



MTE

**Mansoura University
Faculty of Engineering**

**Mechatronics Engineering
B.Sc. Program Specification**

(Bylaw2020)

Contents

A- Basic Information.....	
B- Professional Information.	
	Program Mission
	Program Vision
1	Program Aims
2	Learning Outcomes (LO's)
3	Academic Standards
4	Reference standards
5	Curriculum Structure and Contents
6	Course Specifications
7	Program Admission Requirements
8	Regulations for Progression and Program Completion
9	Teaching and learning methods
10	Student Assessment methods
11	Program Evaluation
Appendix-1	Matching matrix of program aims and program attributes
Appendix-2	Matching program LOs to course LOs
Appendix-3	Internal Reviewers report
Appendix-4	External Reviewers report

Mechatronics Engineering

B.Sc. Program Specification

A- Basic Information

Program Title: Mechatronics Engineering

Program Type: Multidisciplinary

Departments responsible of program: Mechanical Power Engineering,
Electronics and Communications Engineering,
Production and Design engineering,
Computer and System Engineering
Mathematics and Engineering Physics

Coordinator: Assoc. Prof. Mohamed Hassan Mansour

Assistant Coordinator: Assoc. Prof. Mahmoud Mohamed Saafan

Dates of Program Approval: 27- 9 - 2020

B- Professional information

Program Vision

To achieve leadership in the field of engineering education and gain confidence of the local and regional community for program graduates.

Program Mission

To prepare qualified engineers in the field of mechatronics while applying total quality in scientific framework to meet the needs of labor market and serve the local and regional community. Our mission shall be achieved by delivering an educational program with objectives to graduate engineers, who will:

- Be competent and engaged professionals in their field.
- Continue developing professionally to assume positions of technical and management leadership within their respective organizations.
- Recognize the societal, ethical, and global impacts of their work

1- Program Aims:

1. Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.
2. Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.
3. Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.
4. Use techniques, skills, and modern engineering tools necessary for engineering practice.
5. master self-learning and life -long learning strategies to communicate effectively using different modes, tools, and languages to deal with academic/professional challenges in a critical and creative manner.
6. Plan, manage and carry out designs of mechanical systems and machine elements using appropriate materials, suitable national and international standards and codes with economic and financial aspects.
7. Analyze and asses performance of mechatronic systems and components using scientific, mathematical, computer-based models, analytical methods and Modeling techniques.
8. Integrate a wide range of analytical tools, techniques, equipment, and software packages to design and develop mechatronic systems to meet a given specification and requirements.

2- Program Learning Outcomes (LO's)

Level A: Competencies of engineering graduate

The Engineering Graduate must be able to:

- A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
- A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
- A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
- A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
- A5. Practice research techniques and methods of investigation as an inherent part of learning.
- A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
- A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.
- A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
- A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
- A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

Level B: Competencies of basic Mechanical engineering

Mechanical engineering graduate must be able to:

- B1. Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.
- B2. Plan, manage and carry out designs of mechanical systems and machine elements using appropriate materials both traditional means and computer-aided tools and software contemporary to the mechanical engineering field.
- B3. Select conventional mechanical equipment according to the required performance.
- B4. Adopt suitable national and international standards and codes; and integrate legal, economic and financial aspects to: design, build, operate, inspect and maintain mechanical equipment and systems

Level C: High specialized competencies

The graduates of the Mechatronics engineering program should be able to:

- C1. Analyze mechatronic system using scientific, mathematical and computer-based models and asses the limitations of particular cases.
- C2. Identify and classify the performance of mechatronic systems and components through the use of analytical methods and Modelling techniques
- C3. Design a mechatronic system using systems approach to meet a given specification and requirements.
- C4. Integrate a wide range of analytical tools, techniques, equipment, and software packages to design and develop mechatronic systems.

3- Academic Standards

- National Academic reference Standards of mechatronics engineering program (2018) which were issued by the National Authority for Quality Assurance & Accreditation of Education NAQAAE.

4- Reference standards

- None

5- Program Structure and Contents

Program duration:

The program duration is five years, 10 semesters, 160 credit hours.

Program structure:

- **Total hours of program:** 160 credit hours
- **Theoretical :** 105 contact hours
- **Practical/Exercises :** 132.5 contact hours
- **Compulsory :** 148 credit hours
- **Elective :** 12 credit hours
- **Selective :** none

Program Levels:

Level	Compulsory	Elective	Selective
000	34 credit		-
100	32 credit		-
200	34 credit		-
300	24 credit	6 credit	-
400	24 credit	6 credit	-

Distribution of program courses

■ Freshman - First Semester:

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
BAS011	Mathematics (1)	3	2	2	---	4	20	30	--	50	100	-----
BAS021	Mechanics (1)	3	2	2	---	4	20	30	--	50	100	-----
BAS031	Physics (1)	3	2	1	1.5	4.5	20	20	10	50	100	-----
BAS041	Basics of Chemical Engineering	3	2	1	1.5	4.5	20	20	10	50	100	-----
PDE052	Engineering Drawing	3	2	2	---	6	20	30	--	50	100	-----
UNR061	English Language (1)	2	1	2	---	2	20	30	--	50	100	-----
Total		17	11	10	3	25					600	
Total Contact hrs = 24 hrs/week Total SWL = 47 hrs/week												

■ Freshman - Second Semester:

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
BAS012	Mathematics (2)	3	2	2	--	4	20	30	--	50	100	BAS011
BAS022	Mechanics (2)	3	2	2	--	4	20	30	--	50	100	BAS021
BAS032	Physics (2)	3	2	1	1.5	4.5	20	20	10	50	100	-----
CSE042	Introduction to Computer Systems	3	2	1	1.5	4.5	20	20	10	50	100	-----
PDE051	Principles of Manufacturing Engineering	3	2	--	3	3	20	20	10	50	100	-----
UNR062	English Language (2)	2	1	2	--	2	20	30	--	50	100	UNR061
Total		17	11	8	6	22					600	
Total Contact hrs = 25 hrs/week Total SWL = 47 hrs/week												

■ **Sophomore - First Semester:**

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
BAS113	Mathematics (3)	3	2	2	--	4	20	30	--	50	100	BAS012
BAS115	Probability Theory and Statics	2	1	2	--	2	20	30	--	50	100	BAS012
ELE141	Electric Circuits	3	2	2	--	4	20	30	--	50	100	BAS032
CSE151	Digital Logical Design	3	2	1	1.5	4	20	20	10	50	100	CSE051
PDE181	Strength of Materials	3	2	2	--	4	20	30	--	50	100	BAS021 BAS031
UNR171	History of Engineering and Technology	1	1	-	-	1	20	30	--	50	100	-----
Total		15	10	9	1.5	19					600	
Total Contact hours = 20.5 hrs/week Total SWL = 39 hrs/week												

■ **Sophomore - Second Semester:**

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
BAS114	Mathematics (4)	3	2	2	--	4	20	30	--	50	100	BAS113
BAS121	Solid Body Mechanics	3	2	2	--	4	20	30	--	50	100	BAS022
ELE142	Electric Power and Machines	3	2	2	--	4	20	30	--	50	100	ELE141
CSE152	Algorithms and Data Structures	3	2	1	1.5	4	20	20	10	50	100	CSE151
MPE171	Basics of Heat and Fluids	3	2	1	1.5	4	20	30	--	50	100	BAS031- BAS041
ENG111	Technical Report Writing	2	1	2	--	2	20	30	--	50	100	UNR015
Total		17	11	10	3	22					600	
Total Contact hrs = 24 hrs/week Total SWL = 46 hrs/week												

■ **Junior - First Semester:**

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
BAS215	Mathematics (5)	3	2	2	--	4	20	30	--	50	100	BAS115
ECE261	Electronics (1)	3	2	2	--	4	20	30	--	50	100	ELE141
MPE271	Fluid Mechanics	3	2	2	--	4	20	30	--	50	100	MPE171
PDE281	Materials Science	3	2	1	1.5	4	20	20	10	50	100	BAS041
PDE282	Kinematics and Dynamics of Machines	3	2	2	--	4	20	30	--	50	100	BAS121
UNR241	Communication and Presentation Skills	2	1	2	--	2	20	30	--	50	100	ENG111
Total		17	11	11	1.5	22					600	
Total Contact hrs = 23.5 hrs/week Total SWL = 45.5 hrs/week												

■ **Junior – Second Semester :**

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
MPE272	Thermodynamics	3	2	2	--	4	20	30	--	50	100	MPE171
CSE252	Automatic Control Systems	3	2	2	--	4	20	30	--	50	100	BAS113
ECE262	Electronics (2)	3	2	1	1.5	4	20	30	--	50	100	ECE261
PDE283	Mechanical Vibrations	3	2	2	--	4	20	30	--	50	100	PDE282
MTE291	Instrumentation & Measurements	3	2	1	--	4	20	20	10	50	100	ELE141 – BAS211
UNR281	Law and Human Rights	2	2	--	--	2	20	30	--	50	100	-----
MTE295	Field Training (1)	--	--	--	6	--	--	50	--	50	100*	-----
Total		17	12	7	9	22					600	
Total Contact hrs = 27.5 hrs/week Total SWL = 49.5 hrs/week												
* Not considered in the sum of grades.												

■ Senior -1 -First Semester:

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
CSE352	Microcontrollers and Operating Systems	2	1	--	2	4	20	30	--	50	100	CSE151
ECE361	Digital Signal Processing	3	2	2	--	4	20	30	--	50	100	ECE262
MTE391	Sensors and Actuators	2	1	--	2	2	20	30	--	50	100	MTE291
PDE381	Mechanical Design	3	2	2	--	4	20	30	--	50	100	PDE282 – PDE283
MPE371	Heat Transfer	3	2	1	1.5	4	20	20	10	50	100	MPE171
Elective	Elective Course (1): From Table 6	3	2	2	--	4	--	--	--	50	100	According each course
Total		16	10	7	3.5	22					600	
Total Contact hrs = 23 hrs/week Total SWL = 45 hrs/week												

■ Senior -1 -Second Semester:

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
CSE353	Embedded Systems	2	1	--	2	3	20	20	10	50	100	CSE352
MTE392	Robotics	3	2	1	1.5	4	20	20	10	50	100	PDE382
MPE372	Computational Fluid Dynamics	3	2	1	1.5	4	20	30	--	50	100	BAS212 – MPE271
PDE382	CNC Machines	3	2	1	1.5	4.5	20	20	10	50	100	PDE282 – PDE283
Elective	Elective Course: From Table 6	3	2	2	0	5	20	30	--	50	100	According to each course
MTE395	Field Training (2)	--	-	--	6	--	--	50	--	50	100*	-----
Total		14	9	6	11	20.5					500	
Total Contact hrs = 26 hrs/week Total SWL = 46.5 hrs/week												
* Not considered in the sum of grades												

■ Senior 2– 2 -First Semester:

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
CSE452	Programmable Logic Controllers	3	2	1	1.5	4.5	20	20	10	50	100	CSE151
MTE491	Design of Mechatronic Systems	3	2	-	3	4	20	20	10	50	100	PDE282 - CSE352
ENG431	Project Management	2	2	-	0	2	20	30	--	50	100	-----
UNR471	Marketing	2	2	-	0	2	20	30	--	50	100	-----
Elective	Elective Course (3): From Table 7	3	2	2	0	5	20	20	--	50	100	According each course
MTE498	Project (1) in Mechatronics	3	1	-	6	3	20	30	--	50	100	Completing 120 Cr. H
Total		16	11	3	10.5	20.5					600	
Total Contact hrs = 24.5 hrs/week Total SWL = 45 hrs/week												

■ Senior – 2 -Second Semester:

Course Code	Course Title	Hours/Week					Marks Distribution					Prerequisites
		Credit	Lecture	Tutorial	Lab.	Free Work	Mid Term	Term Work	Lab.	Final	Total	
CSE453	Artificial Intelligence and Machine Learning	3	2	2	0	5	20	30	--	50	100	CSE352
MPE471	Hydraulic and Pneumatic Control Systems	3	2	1	1.5	4.5	20	20	10	50	100	BAS212 – MPE271
Elective	Elective Course (4) From Table7	3	2	2	0	5	20	30	-	50	100	According each course
UNR461	Ethics and Morals of the Profession	2	2	0	0	4	20	30	-	50	100	-----
MTE499	Project (2) in Mechatronics	3	1	0	6	3	20	30	--	50	100	Project (1) in Mechatronics
		14	9	5	7.5	21.5					500	
Total Contact hrs = 21.5 hrs/week Total SWL = 43 hrs/week												

Elective Courses

Code	Course Name	Level	Semester	Teaching Hours			Written Exam Time	Marking			
				Lectures	Tutorial	Total Hours		Term Work	Mid Term	Final	Total
CSE301	Data Base Systems	300	seven	2	2	4	2	30	20	50	100
CSE302	Internet of Things	300	seven	2	2	4	2	30	20	50	100
ELE301	Power Electronics	300	seven	2	2	4	2	30	20	50	100
PDE301	Computer-Aided Design	300	seven	2	2	4	2	30	20	50	100
PDE302	Non-Traditional Machining Processes	300	seven	2	2	4	2	30	20	50	100
MPE301	Microelectromechanical Systems	300	seven	2	2	4	2	30	20	50	100
MPE302	Control in Power Stations and Air conditioning Systems	300	seven	2	2	4	2	30	20	50	100
MTE301	Autotronic Systems	300	seven	2	2	4	2	30	20	50	100
CSE401	Software Engineering	400	nine	2	2	4	2	30	20	50	100
CSE402	Computer Vision	400	nine	2	2	4	2	30	20	50	100
ECE401	Image Processing	400	nine	2	2	4	2	30	20	50	100
ELE401	Electric Traction Systems	400	nine	2	2	4	2	30	20	50	100
PDE401	Prototyping and Automation	400	nine	2	2	4	2	30	20	50	100

PDE402	Mobile and Bipedal Robots	400	nine	2	2	4	2	30	20	50	100
MPE401	Design of Renewable Energy Systems	400	nine	2	2	4	2	30	20	50	100
MTE401	Medical Mechatronic Systems	400	Nine	2	2	4	2	30	20	50	100

6- Courses Specifications

Program – courses LO's Matrix is given in Appendix 2.

7- Program Admission Requirements

مادة (2) شروط القيد ومتطلبات الالتحاق

يتقدم الطالب بالوثائق اللازمة للالتحاق بالكلية من خلال مكتب تنسيق القبول بالجامعات. يسجل الطالب لدرجة البكالوريوس في هذا البرنامج إذا كان حاصلًا على شهادة الثانوية العامة أو ما يعادلها شعبة رياضيات، وفقًا للمادة 75 من قانون تنظيم الجامعات، ومستوفيا للشروط التي يضعها المجلس الأعلى للجامعات. ولا يجوز تجاوز شروط مكتب التنسيق فيما يخص التوزيع أو التحويلات.

8- Regulations for Progression and Program Completion

مادة (13) التخرج والحصول على الدرجة

- للحصول على درجة البكالوريوس يجب أن يكون الطالب قد أتم عدد 160 ساعة معتمدة في دراسة المقررات بتقدير لا يقل عن D أو أكثر وألا يقل متوسط تقديره عن C أو أكثر في كل من التقدير الكلي ومقررات مجال التخصص. وهذا يعني أن يحصل على الأقل على متوسط تقدير تراكمي 2.0 / 4.0.
- النجاح في مشروع التخرج.
- اجتياز المقررات التي يكون التقييم فيها ناجح / راسب (Pass / Fail) (ولا تحتسب ضمن المعدل التراكمي مثل مقررات التدريب الصيفي والندوات .. الخ.

9- Teaching and learning methods

1- Interactive lectures
2- Mini – project
3- Problem-Based Learning (PBL) sessions
4- Practical
5- Flipped classroom

10- Student assessment (Methods and rules for student assessment)

Method (tool)	Assessed ILO's
1- Written exam	To assess the competencies of level A, B, C.
2- Quizzes and reports	
3- Oral exams	
4- Practical	
5- Project applied on a practical field problem	

11- Program Evaluation

Evaluator	Tools	Sample evidence
1- Senior students	<ul style="list-style-type: none">• Meeting• Questionnaires	<u>25% of the student</u>
2- Alumni	<ul style="list-style-type: none">• Meeting	
3- Stakeholders	<ul style="list-style-type: none">• Meeting• Questionnaires	Samples representative from all sectors
4- External Evaluator(s)	<ul style="list-style-type: none">• Reviewing according to external evaluator• Checklist report	<u>Reports</u>
5- Others	non	

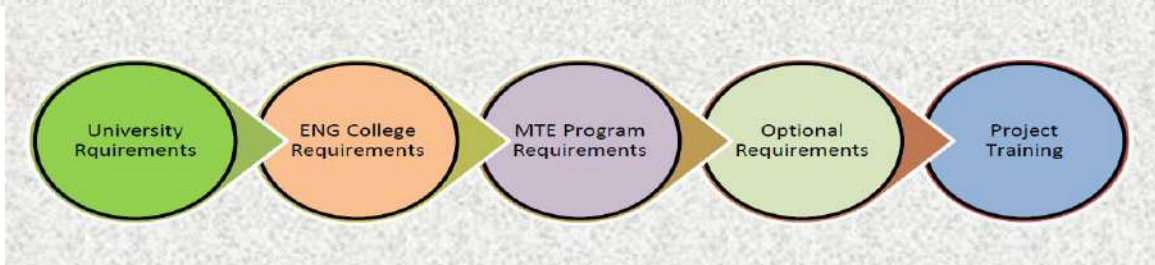
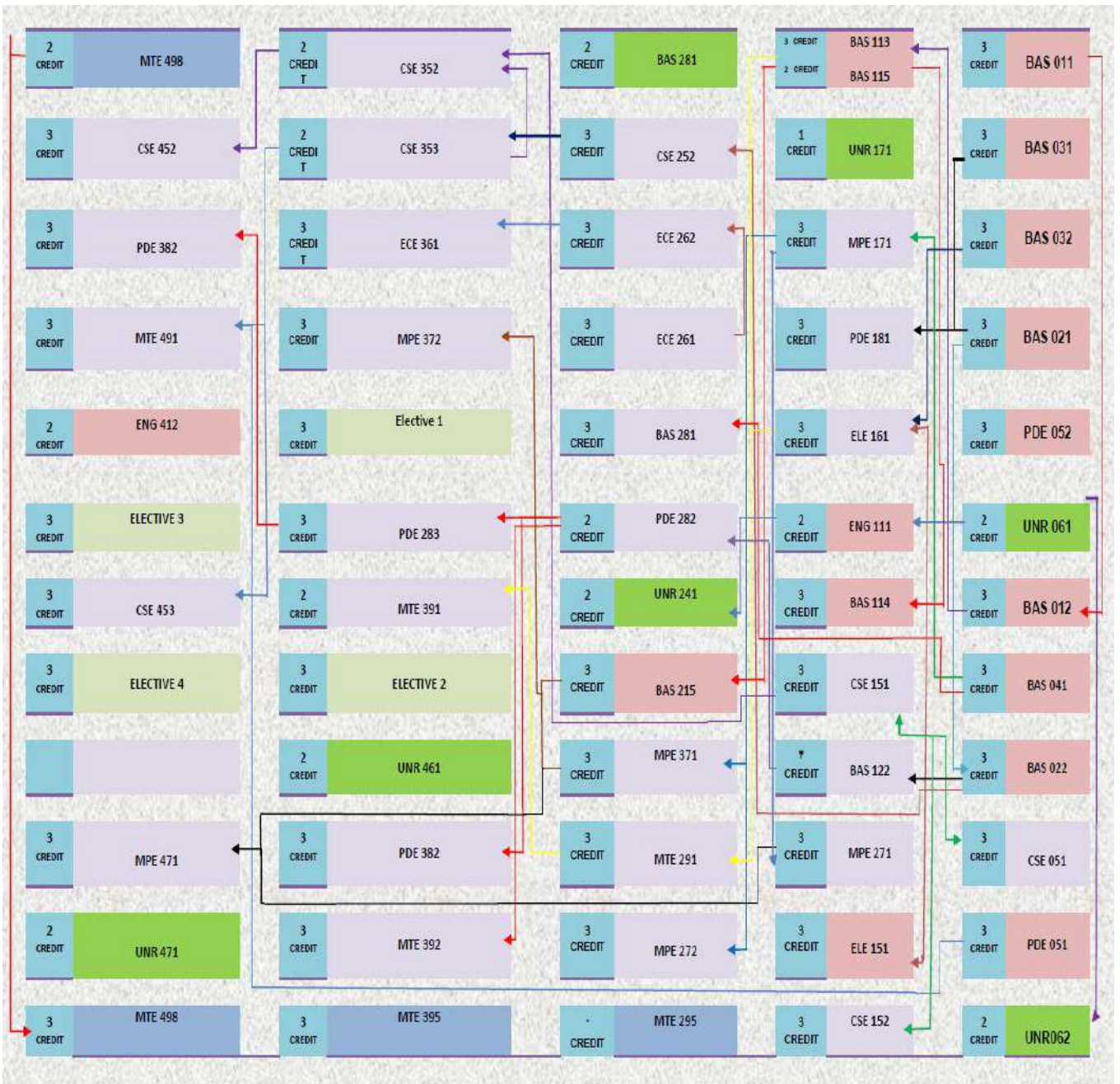
Program coordinator: [Assoc. Prof. Mohamed Hassan Mansour](#)

Signature :



Date: 12/2020.

Course dependency chart



Appendix 1:

Matching matrix of program aims and program attributes

	Graduate Attributes	Program aims
Attributes of Engineer	1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations.	1- Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.
	2- Apply analytic critical and systemic thinking to identify, diagnose, and solve engineering problems with a wide range of complexity and variation.	
	3. Behave professionally and adhere to engineering ethics and standards	2- Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.
	5. Recognize his/her role in promoting the engineering field and contribute to the development of the profession and the community.	
	6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles.	
	4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.	3- Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.
	10. Demonstrate leadership qualities, business administration, and entrepreneurial skills.	
	7. Use techniques, skills, and modern engineering tools necessary for engineering practice	4- Use techniques, skills, and modern engineering tools necessary for engineering practice
	8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies.	5- master self-learning and life -long learning strategies to communicate effectively using different modes, tools, and languages to deal

	9. Communicate effectively using different modes, tools, and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner	with academic/professional challenges in a critical and creative manner.
Attributes of Mechatronics Engineering	11. Plan, manage and carry out designs of mechanical systems and machine elements using appropriate materials, suitable national and international standards and codes with economic and financial aspects.	6- Plan, manage and carry out designs of mechanical systems and machine elements using appropriate materials, suitable national and international standards and codes with economic and financial aspects.
	12. Analyze and asses performance of mechatronic systems and components using scientific, mathematical, computer-based models, analytical methods and Modeling techniques.	7- Analyze and asses performance of mechatronic systems and components using scientific, mathematical, computer-based models, analytical methods and Modeling techniques.
	13. Integrate a wide range of analytical tools, techniques, equipment, and software packages to design and develop mechatronic systems to meet a given specification and requirements.	8- Integrate a wide range of analytical tools, techniques, equipment, and software packages to design and develop mechatronic systems to meet a given specification and requirements.

Appendix-2 Matching program LOs to course LOs

Level	Course Title	Course Code	Program Graduate competencies According to NARS 2018																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	C1	C2	C3	C4
000	Mathematics (1)	BAS011	√				√													
	Mechanics (1)	BAS021	√				√													
	Physics (1)	BAS031	√	√																
	Basics of Chemical Engineering	BAS041	√	√																
	Engineering Drawing	PDE052	√								√									
	English Language (1)	UNR061				√					√									
	Mathematics (2)	BAS012	√							√										
	Mechanics (2)	BAS022	√																	
	Physics (2)	BAS032	√	√																
	Introduction to Computer Systems	CSE042	√				√													
	Principles of Manufacturing Engineering	PDE051	√	√																
	English Language (2)	UNR062					√				√									
100	Mathematics (3)	BAS113	√																	
	Probability Theory and Statics	BAS115	√	√				√			√									
	Electric Circuits	ELE141	√		√						√									
	Digital Logical Design	CSE151		√	√															
	Strength of Materials	PDE181										√	√							
	History of Engineering and Technology	UNR171			√		√				√									
	Mathematics (4)	BAS114	√																	
	Solid Body Mechanics	BAS121	√									√	√							
	Electric Power and Machines	ELE142															√	√		
	Algorithms and Data Structures	CSE152															√	√		
	Basics of Heat and Fluids	MPE171											√		√					

	Technical Report Writing	ENG111					√			√		√						
200	Mathematics (5)	BAS215	√	√								√						
	Electronics (1)	ECE261														√		√
	Fluid Mechanics	MPE271										√		√				
	Materials Science	PDE281										√			√			
	Kinematics and Dynamics of Machines	PDE282										√	√	√				
	Communication and Presentation Skills	UNR241									√							
	Thermodynamics	MPE272										√	√					
	Automatic Control Systems	CSE252														√	√	
	Electronics (2)	ECE262														√		√
	Mechanical Vibrations	PDE283										√		√	√			
	Instrumentation & Measurements	MTE291														√	√	
	Law and Human Rights	UNR281	√					√										
	Field Training (1)	MTE295														√		√
300	Microcontrollers and Operating Systems	CSE352														√		√
	Digital Signal Processing	ECE361															√	√
	Sensors and Actuators	MTE391														√		√
	Mechanical Design	PDE381										√	√	√				
	Heat Transfer	MPE371										√			√			
	Embedded Systems	CSE353														√	√	√
	Robotics	MTE392														√		√
	Computational Fluid Dynamics	MPE372										√			√			
	CNC Machines	PDE382										√	√					
	Field Training (2)	MTE395														√	√	
	Data Base Systems	CSE301														√		√
	Internet of Things	CSE302														√		√
	Power Electronics	ELE301															√	√
	Computer-Aided Design	PDE301											√	√				
Non-Traditional Machining Processes	PDE302											√		√				

	Microelectromechanical Systems	MPE301												√	√					
	Control in Power Stations and Air conditioning Systems	MPE302												√	√		√			
	Autotronic Systems	MTE301															√	√		
400	Programmable Logic Controllers	CSE452															√	√	√	
	Design of Mechatronic Systems	MTE491																	√	√
	Project Management	ENG431				√	√			√	√									
	Marketing	UNR471				√	√	√		√	√									
	Project (1) in Mechatronics	MTE498															√		√	√
	Artificial Intelligence and Machine Learning	CSE453																√		√
	Hydraulic and Pneumatic Control Systems	MPE471												√	√					
	Ethics and Morals of the Profession	UNR461				√	√			√	√									
	Project (2) in Mechatronics	MTE499															√		√	√
	Software Engineering	CSE401															√			√
	Computer Vision	CSE402																√		√
	Image Processing	ECE401																√		√
	Electric Traction Systems	ELE401																√	√	
	Prototyping and Automation	PDE401															√	√		
	Mobile and Bipedal Robots	PDE402													√	√				
	Design of Renewable Energy Systems	MPE401													√	√	√			
	Medical Mechatronic Systems	MTE401																√		√