



Degree and Study Plan



College: Engineering
Department: Electrical and Computer Engineering
Cohort: 2023
Degree: Bachelor of Engineering (B. Eng.)
Major: Electrical and Computer Engineering (ECE)
Specializations:

1. Telecommunications and Wireless Systems (TWS)
2. Embedded Computing and Networks (ECN)
3. Power Systems and Energy (PSE)
4. Electronic Instrumentation and Control (EIC)

Summary of Credits

Category		Courses	Total Credit Hours
University Requirements	(UR)	-General Foundation Program	0
		-Arabic	2
		-Contemporary Omani State and People	2
		-Oman & Islamic Civilization or Islamic Culture	2
University Elective	(UE)	List (A)	6
College Requirements	(CR)	List (B)	32
College Electives	(CE)	List (C)	3
Departmental Requirements	(DR)	List (D)	50
Departmental Electives	(DE)	List (E) ¹	0
Major Requirements	(AR)	List (F) ¹	0
Major Electives	(AE)	List (G) ¹	0
Specialization Requirements	(SR)	List (H)	30
Specialization Electives	(SE)	List (I)	9 (3-courses) or 3 (1-course) + 6 (of Co-Op)
Minor Requirement	(IR)	List (J) ¹	0
Minor Elective	(IE)	List (K) ¹	0
Total Credits			136

Important Information:

Co-Operative Training (Co-Op) pathway (introduced in April 2020) is optional. It is designed for students who are following a one-year Co-Op program after finishing semester 8 (College regulations apply).

For reference please contact:

Dr. Ahmed Al Maashri (HoD)

Ext: 1330/1390/1363

HoD:

Date: 17th October 2023

Dean:

Date: 22 October 2023

for



¹ Not attached as no courses for ECE department

Department of Electrical and Computer Engineering

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Sem-1 Fall 2023	Course Code	Course Title	Cr.	Pre-Requisites	Cat.
	-	General Foundation Program	-	-	UR
	Total Credits		-		
Semester-2 Spring 2024	HIST1010 or ISLM1010	Oman & Islamic Civilization or Islamic Culture	2		UR
	CHEM1071	General Chemistry for Engineering	3	(FPEH 0560 OR FPEL0560 OR FPES0560 OR FPMT0105) OR (FPEH 0600 OR FPEL0600 OR FPES0600 OR FPMT0105) OR (FPEL0601 OR FPMT0105) OR (FPEL0602 OR FPMT0105) OR (FPEH0603 OR FPEL0603 OR FPES0603 OR FPMT0105) OR (FPEL0604 OR FPMT0105) OR (FPEH0560 OR FPEL0560 OR FPES0560 OR FPMT0109) OR (FPEH0600 OR FPEL0600)	CR
	ENGR1501	Introduction to Engineering	1	(FPEH0560 OR FPEL0560 OR FPES0560) OR (FPEH0600 OR FPEL0600 OR FPES0600) OR FPEL0601 OR FPEL0602 OR (FPEH0603 OR FPEL0603 OR FPES0603) OR FPEL0604	CR
	ENGR1600	Workshop I	1		CR
	LANC2160	English for Engineering I	3	(FPES0560 OR FPEH0560 OR FPES0600 OR FPEH0600 OR FPEH0603 OR FPES0603 OR FPEL0700)	CR
	MATH2107	Calculus I	4	(FPEH 0560 OR FPEL0560 OR FPES0560 OR FPMT0105) OR (FPEH 0600 OR FPEL0600 OR FPES0600 OR FPMT0105) OR (FPEL0601 OR FPMT0105) OR (FPEL0602 OR FPMT0105) OR (FPEH0603 OR FPEL0603 OR FPES0603 OR FPMT0105) OR (FPEL0604 OR FPMT0105) OR (FPEH0560 OR FPEL0560 OR FPES0560 OR FPMT0108) OR (FPEH0600 OR FPEL0600)	CR
	Total Credits		14		
Semester-3 Fall 2024	ARAB1060**	Arabic	2		UR
		University Elective	2		UE
	SOCY1005**	Contemporary Omani State and People	2		UR
	LANC2161	English for Engineering II	3	LANC2160 OR LANC2162 OR LANC2035 OR LANC2140 OR LANC2058 OR LANC2033)	CR
	MATH2109	Calculus II for science and Engineering	3	MATH2107	CR
	PHYS2107	Physics for Engineering I	4	(FPEL0560 OR FPMT0105) OR (FPEL0560 OR FPMT0109) OR (FPEL0600 OR FPMT0105) OR (FPEL0600 OR FPMT0109) OR (FPEL0601 OR FPMT0105) OR (FPEL0601 OR FPMT0109) OR (FPEL0602 OR FPMT0105) OR (FPEL0602 OR FPMT0109) OR (FPEL0603 OR FPMT0105) OR (FPEL0603 OR FPMT0109)	CR
	Total Credits		16		
Semester-4 Spring 2025	ECCE2017	Electrical Circuit Analysis	4	MATH2107	DR
	ECCE3206	Digital Logic Design	3		DR
	MATH3171	Linear Algebra & Multivariate Calculus for Engineers	3	MATH2108 OR MATH2109	CR
	PHYS2108	Physics for Engineering II	4	PHYS2107 OR PHYS2101	CR
	Total Credits		14		
Semester-5 Fall 2025	ENGR2217 ²	Introduction to Computer Programming for Engineers	3		CE
	ECCE3153	Electronic Devices and Circuits	3	ECCE2017	DR
	ECCE4023	Engineering Electromagnetics	3	PHYS2108 AND MATH 3171	DR
	MATH4151	Disc. Math and Complex Analysis	3	MATH3171	DR
	MATH4174	Differential Equations for Engineers	3	(LANC2161 AND MATH2108) OR (LANC2161 AND	CR

² ENGR 2217-Programming for Engineers

** Please refer to the end of the document

				MATH2109)	
	Total Credits		15		
Semester-6 Spring 2026	ECCE3142	Signals & Systems	3	ECCE2017	DR
	ECCE3352	Electrical Technology	3	ECCE2017	DR
	MATH4176	Numerical Analysis for Engineers	3	MATH3171 AND MATH4174 AND [COMP2002 OR ENGR2217]	DR
	ECCE4227	Embedded Systems	3	COMP2002 OR ENGR2217 AND ECCE3206 AND (ECCE3153 OR MCTE3110)	DR
	STAT2103	Probability for Engineers	3	MATH2107	DR
	Total Credits		15		

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Telecommunications and Wireless Systems Specialization (TWS)

	Course Code	Course Title	Cr.	Pre-Requisites	Cat.
Semester-7 Fall 2026	ECCE3038	Elect. Measurements & Instr.	2	ECCE2017 AND ECCE3153	DR
	ECCE4122	Principles of Analog & Digital Communication	3	ECCE3142	DR
	ECCE4242	Introduction to Computer Networks	3	ECCE4227 OR COMP3518 OR COMP3501 [Incompatible with ECCE5231]	SR
	ECCE4153	Modern Digital Electronics	3	ECCE3153	SR
	ECCE4142	Digital Signal Processing	3	ECCE3142	SR
	ECCE4010	Engineering Design and Professional Ethics	2	ECCE3142 AND ECCE3352 AND ECCE3153 AND ECCE3206	DR
	Total Credits		16		
Jan 27	ECCE3006	Skills Training	-	ECCE3152 OR MCTE3110	DR
	Total Credits		0		
Semester-8 Spring 2027	ECCE4082	Professional Skills	1	LANC2161	DR
	ECCE4127	Advanced Digital Communication	3	ECCE4122	SR
	ECCE4416	Linear Control Systems	3	ECCE3142	DR
	ECCE5113	Antenna Theory and Radiowave Propagation	3	ECCE4023	SR
	ECCE5010	Engineering Economics and Project Management	3	STAT2103	DR
		University Elective	2		UE
	Total Credits		15		
Summer 2027	ENGR4007	Industrial Training	-	ECCE3006	CR
	Total Credits		0		
Semester-9 Fall 2027	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5123	Optical Communications	3	ECCE4122	SR
	ECCE5124	Wireless Communications	3	ECCE4122	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	ECCE5114	Telecom Systems Security	3	ECCE4122	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	Total Credits		17		
Semester-10 Spring 2028	ECCE5099	Project (Part II)	3	ECCE5009	DR
	ECCE5143	Advanced Digital Signal Proc.	3	ECCE4142	SR
	ECCE5130	Modern Communication Systems Design	3	ECCE4153	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
		University Elective	2		UE
	Total Credits		14		

³ Internal regulation [enforced by the ECE Department]. ECCE5009 will be available only in each Fall semester.

⁴ Or ECCE4xxx

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Embedded Computing and Networks Specialization (ECN)

	Course Code	Course Title	Cr.	Pre-Requisites	Cat.
Semester-7 Fall 2026	ECCE3038	Elect. Measurements & Instr.	2	ECCE2017 AND ECCE3153	DR
	ECCE4122	Principles of Analog & Digital Communication	3	ECCE3142	DR
	ECCE4216	Machine Learning for Engineers	3	(ENGR2217 OR COMP2002) AND (ECCE3352 OR MCTE3210)	SR
	ECCE4416	Linear Control Systems	3	ECCE3142	DR
		University Elective	2		UE
		University Elective	2		UE
	Total Credits		15		
Jan 27	ECCE3006	Skills Training	-	ECCE3152 OR MCTE3110	DR
	Total Credits		0		
Semester-8 Spring 2027	ECCE4010	Engineering Design and Professional Ethics	2	ECCE3142 AND ECCE3352 AND ECCE3153 AND ECCE3206	DR
	ECCE4082	Professional Skills	1	LANC2161	DR
	ECCE4242	Introduction to Computer Networks	3	ECCE4227 OR COMP3518 OR COMP3501 [Incompatible with ECCE5231]	SR
	ECCE4257	Applied Algorithms for ECE	3	COMP2002 OR ENGR2217	SR
	ECCE4254	Operating Systems	3	COMP2002 OR ENGR2217	SR
	ECCE5217	Reconfigurable Computing	3	ECCE4227	SR
	Total Credits		15		
Summer 2027	ENGR4007	Industrial Training	-	ECCE3006	CR
	Total Credits		0		
Semester-9 Fall 2027	ECCE5232	Computer Architecture and Organization	3	ECCE4227	SR
	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5218	Routing and Switching	3	ECCE4242	SR
	ECCE5293	Embedded Vision Systems	3	ECCE4227	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	ECCE5010	Engineering Economics and Project Management	3	STAT2103	DR
	Total Credits		17		
Semester-10 Spring 2028	ECCE5099	Project (Part II)	3	ECCE5009	DR
	ECCE5229	Embedded Real Time Systems	3	ECCE4227	SR
	ECCE5219	Intelligent Applications in Robotics and Drones	3	ECCE4227	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	Total Credits		15		

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Power Systems and Energy Specialization (PSE)

	Course Code	Course Title	Cr.	Pre-Requisites	Cat.
Semester-7 Fall 2026	ECCE3038	Elect. Measurements & Instr.	2	ECCE2017 AND ECCE3153	DR
	ECCE4122	Principles of Analog & Digital Communication	3	ECCE3142	DR
	ECCE4312	Power System Analysis I	3	ECCE3352	SR
	ECCE4358	Electrical Machines	3	ECCE3352	SR
	ECCE4010	Engineering Design and Professional Ethics	2	ECCE3142 AND ECCE3352 AND ECCE3153 AND ECCE3206	DR
		University Elective	2		UE
	Total Credits		15		
Jan 27	ECCE3006	Skills Training	-	ECCE3152 OR MCTE3110	DR
	Total Credits		0		
Semester-8 Spring 2027	ECCE4082	Professional Skills	1	LANC2161	DR
	ECCE4361	Renewable Electricity generation	3	ECCE3352	SR
	ECCE4316	Power System Analysis II	3	ECCE4312	SR
	ECCE4416	Linear Control Systems	3	ECCE3142	DR
	ECCE5010	Engineering Economics and Project Management	3	STAT2103	DR
	ECCE4467	Power Electronics & Drives	3	(ECCE3153 OR MCTE3110) AND (ECCE3352 OR MCTE3210)	SR
	Total Credits		16		
Summer 2027	ENGR4007	Industrial Training	-	ECCE3006	CR
	Total Credits		0		
Semester-9 Fall 2027	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5302	Power Systems Protection	3	ECCE4316	SR
	ECCE5332	High Voltage Engineering	3	ECCE4312	SR
	ECCE5303	Power Distribution System Eng.	3	ECCE4312	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
		University Elective	2		UE
	Total Credits		16		
Semester-10 Spring 2028	ECCE5099	Project (Part II)	3	ECCE5009	DR
	ECCE5322	Electrical Power Systems Quality	3	ECCE4312	SR
	ECCE5315	Smart Grid	3	ECCE4312	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	Total Credits		15		

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Electronic Instrumentation and Control Specialization (EIC)

	Course Code	Course Title	Cr.	Pre-Requisites	Cat.
Semester-7 Fall 2026	ECCE3038	Elect. Measurements & Instr.	2	ECCE2017 AND ECCE3153	DR
	ECCE4122	Principles of Analog & Digital Communication	3	ECCE3142	DR
	ECCE4153	Modern Digital Electronics	3	ECCE3153	SR
	ECCE4416	Linear Control Systems	3	ECCE3142	DR
	ECCE4467	Power Electronics & Drives	3	(ECCE3153 OR MCTE3110) AND (ECCE3352 OR MCTE3210)	SR
		University Elective	2		UE
	Total Credits		16		
Jan 27	ECCE3006	Skills Training	-	ECCE3152 OR MCTE3110	DR
	Total Credits		0		
Semester-8 Spring 2027	ECCE4082	Professional Skills	1	LANC2161	DR
	ECCE4455	Sensors and Actuators	3	ECCE3038	SR
	ECCE4436	Industrial Control Systems Design	3	ECCE4416	SR
	ECCE4010	Engineering Design and Professional Ethics	2	ECCE3142 AND ECCE3352 AND ECCE3153 AND ECCE3206	DR
	ECCE4142	Digital Signal Processing	3	ECCE3142	SR
	ECCE4216	Machine Learning for Engineers	3	(ENGR2217 OR COMP2002) AND (ECCE3352 OR MCTE3210)	SR
	Total Credits		15		
Summer 2027	ENGR4007	Industrial Training	-	ECCE3006	CR
	Total Credits		0		
Semester-9 Fall 2027	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5452	Computer-Aided Instrumentation	3	(ECCE4456 OR ECCE4455) AND ECCE4227	SR
	ECCE5411	Introduction to Industrial Network Practices	3	ECCE4436	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	ECCE5010	Engineering Economics and Project Management	3	STAT2103	DR
	Total Credits		17		
Semester-10 Spring 2028	ECCE5099	Project (Part II)	3	ECCE5009	DR
		University Elective	2		UE
	ECCE5410	Intelligent Control Systems	3	ECCE4416	SR
	ECCE5445	Control System Design	3	ECCE4416 OR MCTE4250	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	Total Credits		14		

The Co-Operative Training (Co-Op) pathway is **optional**. Students can enroll in this after finishing semester-8. Late students would have to adjust as per course(s) offering.

■ For enrollment terms, conditions, please consult the Head of Department and the Assistant Dean for Training and Community Services Offices					
Co-Operative Pathway					
Co-Op Co-Op Sem-1 Fall-2027	Course Code	Course Title	Cr.	Pre-Requisites/Co-Requisite*	Cat.
	ENGR4007	Industrial Training	-	ECCE3006	CR
	ECCE5501	Co-Operative Training I	0	ENGR4007 *(co-requisite)	AE
	Total Credits		0		
Co-Op Co-Op Sem-2 SP-2028	Course Code	Course Title	Cr.	Pre-Requisites/Co-Requisite*	Cat.
	ECCE5502	Co-Operative Training II	6	ECCE5501	AE
	Total Credits		6		
Telecommunications and Wireless Systems Specialization (TWS)					
Semester-9 Fall 2028	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5123	Optical Communications	3	ECCE4122	SR
	ECCE5124	Wireless Communications	3	ECCE4122	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	ECCE5114	Telecom Systems Security	3	ECCE4122	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	Total Credits		17		
Semester-10 Spring 2029	ECCE5099	Project (Part II)	3	ECCE5009	DR
	ECCE5143	Advanced Digital Signal Processing	3	ECCE4142	SR
	ECCE5130	Modern Communication Systems Design	3	ECCE4153	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
		University Elective	2		UE
	Total Credits		14		
Embedded Computing and Networks Specialization (ECN)					
Semester-9 Fall 2028	ECCE5232	Computer Architecture and Organization	3	ECCE4227	SR
	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5218	Routing and Switching	3	ECCE4242	SR
	ECCE5293	Embedded Vision Systems	3	ECCE4227	
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	ECCE5010	Engineering Economics and Project Management	3	STAT2103	DR
	Total Credits		17		
Semester-10 Spring 2029	ECCE5099	Project (Part II)	3	ECCE5009	DR
	ECCE5229	Embedded Real Time Systems	3	ECCE4227	SR
	ECCE5219	Intelligent App. in Robotics and Drones	3	ECCE4227	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	ECCE5xxx ⁴	Specialization Elective	3	Offered course-specific	SE
	Total Credits		15		
Power Systems and Energy Specialization (PSE)					
Semester-9 Fall 2028	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5302	Power Systems Protection	3	ECCE4316	SR
	ECCE5332	High Voltage Engineering	3	ECCE4312	SR
	ECCE5303	Power Distribution System Eng.	3	ECCE4312	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
		University Elective	2		UE
	Total Credits		16		
Semester-10 Spring 2029	ECCE5099	Project (Part II)	3	ECCE5009	DR
	ECCE5322	Electrical Power System Quality	3	ECCE4312	SR
	ECCE5315	Smart Grid	3	ECCE4312	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	Total Credits		15		
Electronic Instrumentation and Control Specialization (EIC)					
Semester-9 Fall 2028	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ³	DR
	ECCE5452	Computer-Aided Instrumentation	3	(ECCE4456 OR ECCE4455) AND ECCE4227	SR
	ECCE5411	Introduction to Industrial Network Practices	3	ECCE4436	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	ECCE5010	Engineering Economics and Project Management	3	STAT2103	DR
	Total Credits		17		
Semester-10 Spring 2029	ECCE5099	Project (Part II)	3	ECCE5009	DR
		University Elective	2		UE
	ECCE5410	Intelligent Control Systems	3	ECCE4416	SR
	ECCE5445	Control System Design	3	ECCE4416 OR MCTE4250	SR
	ECCE5xxx ⁴	Specialization Elective	3	Offered course specific	SE
	Total Credits		14		

UNIVERSITY REQUIREMENTS for Non-Arabic or Non-Omani Students

No.	Cohorts 2017 and before	Credits	Cohorts 2018 and after	Credits	Notes
1	ARAB1001	3	ARAB1060	2	
2	SOCY1001	1	SOCY1005	2	For Omanis Only
3	--	--	SOCY1007	2	For Non Omanis
4	ARAB1019			3	For non-Arabic Speaking Students. Offered only in Fall semesters

Notes:

- For the courses (SOCY1005, SOCY1007, HIST1010), the course materials and exams are in English for non-Arabic speaking students.
- Currently, there is no Arabic course with 2 credits for the non-Arabic speaking students of cohorts 2018 and after. Those students have to register the ARAB1019 as shown in the table above.
- For the university electives below, engineering students must register a humanity or social course (non-scientific & non-linguistic course) from any college as a University Elective. However, students are **NOT** allowed to register the following University Electives listed below

List A: UNIVERSITY ELECTIVES (UE) – 6 Credits

No.	Course Code	Course Title	College
1	ENGL1523	English Writing Skills	College of Arts
2	ENGR1524	English Reading Skills	College of Arts
3	ENGL1525	English Speaking and Listing Skills	College of Arts
4	CHEM1100	Everyday Chemistry	College of Science
5	COMP1210	Web Site Development	College of Science
6	CROP2020	Lab and Safety	College of Agriculture and Marine Science
7	MNGT2500	Entrepreneurship: Creativity and Innovation	College of Economics and Political Sciences
8	MNGT2501	Entrepreneurship	College of Economics and Political Sciences
9	ECON1050	Introduction to Economics	College of Economics and Political Sciences
10	CHPE1000	Renewable Energy	College of Engineering
11	ECCE1000	Electricity Generation from Solar PV	College of Engineering
12	MEIE1000	Solar Calculations and Energy	College of Engineering
13	MCTE1000	Edutainment Robotic	College of Engineering
14	ECCE2000	Introduction to Artificial Intelligence	College of Engineering

List B: COLLEGE REQUIREMENTS (CR) – 32 Credits

No.	Course Code	Course Title	Credits	Pre-Requisites
1	LANC2160	English for Engineering I	3	(FPES0560 OR FPEH0560 OR FPES0600 OR FPEH0600 OR FPEH0603 OR FPES0603 OR FPEL0700)
2	LANC2161	English for Engineering II	3	LANC2160 OR LANC2162 OR LANC2035 OR LANC2140 OR LANC2058 OR LANC2033)
3	ENGR1501	Introduction to Engineering	1	(FPEH0560 OR FPEL0560 OR FPES0560) OR (FPEH0600 OR FPEL0600 OR FPES0600) OR FPEL0601 OR FPEL0602 OR (FPEH0603 OR FPEL0603 OR FPES0603) OR FPEL0604
4	ENGR1600	Workshop I	1	
5	MATH2107	Calculus I	4	(FPEH 0560 OR FPEL0560 OR FPES0560 OR FPMT0105) OR (FPEH 0600 OR FPEL0600 OR FPES0600 OR FPMT0105) OR (FPEL0601 OR FPMT0105) OR (FPEL0602 OR FPMT0105) OR (FPEH0603 OR FPEL0603 OR FPES0603 OR FPMT0105) OR (FPEL0604 OR FPMT0105) OR (FPEH0560 OR FPEL0560 OR FPES0560 OR FPMT0108) OR (FPEH0600 OR FPEL0600)
6	MATH2109	Calculus II for science and Engineering	3	MATH 2107
7	MATH3171	Linear Algebra & Multivariate Calculus	3	MATH2108 OR MATH2109
8	MATH4174	Differential Equations for Engineers	3	(LANC2161 AND MATH2108) OR (LANC2161 AND MATH2109)
9	PHYS2107	Physics for Engineering I	4	(FPEL0560 OR FPMT0105) OR (FPEL0560 OR FPMT0109) OR (FPEL0600 OR FPMT0105) OR (FPEL0600 OR FPMT0109) OR (FPEL0601 OR FPMT0105) OR (FPEL0601 OR FPMT0109) OR (FPEL0602 OR FPMT0105) OR (FPEL0602 OR FPMT0109) OR (FPEL0603 OR FPMT0105) OR (FPEL0603 OR FPMT0109)
10	PHYS2108	Physics of Engineering II	4	PHYS2107 OR PHYS2101

11	CHEM1071	General Chemistry for Engineering	3	(FPEH 0560 OR FPEL0560 OR FPES0560 OR FPMT0105) OR (FPEH 0600 OR FPEL0600 OR FPES0600 OR FPMT0105) OR (FPEL0601 OR FPMT0105) OR (FPEL0602 OR FPMT0105) OR (FPEH0603 OR FPEL0603 OR FPES0603 OR FPMT0105) OR (FPEL0604 OR FPMT0105) OR (FPEH0560 OR FPEL0560 OR FPES0560 OR FPMT0109) OR (FPEH0600 OR FPEL0600)
12	ENGR4007	Industrial Training	0	ECCE3006

List C: COLLEGE ELECTIVES (CE) – 3 Credits

No.	Course Code	Course Title	Credits	
1	COMP2002	Intr. to Computer Prog. for Engineers	3	FPEL (0560 OR 0600 OR 0601 OR 0602 OR 0603 OR 0604) AND FPCS (0101 OR 0102)
2	ENGR2217	Programming for Engineers	3	

List D: DEPARTMENTAL REQUIREMENT (DR) – 50 Credits

No.	Course Code	Course Title	College	Pre-Requisite
1.	ECCE2017	Electrical Circuit Analysis	4	MATH2107
2.	ECCE3038	Electrical Measurements & Instrumentation	2	ECCE2017 AND ECCE3153
3.	ECCE3142	Signals & Systems	3	ECCE2017
4.	ECCE3153	Electronic Devices and Circuits	3	ECCE2017
5.	ECCE3206	Digital Logic Design	3	
6.	ECCE3352	Electrical Technology	3	ECCE2017
7.	ECCE4010	Eng. Design and Professional Ethics	2	ECCE3142 AND ECCE3352 AND ECCE3153 AND ECCE3206
8.	ECCE4082	Professional Skills	1	LANC2161
9.	ECCE4023	Engineering Electromagnetics	3	PHYS2108 AND MATH 3171
10.	ECCE4122	Principles of Analog & Digital Comm	3	ECCE3142
11.	ECCE4227	Embedded Systems	3	(COMP2002 OR ENGR2217) AND ECCE3206 AND (ECCE3153 OR MCTE3110)
12.	ECCE4416	Linear Control Systems	3	ECCE3142
13.	ECCE5010	Engineering Economics and Project Management	3	STAT2103
14.	ECCE5009	Project (Part I)	2	ECCE4010 AND PR ¹
15.	ECCE5099	Project (Part II)	3	ECCE5009
16.	MATH4151	Discrete Math & Complex Analysis	3	MATH3171
17.	MATH4176	Numerical Analysis for Engineers	3	MATH3171 AND MATH4174 AND (COMP2002 OR ENGR2217)
18.	STAT2103	Probability for Engineers	3	MATH2107
19.	ECCE3006	Skills Training	0	ECCE3152 OR MCTE3110

List H: SPECIALIZATION REQUIREMENT (SR) – 30 Credits

Telecommunications and Wireless Systems Specialization

No.	Course Code	Course Title	College	Pre-Requisite
1.	ECCE4242	Introduction to Computer Networks	3	(ECCE4227 OR COMP3518 OR COMP3501) [Incompatible with ECCE5231]
2.	ECCE4153	Modern Digital Electronics	3	ECCE3153
3.	ECCE4142	Digital Signal Processing	3	ECCE3142
4.	ECCE4127	Advanced Digital Communication	3	ECCE4122
5.	ECCE5113	Antenna Theory and Radiowave Propagation	3	ECCE4023
6.	ECCE5123	Optical Communications	3	ECCE4122
7.	ECCE5124	Wireless Communications	3	ECCE4122
8.	ECCE5114	Telecom Systems Security	3	ECCE4122
9.	ECCE5143	Advanced Digital Signal Processing	3	ECCE4142
10.	ECCE5130	Modern Communication Systems Design	3	ECCE4153

Embedded Computing and Networks Specialization

No.	Course Code	Course Title	College	Pre-Requisite
1.	ECCE4242	Introduction to Computer Networks	3	ECCE4227 OR COMP3518 OR COMP3501 [Incompatible with ECCE5231]
2.	ECCE4216	Machine Learning for Engineers	3	(ENGR2217 OR COMP2002) AND (ECCE3352 OR MCTE3210)
3.	ECCE4257	Applied Algorithms for ECE	3	(COMP2002 OR ENGR2217)
4.	ECCE4254	Operating Systems	3	COMP2002 OR ENGR2217
5.	ECCE5217	Reconfigurable Computing	3	ECCE4227
6.	ECCE5232	Computer Architecture and Organization	3	ECCE4227
7.	ECCE5218	Routing and Switching	3	ECCE4242
8.	ECCE5293	Embedded Vision Systems	3	ECCE4227
9.	ECCE5229	Embedded Real Time Systems	3	ECCE4227
10.	ECCE5219	Intelligent Applications in Robotics and Drones	3	ECCE4227

Power Systems and Energy Specialization

No.	Course Code	Course Title	College	Pre-Requisite
1.	ECCE4312	Power System Analysis I	3	ECCE3352
2.	ECCE4358	Electrical Machines	3	ECCE3352
3.	ECCE4467	Power Electronics & Drives	3	(ECCE3153 OR MCTE3110) AND (ECCE3352 OR MCTE3210)
4.	ECCE4361	Renewable Electricity generation	3	ECCE3352
5.	ECCE4316	Power System Analysis II	3	ECCE4312
6.	ECCE5302	Power Systems Protection	3	ECCE4316
7.	ECCE5332	High Voltage Engineering	3	ECCE4312
8.	ECCE5303	Power Distribution System Eng.	3	ECCE4312
9.	ECCE5322	Electrical Power Systems Quality	3	ECCE4312
10.	ECCE5315	Smart Grid	3	ECCE4312

Electronic Instrumentation and Control Specialization

No.	Course Code	Course Title	College	Pre-Requisite
1.	ECCE4142	Digital Signal Processing	3	ECCE3142
2.	ECCE4153	Modern Digital Electronics	3	ECCE3153
3.	ECCE4467	Power Electronics & Drives	3	(ECCE3153 OR MCTE3110) AND (ECCE3352 OR MCTE3210)
4.	ECCE4455	Sensors and Actuators	3	ECCE3038
5.	ECCE4436	Industrial Control Systems Design	3	ECCE4416
6.	ECCE5452	Computer-Aided Instrumentation	3	ECCE4456 OR 4455) AND ECCE4227
7.	ECCE4216	Machine Learning for Engineers	3	(ENGR2217 OR COMP2002) and (ECCE3352 OR MCTE3210)
8.	ECCE5445	Control System Design	3	ECCE4416 OR MCTE4250
9.	ECCE5411	Introduction to Industrial Network Practices	3	ECCE4436
10.	ECCE5410	Intelligent Control Systems	3	ECCE4416

List I: SPECIALIZATION ELECTIVES (SE) – Minimum 9 Credits

No.	Course Code	Course Title	Pre-Requisite
1.	ECCE4005	Numerical Methods for Engineers	MATH3171 AND (COMP2002 OR ENGR2217 OR COMP2216)
2.	ECCE4023	Engineering Electromagnetics	PHYS2108 AND MATH 3171
3.	ECCE4127	Advanced Digital Communication	ECCE4122
4.	ECCE4142	Digital Signal Processing	ECCE3142
5.	ECCE4153	Modern Digital Electronics	ECCE3153
6.	ECCE4203	Advanced Logic Design	ECCE3206
7.	ECCE4213	Digital Electronics – Reliability and Testing	ECCE3153
8.	ECCE4216	Machine Learning for Engineers	(ENGR2217 OR COMP2002) AND (ECCE3352 OR MCTE3210)
9.	ECCE4221	Systems of Smart Cities	ENGR2217 OR COMP2002
10.	ECCE4237	Block chain and DLT	ENGR2217 OR COMP2002
11.	ECCE4242	Introduction to Computer Networks	ECCE4227 OR COMP3518 OR COMP3501 [Incompatible with ECCE5231]
12.	ECCE4254	Operating Systems	COMP2002 OR ENGR2217
13.	ECCE4257	Applied Algorithms for ECE	(COMP2002 OR ENGR2217)
14.	ECCE4282	Coding and Data Encryption	ECCE3122 OR ECCE4122
15.	ECCE4312	Power System Analysis I	ECCE3352
16.	ECCE4316	Power System Analysis II	ECCE4312
17.	ECCE4358	Electrical Machines	ECCE3352
18.	ECCE4361	Renewable Electricity Generation	ECCE3352
19.	ECCE4422	Digital Control Systems	ECCE4416
20.	ECCE4436	Industrial Control Systems Design	ECCE4416
21.	ECCE4455	Sensors and Actuators	ECCE3038
22.	ECCE4467	Power Electronics & Drives	(ECCE3153 OR MCTE3110) AND (ECCE3352 OR MCTE3210)
23.	ECCE5001	Entrepreneurial Opportunities in Electrical and Computer Engineering	
24.	ECCE5002	Selected Topics in ECE	
25.	ECCE5006	Biomedical Signal Processing	ECCE3142
26.	ECCE5007	Biomedical Instrumentation Engineering	ECCE3142
27.	ECCE5008	Project Management	ECCE5004 OR ECCE5010
28.	ECCE5113	Antenna Theory and Radiowave Propagation	ECCE4023
29.	ECCE5114	Telecom Systems Security	ECCE4122
30.	ECCE5122	Communications Systems	ECCE4126 OR ECCE4127
31.	ECCE5123	Optical Communications	ECCE4122
32.	ECCE5124	Wireless Communications	ECCE4122
33.	ECCE5128	Wireless Communication Networks	ECCE4127
34.	ECCE5129	Information Theory and Data Communications	ECCE4127
35.	ECCE5130	Modern Communication Systems Design	ECCE4153
36.	ECCE5131	Digital Cellular Systems	ECCE4142
37.	ECCE5133	Satellite Communications	ECCE4122
38.	ECCE5134	Selected Topics in Communications	ECCE4126 OR ECCE4127
39.	ECCE5136	Error Control Coding	ECCE4122
40.	ECCE5142	Image and Video Processing	ECCE4142
41.	ECCE5143	Advanced Digital Signal Processing	ECCE4142
42.	ECCE5160	Antenna Modeling and Measurement Techniques	ECCE4023
43.	ECCE5162	Microwave Engineering	ECCE4023
44.	ECCE5164	RF Comm. Circuits	ECCE4153
45.	ECCE5166	Introduction to EMI/EMC	ECCE3022 OR ECCE4023
46.	ECCE5212	VLSI Design	ECCE4227
47.	ECCE5213	Fault-Tolerant Computing Systems	ECCE4227
48.	ECCE5214	Adv. Logic & Computer Interfacing	ECCE4227
49.	ECCE5215	Computing Systems for Eng. Applications	ECCE4242
50.	ECCE5217	Reconfigurable Computing	ECCE4227
51.	ECCE5218	Routing and Switching	ECCE4242
52.	ECCE5219	Intelligent Applications in Robotics & Drones	ECCE4227
53.	ECCE5220	AI Accelerators	ECCE4227
54.	ECCE5222	Microprocessor Interfacing	ECCE4227
55.	ECCE5223	Adv. Embedded Systems Design	ECCE4227
56.	ECCE5224	Microprocessor Based Control Design	ECCE4227
57.	ECCE5228	Cloud & Edge Computing Infrastructure	ECCE4242

58.	ECCE5229	Embedded Real Time Systems	ECCE4227
59.	ECCE5231	Industrial Networks and Operating Systems	ECCE4227 AND COMP2002 [Incompatible with ECCE4242 AND ECCE4254]
60.	ECCE5233	Computer Architecture and Organization II	ECCE5232
61.	ECCE5234	Industrial Systems Security	ECCE4242 OR ECCE5411
62.	ECCE5236	Practical Ethical Hacking	ECCE4242 OR ECCE5411
63.	ECCE5242	Advanced Computer Networks	ECCE4242
64.	ECCE5243	Network Software Design & Programming	ECCE4242
65.	ECCE5252	Software Engineering	ECCE4252 OR ECCE4255
66.	ECCE5265	Database Engineering and Applications	COMP2002 OR ENGR2217
67.	ECCE5282	Computer Network Security	ECCE4242 OR ECCE5231
68.	ECCE5283	Cryptography, Security & e-Commerce	ECCE4242
69.	ECCE5284	Digital Forensics	(ENGR2217 OR COMP2002) AND (ECCE4242 OR ECCE5411 OR ECCE5231)
70.	ECCE5291	Functional Verification of Hardware Designs	ECCE4227
71.	ECCE5292	Selected Topics in Computer Engineering	ECCE4227 AND (ECCE4242 OR ECCE5231)
72.	ECCE5293	Embedded Vision Systems	ECCE4227
73.	ECCE5294	Introduction to Real Time Systems	COMP2002 OR ENGR2217
74.	ECCE5302	Power Systems Protection	ECCE4316
75.	ECCE5303	Power Distribution System Eng.	ECCE4316
76.	ECCE5304	Power Stations	ECCE4312
77.	ECCE5313	Electric Power Transmission System Eng.	ECCE4316
78.	ECCE5314	Selected Topics in Power	ECCE4312
79.	ECCE5315	Smart Grid	ECCE4312
80.	ECCE5316	Renewable Power Generation	ECCE3352
81.	ECCE5317	Power System Stability and Control	ECCE4316
82.	ECCE5322	Electrical Power Systems Quality	ECCE4312
83.	ECCE5323	Power System Operation	ECCE4316
84.	ECCE5324	Power System Reliability and Planning	ECCE4312
85.	ECCE5332	High Voltage Engineering	ECCE4312
86.	ECCE5333	Power System Economics	ECCE4312
87.	ECCE5342	Electrical Engineering Material	PHYS2108
88.	ECCE5352	Generalized Machine Theory	ECCE4358
89.	ECCE5410	Intelligent control systems	ECCE4416
90.	ECCE5411	Introduction to the Industrial network practices	ECCE4436
91.	ECCE5412	Mechatronics	ECCE4416
92.	ECCE5414	Real Time Control System	ECCE4416 AND ECCE4227
93.	ECCE5415	Control of Electric Machines	ECCE4467
94.	ECCE5422	Selected Topics in Control Systems	ECCE4416 OR MCTE4250
95.	ECCE5432	Programmable Logic Control Systems	ECCE3206 AND ECCE4416
96.	ECCE5433	Modern Control Systems	ECCE4416
97.	ECCE5434	System Dynamics and Simulation	ECCE3142
98.	ECCE5443	Optimization Techniques in Engineering	MATH3171
99.	ECCE5445	Control System Design	ECCE4416 OR MCTE4250
100.	ECCE5452	Computer-Aided Instrumentation	(ECCE4456 OR 4455) AND ECCE4227
101.	ECCE5453	Mobile Robot Control	ECCE4416
102.	ECCE5462	Electric Drives	ECCE4466 OR ECCE4467
103.	ECCE5464	Advanced Power Electronics	ECCE4466 OR ECCE4467
104.	ECCE5501	Co-Operative Training-I	ENGR4007 (co-requisite)
105.	ECCE5502	Co-Operative Training-II	ECCE5501

Note:

- Students are advised to regularly check the most updated degree plan on the department webpage. This degree plan is last updated on 07th May 2023.

- Course Syllabus and exact prerequisite(s) can be checked on <https://portal.squ.edu.om/course-description>