

ELECTRIC and ELECTRONIC ENGINEERING MASTER DEGREE PROGRAM INFORMATION

General Information	<p>TOBB ETÜ M. S. program in Electrical and and Electronics Engineering Program, founded in 2004 gave its first graduates in 2008. There are currently 11 faculties in the department. The faculty does research mostly in the areas of microelectronics, control, communications, signal processing, biomedical, optics/photronics and smart grid.</p> <p>There are two programs, namely, Thesis and non-Thesis. Thesis and non-Thesis programs require taking 7 and 10 courses (9 ECTS each), respectively. Students can take some courses from outside of the department and can also take a limited number of 4xx level courses. Thesis students are also required to the ELE 597 Graduate Seminar (8 ECTS) and ELE 599 Master of Science Thesis course (60 ECTS). Finally all thesis and non-thesis students are required to take the FBE 600 Scientific Research Techniques and Publication Ethics course. More information can be obtained from the Graduate School web site (link: https://www.etu.edu.tr/enstitu/fen-bilimleri-enstitusu)</p>
Program Purpose	<p>The purpose of the M.S. Program in Electrical and Electronics Engineering is to educate successful engineers that are capable of leadership in serving the science and humanity and are strong in adapting to the ever-changing world.</p>
Degree Earned	<p>Master of Science in Electrical and Electronics Engineering</p>
Level of Degree Earned	<p>Electrical and Electronics Engineering is a First-Cycle (Bachelors Degree – EQF 7) program.</p>
Requirements and Rules of the Degree Earned	<p>Graduation requirements are defined according to Article 45 of the Undergraduate Education and Examination Regulation (link: http://mevzuat.basbakanlik.gov.tr/Metin.Aspx?MevzuatKod=8.5.15287&MevzuatIliski=0&sourceXmlSearch=). For graduation the thesis student should a) successfully complete at least 90 credits of courses, ELE 597 Graduate seminar, FBE 600 Scientific Research Methods and Publication Ethics within the maximum allowable time period b) obtain a GPA of 3.00/4.00.</p>
Registration Admission Requirements	<p>Student quota of our undergrad programs are determined by the board of regents after a suggestion by the Senate and subject to the approval of the Higher Education Council (YÖK). Acceptance of candidate students is according to the ÖSYM exam scores. Acceptance of foreign students are carried out according to the rules determined by the Senate. Acceptance of horizontal and vertical transfer students and special/guest/exchange students are regulated by the departmental and faculty administrative boards according to Undergraduate Education and Examination Regulation (link: http://mevzuat.basbakanlik.gov.tr/Metin.Aspx?MevzuatKod=8.5.15287&MevzuatIliski=0&sourceXmlSearch=)</p>
Recognition of Prior Learning	<p>A student arriving through the ÖSYM examination or by undergraduate transfer can substitute courses taken in a quitted previous higher education program. The substitution of the courses taken in a previous program, its equivalency and suitability with the courses in the program are evaluated at the Departmental and Engineering Faculty Boards. In case of approval of substitution, the course is substituted with its letter grade. In case of vertical transfer the course is substituted with M (Exempt) grade. Grade is converted to a letter at graduation.</p>
Examinations, Assessment and Grading	<p>Evaluation and assessment methods used for each course are defined according to Article 22 of the Undergraduate Education and Examination Regulation (link: http://mevzuat.basbakanlik.gov.tr/Metin.Aspx?MevzuatKod=8.5.15287&MevzuatIliski=0&sourceXmlSearch=). Except the project and laboratory courses, which do not necessarily require an examination, all courses require at least a midterm and a final exam. Final exams are applied in a specific period of time indicated in the Academic Calendar. Final exam period and classrooms are determined by the Rectorate.</p>
Teaching Style	<p>The style of education is Full-Time and Day-Time. Most of the courses are given in classrooms. Only the TÜR 101, 102 Turkish and AİT 201,202 Principles of Atatürk and History of Revolution courses are given by distance education methods.</p>

<p>Graduation Requirements</p>	<p>Graduation requirements are defined according to Article 45 of the Undergraduate Education and Examination Regulation (link: http://mevzuat.basbakanlik.gov.tr/Metin.Aspx?MevzuatKod=8.5.15287&MevzuatIliski=0&sourceXmlSearch=). For graduation the thesis student should a) successfully complete at least 90 credits of courses, ELE 597 Graduate seminar, ELE 599 Master's Thesis and FBE 600 Scientific Research Methods and Publication Ethics within the maximum allowable time period b) obtain a GPA of 3.00/4.00. For graduation the student has to publish a conference paper.</p>
<p>Occupational Profiles of Graduated-Employment Opportunities</p>	<p>A great majority of our graduates can find a job within 6 months of graduation. Also 30% of our graduates start their career in one of their Coop companies. Our graduates mostly occupy Electronics, Defense, Space/Aviation, Telecommunications and Information Technologies sectors. Companies like ASELSAN , ROKETSAN, TÜBİTAK, TAI, ARÇELİK, TÜRK TELEKOM and HAVELSAN are the ones that employ most of our graduates. Our graduates usually work as R&D/Design, System, Production or Test engineers. A 10% of our graduates have either founded their hi-tech start-up companies or work in their family ventures.</p>
<p>Transition to a Upper Degree</p>	<p>Candidates that successfully finished their Bachelor's program are required to obtain a minimum 55/100 ALES score and a minimum 50/100 English score in order to be accepted to graduate programs. The graduate school also provides tuition remission and stipend to a limited number of candidates with higher scores. International candidates can also apply with a GRE score instead of ALES. Application requirements for graduate programs are listed in detail in the Graduate School web page.(link:https://www.etu.edu.tr/tr/enstitu/fen-bilimleri-enstitusu/basvuru-bilgileri)</p>

	Communication and Social Competence	Completes and applies the knowledge using scientific methods using limited or incomplete data; integrates knowledge of different disciplines.			x										
		Builds engineering problems, develop methods to solve them, and applies innovative methods in solutions.		x											
		Has extensive knowledge about current techniques and methods applied in engineering and their limitations.		x											
		Designs and implements analytical, modeling and experimental based research; analyzes and interprets complex situations encountered in this process.							x						
	Field Specific Competence	Observes social, scientific and ethical values in the process of collecting, interpreting and announcing data and in all professional activities.													x
		Complete and applies the knowledge using scientific methods using limited or incomplete data; integrates knowledge of different disciplines.			x										
		Leads in multidisciplinary teams, develops solution approaches in complex situations and take responsibility.								x					
		Transcribes the processes and outcomes of his or her work in a systematic and explicit way, either in writing or verbally, in the national or international contexts in the area or outside the field.											x		

Electric and Electronic Engineering Program Qualifications

1	Ability of doing scientific research in a specific field, interpretation and application of the resulting knowledge.
2	Knowledge about current techniques and methods applied in electrical and electronics along with their limitations.
3	Ability to complete/apply the knowledge using scientific methods using limited or incomplete data; integrate knowledge of different disciplines.
4	Awareness of new and evolving practices of the Electrical and Electronics Engineering and motivation to learn them when necessary.
5	Ability to develop new ideas and methods; develop innovative solutions in system, component or process design.
6	Ability to design and implement analytical, modeling and experimental based research; analyze and interpret complex situations encountered in this process.
7	Ability to leads in multidisciplinary teams, develop solution approaches in complex situations and take responsibility.
8	Ability to communicate effectively in Turkish and English; transcribe the processes and outcomes of his or her work effectively, either in writing or verbally, in the national or international contexts
9	Awareness of the social and environmental dimensions of engineering applications.
10	Ability to observes social, scientific and ethical values in all professional and scientific activities.

Master Program Qualifications Course Matrix of Electric and Electronic Engineering		Program Qualifications									
Code	Course Name	1	2	3	4	5	6	7	8	9	10
ELE 501	Linear Systems	4	3	2	3	4	4	2	3	2	3
ELE 502	Optimal Control	5	3	2	3	4	4	2	3	2	3
ELE 503	Nonlinear Systems	4	3	2	3	4	4	2	3	2	3
ELE 504	Digital Control Systems	4	3	2	3	4	4	2	3	2	3
ELE 505	System Identification	4	3	4	3	4	4	2	3	2	3
ELE 506	Robust Control	5	3	2	3	4	4	2	3	2	3
ELE 507	Multivariate Control	5	3	2	3	4	4	2	3	2	3
ELE 508	Adaptive Control	5	3	2	3	4	4	2	3	2	3
ELE 509	Flow Control	5	3	2	3	4	4	2	3	2	3
ELE 511	Robotics and sensing	4	4	2	5	4	4	4	3	2	3
ELE 512	Flight Control Systems	4	3	2	5	5	4	4	3	2	3
ELE 513	Artificial Neural Networks	4	4	2	5	4	4	4	3	2	3
ELE 514	Fuzzy Logic	4	4	2	5	4	4	4	3	2	3
ELE 515	Computer Aided Control Design with MATLAB	4	5	3	5	4	4	4	3	2	3
ELE 516	Intelligent Systems	4	4	2	5	4	4	4	3	2	3
ELE 517	Computer Vision	4	4	2	5	4	4	4	3	2	3
ELE 518	Swarm Systems	4	4	2	5	4	4	4	3	2	3
ELE 519	Embedded Systems	3	5	2	5	5	4	4	3	2	3
ELE 521	Microwave Electronics	3	4	2	5	5	4	4	3	2	3
ELE 522	CMOS VLSI Design	3	5	2	5	5	4	4	3	2	3
ELE 523	Analog Integrated Systems	3	4	2	5	5	4	4	3	2	3
ELE 524	Advanced Analog Integrated Systems	3	4	2	5	5	4	4	3	2	3
ELE 525	CMOS Mixed Signal Integrated Circuit Design	3	4	2	5	5	4	4	3	2	3
ELE 526	Analog Integrated Filter Circuits	3	4	2	5	5	4	4	3	2	3
ELE 527	Instrumentation and Experimental Methods	3	5	2	5	5	4	4	3	2	3
ELE 528	Superconductor Electronics I	3	5	2	5	5	4	4	3	2	3
ELE 529	Superconductor Electronics II	3	5	2	5	5	4	4	3	2	3
ELE 531	Microwaves	4	3	2	3	4	4	3	3	2	3
ELE 532	Antennas and Propagation	4	3	2	3	4	4	3	3	2	3
ELE 533	Numerical Methods in Electromagnetics	5	3	2	3	4	4	3	3	2	3
ELE 536	Neuroengineering I	5	3	4	3	4	4	4	3	4	3
ELE 537	Neuroengineering I	5	3	4	3	4	4	4	3	4	3
ELE 541	Biomedical Engineering	4	3	4	3	4	4	4	3	4	3
ELE 542	Medical Imaging Systems	4	3	4	3	4	4	4	3	4	4
ELE 543	Biomedical Signal Processing	4	4	3	4	4	2	4	3	5	4
ELE 544	Biomaterials	4	4	3	4	3	2	4	3	5	4
ELE 545	Bioelectric Phenomena	4	4	3	4	3	3	4	3	5	4
ELE 546	Bioelectrics and Biomagnetics	4	4	3	4	3	3	4	3	5	4
ELE 547	Biomedical optics	4	4	3	4	3	2	4	3	5	4
ELE 548	Biologic Effects of Electromagnetic Waves	4	4	3	4	3	3	4	3	5	4
ELE 549	Biomechanics and Tissue Biomechanics	4	4	3	4	3	2	4	3	5	4
ELE 551	Optics	5	4	4	4	4	4	3	3	2	3
ELE 552	Photonics	5	4	4	4	4	4	3	3	2	3
ELE 553	Optical Communications	5	3	4	4	4	4	3	3	2	3
ELE 554	Fiberoptical Systems	5	3	4	4	4	4	3	3	2	3
ELE 555	Fourier Optics and Holography	5	3	4	4	4	4	3	3	2	3
ELE 557	Solar Energy Systems	5	3	4	4	4	4	3	3	2	3
ELE 561	Wireless Communications	5	4	3	5	4	5	3	3	3	4
ELE 562	Satellite Communication Systems	4	4	3	5	3	4	4	3	3	4
ELE 563	Communication Networks	4	4	3	5	3	3	3	3	3	4
ELE 564	Digital Communication	4	4	3	3	3	5	3	3	3	4
ELE 565	Fundamentals of Radar Signal Processing	5	5	5	5	5	5	3	3	3	4
ELE 566	Mobile Communication Systems	5	4	3	5	4	5	3	3	3	4
ELE 569	Communication Network Optimization	5	5	5	5	5	5	3	3	3	4
ELE 571	Estimation and Detection Theory	4	3	5	3	3	3	3	3	2	3

