

## جامعة بنهـــا - كلية الهندسة ببنها

## إدارة البرامج العلمية المتخصصة بنظام الساعات المعتمدة



## برنامج هندسه الميكاترونيات والأتمتة

# المقررات الدراسية

			Lev	el 0-1	<u>1</u>									
			Cr.		Ct.	Hr.		Final			Ass	essme	nt	
Code	Course Title	Pre-Req	Hrs	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	PE/ OE	SA	Final	Sum
FRB 001	Analytical geometry & Linear Algebra		3	2	0	2	4	2 Hr	30	20		10	40	100
FRB 003	Statics		3	2	0	2	4	2 Hr	30	20		10	40	100
FRB 007	Chemistry for Engineers		4	3	2	1	6	2 Hr	30		20	10	40	100
FRB 005	Waves and Heat		3	2	2	1	5	2 Hr	30		20	10	40	100
FRM 009	Engineering Drawing		2	0	0	4	4	2 Hr	30	20		10	40	100
UHS 101	Foreign Language		2	2	0	0	2	2 Hr	30	20		10	40	100
UHS 102	Information and Communication Technology		2	2	0	0	2	2 Hr	30	20		10	40	100
	Total		19											700

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			Le	vel 0	- <u>2</u>									
			Cr.		Ct.	Hr.		Final			1	Assess	ment	
Code	Course Title	Pre-Req	Hrs	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	PE/ OE	SA	Final	Sum
FRB 002	Integration & Multivariable	FRB 001	3	2	0	2	4	2 Hr	30	20		10	40	100
	functions													
FRB 004	Dynamics	FRB 003	3	2	0	2	4	2 Hr	30	20	-	10	40	100
FRM 008	Production Systems Engineering		2	1	3	0	4	2 Hr	30		20	10	40	100
FRB 006	Electricity and Magnetism		3	2	2	1	5	2 Hr	30		20	10	40	100
FRM 010	Engineering Drawing by Computer	FRM 009	2	1	2	0	3	2 Hr	30	20	40	10		100
FRE 012	Computer Programming		2	0	2	2	4	2 Hr	30	20	40	10		100
UHS 103	Societal Issues		2	2	0	0	2	2 Hr	30	20	-	10	40	100
	Total		17											700

			Lox	el 1-	1									
			Cr.	EI 1-	_	Hr.		Final				Asses	sment	
Code	Course Title	Pre-Req	Hrs	Lec		Tut	Sum	Exam Time	MT1	MT2	PE/ OE	SA	Final	Sum
FRB 101	Engineering Differential	FRB 002	3	2	0	2	4	2 Hr	30	20		10	40	100
	Equations													
MAM 101	Fluid Mechanics	FRB 005	3	2	2	1	5	2 Hr	30		20	10	40	100
MAM 103	Kinematics of Machines	FRB 004	3	2	1	1	4	2 Hr	30		20	10	40	100
MAM 107	Materials Science and Engineering	FRB 006	3	2	2	0	4	2 Hr	30	-	20	10	40	100
MAM 105	Mechanics and Testing of Materials	FRM 008	3	2	2	1	5	2 Hr	30		20	10	40	100
MAE 101	Electrical Circuits	FRB 006	2	1	0	2	3	2 Hr	30	20		10	40	100
MAM 109	Computer Applications	FRE 012	2	1	2	0	3	2 Hr	30	20	40	10		100
	Total		19											700



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## برنامج هندسه الميكاترونيات والأتمتة

		1	Field Train	ing l	[								
Code	Course Title	Pre-Req	Cr. Hrs.		Ct.	Hr.		Final Exam Time			Asses	sment	
Code	Course Title	Tie-Req	CI. IIIs.	Lec	Lab	Tut	Sum		MT1	MT2	SA	Final	Sum
FT 103	Field Training I	Completion of 65 Cr. Hrs.	0	0	0	0	0	Oral	-	-	-	Pass or Fail	-

			Level 1	1-2										
			Cr.		Ct.	Hr.		Final			Ass	essm	ent	
Code	Course Title	Pre-Req	Hrs.	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	PE/ OE	$S\Delta$	Final	Sum
FRB 206	Multiple Integrals & Complex Analysis	FRB 002	3	2	0	2	4	2 Hr	30	20	1	10	40	100
MAM 102	Thermodynamics	FRB 005	3	2	1	2	5	2 Hr	30		20	10	40	100
MAM 106	Design of Machine Elements	MAM 105	3	2	3	0	5	2 Hr	30	1	20	10	40	100
MAM 104	Measurement and Instrumentation	FRB 006	2	1	2	1	4	2 Hr	30	1	20	10	40	100
MAM 108	Manufacturing Technology	FRM 008	2	1	2	0	3	2 Hr	30	-	20	10	40	100
MAE 102	Electronic Devices and Circuits	MAE 101	2	1	0	2	3	2 Hr	30	20		10	40	100
UHS 104	Professional Ethics		2	2	0	0	2	2 Hr	30	20		10	40	100
	Total		17											700

			Level	2-1										
			Cr.		Ct.	Hr.		Final			As	sessme	nt	
Code	Course Title	Pre-Req	Hrs.	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	PE/ OE	SA	Final	Sum
MAM 201	Project Management	FRB 002	2	2	1	0	3	2 Hr	30		20	10	40	100
MAM 203	Dynamic Modeling and	FRB 101	3	2	1	1	4	2 Hr	30		20	10	40	100
	Simulation													
MAM 205	Fluid Power Systems	MAM 101	2	1	3	0	4	2 Hr	30		20	10	40	100
MAM 207	Mechanical Design	MAM 106	3	2	3	0	5	2 Hr	30		20	10	40	100
MAM 209	Mechanical Vibrations	FRB 004	3	2	2	1	5	2 Hr	30		20	10	40	100
MAE 211	Electric Machinery	MAE 101	3	2	1	1	4	2 Hr	30		20	10	40	100
UHS XXX	Humanities - Elective I		2	2	0	0	2	2 Hr	30	20	ı	10	40	100
	Total		18											700



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## برنامج هندسه الميكاترونيات والأتمتة

		Le	evel 2	<u>2-2</u>										
			Cr.		Ct.	Hr.		Final			A	ssessm	ent	
Code	Course Title	Pre-Req	Hrs	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	PE/O E	SA	Final	Sum
FRB 104	Engineering Numerical Analysis	FRB 101	3	2	2	0	4	2 Hr	30		20	10	40	100
MAM 204	Introduction to Mechatronics	MAE 102	3	2	2	0	4	2 Hr	30		20	10	40	100
MAE 206	Logic Circuits Design &	MAE 102	3	2	2	0	4	2 Hr	30		20	10	40	100
	Applications													
MAM 208	Industrial Robots	MAM 103	3	2	2	0	4	2 Hr	30		20	10	40	100
MAM 202	Automatic Control Systems	MAM 209	3	2	2	1	5	2 Hr	30		20	10	40	100
FRB 103	Environmental Pollution and	FRB 007	2	2	1	0	3	2 Hr	30		20	10	40	100
	Industrial Safety													
UHS 3XX	Humanities Elective II		2	2	0	0	2	2 Hr	30	20		10	40	100
	Total		19											700

		Field Trai	ning I	I									
			Cr.		Ct.	Hr.		Final			Asses	sment	
Code	Course Title	Pre-Req	Hrs	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	SA	Final	Sum
FT 203	Field Training II	Completion of 96 Cr. Hrs.	0	0	0	0	0	Oral	-	-	-	Pass or Fail	-

			Level	3-1										
		Pre-	Cr.		Ct.	Hr.		Final			As	sessr	nent	
Code	Course Title	Req	Hrs.	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	PE. OE	SA	Final	Sum
FRB 201	Applied Engineering Probability	FRB	3	2	1	1	4	2 Hr	30		20	10	40	100
	and Mathematical Statistics	002												
MAX xxx	Elective I		3	2	0	2	4	2 Hr	30	20		10	40	100
MAM 301	Design of Mechatronic Systems	MAM	3	2	2	0	4	2 Hr	30	-	20	10	40	100
		204												
MAE 303	Power Electronics	MAE	3	2	2	0	4	2 Hr	30	1	20	10	40	100
		211												
MAX xxx	Elective II		3	2	0	2	4	2 Hr	30	20		10	40	100
MAM 309	Technical Reports		1	0	2	0	2	2 Hr			50	50		100
UHS 4XX	Humanities Elective III		2	2	0	0	2	2 Hr	30	20		10	40	100
	Total		18											600





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# برنامج هندسه الميكاترونيات والأتمتة

			Level	3-2										
Code	Course Title	Pre-Req	Cr. Hrs.	Lec	Ct.	_	_	Final Exam Time		MT2	DE.		nent Final	Sum
MAM 302	CAD/CAM	MAM 207	3	2	2	0	4	2 Hr	30		20	10	40	100
MAE 304	Microprocessors & Microcontrollers	MAE 206	3	2	1	1	4	2 Hr	30	-	20	10	40	100
MAX xxx	Elective III		3	2	0	2	4	2 Hr	30	20		10	40	100
MAX xxx	Elective IV		3	2	0	2	4	2 Hr	30	20		10	40	100
MAM 390	Senior Design Project I		2	2	0	0	2	-	-	-	50	50		100
MAM 306	Engineering Economics		2	2	0	1	3	2 Hr	30	20		10	40	100
	Total		16											600

			Lev	vel 4	1									
			Cr.		Ct.	Hr.		Final				Asse	essmen	ıt
Code	Course Title	Pre-Req	Hrs.	Lec	Lab	Tut	Sum	Exam Time	MT1	MT2	PE/ OE	S 4	Final	Sum
MAE 405	Electric Drives	MAE 303	3	2	1	2	5	2 Hr	30		20	10	40	100
MAE 403	Programmable Logic	MAE 206	3	2	2	0	4	2 Hr	30		20	10	40	100
	Controllers													
MAX xxx	Elective V		3	2	0	2	4	2 Hr	30	20		10	40	100
MAX xxx	Elective VI		3	2	0	2	4	2 Hr	30	20		10	40	100
MAE 401	Artificial Intelligence	MAE 304	2	1	2	1	4	2 Hr	30		20	10	40	100
MAM 490	Senior Design Project II	MAM 390	3	0	6	0	6	-	-	-	50	50		100
	Total		17											600

#### Concentration Requirements Mechatronics Engineering (concentration "x")

	Tutton requirements meeting of		<u> </u>				
Code	Course	Pre-Req	Cr.		Ct.	Hr.	
Code	Course	Fre-Req	Hrs.	Lec	Lab	Tut	Sum
Pool Course	s for Elective I, Elective II						
MAM 331	Mobile Robots	MAM 208	3	2	1	1	4
MAE 333	Digital Control	MAM 202	3	2	0	2	4
MAE 335	Computer Interfacing	MAE 206	3	2	0	2	4
Pool Course	s for Elective III, Elective IV						
MAM 332	Autonomous systems	MAM 208	3	2	0	2	4
MAE 334	Micro Electromechanical Systems	MAM 301	3	2	0	2	4
	(MEMS)	MAM 301	3	2	0	2	4
MAM 336	Automotive Engineering	MAM 301	3	2	0	2	4
Pool Courses	for Elective V, Elective VI						
MAE 431	Embedded System Design	MAE 304	3	2	1	2	5
MAM 433	Biomechatronic	MAM 301	3	2	1	2	5
MAM 435	Autotronics	MAM 301	3	2	1	2	5
	Total		18	12	4	17	27



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## برنامج هندسه الميكاترونيات والأتمتة

Concentration Requirements of Automation Engineering (MAX x4x)

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Code	Course	Pre-Req	Cr.	Ct. Hr.			
			Hrs.	Lec	Lab	Tut	Sum
Pool Courses for Elective I, Elective II							
MAE 341	Industrial Automation	MAM 208	3	2	0	2	4
MAE 343	Machine Vision Systems	MAM 204	3	2	0	2	4
MAM 345	Playware Technology	MAM 208	3	2	0	2	4
Pool Courses for Elective III, Elective IV							
MAE 342	Theory of Automata	MAE 341	3	2	0	2	4
MAM 344	Sensors and Actuators	MAM 208	3	2	0	2	4
MAM 346	Industrial Material Flow	MAM 301	3	2	0	2	4
	Management						
Pool Courses for Elective V, Elective VI							
MAM 441	Hydraulic Servo Control	MAE 341	3	2	0	2	4
MAE 443	Internet of things	MAE 304	3	2	0	2	4
MAM 445	Computer Numerical Control (CNC)	MAM 302	3	2	0	2	4
Total			18	12	0	12	24

وكيل الكلية لشئون التعليم والطلاب

منسق البرنامج

مقررا ومشرف عام البرامج

د. أيمن سليمان سلمي

أ.د. فهمى صلاح عبدالحليم