

# Systems and Biomedical Engineering Program

Reg. 2013-2019

## Program Report

### 2023-2024



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## 1. General

- **Program Title:** Systems and Biomedical Engineering
- **Program Type:** Single.
- **Department Offering the Program:** Biomedical and Systems Engineering
- **No. of studying years:** Four years / Eight semesters
- **Program Coordinator:** Dr. Mostafa Elhussien,
- **External Evaluators:**  
Prof. Dr. Mohamed Abou Zahad was assigned by The National Authority for Quality Assurance and Accreditation of Education “NAQAAE” as External Evaluator in 2022-2023
- **The formation of committee’s examiners:** The examiners are selected according to the specialization as in the levels from preparatory to 3<sup>rd</sup> level, the two of the examiners are selected for each course, while in the 4<sup>th</sup> level is three examiners.
- **Year of Regulation Approval:** 2019
- **Lecture Hrs= 112 hrs -Tutorial= 49 hrs - Practical Hrs =77 hrs**
- **Year of Operation Approval:** 2023-2024

## 2. Professional Information

### 2.1 Statistics

- No. of students starting the program (Admitted in 2020-2021): 69
- The ratio of students admitted to the program this year (2023-2024) to those of last year (2022-2023) =  $46/50 = 92\%$
- No. and Percentage of students passing in each year/level/semester.

<i>Year</i>		<i>Number of students</i>	<i>Number of passing students</i>	<i>Percentage of passing students</i>
<i>Preparatory</i>	<i>2019-2020</i>	-	-	-
<i>First</i>	<i>2020-2021</i>	<u>69</u>	<u>51</u>	<u>73.9</u>
<i>Second</i>	<i>2021-2022</i>	<u>51</u>	<u>50</u>	<u>98</u>
<i>Third</i>	<i>2022-2023</i>	<u>50</u>	<u>46</u>	<u>92</u>
<i>Fourth</i>	<i>2023-2024</i>	<u>46</u>	<u>45</u>	<u>98</u>

- No. of students completing the program and as a percentage of those who started:  
 $= 45/69 = 65.21\%$
- Grading: No. and Percentage in each Grade

<i>Academic year</i>	<i>Number</i>	<i>Percentage</i>
<i>Students joining the program in Sept 2020</i>	<u>69</u>	<u>100</u>
<i>Students completing the program Jul 2024</i>	<u>45</u>	<u>98</u>
<i>Students completing the program in Sept 2024</i>		
<i>Total No. of students completing the program in 2024</i>		



- No. and Percentage of Students Passing in each Grade:

<u>Year</u>	<u>Excellent</u>		<u>V.good</u>		<u>Good</u>		<u>pass</u>		<u>Total Pass</u>		<u>failed</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>%</u>	<u>%</u>
<b>4th Year 2023/2024 (46)</b>	6	13%	17	37%	19	41%	3	7%	45	98%	1	2%

- First Destinations of Graduates:

<i>i. Proceeded to appropriate employment %</i>	Not available
<i>ii Proceeded to other employment %</i>	Not available
<i>iii Undertaken postgraduate study %</i>	Not available
<i>iv. Engaged in other types of activity %</i>	Not available
<i>v. Unknown first destination %</i>	Not available



## 2.2 Academic Standards

### 2.2.1 Achievement of Program Learning Outcomes, LO's:

- Program Learning Outcomes (LO's) are shown in the following tables.
- The apparent evaluation of Program LO's achievement is **GOOD**, based on available documentation and reports.
- However, the evaluation of achieved LO's is a complicated process hard to be carried out practically on a regular basis (every academic year). There is a need to improve the evaluation process to reflect the actual real achievement. (**Appendix 4: Quality Management & Program Improvement Plans**)

### Prep. Year (الإحة 2019)

Course		Learning Objectives		
Code	Title	A	B	D
PHM 011	Mathematics (1)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
PHM 013	Physics (1)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
PHM 015	Mechanics (1)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
ARC 011	Engineering drawing & Projection (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
CHE 011	Chemistry (1)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
HUM 013	Computer Skills	A1.1A4.1A7.1A8.1		
HUM 011	Technical English language (1)	A1.1A4.1A7.1A8.1		
PHM 012	Mathematics (2)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
PHM 014	Physics (2)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
PHM 016	Mechanics (2)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
ARC 012	Engineering drawing & Projection (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
PHM 017	Production Technology	A2.2A2.3A2.4A3.2A4.1A4.2 A5.1A6.1	B1.2B2.1B2.2B3.2B3.3B 4.1	D1.2D2.1D2.2 D2.3D3.1
HUM 014	History of Engineering Technology	A1.1A4.1A7.1A8.1		
HUM 012	Technical English language (2)	A1.1A4.1A7.1A8.1		



### First Year (لائحة 2019)

Course		Learning Objectives		
Code	Title	A	B	D
BIS 151	Electrical Eng. (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
BIS 153	Mechanical Eng. (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
BIS 155	Computer Basics	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
PHM 161	Engineering Mathematics	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
PHM 163	Physics of Medical Waves	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
BIS 145	Chemistry (2)	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
HUM 161	Int. Biomedical Engineering	A2.2A2.3A2.4A3.2A4.1A4.2 A5.1A6.1	B1.2B2.1B2.2B3.2B3.3B 4.1	D1.2D2.1D2.2 D2.3D3.1
BIS 152	Electrical Eng. (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
BIS 154	Mechanical Eng. (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
BIS 156	Programming & Algorithms	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
PHM 162	Diff. Equations & Transforms	A1.2A2.1A2.2A2.3A2.4A3.2 A4.1A4.2A10.1	B1.1	
PHM 164	Physics of Medical Radiation	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2A9.1A10.1	B1.1B1.2B2.1B2.2B3.2B 3.3B4.1	D1.2D2.2D3.1
BIS 158	Electronic Dev. & Systems (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2A9.1A10.1	B1.1B1.2B2.1B2.2B3.2B 3.3B4.1	D1.2D2.2D3.1
BIS 148	Biology			D1.1D1.2D3.1



## لائحة (2019) سنة ثانية

Course		Learning Objectives		
Code	Title	A	B	D
BIS 251	Elect. Signals & Systems (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2A9.1A10.1	B1.1B1.2B2.1B2.2B3.2B 3.3B4.1	D1.2D2.2D3.1
BIS 253	Elect. Measurements (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2A9.1A10.1	B1.1B1.2B2.1B2.2B3.2B 3.3B4.1	D1.2D2.2D3.1
BIS 255	Data Structure	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
BIS 257	Electronic Dev. & Systems (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2A9.1A10.1	B1.1B1.2B2.1B2.2B3.2B 3.3B4.1	D1.2D2.2D3.1
BIS 241	Physiology (1)			D1.1D1.2D3.1
BIS 243	Anatomy			D1.1D1.2D3.1
BIS 261	Practical Training Course (1)	A1.1A1.2A2.2A2.3A2.4A3.2 A4.1A4.2A7.1A8.1	B1.1B2.2	D1.2D2.2D2.3 D3.1
Hum 261	Elective Humanity Courses (1)			
HUM 261a	Professional Ethics in Biomedical Eng.	A3.2A4.2A5.1A5.2A9.1A10.1		
HUM 261b	Scientific & Creative Thinking	A3.2A4.2A5.1A5.2A9.1A10.1		
BIS 252	Elect. Signals & Systems (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2A9.1A10.1	B1.1B1.2B2.1B2.2B3.2B 3.3B4.1	D1.2D2.2D3.1
BIS 254	Elect. Measurements (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2A9.1A10.1	B1.1B1.2B2.1B2.2B3.2B 3.3B4.1	D1.2D2.2D3.1
BIS 256	Computer Networks	A1.1A1.2A2.1A2.2A2.3A2.4 A4.1A4.2A9.1A10.1		
BIS 242	Physiology (2)			D1.1D1.2D3.1
BIS 244	Biochemistry			D1.1D1.2D3.1
HUM 262	Comm. Skills	A1.1A1.2A3.2A4.1A6.1A6.2 A7.1A8.1		
HUM 263	Elective Humanity Courses (2)			
HUM 263a	Economics Principles	A3.2A4.2A5.1A5.2A9.1A10.1		
HUM 263b	Advertising and Marketing	A3.2A4.2A5.1A5.2A9.1A10.1		



### Third Year (لائحة 2019)

Course		Learning Objectives		
Code	Title	A	B	D
BIS 371	Bioelectronics and Measurements (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 373	Syst. Dynamics (1)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 375	Med. Labs Equipment	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 38a	Elective Specialized Course (1)			
BIS 381	Biomedical Modeling and Simulation	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 382	Numerical Methods in Biomedical Eng.	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 351	Bioinformatics	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
HUM 363	Business Management.	A1.1A1.2A3.2A4.1A6.1A6.2 A7.1A8.1A9.2		
BIS 361	Practical Training Course (2)	A1.1A1.2A2.2A2.3A2.4A3.2 A4.1A4.2A7.1A8.1	B1.1B2.2	D1.2D2.2D2.3 D3.1
HUM 361	Elective Humanity Courses (3)			
HUM 361a	Strategic Planning	A2.2A2.3A2.4A3.2A4.1A4.2	B4.1	D1.2D2.1D2.2 D2.3D3.1
HUM 361b	Risk Management in Health Facilities	A2.2A2.3A2.4A3.2A4.1A4.2 A9.2	B4.1	D1.2D2.1D2.2 D2.3D3.1
BIS 372	Bioelectronics and Measurements (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 374	Syst. Dynamics (2)	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 376	Basic Medical Equipment	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 38b	Elective Specialized Course (2)			
BIS 384	Ultrasound in Medicine	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 385	Digital Medical Image Processing	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 386	Introduction to Biomechanics	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
BIS 352	Artificial Intelligence	A1.1A1.2A2.1A2.2A2.3A2.4 A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B 3.1B3.2B3.3B4.1	D2.2D3.1
HUM364	Project Management.	A1.1A1.2A3.2A4.1A6.1A6.2 A7.1A8.1A9.2		
HUM362	Elective Humanity Courses (4)			
HUM 362a	Quality Assurance & Accreditation in Health services	A2.2A2.3A2.4A3.2A4.1A4.2	B4.1	D1.2D2.1D2.2 D2.3D3.1
HUM 362b	Healthcare Facility Management	A2.2A2.3A2.4A3.2A4.1A4.2 A9.2	B4.1	D1.2D2.1D2.2 D2.3D3.1





### (لائحة 2019) رابع سنة

Course		Learning Objectives		
Code	Title	A	B	D
BIS 471	Digital Electronic Syst. (1)	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 473	System Engineering	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 475	Med. Imaging Equipment	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 49x	Distinction Course (1)			
BIS 491	Design & Test of Medical Equipment	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 492	Computer Vision in Medicine	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 493	Introduction to Mechatronics in Medicine	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 48c	Elective Specialized Course (3)			
BIS 481	LASER and Medical Optics	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 482	Pattern Recognition	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 483	Biomaterials	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 461	Practical Training Course (3)	A1.1A1.2A2.2A2.3A2.4A3.2A4.1A4.2A7.1A8.1	B1.1B2.2	D1.2D2.2D2.3D3.1
BIS 463	Graduation . Project (1)	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A6.1A7.1A8.1A9.1A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D1.2D2.2D2.3D3.1
HUM 461	Management of Clinical Eng. Systems	A2.2A2.3A2.4A3.2A4.1A4.2A5.1A6.1	B1.2B2.1B2.2B3.2B3.3B4.1	D1.2D2.1D2.2D2.3D3.1
BIS 472	Digital Electronic Syst. (2)	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 474	Digital Signal Processing	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 476	Specialized Med. Equipment	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 49y	Distinction Course (2)			
BIS 494	Advanced Topics in Medical Equipment	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 495	Advanced Topics in Bioinformatics	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 496	Advanced Topics in Biomechanics	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 48d	Elective Specialized Course (4)			
BIS 484	Nuclear Medicine	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 485	3D Graphics in Medicine	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 486	Rehabilitation Engineering	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D2.2D3.1
BIS 464	Graduation. Project (2)	A1.1A1.2A2.1A2.2A2.3A2.4A3.1A3.2A4.1A4.2A5.1A5.2A6.1A7.1A8.1A9.1A10.1	B1.1B1.2B2.1B2.2B2.3B3.1B3.2B3.3B4.1	D1.2D2.2D2.3D3.1
HUM 462	Hospitals Systems: Design & Structure	A2.2A2.3A2.4A3.2A4.1A4.2A5.1A6.1	B1.2B2.1B2.2B3.2B3.3B4.1	D1.2D2.1D2.2D2.3D3.1



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## **Comments of External Evaluator and Other Stakeholders**

### **a- Comments of Stakeholders**

As a regular procedure, the department used to communicate with stakeholders during the activities of the “Recruitment Forum”, which was held in April 2024 and the “Annual Academic Conference”, which was held in February 2024.

Communication with stakeholders usually includes Questionnaires, Discussions and Presentations with the intention to revise and judge the academic program specifications as well as the targeted knowledge and skills of graduates.

Therefore, the department was able to get and evaluate the fruitful feedback of stakeholders (Appendix 5: Annual Academic Conference)

### **b- Comments of External Evaluator**

Prof. Dr. Mohamed Abou Zahad was assigned by The National Authority for Quality Assurance and Accreditation of Education “NAQAAE” as External Evaluator in 2022-2023

Received “External Evaluator Report”, as well as the department response to deal with its findings, are listed in **Appendix 4: Quality Management & Program Improvement Plans.**



## 2.3 Achievement of Program Aims

### الأهداف التنفيذية للبرنامج

تم تحديد وصياغة الأهداف التنفيذية للبرنامج وتم اعتمادها في مجلس القسم بتاريخ 2021/9/6

الأهداف الرئيسية	الأهداف التنفيذية
1 تقديم برنامج أكاديمي متطور وذوكفاءة ومضمون الجودة	1.1 تطوير ورفع كفاءة المقررات الدراسية (نظرياً وعملياً)
	1.2 تطوير ورفع كفاءة المعامل الدراسية
	1.3 تطوير ورفع كفاءة أساليب التعليم والتعلم
	1.4 تطوير ورفع مصداقية أساليب التقييم
	1.5 تطبيق منظومة لضمان جودة العملية التعليمية
2 اكتساب الطالب وخريج البرنامج مهارات وامكانيات متوافقة مع متطلبات سوق العمل وملائمة لتطورات.	2.1 تطوير مهارات الطالب العلمية والعملية والشخصية طبقاً لمتطلبات سوق العمل.
	2.2 تحفيز وتنمية ابداعات ومواهب الطلبة
3 دعم وتنمية البحث العلمي	3.1 تشجيع وتدعيم التعاون في مجال الدراسات العليا مع الجامعات المصرية والدولية لأعضاء هيئة التدريس وأعضاء الهيئة المعاونة
	3.2 تنمية ورفع كفاءة امكانيات المعامل البحثية
	3.3 تشجيع الاستفادة من المشروعات البحثية الممولة (العلمية والتطبيقية)
	3.4 تشجيع وتدعيم المشاركة في نشر الأبحاث في الدوريات العلمية والمؤتمرات العلمية الدولية

Main Aims	Executive Aims
1 <b>Providing an advanced, efficient and quality-assured academic program</b>	1.1 Developing and raising the efficiency of academic courses (Theoretically and Practically)
	1.2 Developing and raising the efficiency of study laboratories
	1.3 Developing and raising the efficiency of teaching and learning methods
	1.4 Developing and raising the credibility of evaluation methods
	1.5 Implementing a system to ensure the quality of the educational process
2 <b>Providing the student and graduate of the program with skills and capabilities that are compatible with the requirements of the labor market and appropriate to its developments.</b>	2.1 Developing the student's scientific, practical and personal skills in accordance with the requirements of the labor market.
	2.2 Motivating and developing students' creativity and talents
3 <b>Support and develop scientific research</b>	3.1 Encouraging and strengthening cooperation in the field of graduate studies with Egyptian and international universities for faculty members and supporting staff members
	3.2 Developing and raising the efficiency of research laboratories' capabilities
	3.3 Encouraging benefits from funded research projects (scientific and applied)
	3.4 Encouraging and supporting participation in publishing research in scientific journals and international scientific conferences



وتؤهل الدراسة بالقسم خريجها للقيام بالآتي:

	<b>Educational Aims</b>	<b>الأهداف التعليمية:</b>	
A1	Designing medical and prosthetic devices and their components and connecting them to hospital networks and the Internet	تصميم الأجهزة الطبية والتعويضية ومكوناتاتها وربطها بشبكات المستشفيات والأنترنت	A1
A2	Designing medical software, bioinformatics, the fields of medical imaging, archiving, compressing, storing, and transferring various medical data, x-ray images, and heart, brain, and muscle imaging, in accordance with international standards in data representation and transfer to and from hospitals and medical units, and communication via Internet networks, whether central or local.	تصميم البرمجيات الطبية والمعلوماتية الحيوية ومجالات التصوير الطبي وأرشفة وضغط وتخزين ونقل البيانات الطبية المختلفة وصور الأشعة ورسوم القلب والمخ والعضلات وتبعاً للمقاييس العالمية في تمثيل البيانات ونقلها من وإلى المستشفيات والوحدات الطبية والتواصل عبر شبكات الأنترنت سواء مركزية أو محلية.	A2
A3	Establishing the required specifications for medical devices requested by hospitals and medical units.	وضع المواصفات المطلوبة للأجهزة الطبية التي تطلبها المستشفيات والوحدات الطبية.	A3
A4	Diagnosis, maintenance and repair of medical devices.	تشخيص وصيانة وإصلاح الأجهزة الطبية.	A4
A5	Training, design and implementation in the fields of medical programming and systems	التدريب والتصميم والتنفيذ في مجالات البرمجة الطبية والنظم	A5
A6	Hospital design, planning, installation, supervision and follow-up of all hospital equipment	تصميم المستشفيات والتخطيط والتركيب والإشراف والمتابعة لكل أجهزة المستشفيات	A6
A7	Systems design for medical devices	تصميم النظم للأجهزة الطبية	A7
A8	Identify and control the impact of biomedical engineering on society from an environmental, economic, social and cultural point of view.	تحديد والتحكم في تأثير الهندسة الطبية الحيوية على المجتمع من وجهة نظر بيئية واقتصادية واجتماعية وثقافية.	A8
A9	Planning and implementing research work, evaluating results, and drawing conclusions	تخطيط وتنفيذ العمل البحثي وتقييم النتائج واستخلاص النتائج.	A9

Usually, evaluation of achievement of these aims depends on feedback received from: Students, Graduates, and the market. Students' questionnaire carried out through the academic year, shows fair results and evaluation (**Appendix 1: Questionnaires**). Graduates and market questionnaires for this year were carried out in the "Annual Academic Conference".



## 2.4 Assessment Methods

Assessment methods used in the program's courses were chosen among the as following:

<i>Tool</i>	
Lecture	Attendance
Class	Attendance
	Work
	Quizzes /Online Quizzes
	Mid-Term / Online Mid-Term
Practical	Attendance
	Work
	Lab Test
	Mid-Term
Final Exam	Practical
	Written

These methods measure the program LO's with reasonable accuracy.

## 2.5 Student Achievement

Graduated Student's achievement through the program

<b>Students Passing Percentage</b>	
<b>Year</b>	<b>Percentage %</b>
Prep Year (2019 - 2020)	-
1 <sup>st</sup> Year (2020 - 2021)	73.9
2 <sup>nd</sup> Year (2021 - 2022)	98
3 <sup>rd</sup> Year (2022 - 2023)	92
4 <sup>th</sup> Year (2023 - 2024)	98

The percentage of students completing the programs and graduating this year as referred to the admitted students is around 98% which is considered a good achievement.

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## 2.6 Quality of Teaching and Learning

Usually, evaluation of the quality of teaching and learning methods depends on feedback received from: Students, Graduates and the market, external and internal evaluators.

- **Students**

Students' questionnaire carried out through the academic year, show satisfactory evaluation (See Appendix 1: Questionnaires).

- **Stakeholder**

Comments and recommendations of stakeholders gathered during the "Recruitment Forum", which was held in April 2024 and the "Annual Academic Conference", which was held in February 2024 are shown in (Appendix 5: Annual Academic Conference).

- **External & Internal Evaluator:**

Prof. Dr. Mohamed Abou Zahad was assigned by The National Authority for Quality Assurance and Accreditation of Education "NAQAAE" as External Evaluator in 2022-2023

The Internal Quality Committee issued a report in response to the external evaluator's report with a proper action plan.

Internal evaluation by the Quality committee is carried out regularly and regular reports were issued, and the department responded to both (Appendix 4: Quality Management & Program Improvement Plans)

## 2.7 Effectiveness of Student Support Systems

The department achieved the students' support, through the following:

- Divide the students of the same level into groups and the distribution of the studying schedule to optimize the use of lecture halls and section rooms
- A system was developed to solve the problems of students through the distribution of the responsibility on the faculty members to quickly resolve the problem and follow up on the complaints and to respond as soon as possible. (نظام الريادة الطلابية بالقسم)
- The students' representatives are included in the department council to solve the problems of students. (أشترك ممثلو الطلاب في مجالس الأقسام)
- There is a schedule of final revision for some of the studied courses at the end of each semester to assist low and middle-caliber students.
- Students are helped in the case of special circumstances such as cases of disease, the death of a parent, injuries during an incident, by taking into account the circumstances of each case in providing the requirements of this year, especially in materials that rely on semester marks and attendance.

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## 2.8 Learning Resources

### A- Number and Ratio of Faculty Members and their Assistants to Students

- No. of students  $67+67+66+1+46+19=266$
- No. of program faculty members = 8
- No. of program faculty out posted members = 11
- Total No of program members =  $8+ (11/2)=14$
- No. of program faculty member assistants = 10
- No. of program faculty members and their assistants = 24
- No. of students / No. of faculty members =  $266/14$  (about one faculty for 19 students)
- No. of students / No. of faculty members and assistants =  $266/24$  (about one faculty for 11 students)

### B- Matching of Faculty Members' Specialization to Program Needs.

- There are sufficient faculty members in each specialization to satisfy all program needs.

### C- Availability and Adequacy of Program Handbook

- There is a handbook for all programs offered by the faculty, including study plans and courses' short descriptions.

### D- Adequacy of Library Facilities.

- The Central Library is updating the list of references and textbooks available for department students on an annual basis, in the academic year 2023/2024, the Central Library added **23** new references related to this program, based on the recommendations of the department.
- The faculty library is adequate, due to: a sufficient number of computers connected to the internet adequate space, adequate lighting, adequate ventilation, computerized search, with enough recent textbook copies.

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### E- Adequacy of Laboratories

- In the academic year 2023/2024, the department has **Seven laboratories** that are fairly sufficient for the purposes of the program:
  1. Physiology & Anatomy Lab
  2. Electrical Measurements Lab
  3. Computer & Signal Processing Lab
  4. Embedded Systems & IoT Lab
  5. Electronic Systems Lab
  6. Biomechanics Lab
  7. PCB lab
- In addition to the Computer (Central Facility) Lab and Super-computer for research purposes.

### F- Adequacy of Computer Facilities

- The available computer labs are adequate compared to the number of students.
- Internet access is now available for faculty staff and for students through a wireless network covering the building where the department rooms exist.

### G- Adequacy of Field/Practical Training Resources

- Field and Practical training courses are genuine part of the program.
- These courses are conducted to the students of different years in the program, based on the recommendations of market survey, in the third semester of the academic year (**See Appendix 7: Training Program**).

### H- Adequacy of Any Other Program Needs

- The E-learning system is fully employed during the academic year 2023/2024.
- Additional Programs for Online lectures and classes (MS Teams) were additionally employed to overcome communication difficulties with students.
- Social applications (WhatsApp, Facebook... etc..) were also employed to maintain easy ways for students to communicate all the time.



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## 2.9 Quality Management

Complete analysis of the findings of applied quality management system is found in **Appendix 4: Quality Management & Program Development Plans**. These listed findings are analyzed by the department and program director to reach suitable actions proper for avoiding these outcomes in the future.

### **A- Availability of Regular Evaluation and Revision System for the Program**

- An internal quality committee is formed by department members to follow up the commitment with quality requirements.
- The quality unit in the institute had formed an internal audit committee that was responsible for regular investigation and evaluation of department commitment with quality system.

### **B- Effectiveness of the System**

- The implemented quality system showed fairly efficient results.
- Improvement was achieved in previously mentioned drawbacks affected the effectiveness of the system such as:
  - Irregular time schedules for quality processes.
  - Delayed provision of analytical data needed.
  - Unsettled definitions of important terminology.

### **C- Effectiveness of Faculty and University Laws and Regulations for Progression and Completion**

- Adequately effective.
- Continuous improvement carried out by the quality unit to increase the effectiveness of faculty and university laws and regulations. The institute annual quality report.

### **D- Effectiveness of Program External Evaluation System:**

#### **I. External Evaluators**

- Effective
- External Evaluator report is listed in **Appendix 4**.

#### **II. Alumni**

- Reported feedback is included in Appendix 5: Annual Academic Conference.

#### **III. Other Stakeholders**

- Reported feedback is included in Appendix 5: Annual Academic Conference.

### **E- Faculty Response to Students and External Evaluations**

- Department response to External Evaluator report and student evaluations are shown in **Appendix 4: Quality Management & Program Development Plans and Appendix 1 The Questionnaire**

## 3. Proposals for Program Improvement

Detailed in Appendix 4



#### 4. Progress of Previous Year's Action Plan

نسب الإنجاز %	المتابعة	Responsibility مسئولية التنفيذ	Ending Date تاريخ الانتهاء	Starting Date تاريخ البدء	Action Required العمل المطلوب
					(المقررات/الساعات) هيكل البرنامج
					Program Structure (Units/Credit-hours)
100 %	تم الانتهاء من اعداد الأئحة الدراسية 2024 وفي مرحلة المراجعة	أعضاء هيئة التدريس	أكتوبر 2024	سبتمبر 2023	<u>تعديلات الأئحة الدراسية المعتمدة في 2024:</u> • تعديلات الأئحة جديدة ساعات معتمدة في 2024.
					المقررات (الحذف والإضافات والتعديلات)
					Courses Deletions, Additions and Modifications
100 %	تم	أعضاء هيئة التدريس	أكتوبر 2023	سبتمبر 2023	<u>تحديث ملفات المقررات (توصيف وتقرير المقرر)</u> • تحديث المصفوفات المختلفة • إضافة مصفوفة محتوى المقرر مع نواتج التعلم • تحديث وسائل التعليم والتعلم • تحديث وسائل التقييم وتوزيع درجات أعمال السنة. • مراجعة وتحديث خطة تحسين المقررات
100 %	تم	منسق الجودة	سبتمبر 2023	اغسطس 2023	<u>زيادة فاعلية منظومة الجودة</u> • سرعة تحليل بيانات منظومة الجودة. • سرعة الانتهاء من اعمال الجودة والتقدم للاعتماد المؤسسي. • عمل التحليل الإحصائي لرضاء أعضاء هيئة التدريس والهيئة المعاونة كل على حده. • زيادة مشاركة جميع الأطراف في الأستبيانات
					التدريب والمهارات (الهيكل الأكاديمي)
					Training and Skills
100 %	<ul style="list-style-type: none"> <li>قام القسم بأصدار دليل الطالب للعام الجامعى 2024-2023 ونشره على الموقع الإلكتروني</li> <li>قام القسم بعمل المؤتمر العلمى للقسم 2023-2024 يوم الخميس الموافق 2024/2/22 بمشاركة (الطلاب وأعضاء هيئة التدريس والهيئة المعاونة و خريجين القسم وجهات العمل)</li> </ul>	أعضاء هيئة التدريس	فبراير 2024	أكتوبر 2023	<u>تأهيل وتنمية مهارات الطلبة</u> • تعريف الطالب بخصائص البرنامج الأكاديمي • تطوير برنامج التدريب للطلاب وتوسيع قاعدة مشاركة الجهات الخارجية فيه. • تطوير برنامج التدريب لتنمية مهارات الطالب

	<ul style="list-style-type: none"> <li>• قام القسم بالمشاركة في الملتقى التوظيفي السادس يوم الاربعاء الموافق 2024/4/24 بمشاركة (الطلاب وأعضاء هيئة التدريس والهيئة المعاونة و خريجين القسم وجهات العمل)</li> <li>• توقيع بروتوكولات تعاون مع عديد من الشركات لتدريب الطلاب</li> <li>• مشاركة طلاب الفرقة الرابعة في عديد من المسابقات العلمية وحصول بعض المشاريع على جوائز ومراكز مميزة مثل: فريق طلاب مشروع (Automated Resuscitation System ARS) بالفرقة الرابعة علي جائزة أفضل تصميم وقدرها 1500 جنية في فعاليات معرض مشاريع الطلاب الهندسة الطبية النسخة الخامسة المقام في كلية الهندسة الالكترونية بمنوف</li> </ul>				<ul style="list-style-type: none"> <li>• قياس فاعلية التدريب في تحقيق المخرجات التعليمية</li> </ul>
100 %	تم	ادارة التدريب بالمعهد	اغسطس 2024	سبتمبر 2023	<p><b>تأهيل وتنمية مهارات أعضاء هيئة التدريس والهيئة المعاونة:</b></p> <ul style="list-style-type: none"> <li>• تدريب أعضاء هيئة التدريس والهيئة المعاونة على نظام الساعات المعتمدة</li> <li>• تنمية مهارات أعضاء هيئة التدريس والهيئة المعاونة في شتي مجالات التدريس والادارة والبحث العلمي واعمال الجودة.</li> <li>• زيادة نسبة مشاركة أعضاء هيئة التدريس والهيئة المعاونة في تحديد الاحتياجات التدريبية</li> </ul>
<b>مقترحات تطوير البرنامج</b>					
<b>Other Recommendations</b>					
100 %	تم	منسق الجودة	أكتوبر 2024	سبتمبر 2023	<p><b>إعداد اللائحة الدراسية المعتمدة في 2024:</b></p> <ul style="list-style-type: none"> <li>• إعداد توصيف البرنامج للائحة 2024</li> <li>• اعداد أعضاء هيئة التدريس والهيئة المعاونة والادارى على النظام الالكترونى لشئون الطلاب والتسجيل وكذلك الارشاد الاكاديمي</li> </ul>





100 %	تم	رئيس القسم	أكتوبر 2024	سبتمبر 2023	<ul style="list-style-type: none"><li>زيادة اعداد أعضاء الهيئة المعاونة.</li><li>زيادة تفعيل خطة التعامل مع العجز والزيادة لأعضاء الهيئة المعاونة</li></ul>
100 %	تم	ادارة التدريب بالمعهد	أكتوبر 2024	سبتمبر 2023	<ul style="list-style-type: none"><li>تفعيل الخطة التدريبية لأعضاء الجهاز الأدارى</li></ul>
100 %	تم	وحدة الخريجين	أكتوبر 2024	سبتمبر 2023	<ul style="list-style-type: none"><li>متابعة مستوى كفاءة الخريجين فى المنظمات التى يعملون بها</li><li>تحديث قاعدة بيانات الخريجين</li></ul>
100 %	تم شراء عدد 23 مرجع حديث	رئيس القسم	أكتوبر 2024	سبتمبر 2023	<ul style="list-style-type: none"><li>زيادة مخصصات البرنامج من الكتب فى المكتبة</li></ul>

## 5. Action Plan for Academic year 2024/2025

Responsibility مسئولية التنفيذ	Ending Date تاريخ الانتهاء	Starting Date تاريخ البدء	Action Required العمل المطلوب
<b>Program Structure (Units/Credit-hours)</b>			
المقررات (الحذف والإضافات والتعديلات)			
<b>Courses Deletions, Additions and Modifications</b>			
أعضاء هيئة التدريس	أكتوبر 2024	سبتمبر 2024	<b>تحديث ملفات المقررات (توصيف وتقرير المقرر)</b> <ul style="list-style-type: none"> <li>تحديث المصفوفات المختلفة</li> <li>إضافة مصفوفة محتوى المقرر مع نواتج التعلم</li> <li>تحديث وسائل التعليم والتعلم</li> <li>تحديث وسائل التقييم وتوزيع درجات أعمال السنة</li> <li>مراجعة وتحديث خطة تحسين المقررات</li> </ul>
وحدة الجودة بالبرنامج	يوليو 2025	أكتوبر 2024	<b>زيادة فاعلية منظومة الجودة</b> <ul style="list-style-type: none"> <li>سرعة تحليل بيانات منظومة الجودة.</li> <li>زيادة مشاركة جميع الأطراف في الأستبيانات</li> <li>تفعيل استبيانات الرضا الطلابي</li> <li>استطلاع رأى الطلاب المحولين الى البرنامج</li> </ul>
التدريب والمهارات (الهيكل الأكاديمي)			
<b>Training and Skills</b>			
منسق البرنامج	يوليو 2025	أكتوبر 2024	<b>تأهيل وتنمية مهارات الطلبة</b> <ul style="list-style-type: none"> <li>تعريف الطالب بخصائص البرنامج الأكاديمي</li> <li>تطوير برامج تدريب الطلاب وتوسيع قاعدة مشاركة الجهات الخارجية فيه</li> <li>تطوير برنامج لتنمية مهارات الطالب</li> </ul>
إدارة التدريب - وحدة التعليم الإلكتروني - وحدة الجودة بالبرنامج	يوليو 2025	أكتوبر 2024	<b>تأهيل وتنمية مهارات أعضاء هيئة التدريس والهيئة المعاونة:</b> <ul style="list-style-type: none"> <li>التدريب على تنفيذ التجارب المعملية بشكل online</li> </ul>
مقترحات تطوير البرنامج			
<b>Other Recommendations</b>			
مجلس القسم	أكتوبر 2024	أكتوبر 2024	<b>اللجان المختلفة بالبرنامج:</b> <ul style="list-style-type: none"> <li>تشكيل اللجان المختلفة بالبرنامج</li> </ul>
أعضاء هيئة التدريس - وحدة البحث العلمي	يوليو 2025	أكتوبر 2024	<b>تشجيع البحث العلمي ودعم الابتكارات:</b> <ul style="list-style-type: none"> <li>اعداد مشروعات بحثية ممولة</li> <li>اعداد مؤتمر دولي للبرنامج</li> <li>المشاركة في المسابقات العلمية المتخصصة</li> <li>اعداد مكتبة الكترونية للبرنامج</li> </ul>
مدير البرنامج - لجنة المعامل بالبرنامج	يوليو 2025	أكتوبر 2024	<b>تطوير المعامل:</b> <ul style="list-style-type: none"> <li>انشاء معمل للميكانيكا الحيوية والأجهزة التعويضية</li> </ul>

			<ul style="list-style-type: none"><li>• انشاء معمل للواقع الافتراضي و الواقع المعزز</li><li>• تسويق مشاريع التخرج</li><li>• انشاء مركز للدعم العلمي والتقني</li></ul>
مدير البرنامج	أكتوبر 2024	سبتمبر 2024	الإمكانيات البشرية: <ul style="list-style-type: none"><li>• زيادة عدد أعضاء هيئة التدريس والهيئة المعاونة</li></ul>

Title	Name	Signature
Program Co-ordinator	Dr. Mostafa Elhussien	
Head of Program	Prof. Dr. Ahmed El-Bialy	
Date of Department Council Approval	11-9-2024	
Date of Academic Council Approval	18-9-2024	

