these skills in their freshman year and to be able to continue to use these skills during their undergraduate studies as well as professional lives after graduation.	

6.	**Course code:** ENGL101	**Course title:** English I
	This is a first-semester EAP course for freshman students, and it focuses on developing both receptive and productive skills as well as the study skills required for university-level coursework.	

7.	**Course code:** MATH 102	**Course title:** Calculus II
	Complex numbers. Vectors in the plane and space. Vector calculus. Line, plane and curves in the space. Limit and continuity in functions with several variables. Partial and directional derivatives. Tangent plane. Maximum and minimum values. Multiple integrals. Cylindrical and spherical coordinate planes. Coordinate transformations. Green Theorem. Surface integrals. Gauss and Stokes theorems. **Textbook:** Calculus, Thomas- Finney, Addison-Wesley, 1998.	

8.	**Course code:** MATH 104	**Course title:** Linear Algebra
	Matrices, determinant. System of a linear equations. Vector spaces. Base and dimension. Linear transformations. Base transformation. Inverse of a linear transformation. Characteristic equations, eigenvalues and eigenvectors and Jordan form. Numerical techniques for calculation of eigenvalues and eigenvectors. Inner product spaces,	

	diagonality, quadratic forms. Norm of a vector space. **Textbook:** Steven, J. Leon, "Linear Algebra with Applications", Prentice Hall, 1998.

9.	**Course code:** PHYS 102	**Course title:** Physics II
	Charge, electrical field and Gauss's Law. Basic circuits and Kirchhoff's Laws. Magnetic field. Ampere's Law. Faraday's Laws. Resistance, Magnetic properties of the material. Maxwell equations. Electromagnetic waves and introduction to modern physics. **Textbook:** Physics for Scientist and Engineering, 5th Ed., Serway-Beichner.	

10.	**Course code:** COMP 104	**Course title:** Computer Programming
	Review of the C programming language. Structured and modular programming using C. Local and global variables. Structured programming constructs. Arrays and array handling. Multi-dimensional arrays. Structures and Unions. Arrays of structures. Defining new data types in C. Functions in C. Call-by-value and call-by-reference. Character and string functions. Scope and extent. Recursion. Pointers and pointer arithmetic. Dynamic memory allocation and simple data structures in C. Arrays of pointers. Bit manipulation. Files; data and file processing. Conditional compilation and exception handling in C. **Textbook:** Deitel & Deitel, C How to Program, 8th Ed., Prentice Hall, 2016.	

11.	**Course code:** ENGL102	**Course title:** English II
	This course is continuation of ENGL 101- English I. It involves further development of students' EAP oral and written communication skills as well as further development of the study skills essential to success at this level.	

12.	**Course code:** MATH 205	**Course title:** Differential Equations
	Classification of differential equations. Solving methods of first order differential equations. Linear differential equations of higher degrees. Method of undetermined coefficients. Laplace transformation and convolution. Differential equations with several variables. **Textbook:** Elementary Differential Equations and Boundary Value Problems, William E. Boyce – Richard C. Diprima, John-Wiley, 1992.	

13.	**Course code:** MATH 207	**Course title:** Engineering Mathematics
	Complex numbers. Algebra of complex numbers. Polar representation. Complex functions. Limits and continuity. Analyticity and analytic functions. Cauchy-Riemann equations. Line integrals. Cauchy integral formula. Isolated singularities. Residue theorem. Numerical error. Solution of nonlinear equations. Convergence. Solution of linear systems of equations: direct and iterative methods. Interpolation. Curve fitting. Numerical differentiation and integration.	

14.	**Course code:** ELEC 231	**Course title:** Circuit Theory I
	Circuit variables, circuit elements. Simple resistive circuits. Techniques of circuit analysis. Topology in circuit analysis. Inductance and capacitance. State variables and state equations. Response of first-order RL, RC circuits. Natural and step responses of second-order RLC circuits.	

15.	**Course code:** ELEC 211	**Course title:** Digital Logic Design
	Binary Systems. Boolean algebra and logic gates. Simplification of Boolean functions. Analysis and design of combinational circuits. SSI, MSI and LSI elements. Synchronous sequential logic; flip-flops, counters, shift registers. Analysis and design of sequential circuits, state tables, state diagrams, state reduction and state assignment. Sequential MSI elements. Large scale system design with MSI. Timing issues. Registers, memory elements and programmable logic devices (PLDs). FSMs and FSMD; datapath and control. Relationship to simple computing architecture. **Textbook:** Digital Design, 5th Ed., M. Morris Mano and Michael D. Ciletti, Prentice Hall, 2013.	

16.	**Course code:** COMP 215	**Course title:** Algorithms and Data Structures
	Data structures and their usage. Programming methods, sorting, searching algorithms and applications, storage, time analysis. Stacks and queues. Linked lists and applications. Recursion. Trees and tree searching algorithms. **Textbook:** Algorithms in C (Vol. 1), Sedgewick, 3rd Ed. Addison-Wesley, 1998.	

17.	**Course code:** ENGL201	**Course title:** English III

	This second year English course helps develop the academic language skills required to write, format, and reference a short professional or technical report, and to present a summary of its contents to a public audience.	
18.	**Course code:** MATH 206	**Course title:** Probability and Statistics
	Probability concept and basic theorems. Independency, conditional probability and Bayes' rule. Random variables and functions. Some important discrete and continuous distributions. Distribution of random variable functions. Statistics. Unit, mass, data analysis. Sampling and sampling methods.	

19.	**Course code:** ELEC 232	**Course title:** Circuit Theory II
	Sinusoidal Sources and Phasors. AC Steady-State Analysis. AC Steady-State Power. Three-Phase Circuits. The Laplace Transforms. Circuit Analysis in the s-domain. Frequency Response. Mutual Inductance and Transformers. Two-port Circuits.	

20.	**Course code:** ELEC 252	**Course title:** Electromagnetics I
	Review of vector calculus. Electrostatics in vacuum. Coulomb's and Gauss's laws. Electrostatic potential. Poisson's and Laplace's equations. Conductors in the presence of electrostatic fields. Method of images. Dielectrics; polarization. Dielectric boundary conditions. Capacitance. Electrostatic energy. Electrostatic forces by the virtual work principle. Steady currents. Ohm's and Joule's laws. Resistance calculations. Magnetostatics in vacuum. Ampere's force law. Biot-Savart law. Magnetic vector potential. Ampere's circuital law. Magnetic boundary conditions. Magnetic dipole. Magnetization. Hysteresis curve. Self and mutual inductance. Magnetic stored energy. Magnetic forces by the virtual work principle.	

21.	**Course code:** ELEC 242	**Course title:** Semiconductor Devices
	Crystal structures, energy levels in crystals. Electronic transport in metals; superconductivity. Semiconductors; impurities; carrier transport in semiconductors; generation and recombination of minority carriers. The P-N junction diode and Schottky diode; diode characteristics and circuits. The bipolar junction transistor (BJT); current flow in diodes, BJTs and MOSFETs. Integrated circuits. Inverters. TTL, MOS, ECL structures. Logic Gates. Flip-flops. Bistable, astable and monostable multivibrators.	

22.	**Course code:** GEED-01 / 02 / 03 / 04	**Course title:** General Education Elective-I/ II/ III/ IV
	Courses in the General Education classification will be available for students to take as an elective non-technical course. The topics will be balanced between Humanities, Arts and Social Sciences. Approved courses will be announced at the start of each semester by the Faculty of Engineering. One of the courses must be among Introduction to Economics, Business/Engineering Management/Management or Accounting-I courses.	

23a.	**Course code:** HIST100	**Course title:** History of Turkish Republic
	This course is designed to provide Turkish-speaking students enrolled in English-medium programs with a brief historical account of the Republic of Turkey.	

23b.	**Course code:** TURK100	**Course title:** Turkish as a Second Language
	This course is designed to provide international students with the basic lexis and grammar of the Turkish language and to develop basic receptive and productive skills in Turkish.	

24.	**Course code:** ELEC 341	**Course title:** Electronics I
	Feedback amplifiers. Applications of operational amplifiers. Active filters. Logarithmic and exponential amplifiers. Analog multipliers. Comparators and the Schmitt trigger. Voltage-controlled oscillators. Multi-vibrators. Data conversion circuits. Sinusoidal oscillators.	

25.	**Course code:** ELEC 331	**Course title:** Signals and Systems
	Continuous-time and discrete-time signals and systems. Linear time-invariant (LTI) systems: system properties, convolution sum and the convolution integral representation, system properties, LTI systems described by differential and difference equations. Fourier series: Representation of periodic continuous-time and discrete-time signals and filtering. Continuous time Fourier transform and its properties: Time and frequency shifting, conjugation, differentiation and integration, scaling, convolution, and the Parseval's relation. Representation of aperiodic signals and the Discrete-time Fourier transform. Properties of the discrete-time Fourier transform.	

26.	**Course code:** ELEC 311	**Course title:** Microprocessors

	Systems based on microprocessors and their design, software and hardware design integration. Memories, input/output elements, interrupts and priorities. Daisy chaining type of processors. Lines, connections, timing, usage of logic state analyzers. Control programming, permanent programs in the memory and programming. Synchronous multi-tasking usage and system design.

27.	**Course code:** ELEC 351	**Course title:** Electromagnetics II
	Electromagnetic induction; Faraday's and Lenz's laws; transformer and motional electromotive force; induction heating; displacement current; time-varying fields; Maxwell's equations; wave equations; time-harmonic fields; complex phasors; scalar and vector potential functions; plane waves in vacuum; plane waves in dielectrics and conductors; polarization; skin effect; electromagnetic energy and power; Poynting's theorem; reflection and refraction of plane waves at dielectric interfaces; Snell's laws; Fresnel formulas; critical angle; total internal reflection; total transmission; Brewster's angle; standing waves; transmission line theory; TEM waves; transmission line parameters; lossy and lossless lines; matching of transmission lines to their loads.	

28.	**Course code:** GEED-02	**Course title:** General Education Elective-II
	See GEED-01 course description.	

29.	**Course code:** ELEC 342	**Course title:** Electronics II
	Feedback amplifiers. Applications of operational amplifiers. Active filters. Logarithmic and exponential amplifiers. Analog multipliers. Comparators and the Schmitt trigger. Voltage-Controlled-Oscillators. Multivibrators. Data conversion circuits. Sinusoidal oscillators.	

30.	**Course code:** ELEC 362	**Course title:** Communication Systems
	Review of Fourier transform and its properties. Transmission of signals through linear systems. Power spectral density and autocorrelation function. The sampling theorem and the Nyquist rate, aliasing distortion. Non-ideal sampling: Pulse amplitude modulation (PAM) and flat-top PAM and equalization. Digital signaling: quantization, encoding and pulse code modulation (PCM), line codes and their spectra, regenerative repeaters. Pulse transmission: Intersymbol interference (ISI), Nyquist method for zero ISI, time division multiplexing (TDM), pulse-time modulation techniques. Complex envelope representation of bandpass and modulated signals. RF circuits: limiters, converters, multipliers, detectors, PLL circuits and etc. Analog modulation techniques: AM, DSB-SC, SSB etc. Binary modulation techniques: ASK, BPSK, FSK.	

31.	**Course code:** ELEC 332	**Course title:** Control Systems
	Introduction to control: open-loop and closed loop control. Modelling: transfer function, block diagram, signal flow graph, state equations. Feedback control system characteristics: sensitivity, disturbance rejection, steady-state error. Performance specifications: second-order system, dominant roots, steady-state error of feedback systems. Stability: Routh-Hurwitz criterion, relative stability. The root locus method. Frequency response methods: Bode diagram, performance in the frequency domain, Nyquist stability criterion, gain margin and phase margin, Nichols chart.	

32.	**Course code:** ELEC 322	**Course title:** Data Communication and Computer Networks
	Principles of data communications; information transfer, computer networks and their applications. Network structures, architectures and protocols. Open systems and the ISO-OSI reference model; services and network standardization. Communication systems: transmission media, analog and digital transmission. PSTN, modems, PCM, encoding and digital interface. Transmission and switching: FDM, TDM, modulation, circuit, packet and message switching. The store and forward concept. Networking characteristics. Storage, delay, multiplexing, bandwidth sharing and dynamic bandwidth management, QoS. Channel organization, framing, channel access control. PSPDN and integrated digital network concept: ISDN. LANs, MANs and WANs. ATM and gigabit networking. Communication models. De-facto standards. The Internet open architecture and the protocol suite. Modern applications of networking. **Textbook:** Stallings W., Data and Computer Communications", 8th Ed., Prentice-Hall, 2007. **Reading:** Tanenbaum, A.S., "Computer Networks", 4th Ed., Prentice Hall Publ., 201.	

33.	**Course code:** ELEC 371	**Course title:** Electrical Machines and Energy
	Transient analysis of ac and dc machines and transformers; Single-phase induction motors; Stepper motors; Brushless dc motors; Shaded-pole motors; Universal motors; Speed control using Programmable Logic	

	Controllers; Condition monitoring using Labview graphical programming.

34.	**Course code:** ELEC 401	**Course title:** Engineering Design I
	Engineering Design is an important activity that each engineering student must carry out and go through the phases of the design process. Engineering design is expected to be carried out by students within teams under the supervision of an instructor. It is desired that each project be an interdisciplinary capstone design project. The project is spread to one academic year and it involves the courses ELEC401 and ELEC402. ELEC401 includes the initial problem formulation, a technical survey, the detailed problem study, analysis and description, as well as formulation of a methodical way for the initial solution. A detailed preliminary design documentation for the solution of a realistic and reasonably complex computer engineering problem. It is an extended exercise in the professional application of the skills and experience gained in the undergraduate program. Students form teams, and each team chooses a topic proposed by course instructors. Students are expected to present their progress in the form of reports and presentation, both during the semester and at the end of the semester.	

35.	**Course code:** ELEC 431	**Course title:** Digital Signal Processing
	Overview of digital signals and systems. Frequency and time representation of sampling, decimation, interpolation. Z-transform: Evaluation, region of convergence (ROC) and properties. Discrete time system structures: tapped delay line and lattice structures. Fast Fourier Transform (FFT). Digital filter design: Finite impulse response (FIR), infinite impulse response (IIR), windowing, Hilbert transform.	

36.	**Course code:** TE-01	**Course title:** Technical Elective
	This is a Technical Elective course which will be selected by students in their senior year and is offered by the department alternatively during the Fall and Spring semesters. Please see the Technical Elective courses list.	

37.	**Course code:** TE-02	**Course title:** Technical Elective
	This is a Technical Elective course which will be selected by students in their senior year and is offered by the department alternatively during the Fall and Spring semesters. Please see the Technical Elective courses list.	

38.	**Course code:** GEED-03	**Course title:** General Education Elective-III
	See GEED-01 course description.	

39.	**Course code:** ELEC 403	**Course title:** Summer Training
	In partial fulfillment of the graduation requirements, all students must complete 40 work days of summer training after the end of the second and/or (preferably) third year, during summer vacations. The summer training should be carried out in accordance with the rules and regulations set by the Department/Faculty. Registration of summer training is done during the semester immediately following the training.	

40.	**Course code:** ELEC 402	**Course title:** Engineering Design II
	This course is the sequel to ELEC401. It consists of the implementation of a realistic, preferably interdisciplinary, engineering capstone design project emphasizing engineering design principles on an electrical and electronic engineering topic. It is carried out by a team of students under the supervision of an instructor. The team must complete the detailed design and implementation of the preliminary design they started in the ELEC401 course. It is an extended exercise in the professional application of the knowledge, experience and skills gained in the undergraduate program. The team has to complete analysis, design, implementation, testing and documentation of a proto-type or actual engineered product, present it and submit a final report in the technical project report format.	

41.	**Course code:** TE-03	**Course title:** Technical Elective
	This is a Technical Elective course which will be selected by students in their senior year and is offered by the department alternatively during the Fall and Spring semesters. Please see the Technical Elective courses list.	

42.	**Course code:** TE-04	**Course title:** Technical Elective
	This is a Technical Elective course which will be selected by students in their senior year and is offered by the department alternatively during the Fall and Spring semesters. Please see the Technical Elective courses list.	

43.	**Course code:** GEED-04	**Course title:** General Education Elective-IV

	See GEED-01 course description.

44.	**Course code:** ELEC 404	**Course title:** Engineering Attributes and Ethics
	This is a final year course which aims to provide knowledge and awareness of a number of important engineering issues. The knowledge areas include but are not limited to: professionalism, ethics, project management, sustainable development, risk management, change management, standards, health, environment, hazards, workplace health and security, societal issues as well as contemporary issues reflecting on the applications of the engineering profession. Awareness areas include but are not limited to entrepreneurship, innovation and the legal ramifications of the engineering solutions.	