NEAR EAST UNIVERSITY

DEPARTMENT OF BIOENGINEERING

Course Catalogue

CONTENTS

This course catalogue is developed to give information about the Bioengineering programme to all who are interested in the Near East University, Department of Biomedical Engineering eg. future students, parents, academics, universities and institutions, bodies abroad.

The catalogue includes key information about the duration of the programme, mode of study, course description, credit and grading system etc. of the programme.

We hope you can find the necessary information to your questions about the Department of Bioengineering and the course programme.

Sincerely

Assoc. Prof. Dr. Terin Adalı

Deputy Chairperson

Bioengineering (BIOE) Programme

1. General Information about the Department of Bioengineering

Near East University, Department of Bioengineering was founded in 2013. The Department of Bioengineering operates under the administration of the Faculty of Engineering.

The aims of the Bioengineering Department are; bringing up experienced and knowledgeable individuals equipped with theoretical and practical information related to the discipline, and at the same time, bring up competent individuals who are able to contribute to the developments and research studies in the field, and be managers and instructors to continue to bring up qualified people who can effectively serve in this field.

By providing high quality educational opportunities, the vision of the Department of Bioengineering is to be the most prestigious department of engineering so far is existing within the geography It is positioned in by bringing up individuals having the ability to adapt to the changes upcoming throughout the world, achieving international success and thus becoming leading engineers.

Bioengineering Department currently offers the following programs:

- BS Degree in Bioengineering

The department has one section: English, thus, the language of instruction is English.

Mode of Study and Type of program

The Bachelor's degree program is classified as a full time program. The Bachelor's degree program is aimed at Turkish, Cypriots and Foreign students, and teaching is given in English language. Studies in foreign universities can be included in the student's degree in NEU, if they are suitable to substitute studies in the NEU degree program. The Department of Bioengineering also has foreign teachers and researchers, which makes it possible to widen both the educational and cultural perspective.

Website of the higher education institute - http://www.neu.edu.tr

2. Official length of programme:

Length of the program is 4 years (excluding one year of English preparatory class for English programme),2 semesters per year, 16 weeks per semester.

3. Profile of the Programme and Method of Education

Undergraduate curriculum according to Academic Regulation for Undergraduate Studies is arranged by the Bioengineering Department and becomes effective upon the decision of the Engineering Faculty Board and approval of the University Senate.

The Bioengineering Program takes four years and leads to a Bachelor's degree of Science in Bioengineering. The Bachelor's degree requires the completion of 261 ECTS credits. The curriculum of the Bachelor's Degree in Bioengineering was planned according to recommendations of ASIIN's subject-specific criteria (The Technical Committee 10, TC 010). The curriculum is classified into curricular categories represented in Table 1. A number of credits and a weight of a category in the program are indicated in Table 1. It includes studies of mathematics and science, studies of English and social science courses, studies of life science and bioengineering obligatory courses, studies of bioengineering electives courses, bachelor's graduation projects and practical training.

Table 1: Curricular categories of the program

Category	Notation	Credit	Weight, %
Mathematics	MT	15	11
Basic Science	BS	15	11
English Composition & Social Science	ECS	12	1
Life Science	LS	8	0.5
Obligatory Bioengineering Courses	OBE	48	35
Elective Bioengineering Courses	EBE	18	13
Graduation Projects	GP	6	.5
Summer Internship	SI	-	-
	Total	137	100

Each module is assigned a number of semester credit hours, according to the number and types of formal activities within a given week. These are determined as follows:

- Lecture hours: presentation of material in a classroom setting
  - 3 credit hour = 4 "hour" of lecture per week
  - 2 credit hour = 2 "hour" of lecture per week
- Laboratory hours: formal experimentation in a laboratory setting
  - 1 credit hour = 2 "hour" laboratory session per week
- Recitation hours: problem-solving sessions, etc. in support of lecture material
  - 1 credit hour = 2 "hour" of recitation per week

The professional competence acquired in the required subject studies is further developed by elective subject choices. In the Bachelor's Degree Program the portion of elective studies is 13%. In exceptional cases, the elective subject can be chosen from other degree programs, if it is suitable for the degree. The application has to be approved by the Head of Bioengineering Department. With technical respect free electives on offer, students of the Bachelor's degree program may choose a certain specialization track to get a more distinguished qualifications profile.

Teaching methods: The Bachelor's program is full-time, on-campus program. The teaching methods applied in the Degree Program in Bioengineering include lectures, classroom and laboratory exercises, computer training, different kinds of assignments, seminars, excursions,

and Case-exercises. The courses also involve group and project work which train the social competences of the students.

The Department of Bioengineering appreciates modern concepts and new methods in teaching and education methods that support educational objectives in addition to traditional methods. Traditional class attendance is compulsory for all courses except graduation projects. Problem solving sections of knowledge based courses are integrated with the theory sections.

The Department of Bioengineering aims to reach its educational objectives by using several teaching methods. Both the traditional and modern teaching methods are employed at the department. Traditional teaching methods are face-to-face lectures and are class based, requiring all students to attend classes. At least 70% of class attendance is compulsory for all the courses. Lectures are conducted using standard computer based presentations in the form of pre-prepared slides. In addition, white boards and marker pens are used whenever necessary in order to explain difficult topics in greater detail, or to answer student questions. Students are encouraged to take notes during the presentations and ask questions if there are points that they are not clear about. Electronic copies of the slides are sent to students by e-mail after each class, and students are encouraged to go through the slides in their own time and make sure that they understand all presented information.

In addition to traditional teaching methods, a variety of other methods are used to support the teaching. Most computer based learning requires the use of computers as part of the learning process. Students use the departmental computer laboratories for their practical work in order to improve their practical skills. Students use computers in the laboratory under the supervision of either a teaching assistant or an instructor.

Educational methods used for the students can be classified into **teacher centered and student centered**. In **Teacher-Centered Approach**, the Teachers are the main authority figure. The primary role of the student is to passively receive information (via lectures and direct instruction) with an end goal of testing and assessment. It is the primary role of teachers to pass knowledge and information onto their students. In this model, teaching and assessment are viewed as two separate entities. Student learning is measured through objectively scored tests and assessments. In **Student-Centered Approach**, the teachers are an authority figure, teachers and students play an equally active role in the learning process. The teacher's primary role is to coach and facilitate student learning and overall comprehension of material. Student learning is measured through both formal and informal forms of assessment, including group projects, student portfolios, and class participation. Teaching and assessments are connected; student learning is continuously measured during teacher instruction. Commonly used teaching methods may include class participation, demonstration, recitation, memorization, or combinations of these.

4. Qualification Awarded

Bioengineer (BIOE) (Bachelor's Degree/ first cycle in Bologna System)

Level of Qualification: Qualifications Framework- European Higher Education Area (QF-EHEA): 1

5. Access requirement(s)

The admissions and entry requirements ensure that the students who are admitted to the degree program possess the required competences. Bachelor's degree modules are fully taught in English, and thus, good English skills are required.

Students admitted to the department come from three sources:

- Local students, who are citizens of the Turkish Republic of Northern Cyprus (TRNC)
- Students from Turkey, who are Turkish citizens
- Students from other countries (foreign students)

All students are admitted to the university after they complete their high school studies successfully and obtain high school graduation diplomas.

Local students must sit for the Near East University entrance examination and obtain a pass mark from this examination. Successful students are admitted to the university, but not necessarily to the Bioengineering Department.

Students from Turkey must select the Near East University and the Bioengineering Department as their choice, and they must obtain successful pass marks from the Turkish university entrance examinations (prepared and administered by the Higher Education Council of Turkey, YOK). Those who obtain the required marks are admitted to the university, but not necessarily to the Bioengineering Department.

Students from other countries are admitted to the university based on the results of their high school graduation diplomas.

Because the medium of teaching is in English, the level of their English is assessed by the Faculty of English language. Those students who have certificates and who have already passed English Language proficiency examinations are exempt from the English preparation school and are admitted directly to the department where they are enrolled for the first year and first semester of their studies. Those students whose levels of English writing and communication skills are below the required standards are admitted to the English preparatory school of the university. The English preparatory school offers concentrated teaching of the English language reading, writing, and communication skills. The duration of the preparatory school is one academic year. Successful students are admitted to the department at the end of their studies at the English preparatory school.

6. Qualification Requirements

137 Near East University Credits (Near East University Credit is contact hour based) which is total 261 ECTS credits must be completed after being successful in the courses to become a graduate of the Bioengineering department.

ECTS is a credit system designed to make it easier for students to move between different countries. Since they are based on the learning achievements and workload of a course, a student can transfer their ECTS credits from one university to another so they are added up to contribute to an individual's degree programme or training. ECTS helps to make learning more student-centred. It is a central tool in the Bologna Process, which aims to make national systems more compatible.

ECTS also helps with the planning, delivery and evaluation of study programmes, and makes them more transparent (http://ec.europa.eu/education/ects/ects_en.htm) .

7. **Converting US College Credit Hours (semester credit hours-SCH) to ECTS**

ECTS is the most commonly used credit system in Europe. The major difference between the European Credit System ECTS and the US College Credit system is that the first is based on student workload and the second on contact hours. The ECTS is oriented towards the time required for a student to meet the intended study outcomes, while the U.S. system is more oriented towards the time a faculty member needs to teach.

Here is an example of conversion of credits from ECTS to Semester Credit Hours for a college or university in the U.S.: 1.67 ECTS = 1.00 US College Credit Hours

Conversion standards may vary between higher education institutions in the U.S.

(http://www.mastersportal.eu/articles/1110/what-you-need-to-know-about-academic-credit-systems-in-the-us.html)

A student is required to have minimum pass grade from each course and obtain minimum 2.00/4.00 cumulative Grade point Average (cumulative GPA) **.**

The students who have successfully completed the programme should be able to be science-based, skilled and competent **Bioengineering specialist** prepared to meet the challenges of practicing bioengineering in the 21st century, and **researchers** who are prepared to conduct bioengineering research focused on bettering the human condition and advancing the fundamental understanding of bioengineering.

8. **Arrangements for transfer from another Bioengineering department (Recognition of Prior Learning)**

A student wishing a transfer from another university: the student must prove her/his English Proficiency if s/he wishes to attend the English Section. At the time of OSS examination the candidate's entrance score must not be less than the lowest score for admission to the Near East Bioengineering Department. The transcript and course content of the applicant is examined by the department and the student is then accepted to the appropiate year of the programme.

For further details please contact:

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9. Examination Regulations, Assessment and Grading

The examinations are a way of finding out whether the module objectives have been accomplished. Every module in the degree programme has an examination. The type of examination to be held is laid down in each module description.

At the commencement of the teaching term, students are informed as to examination requirements. All the examinations are done during the examination week. The lectures are cancelled during the examination week. Every effort is made to ensure that no more than one examination is taken by a student on the same day.

The assessment procedures, marking criteria, and examination regulations are available for the students to examine if they wish so. The regulations cover the student absences due to illness, financial, or other reasons.

Written examinations are done for each module except the graduation projects. There are some modules that make oral examinations which are indicated in Project/Presentation/ Report activities of the module.

There are two written examinations for each module: mid-term examination, and final examination. The mid-term examinations are done around 6 weeks after the start of a new semester. The final examinations are done at the end of each semester. The examination dates are published in the university calendar at the beginning of each semester.

Students are allowed only to take one make-up exam. The date and time of the make-up exams are announced by the department.

Students who fail in exam are allowed to get re-sit exam at the end of any semester.

The graduation projects are completed in 2 semesters. Students are assigned supervisors for the duration of their graduation projects. Students can carry out their graduation project externally in the industry after approving their topic and supervisor by the department. Graduation project assessment consists of the preparation of a bound report by the student, and also an oral presentation to jury members. The jury members are selected from the

departmental staff according to the topic of the presentation and there must be at least 2 members at the jury. Students are expected to prepare slides and present their projects orally. The presentation time is 10-15 minutes for each student. At the end of the presentation 5 minute time is allocated to questions. The assessment depends on the style of the presentation, command of the language, confidence of the student, the ability to answer the questions, and the content of the project. Each jury member fills in a separate assessment form. The final grading is taken to be the average grade given by all the jury members.

10. Grading Scheme and Grades

PERCENTAGE	COURSE GRADE	GRADE POINTS	
90-100	AA	4.00	(Excellent)
85-89	BA	3,30-3,95	(Excellent)
80-84	BB	3,00-3,45	(Very Good)
75-79	CB	2,50-2,95	(Very Good)
70-74	CC	2,00-2,45	(Good)
65-69	DC	1,50-1,90	(Good)
60-64	DD	1,00-1,40	(Good)
50-59	FD	0,50-0,90	(Failed)
0-49	FF	0,00	(Failed)

11. Occupational Profiles of Graduates

Graduates of the Department of Bioengineering have an opportunity to be employed as system engineers, bioengineers and specialists in this field, and in a variety of private and public establishments.

The Department of Bioengineeringhas good relations with the governmental and private organizations and companies in North Cyprus and Turkey, thereby ensuring up to date study program in regard to scientific expertise and regional industrial needs. Curriculum of the department is kept up to date by offering new core/ elective courses upon the regional requirements, the demand of employers, international organizations and job market representatives.

The graduates can find the job in the governmental and private organizations and companies where they can work as

- Biosystem analysts
- Bioengineers
- Bioenergy resource specialists
- Environmental engineers
- Trainers for life sciences support
- Assistants in high education units

The modules in the degree structure are also closely linked to the research conducted in the department and provide a path to post graduate studies. Moreover, a large majority of Bachelor's projects are completed in cooperation with industry in various projects either at the university or in companies, and thus provide a link to the professional field and a path to future employment in specialist tasks in these research areas.

Practical relevance of the program is achieved by:

- lectures given by professionals from various fields;
- laboratory lessons;
- renewing course contents periodically based on the job market needs;
- implementing new courses based on the job market needs;
- guest lecturers delivered by engineering practitioners;
- providing project based learning in courses with term projects;
- providing graduation projects that involve practical applications both in manufacturing and service sectors;
- organizing international and domestic academic seminars and workshops;
- a summer practice (internship) in order to integrate knowledge and theory to practice in the fields of Bioengineering.

A summer practice is included in the Bachelor's degree. A summer practice is lasted 60 working days.

12. Programme Director

Assoc. Prof. Dr. Terin Adalı (Chairperson)
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13. Key Learning Outcomes

Learning outcomes of the BSc program include development of:

1. Ability to understand and apply knowledge of mathematics, science, and engineering

2. Ability to analyze a problem, identify and define the computing requirements appropriate to its solution.
3. Ability to apply mathematical foundations, algorithmic principles, and computer engineering techniques in the modelling and design of computer-based systems.
4. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social aspects
5. Planning and carrying out experiments, as well as to analyze and interpret data
6. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice
7. Understanding of professional, ethical, legal, security and social issues and responsibilities that apply to engineering
8. Ability to work productively in a multidisciplinary team, in particular to carry out projects involving computer engineering skills
9. Ability to communicate effectively with a range of audiences
10. A recognition of the need for, and an ability to engage in life-long learning

14. Courses List with Near East University credits and ECTS

List of courses of taken each year are given below.

BSc in Bioengineering

FRESHMAN

First Year, Fall Semester (21/21 credits, 33/33 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
AIT101/ TUR100	Atatürk's Principles Reforms/ Turkish for Foreigners*	(2,0) 0	2	ECS	
BIOE101	Introduction to Bioengineering	(3,0) 3	5	OBE	
ECC107	Biology	(3,0) 3	5	OBE	
BME104	Chemistry for Life Sciences	(3,2) 4	6	LS	
ENG101	English I	(3,0) 3	5	ECS	
MTH101	Calculus I	(4,0) 4	6	MT	
PHY101	General Physics I	(3,2) 4	6	BS	

First Year, Spring Semester (21/42 credits, 33 /60 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
CHM122	Organic Chemistry	(3, 0) 3	5	BS	BME104

BME102	Biochemistry for Life Sciences	(3, 2) 4	6	LS	BME104
ENG102	English II	(3,0) 3	5	ECS	ENG101
MTH102	Calculus II	(4,0) 4	6	MT	MTH101
MTH113	Linear Algebra	(3,0) 3	5	MT	MTH101
PHY102	General Physics II	(3,2) 4	6	BS	PHY101

SOPHOMORE

Second Year, Fall Semester (16/58 credits, 28/90 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
BOIE204	Microbiology	(3,0) 3	5	OBE	
BIOE205	Principles and Applications of Ecology	(3,0) 3	5	OBE	
CHM122	Organic Chemistry	(3,2) 4	6	BS	PHY102
MTH201	Differential Equations	(4,2) 4	6	MT	MAT102
ENG201	English Communication Skills	(4,0) 3	6	ECS	ENG102

Second Year, Spring Semester (25/83 credits, 37/127 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
BME250	Biostatistics	(3,0) 3	5	OBE	
BIOE204	Thermodynamics	(3,0) 3	5	OBE	
BIOE202	Polymer Technologies	(3,0) 3	5	OBE	CHM122
NTE	Non-Technical Elective	(3,0) 3	5	ECS	
BIOE208	Genetics	(3,0) 3	5	OBE	BME102
BIOE200	Internship I	-	12	SI	

JUNIOR

Third Year, Fall Semester (17/100 credits, 28/155 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
BME202	Biomaterials	(3,2) 3	6	OBE	BME102
BME320	Biomechanics	(3,0) 3	5	OBE	BME210

BIOE301	Mass & Heat Transfer	(3,0) 3	5	OBE	
BME301	Biosensors	(3,2) 4	6	OBE	
ECC106	Introduction to Computer Programming	(3,2) 4	6	OBE	

Third Year, Spring Semester (116/ credits, 38/193 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
BME340	Modelling of Biological Systems	(3,0) 3	5	OBE	
BIOE302	Bioenergy Resources	(3,2) 3	5	OBE	
BIOE304	Nanotechnology	(3,0) 3	5	OBE	
BME321	Artifical Organs	(3,2) 4	6	OBE	
BIOE306	System Design ob Bioengineering	(3,0) 3	5	OBE	
BIOE300	Internship II	-	12	SI	

SENIOR

Fourth Year, Fall Semester (16/132 credits, 33/ 226 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
BIOE400	Graduation Projects I	(3,0) 3	12	GP	
BME401	Instrumental Analysis	(3,2) 4	6	OBE	
TE	Technical Elective	(3,0) 3	5	EBE	
TE	Technical Elective	(3,0) 3	5	EBE	
TE	Technical Elective	(3,0) 3	5	EBE	

Fourth Year, Spring Semester (14/137 credits, 30/240 ECTS)					
Course Code	Course Name	(Hour) Credit	ECTS	Category	Prerequisite
BIOE402	Graduation Projects II	(3,0) 3	12	GP	BIOE400
BME435	Bioinformatics	(4,0) 3	6	OBE	BME250
TE	Technical Elective	(4,0) 3	6	ECS	
TE	Technical Elective	(4,0) 3	6	ECE	
TE	Technical Elective	(4,0) 3	6	ECE	

* AIT101 is a module for Turkish students.

YIT101 is a module for foreign students

In first semester AIT101 Atatürk's Principles Reforms course is designated for the students of Turkish nationality, the course YIT101 Turkish for Foreigners – for oversee students (foreigners).
MT: Mathematics, BS: Basic Science, ECS: English Composition and Social Sciences, LS: Life Science, OBE: Obligatory Bioengineering Courses, ECE: Elective Bioengineering Courses, GP: Graduation Projects, SI: Summer Internship.

Free Elective

- FRE101 French I 3 Credits5 ECTS
- FRE102 French II 3 Credits 5 ECTS
- GER101 German I 3 Credits 5 ECTS
- GER102 German II 3 Credits 5 ECTS

Technical Electives

Code	**Title**	**Credits**	ECTS
BIOE401	Biophysics	3	5
BIOE411	Biosystems	3	5
BIOE412	Expert Systems	3	5
BME414	Tissue Engineering	3	5
BIOE416	Genetic Engineering	3	5
BIOE418	Image Processing	3	5
BIOE413	Artificial Neural Network	3	5
BIOE415	Electromagnetic Waves and Bioprocessing	3	5
BIOE232	Environmental Technologies	3	5
BIOE230	Enzymology	3	5
BIOE231	Food Biotechnology	3	5

15. Objectives and contents of the course:

The educational objectives of the Degree Program in Bioengineering reflect the mission of Near East University. The Bachelor of Science program in Bioengineering prepares the students to achieve the following career and professional objectives.

- To acquire a strong foundation in Bioengineering area relevant to the current needs of industry to allow them to successfully compete for demanding and high quality jobs
- Analyze problems, propose algorithmic solutions, and implement them correctly and efficiently by applying their knowledge of mathematics, computing, systems and development tools.
- Propose engineering solutions using the information and communication technologies for the related problems of industry and government.
- To acquire clear communication abilities, ethical and social responsibilities for teamwork.
- Make positive contributions to their community and society by applying skills and abilities learned during their undergraduate program in computer engineering
- Improve knowledge and skills through lifelong learning and graduate studies.

The individual courses are described below. These courses are offered by the Bioengineering Department together with the objective of each module.

FIRST YEAR

BIOE 101Introduction to Bioengineering
Objectives of the Course:
The main objective of the course is to introduce bioengineering discipline to students and provide them general knowledge about the discipline.
Course description:
The purpose of this course is to introduce biotechnology systems and design in medical, food and enviornmental sciences.

ECC 106 Introduction to Programming
Objectives of the Course:
To familiarize the students with computers and computing fundamentals.To be able to analyze and design a solution to a given problem. To enable the students to write structured programs using C programming Language.
Course description:
Algorithm development. Elements of C. Structure of a C program, data types, constants, input and output of integer numbers, real numbers. Variables, expressions and assignments. Input and output functions. Control Structures. Selection- If statement, multiple selection- switch statement. Iteration- while, do-while, for operators. User-defined functions, arrays and subscripted variables, single and multi dimensional arrays. Array and functions. Pointers, pointers and strings. Structures, creating structures. Structure as function argument. Subprograms. Files. File operations.Application programs will be developed in a laboratory environment using the C language.

MTH 101 Calculus I 4 Credits
Objectives of the Course:
Learn more about your academic program, Learn about limits, derivatives. Study integrals, definite integrals. To introduce the basic properties of determinants and some of their applications

Course description:
Functions, limits and continuity. Derivatives. Rules of differentiation. Higher order derivatives. Chain rule. Related rates. Rolle's and the mean value theorem. Critical Points. Asymptotes. Curve sketching. Integrals. Fundamental Theorem. Techniques of integration. Definite integrals. Application to geometry and science. Indeterminate forms. L'Hospital's Rule.

PHY 101 General Physics I 4 Credits
Objectives of the Course:
Be able to know the basic laws of mechanics.To apply those laws for solving problems. To be able to us his/her knowledge in the fields of other sciences and/or engineering. Understanding how physics approach and solve problems in mechanics.
Course Description
Measurement, vectors, kinematics, force, mass. Newton's laws, applications of Newton's laws. Work and kinetic energy. Conservation of linear momentum. Impulse, collisions, rotation, moments of inertia. Torque, angular momentum, conservation of angular momentum, static equilibrium.

BME 104 Chemistry for Life Sciences 4 credits
Objectives of the Course:
The objectives are to develop your knowledge capabilities in chemistry that are particularly relevant to the biological and life sciences.
This course contributes to the development of the following program learning outcomes:
1.0 Demonstrate a coherent understanding of science by:
1.1 Demonstrating an understanding of the scientific method and an ability to apply the scientific method in practice.
3.0 Critically analyze and solve scientific problems by:
3.3 Demonstrating the ability to employ and apply appropriate critical and analytical thought in a scientific manner.
4.0 Demonstrate effective communication of science by:
4.2 Demonstrating your ability to write technical and scientific reports.
5.0 Demonstrate accountability for your own learning and scientific work by:
5.3 Demonstrating your ability to work responsibly safely and ethically.
Course Description
This course covers the foundations of chemistry that underpin the life sciences at a molecular level. The course aims to consolidate a general background in chemistry by putting chemical concepts into a life sciences context, with special emphasis on organic, inorganic and physical chemistry. Organic chemistry of biologically important compounds and reactions; thermodynamics; electrochemistry; reaction kinetics; structure determination of biological molecules; foundations of metal-dependent proteins and enzymes**.**

ENG 101 English I 3 Credits
Objectives of the Course:
To develop students' language skills and capacity to conduct writing task through the vocabulary, listening and speaking skills.To develop their level of knowledge, communicative capacity, and ability to analyze and reflect on the language. To give learners the language they need for real-life, hands-on task like explaining a process or analyzing risk and to put into practice the academic skills that they will need to use during their educations.
Course Descriptions.
This course offers intermediate levels include wide range of grammatical structures and vocabulary of English in order to built onto the foundation established at the Preparatory School. This course aims to bring the students to a level that will enable them fulfill the requirements of main courses of their departments. Students will be encouraged to read a variety of texts as well as chapters from textbooks so that they can pursue their undergraduate studies at the university without major difficulty. ENG 101 is designed to improve the students' presentation ability. Students are expected to do an oral presentation. At the end of the course they submitted their written projects.

MTH 102 Calculus II 4 Credits
Sequences and Infinite Series; The integral test, comparison test, geometric series, ratio test, alternating series. Power series, Taylor series. Parametric equations and Polar coordinates. Functions of several variables, limits, continuity, partial derivatives, chain rule, extreme of functions of several variables. Multiple integrals: Double integrals, Area, volume, double integral in polar coordinates, surface area, triple integrals, spherical and cylindrical coordinates.

PHY 102 General Physics II 4 Credits
Objectives of the Course:
Be able to know the basic laws of electricity and magnetism. To apply those laws for solving problems. To be able to use his/her knowledge in the fields of other sciences and/or engineering. Understanding how physics approach and solve problems in electricity and magnetism.
Course Descriptions.
Electrical charges. Coulomb's law. Electrical fields. Gauss's law. Electrical potential. Capacitance and dielectrics. Current and resistance. Direct current circuits. Magnetic fields. Sources of the magnetic field. Faraday's law of induction. Inductance and inductors.
Prerequisite: PHY 101

ENG 102 English II 3 Credits
Objectives of the Course:
to develop the students' capacity to conduct writing task through the vocabulary, listening and speaking skills ; to reinforce and consolidate the language and skills that the students have learned from earlier courses ; to develop their level of knowledge, communicative capacity, and ability to analyze and reflect on the language; to develop students' language skills to prepare them for their future professional life
Course Descriptions.
This course offers the students a wide range of grammatical structures and key language and vocabulary of English in the technical, industrial, and scientific sectors at intermediate level for everyday communication at work. This course aims to bring the students to a level that will enable them to fulfill the requirements of the main courses of their departments. The ability to evaluate, analyze and synthesize information in written discourse will be highlighted. Documentation in writing will be introduced at the beginning of the course, in order to solidly establish the skill by the end. Students will learn the discourse patterns and structures to be used in different essay types that they need for real life, hands-on tasks like explaining process, organizing schedules, reporting or progress, or analyzing risk.

MAT 113 Linear Algebra 3 Credits
Objectives of the Course:
To provide a student with methods for solving systems of linear equations .To introduce the basic properties of determinants and some of their applications. To show that the notion of a finite-dimensional, real vector space is not as remote as it may have seemed when first introduced . To deal with magnitude and direction in inner product spaces .To study linear transformations. To consider eigenvalues and eigenvectors and solve the diagonalization problem for symmetric matrices
Course Description
System of linear equations: elementary row operations, echelon forms, Gaussian elimination method. Matrices: elementary matrices, invertible matrices. Determinants: adjoint and inverse matrices, Crammer's rule. Vector spaces: linear independents, basis, dimension. Linear mapping. Inner product spaces: Gram-Schmit ortogonalization. Eigenvalues and eigenvectors, Cayley-Hamilton theorem, diagonalization.

CHM 122Organic Chemistry 3 Credits
Objectives of the Course:

Students who successfully complete this course will be able to:

1. Understand and realize the integration of organic chemistry in life sciences and engineering.
2. Develop an understanding and appreciation of both structure and chemical transformations of organic molecules.
3. Function effectively in a medically and biologically oriented problem-solving environment.
4. Develop scientific inquiry, complexity, critical thinking, mathematical and quantitative reasoning.

Course Description

This course is designed as a one-semester course for bioengineering, food engineering and molecular biology and genetics students. CHM122 is a central link between physical and biological sciences and introduces a fundamental basis in food processing, genetics and tissue engineering.

ECC 107Biology3 Credits

Objectives of the Course:

Science and Scientific Method, The Chemistry of Life, The Cell, Genetics, Mechanisms of Evolution, The Evolutionary History of Biological Diversity, Plant Form and Function, Animal Form and Function.

Course Description

The aim of this course is to prepare students to upper classes by teaching basic informations on different subjects of biology.

SECOND YEAR

BIOE 200 Internship I Noncredit

The minimum time for this practice in an organization is four weeks (30 working days). The main objective is to observe a company in an original setting and answer questions on the fundamental areas of Computer Engineering and Information Science. A written report summarizing the training experience is required.

MAT 201 Differential Equations 3 Credits

Objectives of the Course:

Introducing first, second and higher order differential equations, and the methods of solving these equations.

Emphasizing the important of differential equations and its engineering application. Introducing the Laplace transform and its applications in solving differential equations and other engineering applications.Introducing the series method in solving differential equations.

Course Description

Ordinary and partial differential equations. Explicit solutions, Implicit Solution. First-order differential equations, separable, homogenous differential equations, exact differential equations. Ordinary linear differential equations. Bernoulli differential equations. Cauchy-differential equations. High-order ordinary differential equations. Introduction to Laplace transforms. Introduction to series method for solving differential equations

ECC201Microbiology 3 Credits

Objectives of the Course:

Microorganisms and Microbiology, Prokaryotic Cell Structure and Function. Nutrition and Laboratory Culture, Microbial Growth, Principles of Virology, Eukaryotic Cell Biology and Eukaryotic Microorganisms, Methods in Microbial Ecology, Microbial Growth Control, Microbial Interactions with Humans.

Course Description

The aim of this course is to prepare students to upper classes by teaching basic knowledge of microbiology.

BME102 Biochemistry for life sciences 3 Credits
Objectives of the Course:
The objectivesaretodevelopyourknowledgecapabilities in chemistrythatareparticularlyrelevanttothebiologicaland life sciences.
Thiscoursecontributestothedevelopment of thefollowing program learningoutcomes:
1.0 Demonstrate a coherentunderstanding of scienceby:
1.1 Demonstrating an understanding of thescientificmethodand an abilitytoapplythescientificmethod in practice.
3.0 Criticallyanalyzeandsolvescientificproblemsby:
3.3 Demonstratingtheabilitytoemployandapplyappropriatecriticalandanalyticalthought in a scientificmanner.
4.0 Demonstrateeffectivecommunication of scienceby:
4.2 Demonstratingyourabilitytowritetechnicalandscientificreports.
5.0 Demonstrateaccountabilityforyourownlearningandscientificworkby:
5.3 Demonstratingyourabilitytoworkresponsiblysafelyandethically.

Course Description
Thiscourse is designedforengineeringstudents. Emphasis is placed on therelationshipbetweenmolecular architectureandthefunctionalproperties of biomolecules, andthethermodynamic, unceasing, and self regulatingnature of livingprocesses. Studentsarealsoprovidedwithoverviews of themajorphysicalandchemicaltechniquesthatengineershaveusedtoexplore life at themolecularlevel.

Prerequisite: BME 104

ENG 210 English Communication Skills 3 Credits
Objectives of the Course:
Reading: to develop the skill of reading for information from a wide variety of authentic Engineering texts. These include longer specialist reading texts to provide challenging reading for students already proficient in this field, and gain the ability to read and understand vacancy announcements and write an appropriate cover letter/letter of intent, CV to deliver a academic presentation in English.
Speaking: to develop the ability to participate in exchanges of information and opinions in the context of IT and Engineering, provide explanations of features of Mechanical, Computer, Electronics, Biomedical, Food and Automotive Engineering. To develop communication skills for the job market which is becoming increasingly common to have give presentation in English.
Writing: to write instructions, descriptions and explanations about topics in Engineering. Write a cover letter and interview winning C.V.
Language : to consolidate and extend the student's understanding and use of structures and function common to Engineering at intermediate and advanced levels. Through the chosen texts they can learn also the vocabulary and expression that need when giving oral presentation. Giving a presentation in a foreign language is real challenge, even for those who have a good knowledge of the language.
Course Description
To reinforces and consolidates the language and 4 skills that students have learned from earlier courses, as well as developing their level of knowledge, communicative capacity, and ability to analyse and reflect on language. Course on upper -intermediate AND ADVANCED levels include interesting and up-to-date topics, encouraging students to recognize the importance of acquiring a foreign language in a modern context, prepare them to for their future professional life.
Prerequisite: ENG 102

BIOE205Principles and Applications of Ecology 3 Credits
Objectives of the Course:
To provide students with an indepth knowledge and appreciation of the natural world, together with an understanding of the complex relationships and processes which shape our natural environment.

Course Description
Ecology introduces ecological topics ranging from ecosystems to individual organisms. Some of the topics introduced in the course include the nature of ecology as a science, the individual and its physical environment, population distribution and growth, biodiversity, and community dynamics. Ecological concepts will be explained using examples from diverse habitats and across a broad spectrum of taxa. Special topics include evolutionary process, population ecology, community ecology and behavioural ecology.
Prerequisite: -

BIOE202Polyer Technologies3 Credits
Objectives of the Course:
The aim of this course is for students to be exposed to the engineering of polymers.
Course Description
Definitions of polymers: Classification: Raw materials sources, structural, mechanical, thermal, electrical, optical and chemical properties of polymers, Weight average molecular weight and analysis techniques and process techniques. Methods to determine average molecular weight of the polymer.

Prerequisite: CHM122

BME 205Biostatistics3 Credits
Objectives of the Course:
1. Understanding the concept of numerical data.
2. Understanding the concept of probability and the concept of random variables.
3. Understanding the difference between discrete and continuous random variables.
4. Understanding the concepts of expectation, variance and standard deviation.
5. Understanding the concepts of probability mass functions and cumulative distribution function for discrete and continuous joint distributions.
6. Understanding and learning the different types of discrete and continuous distributions.
7. Understanding hypothesis testing.

Course Description:
Types of Numerical DATA, Ways to summarize data, Events, Operations on events, Probability, Conditional Probability, Independent events, Independent events, Diagnostic tests, Bayes Theorem, Applications, Random variables, Probability distributions, The binomial distribution (discrete), The Poisson distribution (discrete), The normal distribution (continuous), Standardization, Reading the standard-normal table, Approximations to the Binomial and Poisson Distributions, Applications, Discrete and Continuous Joint distributions, Statistical inference, Sampling distributions, The Central Limit Theorem, Hypothesis testing, Implications of each step in hypothesis testing, Hypothesis testing involving means and unknown variance, Analyses involving two independent Samples, applications.
Prerequisite: -

BIOE 204Thermodynamics3 Credits
Objectives of the Course:
To be able to use the First Law of Thermodynamics to estimate the potential for thermo-mechanical energy conversion in aerospace power and propulsion systems.
Course Description:
The course covers lessons in Introduction and Fundamental Concepts, Zero th Law andFundamental Concepts, Different Kind of Energy and First Low, First Low, Second Law and Its Corollaries, Second Law and Available Energy, Joule-Kelvin Expansion: Properties of PureSubstances, Properties of Pure Substances, Properties of PureSubstances: IdealGases, VaporsPowerCycle, Gas Power Cycle .
Prerequisite: BME104

BIOE208Genetics 3 Credits
Objectives of the Course:

This course will explain genetic principles and Mendelian inheritance, non-Mendelian inheritance, chromosome anomalies, mutations and polymorphisms, stem cells and cancer genetics.

Course Description:

This course will provide an understanding of principles of genetics including Mendelian genetics, non-Mendelian genetics, chromosomal abnormalities, mutations and polymorphisms, stem cells and cancer genetics.

Prerequisite: BME102

BIOE 300 Internship II Noncredit

A minimum of four weeks (30 working days) of training in companies involving observation of the computer system and the software. The main objective is to observe a company in an original setting and answer questions on the fundamental areas of Computer Engineering and Information Science. A written report summarizing the training experience is required.

BME202 Biomaterials 3 Credits

Objectives of the Course:

This course contributes to the development of the following program learning outcomes:

1.0 Demonstrate a coherent understanding of science by:

1.1 Demonstrating an understanding of the scientific method and an ability to apply the scientific method in practice.

3.0 Critically analyze and solve scientific problems by:

3.3 Demonstrating the ability to employ and apply appropriate critical and analytical thought in a scientific manner.

4.0 Demonstrate effective communication of science by:

4.2 Demonstrating your ability to write technical and scientific reports.

5.0 Demonstrate accountability for your own learning and scientific work by:

5.3 Demonstrating your ability to work responsibly safely and ethically.

Course Description:

Introduction to biomaterials, Biocompatibility, The structure of solids, Imperfections in crystals, super cooled and network solids, Composite material structure, Characterization of materials, Mechanical thermal properties, Phase diagrams, Strengthening by Heat Treatments, Surface properties and adhesion, Electrical, optical, X-Ray Absorption, Acoustic and ultrasonic characterization of materials, metallic implant, Ceramic implant, Polymeric implant and composite materials. The course emphasizes the fundamental properties of biomaterials.

Prerequisite: BME102

BME320Biomechanics3 Credits

Objectives of the Course:

This course aims to understand the importance of biomechanics and to understand the importance of developing different systems and apply them to different systems.

Course Description:

This course is an undergraduate level biomechanics course, which emphasizes as a basis for understanding biomechanics and their applications. The course focuses on a important role of biomechanics in diverse areas of growth, development, tissue remodelling and homeostasis. Topics include cellular biomechanics, hemodynamics, the circulatory system, the interstitium, ocular biomechanics, the respiratory system, muscles and movement and skeletal biomechanics. This course covers the fundamental concepts of biomechanics (biology, fluid mechanics, thermodynamics, anatomy or physiology) behind the design of real biomedical problems with biomechanical concepts.

Prerequisite: BME210

BIOE 301Mass & Heat Transfer 3 Credits

Objectives of the Course:

The course will give an introductory treatment of the governing laws for heat and masss transfer. The following topics are covered: Steady state and transient conduction, fundamentals and engineering treatment of convection heat transfer, heat transfer with phase change (boiling/condensation), radiation heat transfer and heat exchangers. Both analytical and numerical solution methods are presented.

Course Description:

The course will give an introductory treatment of the governing laws for heat and masss transfer. The following topics are covered: Steady state and transient conduction, fundamentals and engineering treatment of convection heat transfer, heat transfer with phase change (boiling/condensation), radiation heat transfer and heat exchangers. Bothanalytical and numerical solution methods are presented.

Prerequisite: -

BME 301Biomedical Sensors 4 Credits

Objectives of the Course:

1. The goal of the course is to provide students with an in-depth knowledge and understanding of the principles of biomedical sensors with a particular emphasis on solving design problems involving commonly encountered in biomedical electronics.
2. The specific course objectives are to review the fundamentals of biomedical sensor design, to expose to students to problem-oriented design, to expose the students to problems particular to biomedical applications, to integrate the physiological concepts with sensor design and to prepare the students for solving design problems in any area of bioengineering.

Course Description

This course is designed for bioengineering undergraduate students. The purpose of this course is provide biomedical sensors background on technical aspects.

Prerequisite: -

BME 340Modellng of Biological Systems 3 Credits

Objectives of the Course:

The objective of this course is to introduce students the concepts of mathematicalmodeling and analysis of biological systems using both computer simulation and mathematical techniques.

Course Description

This course introduces the current approaches for mathematical modeling and analysis of biological systems using both computer simulation and mathematical techniques. The course reviews the basics of modeling methodology, stochastic and deterministic models, numerical and analytical methods, and model validation. Examples throughout the course are drawn from, biochemical networks, Biochemical Kinetics, Metabolic Networks,Gene Regulatory Networks, and Electrophysiology.

Prerequisite: BME250

BIOE 302Bioenergy Resources 3 Credits

Objectives of the Course:

The aim of this course is for students to be grounded in bioenergy resources and generation

Course Description:

This course offers great insight into biorenewable biomass resources related to technologies and feedstocks. Dealing specifically with biofuels and bioenergy produced from renewable resources, it also provides production technologies and applications**.**

Prerequisite:-

BIOE 304Nanotechnology 3 Credits

Objectives of the Course:

The aim of this course is for students to be properly exposed to engineering at the nanoscale.

Course Description
Nanotechnology is an interdisciplinary course, contains biochemistry, electrical electronics engineering, and biomaterials. Nano structures and technology of materials are discuss in details. Solid state physics and chemical role on nanotechnology; Instruments used in the characterization and synthesis of nanomaterials would be discussed.

Prerequisite:-

BME 321Artificial Organs4 Credits
Objectives of the Course:
The objectives are to develop your knowledge capabilities in artificial organs that are particularly relevant to the biomedical sciences.
This course contributes to the development of the following program learning outcomes:
1.0 Demonstrate a coherent understanding of science by:
1.1 Demonstrating an understanding of the scientific method and an ability to apply the scientific method in practice.
3.0 Critically analyze and solve scientific problems by:
3.3 Demonstrating the ability to employ and apply appropriate critical and analyticalt hought in a scientific manner.
4.0 Demonstrate effective communication of scienceby:
4.2 Demonstrating your ability to write technical and scientific reports.
5.0 Demonstrate accountability for your own learning and scientific work by:
5.3 Demonstrating your ability to work responsibly safely and ethically.
Course Description:
The important goal of this course is to thought technologies that will maintain, improve or even restore the function of diseased organs. The growing need for these technologies is substantial. Improved healthcare has resulted in an increased life spanforthe general population and when coupled with a growing shortage of donor organs, makes it clear that organ assistance and substitution devices will play a larger role in managing patients with end-stage disease by providing a bridge to recovery or transplantation.

Prerequisite: BME202

BIOE 306System Analysis & Design 3 Credits
Objectives of the Course:
The purpose of this course is for students to be adequately exposed to designs or designing and practically create designs.
Course Description
Introduction to design in bioengineering; Design and engineering analysis methods in the areas of Bioinstrumentations, biomaterials, and biotechnology; Technological needs; Science and methods in Design; Theory of sampling; A/D conversion, Management regulation, Classic systems and control theories / analysis of linear and non-linear processes; Properties of biological control systems;
Prerequisite: -

BIOE400Graduation Projects I 3 Credits
Objectives of the Course:
The purpose of the Graduation Project is to assure/ascertain that the students have acquired theskills, knowledge and concepts necessary to perform well when they leave the university. Each student will use educational tools to broaden his/her knowledge about a particular, selfselected topic. Students are also expected to show how proficient they are in solving real world problems with certain constraints for the outcome-based evaluation by the review board. BIOE400 is the first part of the project to apply literature survey, data collection finding a research question, and establishing the first prototype of their research project.

Course Description
Graduation project leading to BSc. Degree, arranged between a student and the faculty member. The aim of the project must be one of the following: application of new scientific methods for solving different engineering problems, modification of biomaterials, tissue engineering research, and their modelling, development different software packages, analysis and investigation of new research areas in Biomedical engineering fields. Design, develop and present a project based on the knowledge acquired during undergraduate studies.

Prerequisite: -

BIOE402Graduation Projects II3 Credits
Objectives of the Course:
The purpose of the Graduation Project is to assure/ascertain that the students have acquired theskills, knowledge and concepts necessary to perform well when they leave the university. Each student will use educational tools to broaden his/her knowledge about a particular, selfselected topic. Students are also expected to show how proficient they are in solving real world problems with certain constraints for the outcome-based evaluation by the review board. BME400 is the first part of the project to apply literature survey, data collection finding a research question, and establishing the first prototype of their research project.
Course Description:
Graduation project leading to BSc. Degree, arranged between a student and the faculty member. The aim of the project must be one of the following: application of new scientific methods for solving different engineering problems, modification of biomaterials, tissue engineering research, and their modelling, development different software packages, analysis and investigation of new research areas in Biomedical engineering fields. Design, develop and present a project based on the knowledge acquired during undergraduate studies.
Prerequisite: BIOE 400

BME401 Instrumental Analysis 4 Credits
Objectives of the Course:
The objectives are to develop your knowledge capabilities in artificial organs that are particularly relevant to the biomedical sciences.
This course contributes to the development of the following program learning outcomes:
1.0 Demonstrate a coherent understanding of science by:
1.1 Demonstrating an understanding of the scientific method and an ability to apply the scientific method in practice.
3.0 Critically analyze and solve scientific problems by:
3.3 Demonstrating the ability to employ and apply appropriate critical and analytical thought in a scientific manner.
4.0 Demonstrate effective communication of science by:
4.2 Demonstrating your ability to write technical and scientific reports.
5.0 Demonstrate accountability for your own learning and scientific work by:
5.3 Demonstrating your ability to work responsibly safely and ethically.
Course Description
This course is designed to give students practical experience using modern analytical instrumentation and to provide students with the background theory and principles of operation.
Prerequisite:-

BME 435 Bioinformatics 3 Credits
Objectives of the Course:
The purpose of this course is to help students become familiar with bioinformatics tools and biological data

Course Description
This course is designed to help students to understand biological data and their organization, classification by using computer's processing power and algorithms
Prerequisite: BME250

MAN 402 Management for Engineers 3 Credits
Objectives of the Course:
Discuss principles of management, Discuss functions of managers, Discuss organization and environment, Discuss marketing, production and personnel management, Discuss marketing control, Discuss accounting and financial reports, Discuss budgeting and overall control,
Course Description
Principles of management. Functions of managers. Organisation and environment. Marketing management. Production management. Personnel management. Managerial control. Accounting and financial reports. Budgeting and overall control.

ECON 431 Economics for Engineers 3 Credits
Objectives of the Course:
Discuss principles and economic analysis of decision making. Discuss cost concepts, make-versus-purchase studies; Analyze principles of money-time relationships. Work on cash flow analysis. Analyze application of money-time relations. Analyze supply and demand relations. Analyze price and demand relations.Analyze breakeven point analysis and effects of inflation on money-time relationships
Course Description
Principles and economic analysis of engineering decision making. Cost concept. Economic environment. Price and demand relations. Competition. Make-versus-purchase studies. Principles and applications of money-time relations. Depreciation. Many and banking. Price changes and inflation. Business and company finance.

COM 451 Introduction to Artificial Intelligence 3 Credits
Objectives of the Course:
To familiarize students with Artificial Intelligence techniques for building well-engineered and efficient intelligent systems. To have a basic understanding of some of the more advanced topics of AI such as learning, natural language processing. To have an understanding of the basic issues of knowledge representation and blind and heuristic search, as well as an understanding of other topics such as minimax, resolution, etc. that play an important role in AI programs. To have a basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language. Artificial Intelligence Programming using Prolog and VPX will be provided to help students with the programming part of the course.
Course Description
Problem solving methods, heuristic search, game-playing, knowledge acquisition, knowledge representation, logical inference, planning, reasoning under uncertainty, decision theory, expert systems and application, Prolog/LISP programming, learning, perception, and natural language understanding

16. Sample copy of diploma supplement

At the end of program the diploma supplement which is given to all graduates of our university free of charge. It ıs arranged in English.

The diploma supplement is a document the purpose of which is to provide sufficient independent data to improve the international "transparency" and fair academic and professional recognition of qualifications (diplomas, degrees, certificates, etc.). It is designed to provide a description of the nature, level, context, content and the status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgments, equivalence statements or suggestions about recognition

Diploma supplement

Diploma No:	**Diploma Date: 11.07.2014**
1.INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION	
1.1. ***Family name(s):*** **1.2.** ***Given name(s):***	**1.3.** ***Place and date of birth:*** **1.4.** ***Student identification number:***
2. INFORMATION IDENTIFYING THE QUALIFICATION	
2.1. ***Name of the qualification and (if applicable) the title conferred*** BACHELOR OF SCIENCE, B.Sc. **2.2.** ***Main field(s) of study for qualification*** BIOENGINEERING **2.3.** ***Name and status of awarding institution*** NEAR EAST UNIVERSITY, PRIVATE UNIVERSITY	**2.4.** ***Name and type of institution administering studies*** SAME AS 2.3. **2.5.** ***Language(s) of instruction/examinations*** ENGLISH
3. INFORMATION ON THE LEVEL OF THE QUALIFICATION	
3.1. ***Level of qualification*** First Cycle (Bachelor's Degree)	**3.2.** ***Official length of program*** Normally 4 Years (excluding 1 year English Preparatory School, if necessary), 2 semesters per year, 16 weeks per semester
3.3. ***Access requirement(s)*** Admission of Turkish nationalities to higher education is based on a nation-wide Student Selection Examination (ÖSS) administered by the Higher Education Council of Turkey (YÖK). Admission of Turkish Republic of Northern Cyprus nationals is based on the Near East University Entrance and Placement Exam for Turkish Cypriots. Admission of foreign students is based on their high school credentials. Proof of English language proficiency is also required.	
4. INFORMATION ON THE CONTENTS AND RESULTS GAINED	
4.1. ***Mode of study*** Full-Time	**4.2.** ***Programme requirements*** A student is required to have a minimum CGPA of 2.OO/4.00 and no failing grades (below DD).
4.3. ***Objectives*** The aim of the bioengineering department is to prepare engineering candidates for various branches of industry with an improved self-confidence and individual initiative. Students are educated to have scientific systematic approach in solving engineering problems, sound engineering base, life-long learning habits and research abilities.	***4.4. Programme details and the individual grades/marks obtained*** Please see the next page.

4.5. ***Grading scheme, grade translation and grade distribution guidance:***

For each course taken, the student is assigned one of the following grades by the course teacher.

For A.Sc., B.Sc. or B.A. degrees, students must obtain at least DD or S from each course and have a GGPA of not less than 2.00 out of 4.00 and have completed all the courses and summer practices in the program. For graduate degrees, students must obtain at least CC or S from each course for M.Sc. and M.A., at least BB for Ph.D. They also need to have a GCPA of 3.00 to graduate. The student's standing is calculated in the form of a Graduate Point Average (GPA) and Cumulative Grade Point (CGPA) and is announced at the end of each semester by the Registrar's Office. The total credit points for a course are obtained by multiplying the coefficient of the final grade by the credit hours. In order to obtain the GPA for any given semester, the total credit points are divided by the total credit hours. The averages are given up to two decimal points. Students who obtain a CGPA of 3.00-3.49 at the end of a semester are considered as "Honour Students" and those who obtain a CGPA of 3.50-4.00 at the end of a semester are considered as "High Honour Students" and this is recorded in their academic report. The letter grades, the quality point equivalents are:

Percentage	**Course Coefficient**	**Grade**	**Percentage**	**Course Coefficient**	**Grade**
90-100	4	AA	70-74	2	CC
85-89	3.5	BA	65-69	1.5	DC
80-84	3	BB	60-64	1	DD
75-79	2.5	CB	50-59	0.5	FD
49 and below	0	FF			

I- Incomplete **S**- Satisfactory Completion, **U**-Unsatisfactory, **NA**-Never Attended,**E**-Exempted, **W**– Withdrawn

4.6*Overall classification of the award*	CGPA: 3.04/4.00

5. INFORMATION ON THE FUNCTION OF THE QUALIFICATION	
5.1. ***Access to further study*** May apply to second cycle programmes.	**5.2.** ***Professional status conferred*** This degree enables the graduates to teach English in public and private

	institutions.
6. ADDITIONAL INFORMATION	
6. 1. ***Additional information*** The department is accredited by Edexcel Assured Services for its quality standards.	***6.2. Sources for further information*** ***Faculty web site***http://www.neu.edu.tr ***Department web site*** http://english.neu.edu.tr/ ***University web site*** http://www.neu.edu.tr ***The Council of Higher Education of Turkey*** http://www.yok.gov.tr ***Higher Education Planning, Evaluation Accreditation and Coordination of North Cyprus Council Web site*** http://www.ncyodak.org **Edexcel Quality Assured Services** http://www.edexcel.com/international/qualifications/edexcel-assured/Pages/default.aspx

4.4. *Program details and the individual grade/marks obtained:*

1 (1st Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
ECC107	Biology	3	5	Compulsory	
BIOE101	Intr. To Bioengineering	3	5	Compulsory	
ENG101	English I	3	5	Compulsory	
MTH101	Calculus I	4	6	Compulsory	
PHY101	General Physics I	4	6	Compulsory	
BME104	General Chemistry	4	6	Compulsory	
		21	33		

2 (2nd Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
CHM122	Organic Chemsitry	3	5	Compulsory	
ENG102	English II	3	5	Compulsory	
MTH102	Calculus II	4	6	Compulsory	
MTH113	Linear Algebra	3	6	Compulsory	
PHY102	General Physics II	4	6	Compulsory	
YIT101	Turkish for Foreigners	-	2		
		17	30		

3 (3rd Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
ENG201	English Communication Skills	3	5	Compulsory	
BIOE201	Microbiology	3	5	Compulsory	
BME102	Biochemistry	4	6	Compulsory	
MAT201	Differential Equations	4	6	Compulsory	
BIOE205	Principles and applications of Ecology	3	5	Non-Technical Elective	
TUR100	Turkish for Foreners	0	2	Compulsory	
		18	31		

4 (4th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
BIOE202	Polyner Technologies	3	5	Compulsory	
BME250	Biostatistics	3	5	Compulsory	
BIOE204	Thermodynamics	3	5	Compulsory	
BIOE208	Genetics	3	5	Compulsory	
BIOE200	Internship I	-	12	Compulsory	
		12	32		

5 (5th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
BME202	Biomaterials	4	6	Compulsory	
BME320	Biomechanics	3	5	Compulsory	
BIOE301	Mass & Heat Transfer	3	5	Compulsory	
BME301	Biomedical Sensors	3	5	Compulsory	
ECC106	Intro. To computer Programming	4	6	Compulsory	
		23	33		

6 (6th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
BME340	Modelling of Biological Systems	3	5	Compulsory	
BIOE302	Bioengineering Resources	3	5	Compulsory	
BIOE304	Nanotechnology	3	5	Compulsory	
BME321	Artificial Organs	4	6	Compulsory	
BIOE306	Systems & Design in Bioengineering	3	5	Compulsory	
BIOE300	Internship II	0	12	Compulsory	
		16	38		

7 (7th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
BIOE400	Graduation Projects II	3	12	Compulsory	
BME401	Instrumental Analysis	4	6	Compulsory	
TE		3	5	Technical Elective	
TE		3	5	Technical Elective	
TE		3	5	Technical Elective	
		16	33		

8 (8th Semester)

Course Code	Course Name	CR	ECTS	Status	Grade
BIOE402	Graduation Projects II	3	12	Compulsory	
ECON431	Bioinformatics	3	5	Compulsory	
TE		3	5	Technical Elective	
TE		3	5	Technical Elective	
TE		3	5	Technical Elective	
		15	32		

TOTALCREDITS 138, TOTAL ECTS 262

7. CERTIFICATION OF THE SUPPLEMENT

7.1. *Date* :

7.2. Name and *Signature* :Ümit Serdaroğlu

7.3. *Capacity* : Registrar

7.4. *Official stamp or seal* :

INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

The basic structure of the North Cyprus Education System consists of four main stages as pre-school education, primary education, secondary education and higher education.

Pre-school education consists of non-compulsory programs whereas primary education is a compulsory 8 year program for all children beginning from the age of 6. The secondary education system includes “General High Schools” and “Vocational and Technical High Schools”.

The Higher Education System in North Cyprus is regulated by the Higher Education Planning, Evaluation, Accreditationand Coordination Council (YükseköğretimPlanlama,Denetleme,AkreditasyonveKoordinasyonKurulu – YÖDAK). Established in 1988, the Council regulates the activities of higher education institutions with respect to research, governing, planning and organization. The higher education institutions are established within the framework of the Higher Education Law. All programs of higher education should be accredited by YÖDAK.

Higher education in North Cyprus comprises all post-secondary higher education programmes, consisting of short, first, second, and third cycle degrees in terms of terminology of the Bologna Process. The structure of North Cyprus higher education degrees is based on a two-tier system, except for dentistry, pharmacy, medicine and veterinary medicine programmes which have a one-tier system. The duration of these one-tier programmes is five years except for medicine which lasts six years. The qualifications in these one-tier programmes are equivalent to the first cycle (bachelor degree) plus secondary cycle (master degree) degree. Undergraduate level of study consists of short cycle (associate degree) - (önlisansderecesi) and first cycle (bachelor degree) - (lisansderecesi) degrees which are awarded after the successful completion of full-time two-year and four-year study programmes, respectively.

Graduate level of study consists of second cycle (master degree) – (yükseklisansderecesi) and third cycle (doctorate) – (doktoraderecesi) degree programmes. Second cycle is divided into two sub-types named as master without thesis and master with thesis. Master programmes without thesis consists of courses and semester project. The master programmes with a thesis consist of courses, a seminar, and a thesis. Third cycle (doctorate) degree programmes consist of completion of courses, passing a qualifying examination and a doctoral thesis. Specializations in dentistry, accepted as equivalent to third cycle programmes are carried out within the faculties of dentistry. Specialization in medicine, accepted as equivalent to third cycle programmes are carried out within the faculties of medicine, and university hospitals and training hospitals operated by the Ministry of Health.

Universities consist of graduate schools (institutes) offering second cycle (master degree) and third cycle (doctorate) degree programmes, faculties offering first cycle (bachelor degree) programmes, four-year higher schools offering first cycle (bachelor degree) degree programmes with a vocational emphasis and two-year vocational schools offering short cycle (associate degree) degree programmes of strictly vocational nature.

Second cycle degree holders may apply to third cycle programmes if their performance at the first cycle degree level is exceptionally high and their national central Graduate Education Entrance Examination (ALES) score is also high and their application is approved. The doctoral degree is conferred subject to at least one publication in a cited and refereed journal.

GENERAL STRUCTURE OF THE NORTH CYPRUS EDUCATION SYSTEM