Faculty of Engineering

Mansoura University

Electrical Power & Machines Engineering B.Sc. Program Specification

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Electrical Power & Machines Engineering

B.Sc. Program Specification

1. Introduction

1.1 Basic Information

Program Title: Electrical Power & Machines Engineering

Program Type: Single

Department: Electrical Engineering

Coordinator: Prof. D. Saad Eskander

Assistant Coordinator: Dr. Ebrahim Abdel-Ghaffar Badran

Dates of Program Specification Approval: 17 – 10 -2010

1.2 Staff Members:

The Electrical Power & Machines Engineering Program is taught by **26** highly qualified staff members. All of them are full time employed. **Appendix 1** shows the staff members' names, resume and the subjects taught by each of them.

1.3 Internal and External Evaluators:

The program was evaluated by external evaluator. His evaluation showed that the program specification agrees with the National Academic Reference Standards, **Appendix 2**.

2. Professional Data

2.1 Preamble

Engineers solve real-life problems. They find the best solutions through the application of their knowledge, experience and skills. Engineers help to define and refine the way of life by providing innovative, higher-performance, safer, cleaner or more comfortable daily-used facilities for human beings. They seek improvements through the processes of invention, design, manufacturing and construction.

The engineer's problem-solving complexity grows as the world's social and technological problems become more closely related. For example, the problem of air pollution cannot be solved physically without considering the social, legal, political, and ethical conflicts. Moreover, the impact of the available engineering solutions on the interests of the individuals and groups should be considered.

The goal of the **Electrical Power & Machines Engineering Program** is to provide students with a high quality applications-oriented undergraduate education based on state-of-the-art technological equipment associated with electrical technology. This goal is achieved through several objectives such as continuing to update specific courses in the program to ensure relevance to the latest industrial changes, supporting the development of appropriate computer facilities, promoting the integration of advanced technology in all courses, and encouraging professional growth and development of the faculty.

The electrical power & machines engineering program consists of two main fields, namely electrical power engineering subjects and electrical machines engineering subjects. These are essentially supported by two main topics: automatic control engineering and power electronics subjects. Other essential subjects in the program include electrical circuits, electronic circuits and devices, electromagnetism, energy conversion, measurements and computer programming. Basic subjects in the program include mathematics, physics, materials engineering, workshop technology, laboratories, management and environmental issues.

Students completing a major in Electrical Power & Machines Engineering program receive a strong foundation in measurement systems, analog and digital signal conditioning, microprocessor hardware and software, industrial electronics, and rotating machinery. Students have the opportunity to select additional coursework in control systems, electrical power, or a combination of both. Although analog electronics remain important, one of the newest and fastest growing areas is in the application of computers for control; this may be control within some manufactured product or control of some manufacturing process. The manufacturers of electrical systems and machines need electrical power technologists who are familiar with machines and machine controls, both traditional and computer-controlled. The electrical industry provides and controls the transformers, motors, generators, switch gear, and protection equipment required to power homes, businesses, and industries. Electrical power technologists plan electrical systems and modifications to existing electrical systems that generate and use large amounts of electricity required for distribution networks that are economical, safe, and functional.

Graduates of the Electrical Power & Machines Engineering major understand, design, analyze, and work effectively in industrial settings utilizing product/process control systems and electrical power systems. Graduates are working in petrochemical companies, food manufacturing, steel processing, utilities, electrical equipment, sales, manufacturing and testing, and a host of other diverse industries.

2.2 Program Mission and Aims

2.2.1 Program Mission

The mission of the Electrical Power & Machines Engineering Program is to develop and disseminate the theory and methods for the design, analysis, and implementation of the principles and practices in Electrical Engineering and to prepare innovative graduates able to interact with the challenges in diverse domains of his specialty, locally and regionally.

2.2.2 Program Vision:

The vision of the Electrical Power & Machines Engineering Program is to be a leading centre of excellence in the generation and application of electrical power and machine knowledge.

2.2.3 Program Aims

The Electrical Power & Machines Program consists of two main fields, namely electrical power engineering subjects and electrical machines engineering subjects. These are essentially supported by two main topics: automatic control engineering and power electronics subjects. Other essential subjects in the program include electrical circuits, electronic circuits and devices, electromagnetism, energy conversion, measurements and computer programming. Basic subjects in the program include mathematics, physics, materials engineering, workshop technology, laboratories, management and environmental issues. The educational objectives of electrical engineering program are designed to produce engineers who are ready to contribute effectively to the advancement of electrical engineering profession and to accommodate the needs of local and global industries. Specific educational objectives may be summarized as follows:

1) Apply knowledge of mathematics, science and engineering concepts to Identify, formulate and solve engineering problems, considering the impact on society and environment.

2) Design a system, experiment, component and process to meet the required needs of energy generation, transmission and distribution within realistic constraints, as well as data analysis and interpretation.

3) Work and communicate effectively within multi-disciplinary teams.

4) Demonstrate knowledge and contextual understanding of contemporary engineering issues.

5) Display professional and ethical responsibilities, and engage in self and long life learning.

6) Plan and manage engineering activity during the diverse phases of electric power generation, transmission and distribution, using the techniques, skills, and appropriate engineering tools.

2.3 Intended Learning Outcomes (ILO's)

2.3.1 Knowledge and Understanding

The graduates of Electrical Power & Machines Program should demonstrate knowledge and understanding of:

A1 Concepts and theories of mathematics and sciences, appropriate to the discipline.

A2 Basics of information and communication technology (ICT)

A3 Characteristics of engineering materials related to the discipline.

A4 Principles of design including elements design, process and/or a system related to specific disciplines.

A5 Methodologies of solving engineering problems, data collection and interpretation

A6 Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.

A7 Business and management principles relevant to engineering.

A8 Current engineering technologies as related to disciplines.

A9 Topics related to humanitarian interests and moral issues.

A10 Technical language and report writing

A11 Professional ethics and impacts of engineering solutions on society and environment Contemporary engineering topics.

A12 Analytical and computer methods appropriate for electrical power and machines engineering.

A13 Design methods and tools for electrical power and machines equipment and systems.

A14 Principles of operation and performance specifications of electrical and electromechanical engineering systems.

A15 Fundamentals of engineering management

A16 Basic electrical power system theory

A17 Theories and techniques for calculating short circuit, motor starting, and voltage drop

A18 Diverse applications of electrical equipment

A19 Logic circuits.

A20 Basic power system design concepts for underground, cable tray, grounding, and lighting systems.

A21 Basics of low voltage power systems.

A22 Principles of performing electrical system calculations, including load flow, earthling and equipment sizing.

2.3.2 Intellectual Skills

The graduates of electrical power & machines engineering program should be able to:

B1 Select appropriate mathematical and computer-based methods for modeling and analyzing problems.

B2 Select appropriate solutions for engineering problems based on analytical thinking.

B3 Think in a creative and innovative way in problem solving and design.

B4 Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.

B5 Assess and evaluate the characteristics and performance of components, systems and processes.

B6 Investigate the failure of components, systems, and processes.

B7 Solve engineering problems, often on the basis of limited and possibly contradicting information.

B8 Select and appraise appropriate ICT tools to a variety of engineering problems.

B9 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.

B10 Incorporate economic, societal, environmental dimensions and risk management in design.

B11 Analyze results of numerical models and assess their limitations.

B12 Create systematic and methodic approaches when dealing with new and advancing technology.

B13 Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.

B14 Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.

B15 Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.

B16 Analyze the performance of electric power generation, control and distribution systems.

2.3.3 Professional and Practical Skills

The graduates of electrical power & machines engineering program should be able to:

C1 Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.

C2 Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.

C3 Create and/or re-design a process, component or system, and carry out specialized engineering designs.

C4 Practice the neatness and aesthetics in design and approach.

C5 Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.

C6 Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.

C7 Apply numerical modeling methods to engineering problems.

C8 Apply safe systems at work and observe the appropriate steps to manage risks.

C9 Demonstrate basic organizational and project management skills.

C10 Apply quality assurance procedures and follow codes and standards.

C11 Exchange knowledge and skills with engineering community and industry.

C12 Prepare and present technical reports.

C13 Design and perform experiments, as well as analyze and interpret experimental results related to electrical power and machines systems.

C14 Test and examine components, equipment and systems of electrical power and machines.

C15 Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.

C16 Specify and evaluate manufacturing of components and equipment related to electrical power and machines.

C17 Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.

2.3.4 General and Transferrable Skills

The graduates of the engineering power & machines programs should be able to:

D1 Collaborate effectively within multidisciplinary team.

D2 Work in stressful environment and within constraints.

D3 Communicate effectively.

D4 Demonstrate efficient IT capabilities.

D5 Lead and motivate individuals.

D6 Effectively manage tasks, time, and resources.

D7 Search for information and engage in life-long self learning discipline.

D8 Acquire entrepreneurial skills.

D9 Refer to relevant literatures.

2.4 Curriculum Structure and Contents

2.4.1 Program Contents:

The program duration is **five** years, **10** semesters. The following are the subjects taught during this program.

- **Preparatory Year-First Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
BAS1011	Mathematics-1	4	3	0	7	3	45	0	130	175		5	2				
BAS1012	Physics-1	4	1	1	6	3	40	10	100	150		3	2			1	
BAS1013	Mechanics-1	3	2	0	5	2	35	0	90	125		3	2				
BAS+PRE1014	Engineering drawing	2	0	3	5	2	40	0	60	100			3	2			
BAS1015	Chemistry-1	3	1	1	5	3	35	10	80	125		2	2			1	
BAS1016	English	0	2	0	2	2	10	0	40	50	2						
Total		16	9	5	30	15	205	20	500	725	2	13	11	2	0	2	0

- **Preparatory Year-Second Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
BAS1021	Mathematics-2	4	3	0	7	3	45	0	130	175		5	2				
BAS1022	Physics-2	4	1	1	6	3	40	10	100	150		3	2			1	
BAS1023	Mechanics-2	2	2	0	4	2	30	0	70	100		2	2				
BAS+PRE1024	Engineering drawing	1	3	0	4	4	35	0	90	125			2	1			1
PRE1025	Production engineering	2	2	0	4	2	20	10	70	100			2	2			
CSE1026	Introduction to computer programming	2	1	0	3	2	25	0	50	75				1	2		
BAS1027	Humanity-1	2	0	0	2	2	0	0	50	50	2						
Total		**17**	**12**	**1**	**30**	**18**	**195**	**20**	**560**	**775**	2	10	10	4	2	1	1

- **First Year-First Semester:**

Code	Course Name	Teaching Hours	Wr. Exam Dur.	Marking	Subject Area

		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
BAS2111	Mathematics 3	**4**	**2**	**0**	**6**	**3**	**40**	**0**	**110**	**150**		4	1		1		
COM2112	Solid-State Electronics	**4**	**2**	**0**	**6**	**3**	**40**	**10**	**100**	**150**		2	2	1			1
EE2113	Electric Circuits 1	**4**	**4**	**0**	**8**	**3**	**40**	**40**	**120**	**200**	1	1	5	1			
STE2114	Civil Engineering	**2**	**2**	**0**	**4**	**3**	**30**	**0**	**70**	**100**	1		1	2			
EE2115	Programming 1	**2**	**2**	**0**	**4**	**3**	**30**	**20**	**50**	**100**		1	1		2		
EE2116	Technical Reports	**0**	**2**	**0**	**2**	**2**	**10**	**0**	**40**	**50**	2						
Total		**16**	**14**	**0**	**30**	**17**	**190**	**70**	**490**	**750**	4	8	10	4	3	0	1

- **First Year-Second Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
BAS2121	Mathematics 4	4	**2**	**0**	**6**	**3**	**40**	**0**	**110**	**150**		4	1		1		
COM2122	Electronics Fundamentals	4	**2**	**0**	**6**	**3**	**40**	**0**	**110**	**150**		1	2	2		1	
EE2123	Electrical Measurements	2	**2**	**0**	**4**	**3**	**20**	**20**	**60**	**100**		1	1	1			1
EE2124	Electric Circuits 2	4	**2**	**0**	**6**	**3**	**40**	**20**	**90**	**150**		1	2	2	1		
MPE2125	Fluid Mechanic & ThermalEngineering	4	**2**	**0**	**6**	**3**	**40**	**0**	**110**	**150**	1	1	2	2			
EE2126	Humanities 2	2	**0**	**0**	**2**	**2**	**10**	**0**	**40**	**50**	2						
Total		**20**	**10**		**30**	**17**	**190**	**40**	**520**	**750**	3	8	8	7	2	1	1

- **Second Year-First Semester:**

Co de	Course Name	Teaching Hours	m	Marking	Subject Area

		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
BAS2211	Mathimatics.5	4	2	0	6	3	40	0	110	150		4	1		1		
COM2212	Digital Signals Processing	4	2	0	6	3	40	20	90	150		1	2	1	1		1
EE2213	Electromagnetics	4	2	0	6	3	40	20	90	150	1	2	2	1			
MPE2214	Thermal & Hydraulic Machines	4	2	0	6	3	40	0	110	150	1	1	2	2			
COM2215	Logic & Digital Circuits	2	2	0	4	3	30	0	70	100		1	1		1	1	
EE2216	Humanities 3	2	0	0	2	2	10	0	40	50	2						
Total		20	10		30	17	200	40	510	750	4	9	8	4	3	1	1

- **Second Year-Second Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
EE2221	Statistics Applications	2	2	0	4	3	30	0	70	100		2	1	1			
COM2222	Electronic Circuits & Microprocessor	4	2	0	6	3	40	0	110	150		1	1	1	1	1	1
EE2223	Laboratory.1	0	4	0	4	0	50	50	0	100	1		1			2	
EE2224	Electrical Power.1	4	2	0	6	3	40	0	110	150		1	3	1			1
EE2225	Electrical Machines.1	4	2	0	6	3	40	0	110	150		1	3	1			1
EE2226	Programming II	2	2	0	4	2	30	20	50	100		1		1	2		
Total		16	14		30	14	230	70	450	750	1	6	9	5	3	3	3

- **Third Year-First Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
2311EE	Electrical Power-2	2	2	0	4	3	30	0	70	100			1	1	1		1
2312EE	Electrical Machines-2	4	2	0	6	3	40	0	110	150	1		1	2	1		1
2313CSE	Automatic Control-1	2	2	0	4	3	30	0	70	100		1	1	1	1		
2314COM	Communication Sys.Theory	4	2	0	6	3	40	0	110	150	1	1	1	1	1		1
2315EE	Laboratory-2	0	4	0	4	0	50	50	0	100	1					3	
2316EE	High Voltage	4	2	0	6	3	50	0	100	150	1		1	3	1		
Total		**16**	**14**		**30**	**15**	**240**	**50**	**460**	**750**	4	2	5	7	5	3	3

- **Third Year-Second Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
2321EE	Electrical Power-3	**4**	**2**	**0**	**6**	**3**	**40**	**20**	**90**	**150**	1		1	2	1	1	
2322EE	Electrical Machines-3	**2**	**2**	**0**	**4**	**3**	**20**	**20**	**60**	**100**			1	2	1		
2323EE	Power Electronics1	**4**	**2**	**0**	**6**	**3**	**40**	**20**	**90**	**150**		1	1	2	1	1	
2324EE	Protection Systems	**4**	**2**	**0**	**6**	**3**	**40**	**20**	**90**	**150**	1	1		2		1	1
2325CSE	Automatic Control2	**2**	**2**	**0**	**4**	**3**	**30**	**0**	**70**	**100**				1	1	1	1
2326EE	Elective Course-1	**2**	**2**	**0**	**4**	**3**	**30**	**0**	**70**	**100**	1		1	1			1
Total		**18**	**12**		**30**	**18**	**200**	**80**	**470**	**750**	3	2	3	10	5	4	3

- **Forth Year-First Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
2411EE	Electrical Power-4	4	2	0	6	3	50	0	100	150	1			3	1	1	
2412EE	Electrical Machines-4	4	2	0	6	3	50	0	100	150	1			3	1	1	
2413EE	Power Electronics-2	4	2	0	6	3	40	20	90	150				3	1	1	1
2414EE	Elective Course-2	2	2	0	4	3	30	0	70	100	1			1	1		1
2415EE	Laboratory-3	0	4	0	4	0	75	50	0	125						4	
2416EE	Project I	2	2	0	4	0	40	10	0	50				1		2	1
Total		16	14		30	12	285	80	360	725	3	0	0	11	4	9	3

- **Forth Year-Second Semester:**

Code	Course Name	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
		Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
2421EE	Power System Control	4	2	0	6	3	40	20	90	150			1	2	1	1	1
2422EE	Electrical Machines Control	4	2	0	6	3	40	20	90	150			1	2	1	1	1
2423EE	Project Management	2	1	0	3	3	30	0	70	100	3						
2424EE	Elective Course-3	2	2	0	4	3	30	0	70	100	1			1	1		1
2425EE	Laboratory-4	0	4	0	4	0	75	50	0	125						4	
2426EE	Project II	2	4	0	6	0	40	10	100	150	1			1	1	2	1
Total		14	15		29	12	255	100	420	775	5	0	2	6	4	8	4

- **Total teaching hours and subjects distribution over the subject areas:**

Semester	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
	Lectures	Exercises	Practical	Total Hours		Year Work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
Preparatory year/ 1st semester	16	9	5	30	15	205	20	500	725	**2**	**13**	**11**	**2**	**0**	**2**	**0**
Preparatory year/ 2nd semester	17	12	1	30	18	195	20	560	775	2	10	10	4	2	1	1
First year/1st semester	16	14	0	30	17	190	70	490	750	**4**	**8**	**10**	**4**	**3**	**0**	**1**
First year/ 2nd semester	20	10	0	30	17	190	40	520	750	**3**	**8**	**8**	**7**	**2**	**1**	**1**
Second year/1st semester	20	10	0	30	17	200	40	510	750	**4**	**9**	**8**	**4**	**3**	**1**	**1**
Second year/ 2nd semester	16	14	0	30	14	230	70	450	750	**1**	**6**	**9**	**5**	**3**	**3**	**3**
Third year/1st semester	16	14	0	30	15	240	50	460	750	**4**	**2**	**5**	**7**	**5**	**3**	**3**
Third year/ 2nd semester	18	12	0	30	18	200	80	470	750	**3**	**2**	**3**	**10**	**5**	**4**	**3**
Fourth year/1st semester	16	14	0	30	12	285	80	360	725	**3**	**0**	**0**	**11**	**4**	**9**	**3**
Fourth year/ 2nd semester	14	15	0	29	12	255	100	420	775	**5**	**0**	**2**	**6**	**4**	**8**	**4**
Total of Five Years	**169**	**124**	**6**	**299**	**155**	**2190**	**570**	**4740**	**7500**	**31**	**58**	**66**	**60**	**31**	**32**	**20**
% of Five Years	**56.5%**	**41.5%**	**2%**	**100%**		**29.2%**	**7.6%**	**63.2%**	**100%**	**10.4%**	**19.46%**	**22.15%**	**20.13 %**	**10.4%**	**10.7%**	**6.71%**
% NARS										**9-2 %**	**19.33 %**	**22.29 %**	**20-13 %**	**9-11 %**	**8-94%**	**6-17 %**

The above table shows the agreement with NARS requirements.

2.4.2 Curriculum Mapping

Appendix 3 gives the contribution of the individual courses to the program Intended Learning Outcomes in a matrix form. This matrix was developed by the program coordinator, assistant coordinators and professional staff members. The mapping matrix shows that the program courses present balanced contribution to the program ILO's. includes also two tables summarizing the program ILO's contributed by the individual courses and the courses contributing to the individual ILO's.

2.4.3 Courses Specifications

The detailed program courses specifications are shown in the Curriculum mapping. These courses specifications were revised and approved on 2010. The contribution of each course to the program ILO's were considered during this revision and illustrated in **Appendix 4**.

3. Program Admission Requirements

1- Secondary School Certificate Graduates of other countries are eligible to join this program if they met the minimum grades set by Admission Office of the Ministry of Higher Education.

2- The study begins with a preparatory year for all students before specialization in Architectural Engineering. Students' departmental allocation is in accordance with the Faculty Council regulations.

4. Regulations for Progression and Program Completion

Attendance of program is on full-time basis.

1. A student may be transferred to a following academic year if s/he passes all attended courses but a maximum of two in accumulation – excluding humanity or cultural courses.
2. The humanity and cultural courses are not counted as non-passing courses, but have to be completed before graduation.
3. The study follows the semester system with two semesters per year, 15 weeks each.

4. The time for the Bachelor degree is four years preceded by a preparatory year.
5. A minimum of 75 % student attendance to lectures, tutorials and laboratory exercises per course is conditional for taking the final exams, in accordance with the Departmental Board recommendation approved by the Faculty Council, otherwise students would be deprived from taking their final exam(s).
6. The student is entitled to re-set failed exam(s) with fellow-students undertaking the course(s) in following term(s).
7. A 65%+ score in re-set exam(s) is reduced to a ceiling of "Pass" grade, except for acceptable excuses.
8. Final-year students who fail no more than two courses plus any number of humanity cultural courses are re-examined in November.
9. If they fail re-set(s), they are entitled to be re-examined with fellow-students undertaking the course(s) in following term(s).
10. Except for those in final-year, students who provide evidence of successfully completing particular courses in parallel academic institutions, which are recognized by the Ministry of Higher Education, may be exempted from attending these courses. This may only take place after a decision from the Academy Chairman, following the Education & Student Affairs Council and the Faculty and Departmental Boards approval respectively; with no desecration of Article (36) of University Regulation Law.
11. The course which is taught in one semester and has one examination mark and more than examination answer sheets, is treated as one-course as regards the course evaluation.
12. If a course includes written and oral / lab tests, the course evaluation is made according to the total mark of all tests in addition to the academic standing throughout the year.
13. No mark is recorded for the student who fails to appear in the written examination.

Appendix 5 gives the details of program progression and grades evaluation.

5. Student Assessment (Methods and rules for student assessment)

Method (tool)	Assessed ILO's
1- Written exam	A, B & C
2- Quizzes and reports	A, B & C
3- Oral exams	A, B & C
4- Practical	A & C
5- Project applied on a practical field problem	A, B, C & D

6. Program Evaluation

Evaluator	Tool
1- Senior students	questionnaire
2- Alumni	questionnaire
3- Stakeholders	questionnaire
4- External Evaluator(s) (External Examiner (s))	report
5- Other societal parties	Non