

Section II

The study plan, credit hours and course description are presented in the following pages.

OBJECTIVE OF CURRICULA IN ENGINEERING

The engineering programs at ERU are designed to develop the professional engineering by breadth of study to prepare the students for the practical solution of technical problems of society while considering the social and economic implications their work.

The curricula in engineering provide a balanced program in basic sciences, engineering sciences, engineering design, social sciences and humanities.

University Requirements (14 Credits)

1. Compulsory Courses (10 Credits)

Course Code	Course Title	Credit Hours
HM001	Russian Language 1	1
HM002	Russian Language 2	2
HM003	English Language 1	1
HM004	English Language 2	2
HM101	Technical Writing	2
HM102	Scientific Thinking	2

2. Elective Courses (4 Credits)

Course Code	Course Title	Credit Hours
HM007	History of Technology	2
HM008	History of Construction in Egypt	2
HM103	Russian Language 3	2
HM104	Behavioral Psychology	2
HM105	Introduction to Mass Communication	2
HM201	Profession Relationships	2
HM203	Engineering and Industrial Legislations	2
HM301	Safety of Vital Activity	2
HM302	Natural Resources	2
HM303	Sociology	2
HM304	Introduction to Political Society	2
HM401	Impact of Technology on Science	2
HM402	Geography of Nile Basin Countries	2
HM403	Environmental Science	2

Faculty Requirements (34 Credits)

Course Code	Course Title	Credit Hours
BS001	Mathematics 1	3
BS002	Mathematics 2	3
BS003	Physics 1	3
BS004	Physics 2	3
BS005	Chemistry	3
BS006	Computer Aided Drawing	1
BS007	Engineering Mechanics 1	3
BS008	Engineering Mechanics 2	3
BS009	Engineering Drawing 1	2
BS010	Engineering Drawing 2	2
BS108	Probability & Statistics in Engineering	2
ME002	Production Technology	2
HM005	Introduction to Engineering	2
HM202	Engineering Economics and Managements	2
EN101	Technical Training I	-
EN201	Technical Training II	-
EN301	Technical Training III	-

UNIVERSITY & FACULTY REQUIREMENTS

COURSE DESCRIPTION

1. PROBABILITY AND STATISTICS IN ENGINEERING

CODE	CREDIT HOURS	LT	TU	LB
BS108	2	2	1	-

Axioms of probability theory. Events. Conditional probability. Bayes theorem. Random variables. Mathematical expectation. Discrete and continuous probability density functions. Transformation of variables. Probabilistic models, statistics, and elements of hypothesis testing (sampling distributions and interval estimation). Introduction to statistical quality control. Applications to engineering problems.

2. HISTORY OF TECHNOLOGY

CODE	CREDIT HOURS	LT	TU	LB
HM007	2	2	-	-

Definitions - history of technology and engineering in its different branches – historical interconnection between science, technology and Society – examples on the development of different engineering activities.

3. HISTORY OF CONSTRUCTION IN EGYPT

CODE	CREDIT HOURS	LT	TU	LB
HM008	2	2	-	-

Development of construction - Construction in Pharaonic Egypt - Influence of the Romans on methods and materials of construction in Egypt - Effect of economical and political conditions on materials and methods of construction - Influence of different modern European cultures on materials and methods of construction in Egypt.

4. TECHNICAL WRITING

CODE	CREDIT HOURS	LT	TU	LB
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HM101

2

2

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Introduction - writing of numbers; symbols; abbreviations and equations - Rules of statement writing; language; structure; accuracy; consolidation; variety; confirmation - variation of sentences - Easiness to read - Basic writing of active paragraph - How to start writing - summary and conclusion - writing and organizing the subject - Review and editing -.Different forms of writing: Engineering correspondence; notes; proposals; reports; examples; references; and tables - Final edition of technical writing.

5.Scientific Thinking

CODE	CREDIT HOURS	LT	TU	LB
HM102	2	2	-	-

This course is required of all students. It emphasizes the unifying aspects of the scientific approach to the study of nature and human behavior. About one-third of the course is devoted to a discussion of the nature of scientific inquiry and investigation. The course focuses on the process of fact identification and concept formation and testing. In the remainder of the course students are exposed to applications of the approach in various disciplines. The course sets some of the major concepts and theories of science into a broad historical, philosophical, and cultural context and traces the development of these theories and concepts to their present status. This serves the double purpose of acquainting the students with the appropriate setting in which a given idea gains relevance and exposing them to the evolution of current methods of investigation.

6.Russian Language 3

CODE	CREDIT HOURS	LT	TU	LB
HM103	2	2	-	-

Development of listening, conversational, reading and writing skills. System of tenses in Russian grammar. Accusative case constructions. Instrumental case constructions. Personal and possessive pronouns. Main purpose – development of conversational skills on the basis of grammar material. Such topics as "university", "shop", "library", "hospital". Information about countries. Such topics as "Moscow", "Cairo".

7.Behavioral Psychology

CODE	CREDIT HOURS	LT	TU	LB
HM104	2	2	-	-

The relationship between attitudes and social behavior and the study of persuasion processes has had a long and distinguished history inside and outside of social psychology. This body of knowledge has made substantial contributions to theory and research in other sub-fields within

psychology and in the other social sciences, and these connections in turn have enriched the ways in which social psychologists have studied attitudes and persuasion. The study of attitudes and persuasion processes has generally become more interdisciplinary and multi-method, and as a result the way in which social psychologists now think about the relationship between attitudes and social behavior has become much more complex and nuanced.

8. INTRODUCTION TO MASS COMMUNICATION

CODE	CREDIT HOURS	LT	TU	LB
HM105	2	2	-	-

Introduction to Mass Communication is a lecture- and discussion-based course that will introduce you to theories, concepts, terminology, and careers in mass media, specifically focusing on advertising, journalism, and public relations.

9. PROFESSION RELATIONSHIPS

CODE	CREDIT HOURS	LT	TU	LB
HM201	2	2	-	-

Professional ethics in engineering- Relationship between the engineering and the client- Relationship between contractor and client (owner)- Relationship between contractor and engineer- Laws regulating the work at site - Buildings law: Establishment, Development and General Regulations.

10. ENGINEERING ECONOMICS AND MANAGERMENTS

CODE	CREDIT HOURS	LT	TU	LB
HM202	2	2	1	-

Engineering economics: Cost - Cost / benefit analysis - Capital circulation - Consumption - Optimum use of material - Taxes - Technical Feasibility studies - Performance evaluation. Management: Management definition - Management levels - Planning - Control - Control management.

11. ENGINEERING AND INDUSTRIAL LEGISLATIONS

CODE	CREDIT HOURS	LT	TU	LB
HM203	2	2	-	-

Industrial rules – Characteristics of industries – Industrial safety rules – Labor rules – Insurance rules – Environmental rules – Financial arrangements – Tax laws – Different degrees of prosecution – Capital and small projects and their rules – Needs, regulations and rules of engineering projects.

12. SAFETY OF VITAL ACTIVITY

CODE	CREDIT HOURS	LT	TU	LB
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HM301	2	2	-	-
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Industrial accidents causes: human error, unsafe conditions, mechanical failure. Basic types of accidents, accident costs. Explosion hazards, electrical hazards, industrial noise, radiation hazards, x-rays, neutron radiation. Safety in atomic power stations, fire protection, toxic materials. Occupational hygiene, mental and nervous fatigue, protective personal equipment, first aid. Industrial safety training.

13.NATURAL RESOURCES

CODE	CREDIT HOURS	LT	TU	LB
HM302	2	2	-	-

The course will be taught in an interdisciplinary fashion addressing the institutional, economic, and legal issues related to natural resource allocation. The course will begin with a conceptual overview of key issues and trace the evolution of natural resource policy development. Particular attention will be given to options and tools for affecting resource allocation and environmental quality. Specific policy issues addressed will include water resources, air pollution, waste management, energy and climate change. These issues will be discussed, and policy prescriptions to deal.

14.SOCIOLOGY

CODE	CREDIT HOURS	LT	TU	LB
HM303	2	2	-	-

This course is an introduction to sociology as a way of understanding the world. Sociology is a field of study that explains social, political, and economic phenomena in terms of social structures, social forces, and group relations. I will introduce you to the field by focusing on several important sociological topics, including socialization, culture, the social construction of knowledge, inequality, race and ethnic relations, poverty, and political sociology.

15.INTRODUCTION TO POLITICAL SCIENCE

CODE	CREDIT HOURS	LT	TU	LB
HM304	2	2	-	-

This course is an overview of the current world of international relations as that world is understood and studied by professional political scientists. A number of the phenomena we will be looking at have also been dealt with by scholars from other academic disciplines, but as their fetish concepts are quite different, so too will be both their definitions of those phenomena and the stories they tell about them.

The aim of this course is thus to learn not only about international relations but about a way in which international relations can be understood.

16.IMPACT OF TECHNOLOGY ON SOCIETY

CODE	CREDIT HOURS	LT	TU	LB
HM401	2	2	-	-

The purpose of this course is to help students comprehend, analyze, and evaluate the nature, scope, and function of technology in society. Students will be challenged to consider and assess the evolution of technology and society and their mutual impact. The course is intended to facilitate the integration of student views into a coherent and realistic perspective of a technological society. Students will be challenged to consider and assess the evolution of technology and society and their mutual impact. The course is intended to facilitate the integration of students' views into a coherent and realistic perspective of a technological society. To accomplish this, students will be motivated to reflect upon complex issues and then engage in dialogue, through individual and group activities, designed to enhance and enrich their awareness of the complexity of technological issues.

17.GEOGRAPHY OF NILE BASIN COUNTRIES

CODE	CREDIT HOURS	LT	TU	LB
HM402	2	2	-	-

Verification of the Nile basin countries and their political borders – Climate – hydrology of the Nile sources – water sources – environmental problems – large projects on the Nile and its sources.

18.ENVIRONMENTAL SCIENCES

CODE	CREDIT HOURS	LT	TU	LB
HM403	2	2	-	-

Definition of the environment - Definition of earth: atmosphere; air ; climate - Natural cycles of substances (carbon; hydrogen; phosphorus)- Pollution definitions: air pollution; water pollution; earth pollution - Kinds of pollutants: solid; dangerous; toxic - Environment and toxic pollutants - Kinds of chemical toxics and their effects on human life (digestive system; respiratory system) - Toxic measurements - Technology of toxic decay and degree of danger - Toxic cycles in the earth - Environment and the society - Study of habits and their effect on environment pollution - View of industry pollution.

19. TECHNICAL TRAINING I

CODE	CREDIT HOURS	LT	TU	LB
EN101	-	-	-	-

Training in professional environments, familiarizing with the safety procedures, engaging on a task related to the student chosen field of study, writing a report about the outcomes of training.

20. TECHNICAL TRAINING II

CODE	CREDIT HOURS	LT	TU	LB
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EN 201	-	-	-	-
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The same as EN101 but at new training place.

21. TECHNICAL TRAINING III

CODE	CREDIT HOURS	LT	TU	LB
EN 301	-	-	-	-

The same as EN101 but at new training place.