University of Technology

الجامعة التكنولوجية

Bachelor of Applied Science – Medical and industrial material science

بكالوريوس علوم تطبيقية - علم المواد الطبية والصناعية

Table of Contents

1. Overview

This catalogue is about the courses (modules) given by the program of medical and industrial material science to gain the Bachelor of Science degree. The program delivers (48) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج علم المواد الطبية والصناعية للحصول على درجة بكالوريوس العلوم يقدم البرنامج (48) مادة دراسية مع(6000) إجمالي ساعات حمل الطالب و ٢٤٠إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

1

Code	Course/Module Title	ECTS	Semester
MATH111	Mathematics	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	0	63	112
Description			
Familiarizes the student with the concept of a function, its domain, trigonometric functions, the purpose of a function, and its derivatives. covers functions, their domains, purposes, various methods of solving them, trigonometric functions, their domains, methods of differentiation, and complex numbers and their properties. To develop problem solving skills and understanding of circuit theory through the application of techniques. To develop the student with the applications of integration in solving various mathematical problems. The ability to be creative, innovative and develop individual skills and talents. Enable the student to use books and references related to the course. Enable the student to use the Internet to view more information related to the course			

2

Code	Course/Module Title	ECTS	Semester
HURI112	Human Rights	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	17
Description			
Developing and flourishing the human personality in its emotional, intellectual and social			

dimensions, and rooting in its sense of dignity, freedom, equality, social justice and democratic practice.Enhancing people's awareness - women and men - of their rights in a way that helps enable them to transform the principles of human rights into a social, economic, cultural and political reality, and raise their ability to defend, maintain and advance them at all levels. Strengthening the bonds of friendship and solidarity among peoples, enhancing respect for the rights of others, preserving cultural pluralism and diversity, flourishing national cultures for all groups and peoples, enriching the culture of dialogue and mutual tolerance, rejecting violence and terrorism, promoting non-violence and combating intolerance, and providing all people with strong immunity against hate speech. Promoting a culture of peace based on justice and respect for human rights, foremost of which is the right to self-determination, the right to resist occupation, and the democratization of international relations and the institutions of the international community, so as to reflect the common interests of humanity.

3

Code	Course/Module Title	ECTS	Semester
ANCH113	Analytical Chemistry	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	78	97
Description			
The course aims to introduce the student to the methods of analysis and the importance of using them. The semester deals with the definition of analytical chemistry and its types, methods of quantitative and qualitative analysis of chemicals, and methods of expressing concentration.			

4

Code	Course/Module Title	ECTS	Semester
COSC114	Computers science	5	1

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	78	47
Description			
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5

Code	Course/Module Title	ECTS	Semester
MASP115	Materials Science Principles	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	0	63	112
Description			
Describe the important quantum-mechanical principle that relates to electron energies. Briefly describe ionic, covalent, metallic, hydrogen, and van der Waals bonds. Describe the atomic/molecular structure difference between crystalline and non-crystalline materials. Draw unit cells for face-centered cubic, body-centered cubic, and hexagonal close-packed crystal structures. Specify the Miller indices for a plane that has been drawn within a unit cell. Classification of crystalline imperfections, calculate the weight percent and atom percent for each element in a metal alloy. Explain the use of X-ray diffraction measurements in determining crystalline structures.			

6

Code	Course/Module Title	ECTS	Semester
WORSH11	Workshops	2	1
Lectures (hr/w)	**Lab./Prac./Tutor.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
0	3	45	5

Description
Preparing applied engineers in the field of engineering sciences who are distinguished by a high level of knowledge and technological creativity, in line with the strict standards adopted globally in quality assurance and academic accreditation of the corresponding engineering programs, while adhering to the ethics of the engineering profession. Enable the student to know and understand work systems, risks, and the factors surrounding them. Enable the student to know and understand theoretical principles in handicrafts and measurements.

7

Code	Course/Module Title	ECTS	Semester
PHYS121	Physics	7	2
Lectures (hr/w)	**Lab./Prac./Tutor.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
4	2	93	82
Description			
Demonstrate a conceptual understanding of fundamental physics principles. To develop problem-solving skills and an understanding of general physics through applying techniques. To understand how Mechanics, sound and fluid concepts. This course deals with the basic concept of physics. To understand Vectors, Motion, Newtonian laws, kinetic energy, and work problems. To understand sound and fluids principles and solve problems of it.			

8

Code	Course/Module Title	ECTS	Semester
INPC122	Inorganic and Physical Chemistry	7	2
Lectures (hr/w)	**Lab./Prac./Tutor.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	2	78	97
Description			
Demonstrate a conceptual understanding of fundamental physics principles. To develop problem-solving skills and an understanding of general physics through applying techniques. To understand how Mechanics, sound and fluid concepts. This course deals with the basic concept of physics. To understand Vectors, Motion, Newtonian laws, kinetic energy, and work problems. To understand sound and fluids principles and solve problems of it.			

9

Code	Course/Module Title	ECTS	Semester
ENLA123	English LanguageI	2	2
Lectures (hr/w)	**Lab./Prac./Tutor.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	0	33	17
Description			
English is a first-class comprehensive course that provides the students the fundamental principles of English. Some of the principles are illustrated with a nature. It is focused on effective teaching and learning English. It is specially adapted for the Middle East and North Africa. This course combines the best of English language teaching methodologies to help students use English accurately and fluently.			

10

Code	Course/Module Title	ECTS	Semester

BISP124	Biological Science Principles	7	2
Lectures (hr/w)	**Lab./Prac./Tutor.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
3	0	63	112
Description			
Recognize what biology is. List the various terms associated with biology. Summarize what is meant by a biology science. Discuss the relation and involvement of biology. Describe biology programs. Define biology. Identify the basic principles of applications of biology. Discuss the operations of biology. Discuss the various properties of . biology Explain the general biology laws. Identify the applications and pathways relationship with respect to biology.			

11

Code	Course/Module Title	ECTS	Semester
ENDR125	Engineering Drawing	5	2
Lectures (hr/w)	**Lab./Prac./Tutor.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	2	63	62
Description			
Knowledge of engineering drawing principles and AutoCAD 2010 software. Learning the theoretical basic in the engineering shape drawing and executing by AutoCAD 2010 software. Learning the practical basic in applying of the engineering shape drawing by AutoCAD 2010 software on the computers. Learning the ingredient and parts of AutoCAD 2010 software such as tools, modifying, scales, etc. and employing in the engineering shapes drawing. Learning of use different systems which applying in the AutoCAD 2010 software. Learning of execute the engineering draws with required dimensions and scales precisely.			

12

Code	Course/Module Title	ECTS	Semester

WORSH11	Workshops	2	2
Lectures (hr/w)	**Lab./Prac./Tutor.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
0	3	45	5
Description			
Preparing applied engineers in the field of engineering sciences who are distinguished by a high level of knowledge and technological creativity, in line with the strict standards adopted globally in quality assurance and academic accreditation of the corresponding engineering programs, while adhering to the ethics of the engineering profession. Enable the student to know and understand work systems, risks, and the factors surrounding them. Enable the student to know and understand theoretical principles in handicrafts and measurements.			