

Material Science and Engineering

Study Plan

	Course Code	Course Title	Course Type	Pre-R	Co-R	Credit Hours	Contact Hours
Semester 1	ENL101	English for Academic Studies	UM	IEP099 or Equivalent	DPS095	3	3
	GEN150	Professionalism and Ethics	UM			3	3
	MAT101	Calculus I	UM	IMP099 or Equivalent		3	3
	PHY101	Physics I	UM		MAT101	3	3
	CHM101	Chemistry I	CM	IMP099 or Equivalent		3	3
	PHY105	Physics I Lab	CM		PHY101	1	3
	CHM105	Chemistry I Lab	CM		CHM101	1	3
Total						17	21
Semester 2	ENL102	English Composition	UM	ENL101 DPS095		3	3
	INF120	Computers and Information Systems	UM	DPS095		3	3
	MAT102	Calculus II	CM	MAT101		3	3
	PHY102	Physics II	CM	PHY101 MAT101		3	3
	PHY107	Physics II Lab	CM	PHY105	PHY102	1	3
	MAT202	Linear Algebra	CM	MAT101		3	3
Total						16	18
Semester 3	XXXX	Global Citizen (Elective)	UM			3	3
	HST101	Islamic Culture and Values	UM			3	3
	MAT201	Calculus III	CM	MAT102		3	3
	MAT240	Differential Equations	CM	MAT102		3	3
	ENG205	Electrical and Electronic Circuits	CM	MAT102 PHY102		3	3
	ENG209	Statics and Strength of Materials	CM	PHY102 CHM101		3	3
Total						18	18

	Course Code	Course Title	Course Type	Pre-R	Co-R	Credit Hours	Contact Hours
Semester 4	ENL201	Writing and Research	UM	ENL102		3	3
	XXXX	Innovation and Creativity (Elective)	UM			3	3
	ENG206	Electrical and Electronic Circuits Lab	CM	ENG205 PHY107		1	3
	ENG207	Programming	CM	MAT202		3	3
	ENG208	Introduction to Energy and Sustainability	CM	PHY102 CHM105		3	3
	MSE211	Introduction to Materials Science & Engineering	PM	ENG209		3	3
Total						16	18

Semester 5	XXXX	Arts and Humanities Elective Group I	UM			3	3
	ENG304	Engineering Probability & Statistics	CM	MAT102		3	3
	ENG308	Numerical Methods	CM	MAT202 MAT240		3	3
	MSE301	Thermodynamics of Materials	PM	CHM101		3	3
	MSE302	Materials Characterization	PM	MSE211		3	3
	MSE308	Materials Characterization Laboratory I	PM		MSE302	1	3
Total						16	18

Semester 6	ENG309	Engineering Project Management and Economics	CM	ENG207 ENG208		3	3
	MSE303	Structure & Bonding of Solids	PM	MSE211		3	3
	MSE304	Physical Chemistry	PM	MSE302		3	3
	MSE306	Mechanical and Thermal Properties of Materials	PM	MSE211		3	3
	MSE305	Electronic Properties of Materials	PM	MSE211		3	3
	MSE310	Electronic Device Fabrication Laboratory	PM	ENG206	MSE305	1	3
	MSE403	Materials Characterization Laboratory II	PM	MSE302 MSE308		1	3
Total						17	21

	Course Code	Course Title	Course Type	Pre-R	Co-R	Credit Hours	Contact Hours
Semester 7	XXXX	Arts and Humanities Elective Group II	UM			3	3
	MSE490	Capstone Design 1	PM	Pass 96 CH		3	3
	MSE309	Materials Synthesis Laboratory	PM	MSE303 MSE304		1	3
	MSE311	Material Property Measurement Laboratory	PM	MSE305 MSE306		1	3
	MSE307	Nanomaterials	PM	MSE303		3	3
	MSE400	Diffusion and Kinetics in Materials	PM	MSE301 MSE303		3	3
	MSE401	Phase Diagrams & Phase Transformations	PM	MAT201 MSE306 MSE308		3	3
<i>Total</i>						17	21

Semester 8	MSE491	Capstone Design 2	PM	MSE490		3	3
	MSE402	Materials for Renewable Energy & Storage Technologies	PM	MSE305 MSE306 ENG208		3	3
	XXXX	Program Elective	PE	Prerequisite Program Elective		3	3
	XXXX	Program Elective	PE	Prerequisite Program Elective		3	3
	XXXX	Program Elective	PE	Prerequisite Program Elective		3	3
<i>Total</i>						15	15

Note that the University Mandatory (UM), College Mandatory (CM), Program Mandatory (PM), and Program Elective (PE) courses