BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

(Curriculum applicable to students who entered as freshmen beginning academic year 2015-2016)

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	1	CHM11-3	GENERAL CHEMISTRY 1	3.0	-	2.0			CHE-CHM
		CHM11-3L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-3	CHE-CHM
		MATH10-3	ALGEBRA	4.5	-	3.0			MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0			MATH
		ME112	ORIENTATION TO MECHANICAL ENGINEERING	1.5	-	1.0			MME
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)			SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)			ATHLETICS
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
-			Total	18.0	12.0	13.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	2	CHM12-3	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-3, CHM11-3L		CHE-CHM
		CHM12-3L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-3, CHM11-3L	CHM12-3	CHE-CHM
		DRAW10W	ENGINEERING DRAWING	-	4.5	1.0			MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0			SLHS
		FIL10	FILIPINO 1	4.5	-	3.0			SLHS
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3		MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1		MATH
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1		SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)			ATHLETICS
		•	Total	19.5	16.5	15.0		-	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	3	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W		MVA
		ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10		SLHS
		ENV20	INTRODUCTION TO ENVIRONMENTAL ENGINEERING	3.0	-	2.0	CHM12-3		CHE-CHM
		MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4		MATH
		NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP

PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)	ATHLETICS
SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0	SLHS
	Total	19.5	12.0	14.0	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	4	CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3		SOIT
		FIL11	FILIPINO 2	4.5	-	3.0			SLHS
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1		MATH
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3		SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)			ATHLETICS
		SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
P		•	Total	16.5	16.5	13.0		•	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	1	HME01	HUMANITIES ELECTIVE	4.5	-	3.0			SLHS
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1		MATH
		MATH23-1X	ENGINEERING MATHEMATICS EXIT EXAM	-	-	0.0	MATH22-1	MATH23-1	MATH
		ME101	SAFETY ENGINEERING FOR MECHANICAL ENGINEERS	3.0	-	2.0	2nd Year Standing		MME
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1		PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10	PHYSICS
		RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0			SLHS
		SFTY100	SAFETY ENGINEERING MANAGEMENT	1.5	-	1.0	2nd Year Standing		CCESC
			Total	21.0	4.5	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	2	HME02	HUMANITIES ELECTIVE	4.5	-	3.0			SLHS
		MATH24-1	DIFFERENTIAL EQUATIONS	4.5	-	3.0	MATH23-1, MATH23-1X		MATH
		ME123L	MECHANICAL PROCESSES 1: WORKSHOP THEORY & PRACTICE	-	9.0	2.0	SFTY100, ME101		MME
		PHY11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10L		PHYSICS
		PHY11L	GENERAL PHYSICS LABORATORY 2	-	4.5	1.0	PHY10, PHY10L	PHY11	PHYSICS
		SSE04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
			Total	16.5	13.5	14.0		-	-

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	3	ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11		SLHS
		MATH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10- 4,2nd Year Standing		MATH
		MATH16-1L	INTRODUCTION TO SCIENTIFIC COMPUTING	-	4.5	1.0	MATH22-1, CS10-1L		MATH
		ME137L	MECHANICAL PROCESSES 2: MACHINE SHOP THEORY & PRACTICE	-	9.0	2.0	ME123L		MME
		MEC30	STATICS OF RIGID BODIES	4.5	-	3.0	PHY11, PHY11L		CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, PHY11L		PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, PHY11L	PHY12	PHYSICS
			Total	15.0	18.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	4	EE21	BASIC ELECTRICAL ENGINEERING	3.0	-	2.0	PHY12, PHY12L, MATH24-1		EECE
		EE21L	BASIC ELECTRICAL ENGINEERING LABORATORY	-	4.5	1.0	PHY12, PHY12L, MATH24-1	EE21	EECE
		ME136P	ENGINEERING MATERIALS, PROCESSES AND TESTING	3.0	4.5	3.0	CHM12-3, CHM12-3L		MME
		MEC31	DYNAMICS OF RIGID BODIES	4.5	-	3.0	MEC30		MME
		MSE20-2	FUNDAMENTALS OF MATERIALS SCIENCE AND ENGINEERING	4.5	-	3.0	CHM12-3, PHY12, PHY12L		CHE-CHM
		PHY13	GENERAL PHYSICS 4	3.0	-	2.0	PHY12, PHY12L		PHYSICS
		PHY13L	GENERAL PHYSICS LABORATORY 4	-	4.5	1.0	PHY12, PHY12L	PHY13	PHYSICS
		PHY13X	GENERAL PHYSICS EXIT EXAM	-	-	0.0	PHY12, PHY12L	PHY13, PHY13L	PHYSICS
-			Total	18.0	13.5	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	1	EE22	DC/AC MACHINERY	4.5	-	3.0	EE21, EE21L		EECE
		EE22L	DC/AC MACHINERY LABORATORY	-	4.5	1.0	EE21, EE21L	EE22	EECE
		MATH30-8	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1		MATH

ME131	THERMODYNAMICS 1	4.5	-	3.0	PHY13, PHY13L, MATH24-1	MME
ME135	HEAT TRANSFER	3.0	-	2.0	PHY13, PHY13L	MME
MEC32	MECHANICS OF DEFORMABLE BODIES	4.5	-	3.0	MEC31	CEGE
	Total	21.0	4.5	15.0		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	2	ECE20	BASIC ELECTRONICS	3.0	-	2.0	PHY12, PHY12L, MATH24-1		EECE
		ECE20L	BASIC ELECTRONICS LABORATORY	-	4.5	1.0	PHY12, PHY12L, MATH24-1	ECE20	EECE
		ME130-1	FLUID MECHANICS FOR MECHANICAL ENGINEERS	4.5	-	3.0	PHY13X		MME
		ME132P	KINEMATICS OF MACHINES	3.0	4.5	3.0	PHY12		MME
		ME133	THERMODYNAMICS 2	4.5	-	3.0	ME131		MME
		ME50	ADVANCED ENGINEERING MATHEMATICS	4.5	-	3.0	MATH24-1		MME
			Total	19.5	9.0	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	3	ME134	INTERNAL COMBUSTION ENGINE/FUELS & LUBRICANTS	4.5	-	3.0	ME131		MME
		ME134X	THERMO-FLUIDS ENGINEERING EXIT EXAM	-	-	0.0	ME131, ME135, ME130-1		MME
		ME138P	MACHINE ELEMENTS	3.0	4.5	3.0	ME132P		MME
		ME139L	MECHANICAL ENGINEERING LABORATORY 1	-	9.0	2.0	ME133, ME130-1		MME
		ME141	REFRIGERATION SYSTEM	4.5	-	3.0	ME133, ME135		MME
		ME148	INDUSTRIAL PROCESSES	3.0	-	2.0	ME131		MME
		RES100-5	METHODS OF RESEARCH	3.0	-	2.0	MATH30-8, 3rd Year Standing		MME
			Total	18.0	13.5	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	4	ME143	FLUID MACHINERY	4.5	-	3.0	ME130-1		MME
		ME144L	MECHANICAL ENGINEERING LABORATORY 2	-	9.0	2.0	ME139L, ME135		MME
		ME145	RENEWABLE ENERGY SOURCES	3.0	-	2.0	ME133		MME

ME147P	MACHINE DESIGN 1	3.0	4.5	3.0	ME136P, ME132P, MEC32	MME
ME149F	PLANT INSPECTION TRIPS AND SEMINARS	-	4.5	1.0	ME101	MME
ME200L	THESIS 1	-	4.5	1.0	RES100-5	MME
ME40	ENGINEERING ECONOMY	4.5	-	3.0	3rd Year Standing	MME
	Total	15.0	22.5	15.0		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	1	ME143X	MECHANICAL DESIGN EXIT EXAM	-	-	0.0	ME147P		MME
		ME146	VIBRATION ENGINEERING	3.0	-	2.0	ME50		MME
		ME150P	AIR CONDITIONING SYSTEM & DESIGN	3.0	4.5	3.0	ME141		MME
		ME151P	MACHINE DESIGN 2	3.0	4.5	3.0	ME147P		MME
		ME152L	MECHANICAL ENGINEERING LABORATORY 3	-	9.0	2.0	ME143, ME144L		MME
		ME153P	CONTROL SYSTEMS ENGINEERING	1.5	4.5	2.0	ECE20, ECE20L		MME
		ME60	NUMERICAL METHODS	3.0	-	2.0	ME50		MME
			Total	13.5	22.5	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	2	ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12		SLHS
		ME147X	POWER PLANT ENGINEERING EXIT EXAM	-	-	0.0	ME143, ME134		MME
		ME154P	POWER PLANT ENGINEERING	4.5	4.5	4.0	ME133, ME143	•	MME
		ME156P-1	MECHATRONICS FOR MECHANICAL ENGINEERING	1.5	4.5	2.0	ME153P		MME
			PROFESSIONAL ELECTIVE 1	4.5		3.0			
			PROFESSIONAL ELECTIVE 2	4.5		3.0			
			Total	19.5	9.0	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	3	BIO20	INTRODUCTION TO BIOMIMETICS ENGINEERING AND COMPONENT DESIGN	4.5	-	3.0	CHM12-3		CHE-CHM
		ME149X	INDUSTRIAL PLANT ENGINEERING EXIT EXAM	-	-	0.0	ME150P, ME143		MME
		ME155P-1	INDUSTRIAL AUTOMATION AND CONTROL FOR MECHANICAL ENGINEERING	1.5	4.5	2.0	ME152L, ME154P		MME
		ME157P	INDUSTRIAL PLANT ENGINEERING	3.0	4.5	3.0	ME148, ME149F, ME150P		MME
		ME200-1L	THESIS 2	-	4.5	1.0	ME200L		MME

	PROFESSIONAL 3	4.5		3.0		
	PROFESSIONAL 4	4.5		3.0		
	Total	18.0	13.5	15.0		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	4	EMG20	ENGINEERING MANAGEMENT	4.5	-	3.0	4th Year Standing		IE-EMG
		HME03	HUMANITIES ELECTIVE	4.5	-	3.0			SLHS
		ME198D	APPLIED MECHANICAL ENGINEERING	-	9.0	2.0	ME143X, ME147X, ME149X		CCESC
		ME200-2L	THESIS 3	-	4.5	1.0	ME200-1L		MME
		ME70	CONTRACTS, SPECS & ETHICS/ME LAW	4.5	-	3.0	ME40,4th Year Standing		MME
			Total	13.5	13.5	12.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
5	1	ME199R	ON THE JOB TRAINING	-	24.0	3.0	For Graduating Students Only		MME
			Total	0.0	24.0	3.0			

ME ELECTIVES : 12.00 units

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
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MECHATRONICS ENGINEERING

	Total	18.0	0.0	12.0		
ME193-1	INTRODUCTION TO NANOTECHNOLOGY	4.5	-	3.0	ME136P, MSE20-2	MME
ME192-1	INDUSTRIAL ROBOT	4.5	-	3.0	ECE20, ECE20L	MME
ME191-1	DIGITAL CONTROL	4.5	-	3.0	ECE20, ECE20L	MME
ME190-1	INTRODUCTION TO ROBOTICS	4.5	-	3.0	ECE20, ECE20L	MME

AUTOMOTIVE ENGINEERING

	Total	18.0	0.0	12.0		
ME193-2	ENGINE EMISSIONS AND CONTROL	4.5	-	3.0	ME134	MME
ME192-2	SAFETY OF MOTOR VEHICLES	4.5	-	3.0	ME134	MME
ME191-2	AERODYNAMICS	4.5	-	3.0	ME130-1	MME
ME190-2	AUTOMOTIVE ENGINEERING	4.5	-	3.0	ME134	MME

HEATING, VENTILATING, AIRCONDITIONING & REFRIGERATION

	Total	18.0	0.0	12.0		
ME193-3	DESIGN OF THERMAL SYSTEM	4.5	-	3.0	ME150P	MME
ME192-3	INDOOR AIR QUALITY IN BUILDINGS/ INDUSTRIAL AND POWER PLANTS	4.5	-	3.0	ME150P	MME
ME191-3	ADVANCED HEAT TRANSFER	4.5	-	3.0	ME135	MME
ME190-3	ADVANCED REFRIGERATION AND AIR- CONDITIONING	4.5	-	3.0	ME141	MME

PETROLEUM REFINING TECHNOLOGY

	Total	18.0	0.0	12.0		
PRT194	PETROLEUM REFINING SAFETY	4.5	-	3.0	PRT193	MME
PRT193	PETROLEUM REFINING EQUIPMENT	4.5	-	3.0	PRT192	MME
PRT192	OVERVIEW OF PETROLEUM REFINING PROCESS (WITH ELECTRICAL FOCUS)	4.5	-	3.0	PRT190	CHE-CHM
PRT190	INTRODUCTION TO PETROLEUM REFINING	4.5	-	3.0	CHM12-3, CHM12-3L, 4th Year Standing	CHE-CHM

Total Academic Units : 232.00

BACHELOR OF SCIENCE IN MANUFACTURING ENGINEERING

(Curriculum applicable to students who entered as freshmen beginning academic year 2015-2016)

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	1	CHM11-3	GENERAL CHEMISTRY 1	3.0	-	2.0			CHE-CHM
		CHM11-3L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-3	CHE-CHM
		MATH10-3	ALGEBRA	4.5	-	3.0			MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0			MATH
		MFGE10	ORIENTATION TO MANUFACTURING ENGINEERING	1.5	-	1.0			MME
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)			SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)			ATHLETICS
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
			Total	18.0	12.0	13.0		•	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	2	CHM12-3	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-3, CHM11-3L		CHE-CHM
		CHM12-3L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-3, CHM11-3L	CHM12-3	CHE-CHM
		CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3		SOIT
		DRAW10W	ENGINEERING DRAWING	-	4.5	1.0			MVA
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3		MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1		MATH
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1		SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)			ATHLETICS
		SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
•			Total	15.0	25.5	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	3	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W		MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0			SLHS
		FIL10	FILIPINO 1	4.5	-	3.0			SLHS
		MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4		MATH
		NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP
		PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)			ATHLETICS

RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0		SLHS
	Total	21.0	12.0	15.0		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
1	4	ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10		SLHS
		FIL11	FILIPINO 2	4.5	-	3.0			SLHS
		HME01	HUMANITIES ELECTIVE	4.5	-	3.0			SLHS
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1		MATH
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3		SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)			ATHLETICS
			Total	21.0	7.5	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	1	BIO20	INTRODUCTION TO BIOMIMETICS ENGINEERING AND COMPONENT DESIGN	4.5	-	3.0	CHM12-3		CHE-CHM
		HME02	HUMANITIES ELECTIVE	4.5	-	3.0			SLHS
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1		MATH
		ME101	SAFETY ENGINEERING FOR MECHANICAL ENGINEERS	3.0	-	2.0	2nd Year Standing		MME
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1		PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10	PHYSICS
		SFTY100	SAFETY ENGINEERING MANAGEMENT	1.5	-	1.0	2nd Year Standing		CCESC
•			Total	21.0	4.5	15.0		-	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	2	ENV20	INTRODUCTION TO ENVIRONMENTAL ENGINEERING	3.0	-	2.0	CHM12-3		CHE-CHM
		HME03	HUMANITIES ELECTIVE	4.5	-	3.0			SLHS
		MATH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10-4, 2nd Year Standing		MATH
		MATH16-1L	INTRODUCTION TO SCIENTIFIC COMPUTING	-	4.5	1.0	MATH22-1, CS10-1L		MATH
		PHY11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10L		PHYSICS
		PHY11L	GENERAL PHYSICS LABORATORY 2	-	4.5	1.0	PHY10, PHY10L	PHY11	PHYSICS
		SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
•			Total	18.0	9.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	3	MATH24-1	DIFFERENTIAL EQUATIONS	4.5	-	3.0	MATH23-1		MATH
		ME123L	MECHANICAL PROCESSES 1: WORKSHOP THEORY & PRACTICE	-	9.0	2.0	SFTY100, ME101		MME
		MEC30	STATICS OF RIGID BODIES	4.5	-	3.0	PHY11, PHY11L		CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, PHY11L		PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, PHY11L	PHY12	PHYSICS
		SSE04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
			Total	16.5	13.5	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
2	4	EE21	BASIC ELECTRICAL ENGINEERING	3.0	-	2.0	PHY12, PHY12L, MATH24-1		EECE
		EE21L	BASIC ELECTRICAL ENGINEERING LABORATORY	-	4.5	1.0	PHY12, PHY12L, MATH24-1	EE21	EECE
		ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11		SLHS
		ME137L	MECHANICAL PROCESSES 2: MACHINE SHOP THEORY & PRACTICE	-	9.0	2.0	ME123L		MME
		MEC31	DYNAMICS OF RIGID BODIES	4.5	-	3.0	MEC30		MME
		PHY13	GENERAL PHYSICS 4	3.0	-	2.0	PHY12, PHY12L		PHYSICS
		PHY13L	GENERAL PHYSICS LABORATORY 4	-	4.5	1.0	PHY12, PHY12L	PHY13	PHYSICS
			Total	15.0	18.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	1	ECE20	BASIC ELECTRONICS	3.0	-	2.0	PHY12, PHY12L, MATH24-1		EECE
		ECE20L	BASIC ELECTRONICS LABORATORY	-	4.5	1.0	PHY12, PHY12L, MATH24-1	ECE20	EECE
		MATH30-8	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1		MATH
		ME131	THERMODYNAMICS 1	4.5	-	3.0	PHY13, PHY13L, MATH24-1		MME
		ME132P	KINEMATICS OF MACHINES	3.0	4.5	3.0	PHY13		MME
		MSE20-2	FUNDAMENTALS OF MATERIALS SCIENCE AND ENGINEERING	4.5	-	3.0	CHM12-3, PHY12, PHY12L		CHE-CHM
			Total	19.5	9.0	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	2	EMG131	HUMAN FACTORS ENGINEERING AND WORK DESIGN	4.5	-	3.0	MATH30-8		IE-EMG
		ME130	FLUID MECHANICS FOR MECHANICAL ENGINEERS	3.0	-	2.0	PHY13, PHY13L		MME
		ME136P	ENGINEERING MATERIALS, PROCESSES AND TESTING	3.0	4.5	3.0	CHM12-3, CHM12-3L		MME
		ME138P	MACHINE ELEMENTS	3.0	4.5	3.0	ME132P		MME
		MEC32	MECHANICS OF DEFORMABLE BODIES	4.5	-	3.0	MEC31		CEGE
		MFGE09L	ENGINEERING METROLOGY	-	4.5	1.0	ME137L		MME
			Total	18.0	13.5	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	3	EMG151	PRODUCTION AND OPERATIONS MANAGEMENT	4.5	-	3.0	3rd Year Standing		IE-EMG
		ME155P	INDUSTRIAL AUTOMATION AND CONTROL	3.0	4.5	3.0	ECE20, ECE20L		MME
		ME40	ENGINEERING ECONOMY	4.5	-	3.0	3rd Year Standing		MME
		MFGE10L	MANUFACTURING PROCESSES 1	-	4.5	1.0	ME137L		MME
		MFGE20	TECHNOPRENUERSHIP	3.0	-	2.0	3rd Year Standing		MME
		MSE114-0	POLYMER MATERIALS AND PROCESSES	4.5	-	3.0	MSE20-2, ME136P		CHE-CHM
		:	Total	19.5	9.0	15.0		1	1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
3	4	ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12		SLHS
		IE123	STATISTICAL QUALITY CONTROL	4.5	-	3.0	EMG131		IE-EMG
		ME153P	CONTROL SYSTEMS ENGINEERING	1.5	4.5	2.0	ECE20, ECE20L		MME
		ME50	ADVANCED ENGINEERING MATHEMATICS	4.5	-	3.0	MATH24-1		MME
		MFGE11L	MANUFACTURING PROCESSES 2	-	4.5	1.0	MFGE10L		MME
		MSE115	COMPOSITE MATERIALS	4.5	-	3.0	MSE20-2, ME136P		CHE-CHM
			Total	19.5	9.0	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	1	ME147P	MACHINE DESIGN 1	3.0	4.5	3.0	MEC32		MME
		ME156P	MECHATRONICS	3.0	4.5	3.0	ME153P		MME
		ME60	NUMERICAL METHODS	3.0	-	2.0	ME50, CS10- 1L		MME

	Total	16.5	18.0	15.0		
MFGE100	METHODS OF RESEARCH	3.0	-	2.0	MATH30-8, 4th Year Standing	MME
MSE101	SEMICONDUCTOR MATERIALS AND PROCESSES	4.5	-	3.0	MSE20-2, ME136P	CHE-CHM
MFGE149F	PLANT INSPECTION TRIPS AND SEMINARS	-	4.5	1.0	ME101	MME
MFGE12L	MANUFACTURING PROCESSES 3	-	4.5	1.0	MFGE11L	MME

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	2	MFGE21	DESIGN OF FIXTURES, JIGS AND TOOLING	4.5	-	3.0	ME147P		MME
		MFGE22P	COMPUTER-AIDED MANUFACTURING	3.0	4.5	3.0	CAD10L		MME
		MFGE23P	CAPSTONE 1: PRODUCT DESIGN	3.0	4.5	3.0	ME147P, 4th Year Standing		MME
		MFGE24	ELECTRONICS MANUFACTURING 1	4.5	-	3.0	4th Year Standing		MME
		MSE110-0	INTRODUCTION TO NANOTECHNOLOGY	4.5	-	3.0	MSE20-2		CHE-CHM
			Total	19.5	9.0	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	3	IE176	LEAN MANUFACTURING	4.5	-	3.0	4th Year Standing		IE-EMG
		MFGE25	MAINTENANCE ENGINEERING AND TRIBOLOGY	4.5	-	3.0	MFGE21		MME
		MFGE26P	CAPSTONE 2: MANUFACTURING FACILITIES DESIGN	3.0	4.5	3.0	MFGE23P		MME
		MFGE27	ELECTRONICS MANUFACTURING	4.5	-	3.0	MFGE24		MME
		MFGE28	MANUFACTURING ENGINEERING ETHICS	3.0	-	2.0	4th Year Standing		MME
			Total	19.5	4.5	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Caretaker
4	4	MFGE199R	ON-THE-JOB-TRAINING	-	24.0	3.0	For Graduating Students Only		MME
			Total	0.0	24.0	3.0			

Total Academic Units : 220.00

SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING

ME20. THERMODYNAMICS

A comprehensive study of energy, laws of thermodynamics, properties of gases, thermodynamic processes with application of ideal gases, including the power cycles using air and vapor as working medium. It also includes the study of thermodynamics reaction of fuel in power plants and manufacturing plants.

Credit : 3 units. Prerequisites : MATH24-1, PHY12/PHY12L : PHY11-2, PHY11-2L for SEM

ME21. BASIC MECHANICAL ENGINEERING

This course covers the major disciplines of mechanical engineering in relation to building structures, namely HVAC, plumbing and fire protection, noise and vibrations. It includes study of design considerations for mechanical systems such as heating, ventilating, air conditioning, site utilities, plumbing, sanitation, fire protection, specialty or auxiliary systems, transportation, processing, and automation.

Credit	: 3 units
Prerequisites	: CE151P, PHY13 for ESE/CESE
Prereguisites	: CE151P for CE/CEM

ME40. ENGINEERING ECONOMY

A course which deals with financial practices as they relate to the engineering profession. The course includes discussions on the principles of compound interest, annuities, sinking funds, characteristics of business units, alternatives in capital investment, analysis of first cost and operation cost, business statistics and valuations; also includes modern industrial accounting on cost collection systems; and principles of accounting as they apply to engineering economy.

Credit : 3 units Corequisite : 3rd Year Standing

ME50. ADVANCED ENGINEERING MATHEMATICS

The study of mathematical methods for solving engineering problems such as Complex Number, Complex Variables, Cauchy Riemann Equations, Laplace Transform Analysis and Laplace Transformation, Fourier Series and Fourier Transform, Power Series Solutions of differential equations, hyper geometric equations such as Legendre and Bessel functions.

Credit : 3 units Prerequisite : MATH24-1

ME60. NUMERICAL METHODS

A study of the different numerical analysis used for solving problems in applied mechanical engineering. It includes application of the concepts of numerical analysis to effectively solve engineering problems, learn to use available computer software tools in attaining fast and more accurate results, and to analyze and choose the best method in applied mechanical engineering problems. The course will include the study of finite element method.

Credit	: 2 units
Prerequisites	: ME50
Prerequisites	: CS10-1L, ME50 FOR MfgE

ME70. CONTRACTS, SPECS & ETHICS/ME LAW

A study of public and private engineering contracts, preparation and writing of specifications, procedures and instruments in bidding, sales and sales agreement. It also includes a study of the code of ethics for engineers and the scope and application of the Mechanical Engineering Law. Credit : 3 units

Prerequisites : ME40, 4th Year Standing

ME101. SAFETY ENGINEERING FOR MECHANICAL ENGINEERS

The course deals with the principles of industrial accident prevention and safety organization. It also deals with accident analysis, selection and application of remedy/corrective action, industrial health and environmental concerns of any mechanical equipment and mechanical plants such as manufacturing, industrial, and power plants. This extends from simple hazard control management to full crisis management planning. A generic approach to loss control within mechanical engineering plant operations will be reviewed together with identification of management strategies to deal with The course draws on experience and such losses. techniques applied in other industries in addition to a practical focus on mechanical plant operations risk management.

Credit : 2 units Prerequisite : 2nd Year Standing

ME102L. INDUSTRIAL AND MANUFACTURING PROCESSES LABORATORY

A course which deals with woodworking, sand metal molds, machine shop practice and foundry, and other basic manufacturing and industrial processes.

Credit	: 1 unit
Co-requisite	: IE102
Prerequisites	: DRAW10W, CHM12-3, CHM12-3L,
	PHY11, PHY11L

ME112. ORIENTATION TO MECHANICAL ENGINEERING

The course introduces mechanical engineering as a profession with emphasis on the requirements for professional practice and mechanical engineering as a career focusing on the career opportunities. The course discusses developing engineering skills to succeed in engineering study.

: 1 unit

Credit

ME123L. MECHANICAL PROCESSES 1: WORKSHOP THEORY & PRACTICE

A course which deals with wood working, pattern making, foundry practice, sand molding, and metal casting. This involves familiarization with the use and operation of wood shop tools, molding tools, apparatus and equipment.

Credit	: 2 units
Prerequisites	: SFTY100, ME101

ME130. FLUID MECHANICS FOR MECHANICAL ENGINEERS

A course that deals with liquid and gases covering such topics as properties of fluids (liquid and gas), hydrostatic pressure, basic principles of kinematics of fluid dynamics, relative equilibrium of liquid, flow through orifices, tubes and weirs, fluids flow in pipes and open channels. Credit : 2 units

Prerequisites : PHY13, PHY13L for MfgE

ME130-1. FLUID MECHANICS FOR MECHANICAL ENGINEERS

A course that deals with liquid and gases covering such topics as properties of fluids (liquid and gas), hydrostatic pressure, basic principles of kinematics of fluid dynamics, relative equilibrium of liquid, flow through orifices, tubes and weirs, fluids flow in pipes and open channels. Credit : 3 units

Prerequisites : PHY13X for ME

ME131. THERMODYNAMICS 1

A course deals with the study of the laws of thermodynamics, properties of gases, and the power cycles of gases including compressed air. It also includes the study of the thermodynamics reaction of fuels in power plants. Credit : 3 units

rerequisites
rerequisites

ME132P. KINEMATICS OF MACHINES

A course which deals with the fundamental principles of physics and mathematics in the field of mechanical movement. The course also includes an analytical and graphic study of displacements, velocity and acceleration of common mechanisms, with design/drafting.

Credit	: 3 units
Prerequisites	: PHY12 for ME
Prerequisites	: PHY13 for MfgE

ME133. THERMODYNAMICS 2

A course deals with the study of the laws of thermodynamics, the properties of fluids and vapors and a study of power cycles. The course also involves an introduction to the essential component parts of a steam plant.

Credit	: 3 units
Prerequisite	: ME131

ME134. INTERNAL COMBUSTION ENGINE/FUELS & LUBRICANTS

A course with a comprehensive study of internal combustion engines including gasoline, kerosene, diesel engines. It also includes the study of the coordinating accessories in internal combustion engine plants as well as a study of gas turbine. Also included is a study of the different types of lubricants and their methods of manufacture and application.

Credit : 3 units Prerequisite : ME131

ME134X. THERMO-FLUIDS ENGINEERING EXIT EXAM

This examination provides a measure of the knowledge of the student in their Fluid Mechanics, Thermodynamics and Heat Transfer courses. This exam prepares the student for advanced subjects that would need the knowledge in the pre-requisite subjects.

Credit : 0 units Prerequisite/s : ME131, ME130-1, ME135

ME135. HEAT TRANSFER

A course with a comprehensive study of the fundamentals of heat transfer in different types of heat exchangers in different power plants and industrial factories. Credit : 2 units

Prerequisite : PHY13, PHY13L

ME136P. ENGINEERING MATERIALS, PROCESSES AND TESTING

A course dealing with the study of properties, composition, methods of manufacture, and uses of iron and its alloys; present day alloy steels; non-ferrous metals encountered in mechanical equipment including a study of synthetic materials for practical application. A course which deals with the performance and interpretation of results of standard mechanical test on metals and alloys such as tensile test, bending test, hardness and impact test. A course with laboratory/material testing. Credit : 3 units

Prerequisites : CHM12-3, CHM12-3L

ME137L. MECHANICAL PROCESSES 2: MACHINE SHOP THEORY & PRACTICE

A course which includes machine shop practice on metal cutting and forming processes by using the lathes, shaper, and milling machine. It also includes welding, forging, and familiarization with uses of metal tools and equipment. Credit : 2 units Prerequisites : ME123L

ME138P. MACHINE ELEMENTS

A continuation of ME132P, the course involves the study of the elements of mechanism such as cams, gears, and gear trains. This course with drafting is intended primarily to give the students familiarity with the practice of application of fundamental principles of physics and mathematics in mechanical movement. Credit : 3 units Prerequisite : ME132P

ME139L. MECHANICAL ENGINEERING LABORATORY 1

A laboratory course involving the study of engineering measurements. The course includes the study and use of instruments and equipment for measuring pressure, temperature, flow, level - reducing motions, speed, tools, pipes, fittings; demonstrations related to mechanics of fluids. Also included is a study of the different types of lubricants and their methods of manufacture and application. Credit : 2 units

Prerequisites : 2 units : ME133, ME130-1

ME141. REFRIGERATION SYSTEM

A comprehensive study of the different refrigeration systems using different fluids to absorb air energy from outside sources and a study of the different applications of the refrigeration system.

Credit	: 3 units
Prerequisites	: ME133, ME135

ME143. FLUID MACHINERY

A course with the study of the principles involved in the operation of all types of pumps and their selection and application in relation to industrial utilization. The course also includes a study of hydraulic turbines and accessories as well as Philippine hydroelectric power plants.

Credit : 3 units Prerequisite : ME130-1

ME143X. MECHANICAL DESIGN EXIT EXAM

This examination provides a measure of the knowledge of the student in their Machine Design and Machine Elements courses. This exam checks the preparedness of the student in applying theories and knowledge of machine members to real life scenarios.

Credit : 0 units Prerequisite/s : ME147P

ME144L. MECHANICAL ENGINEERING LABORATORY 2

A laboratory course involving the physical study and operation of the fuel systems, valve settings and cooling systems of gasoline, diesel, semi-diesel, and steam engines plus steam boiler operation, heating surface measurement and hydrostatic testing.

Credit	: 2 units
Prerequisites	: ME139L, ME135

ME145. RENEWABLE ENERGY SOURCES

The course aims to give an outlook for alternative energy resources, nuclear power production and utilization, technology of using coal and natural gas, biomass energy sources, biomass energy system, an introduction of solar energy thermal process, introduction of wind power equipment, thermal energy generation from geothermal energy, biogas energy systems, and micro hydroelectric power plant design. The course includes energy management in buildings and industry. Credit : 2 units Prerequisite : ME133

ME146. VIBRATION ENGINEERING

This course deals with a study of functional requirements for machinery foundation to maintain the supplied machine at its proper elevation and alignment considering the factors of moving load and machine vibrations. It also includes a study of soil bearing capacity, anchor bolts, anchor plates, casings and systems of concrete foundation as applied to mechanical machinery.

Credit : 2 units Prerequisite : ME50

ME147P. MACHINE DESIGN 1

The course deals with a comprehensive study of simple and combined stress analysis and their application to the design of screw fastenings, thin-shell cylinders, springs, columns, power screws, shaft keys, and couplings, with design/drafting.

Credit	: 3 units
Prerequisites	: ME136P, ME132P, MEC32 for ME
Prerequisites	: MEC32 for MfgE

ME147X. POWER PLANT ENGINEERING EXIT EXAM

This examination provides a measure of the knowledge of the student in their Power Plant course. This exam checks the preparedness of the student in applying theories and knowledge of power plant components, systems and concepts to real life scenarios.

Credit : 0 units Prerequisite/s : ME143, ME134

ME148. INDUSTRIAL PROCESSES

The course deals with a study of the unit operations, unit processes and equipment on industrial processing plants. Emphasizing on local industries that may be visited during field trips, the course involves the study and analysis of flow sheets, equipment and operating data from simple cone-type rice mills, coconut oil mills, sugar centrals, plywood factories, cement plants, *etc*.

Credit : 2 units Prerequisites : ME131

ME149F. PLANT INSPECTION TRIPS AND SEMINARS

The course involves trips to local power and industrial plants. The course also involves reports by the student regarding the plants visited and problems in industrial equipment and processes.

Credit	: 1 unit
Prerequisite	: ME101

ME149X. INDUSTRIAL PLANT ENGINEERING EXIT EXAM

This examination provides a measure of the knowledge of the student in their Industrial Plant course. This exam checks the preparedness of the student in applying theories and knowledge of industrial plant components, systems and concepts to real life scenarios. Credit : 0 units

Prerequisite/s : ME150P, ME143

ME150P. AIR CONDITIONING SYSTEM & DESIGN

The course also involves the design and cooling load calculation for air conditioning, including equipment layout of the installation. Credit : 3 units Prerequisite : ME141

ME151P. MACHINE DESIGN 2

A course which deals with the study of bearings, various power transmitting devices such as flat belts and pulley. Vbelts and sheaves, chains and sprockets, wire ropes, all types of gears, and brakes and clutches. The course also includes a study of miscellaneous problems regarding welding, curved beams, thick shell cylinders, flat plates, etc., with design projects.

Credit : 3units

Prerequisites : ME147P

ME152L. MECHANICAL ENGINEERING LABORATORY 3.

A laboratory course dealing with Laboratory Performance Test, following lectures covering characteristics, consumption, efficiency of hydraulic equipment, heat exchangers, internal combustion engines, gas turbines, turbo-electric steam power plants, hydro-electric power plants, refrigeration and air conditioning instrumentation and automatic controls.

Credit : 2 units Prerequisites : ME143, ME144L

ME153P. CONTROL SYSTEMS ENGINEERING

The course which deals with the introduction of control system; mathematical models of systems; state-space description; dynamics simulation; feedback control system characteristics; the performance of feedback control systems; the stability of linear feedback systems; essential principles of feedback, the root-locus method; frequency domain, time-domain analysis of control systems; the design and compensation of feedback control systems. With laboratory.

Credit : 2 units Prerequisites : ECE20/ECE20L.

ME154P. POWER PLANT ENGINEERING

A course which deals with the calculations, design and layout of typical steam power plants, internal combustion engine power plants, compressed air plants, as well as gas turbine plants. It also includes a study of the necessary instrumentation in power plants. With design projects. Credit : 4 units

Credit : 4 units Prerequisites : ME133, ME143

ME155P-1. INDUSTRIAL AUTOMATION AND CONTROL FOR MECHANICAL ENGINEERING

A course which deals with the theories and principles behind indicating, recording and controlling instruments. The course emphasizes the use of Wheatstone bridge, modutrol motors, servomotors, and industrial electronics for automatic controls. Sensing devices for all principal variables are treated separately. The course includes a review of basic control system; industrial control component: pneumatic, electric, electronic and fluidic device; analysis and design of the complete control systems; special control applications: boiler control, air condition control, flight control, introduction to direct digital control and supervisory control. With laboratory. Credit : 2 units

Prerequisites : ME152L, ME154P

ME155P. INDUSTRIAL AUTOMATION AND CONTROL

A course which deals with the theories and principles behind indicating, recording and controlling instruments. The course emphasizes the use of Wheatstone bridge, modutrol motors, servomotors, and industrial electronics for automatic controls. Sensing devices for all principal variables are treated separately. The course includes a review of basic control system; industrial control component: pneumatic, electric, electronic and fluidic device; analysis and design of the complete control systems; special control applications: boiler control, air condition control, flight control, introduction to direct digital control and supervisory control. With laboratory. Credit : 3 units

Prerequisites : ECE20, ECE20L

ME156P-1. MECHATRONICS FOR MECHANICAL ENGINEERING

A course that deals with the introduction to mechanical system interfacing, combinational digital logic, industrial electronic components, industrial sensors, simple computer structure, low level programming techniques, embedded control computers, microcontroller, stepping motors, DC motors, analog/digital conversion, position and velocity measurement, amplifiers, projects related to mechatronics (laboratory).

Credit	: 2 units
Prerequisites	: ME153P

ME156P. MECHATRONICS

A course that deals with the introduction to mechanical system interfacing, combinational digital logic, industrial electronic components, industrial sensors, simple computer structure, low level programming techniques, embedded control computers, microcontroller, stepping motors, DC motors, analog/digital conversion, position and velocity measurement, amplifiers, projects related to mechatronics (laboratory).

Credit	: 3 units
Prerequisite	: ME153P

ME157P. INDUSTRIAL PLANT ENGINEERING

The course with design projects that deals with a comprehensive study of the different factors that should be considered in establishing small and large industrial plants, and partial and integrated plants.

Credit : 3 units Prerequisites : ME148, ME149F, ME150P

ME190-1. INTRODUCTION TO ROBOTICS

The course will cover the study of rigid body motion, forward and inverse kinematics, manipulator Jacobians, force relation, dynamics and position control robot manipulators, force control and trajectory generation, collision avoidance and motion planning, and robot programming languages.

Credit : 3 units Prerequisite : ECE20, ECE20L

ME190-2. AUTOMOTIVE ENGINEERING

The course will cover the study of its basic principles, suspension system, body and chassis, brake system, steering system, front wheel geometry, transmission system, automotive equipment, and performance factors. Credit : 3 units

Prerequisite : ME134

ME190-3. ADVANCED REFRIGERATION AND AIR-CONDITIONING

The course will cover the study of low temperature refrigeration, refrigeration system study, industrial applications of refrigeration, air conditioning system and building thermal environmental influences on air conditioning design, ventilation direct moist air and water, flow in ducts and a unconfined spaces, automatic control, testing, adjusting and balancing, economic factors in air-conditioning, noise and vibration control.

Credit : 3 units Prerequisite : ME141

ME191-1. DIGITAL CONTROL

The course will cover the study of the introduction of discrete systems; time-domain representations of linear discrete systems; the analysis of discrete-time systems, z-transformation of linear discrete systems; state variable representation; analysis of linear discrete-time system: z-domain approach; the analytical design of discrete systems; engineering characteristics of computer control systems.

Credit	: 3 units
Prerequisites	: ECE20, ECE20L

ME191-2. AERODYNAMICS

The course will cover the study of the basic relations describing flow field around wings and bodies at subsonic and super-sonic speed; Thin-wing theory; Slender-body theory; formulation of theories for evaluating forces and moments on airplane geometries; and application to the design of high-speed airplanes.

Credit : 3 units Prerequisite : ME130-1

ME191-3. ADVANCED HEAT TRANSFER

The course will cover the study of the advanced modes of heat transfer: conduction heat transfer, convection heat transfer, and radiation heat transfer.

Credit : 3 units Prerequisite : ME135

ME192-1. INDUSTRIAL ROBOT

The course will deal with Industrial Robots, robot reference frames, manipulator kinematics, inverse manipulator kinematics, Jacobian, manipulator dynamics, introduction to robot controls, trajectory generation, mechanism design, introduction to hybrid force/position control, and summary.

Credit : 3 units Prerequisite : ECE20, ECE20L

ME192-2. SAFETY OF MOTOR VEHICLES

The course will deal with mechanical characteristics of pneumatic tires, hydroplaning of pneumatic tires, force distribution during acceleration and braking, braking performance of vehicles, energy and performance, directional and stability control, rear end collision, elementary analysis of the two vehicle collision, crash protection, and energy absorption.

Credit	: 3 units
Prerequisites	: ME134

ME192-3. INDOOR AIR QUALITY IN BUILDINGS/ INDUSTRIAL AND POWER PLANTS

The course will cover the study of indoor air pollutants in buildings, industrial and power plants and their transport dynamics with respect to building ventilation systems; design methodology in handling indoor air quality in buildings and enclosed spaces. This includes building environmental assessment method.

Credit	: 3 units
Prerequisites	: ME150P

ME193-1. INTRODUCTION TO NANOTECHNOLOGY

The course will cover the study of applied science and technology. The main unifying theme is the control of matter on a scale smaller than one micrometer, as well as the fabrication of devices on this same length scale. It is a highly multidisciplinary field, drawing from fields such as colloidal science, device physics, and supramolecular chemistry. The course includes also the speculation that exists as to what new science and technology might result from these lines of research.

Credit	: 3 units
Prerequisite	: ME136P, MSE20-2

ME193-2. ENGINE EMISSIONS AND CONTROL

The course will cover the study of air pollution system, effects of pollutants, engine fundamentals, engine

emissions, emission control techniques, instrumentation and techniques for measuring emissions.

Credit : 3 units Prerequisite : ME134

ME193-3. DESIGN OF THERMAL SYSTEM

The course will cover the study of engineering design, design of a workable system, economics, equation fitting and mathematical modeling, system simulation, optimization, Lagrange multipliers, search methods, dynamic programming, and linear programming. Credit : 3 units Prerequisite : ME150P

ME199R. ON THE JOB TRAINING

Industry exposure of students for them to actually observe the operations and to take advantage of the firsthand information regarding the trends in modern technology. This is also to improve knowledge in M.E. field by providing them with in-depth knowledge in specific areas through development and research concerns, training, ethical and behavioral concerns, environmental and safety concerns, decision making, logistics and personnel management.

Cicuit	. 5 units
Prerequisite	: For Graduating Students only

ME200L. THESIS 1

The course is the first phase of undergraduate research which involves the writing and defense of research proposal.

Credit : 1 unit Prerequisite : RES100-5

ME200-1L. THESIS 2

The course is the continuation of ME 200L. This is the second phase of undergraduate research which will involve the submission of experimental data. Credit : 1 unit

Prerequisites : ME200L

ME200-2L. THESIS 3

The course is the continuation of ME 200-1L. This is the final phase of undergraduate research which will involve an oral presentation of research project to be defended before a panel of faculty members and professionals.

Credit	: 1 unit
Prerequisites	: ME200-1L

MEC31. DYNAMICS OF RIGID BODIES

A course that covers the branch of engineering mechanics known as DYNAMICS which deals with the forces acting on bodies in motion. The course includes kinematics of machines and kinetics particles and rigid bodies such as rectilinear and curvilinear translations, and rotational translations. It gives emphasis to principles related to the solution of problems in assemblies and machine structures, machinery devices like robotic device, machine elements, and other related mechanical structures. Credit : 3 units Prerequisites : MEC30

MEC31-1. DYNAMICS OF RIGID BODIES

The course deals with that branch of Engineering Mechanics called dynamics- the motion of bodies under the action of forces. It has two distinct parts: Kinematics and Kinetics. A thorough comprehension of the subject matter will provide the engineering student with one of its most useful and powerful tools for analysis in Engineering. Credit : 2 units Prerequisite : MEC30 Corequisite : CE50P for CE

MFGE10. ORIENTATION TO MANUFACTURING ENGINEERING

The course introduces manufacturing engineering as a profession with emphasis on the requirements for professional practice and manufacturing engineering as a career focusing on the career opportunities. The course discusses developing engineering skills to succeed in engineering study.

Credit : 1 unit

MFGE09L. ENGINEERING METROLOGY

Measurement of attributes and variables; standards, accuracy and precision; mechanical, electronic and optical/laser measurement systems. Contact and non-contact measurement; straightness, flatness and squareness; GDT (Geometric Dimensioning and Tolerancing); CMM (Coordinate Measurement Machines); surface roughness; metrology for electronic products. 3 lectures, 1 laboratory. Prerequisite: IME 335 or consent of instructor. Credit : 1 Unit

Prerequisites : ME137L

MFGE10L. MANUFACTURING PROCESSES 1

Metal casting as a net shape process in manufacturing. Properties of molding materials and methods of casting. Introduction to rapid prototyping. Pattern and casting design principles.

Credit	: 1 unit
Prerequisites	: ME137L

MFGE11L. MANUFACTURING PROCESSES 2

Theory and application of metal cutting and welding processes. Includes shielded metal arc, flux cored arc, submerged arc, gas metal arc, gas tungsten arc, brazing, resistance, and oxy-acetylene processes. Bonding theory, joint design, codes and testing. Introduction to adhesive bonding. Open to all majors.

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Credit	: 1 Unit
Prerequisites	: MFGE10L

MFGE12L. MANUFACTURING PROCESSES 3

Uses, capabilities, and theoretical and operational characteristics of lathe and milling machine tools, including conventional, automatic and numerical control. Cutting tool characteristics, machining parameters, quality control, and production methods. Design considerations for manufacturing. Introduction to robotics and automation. Open to all majors.

Credit : 1 Unit Prerequisites : MFGE11L

MFGE20. TECHNOPRENUERSHIP

The special requirements of entrepreneurship in a hightech environment. Guest lectures, focused seminar topics, a business plan project, and case studies provide the tools to evaluate and pursue technology-based business opportunities.

Credit : 2 Units Prerequisites :3RD Year Standing

MFGE21. DESIGN OF FIXTURES, JIGS AND TOOLING

Engineering design of fixtures and tools for manufacturing processes. Interpretation of engineering design specifications. Material selection. Analysis of cost, quality, productivity, and safety in tool design. The role of tooling in manufacturing competitiveness. Design projects. Credit : 3 Unit

Prerequisites : ME147P

MFGE22P. COMPUTER-AIDED MANUFACTURING

The course covers study of the design and use of computer-aided manufacturing management systems in the allocation and control of plant, equipment, manpower, and materials. This is accompanied by a laboratory course that will cover advanced and integrated topics on computer integrated manufacturing applications, as enterprise resource planning.

Credit : 3 Unit Prerequisites : CAD10L

MFGE23P. CAPSTONE 1: PRODUCT DESIGN

Innovation for product development, engineering management of new product development and manufacturing competitiveness. Concurrent engineering. Study of manufacturability constraints in terms of prototyping, designing, testing, pre-production support, processing, quality, delivery, and customer satisfaction. Industrial design projects. Examination of relevant environmental and ethical problems. 3 lectures, 1 laboratory. Prerequisite: IME 341, and senior standing or graduate standing or consent of instructor.

Credit : 3 Unit

Prerequisites : ME147P, 4th Year Standing

MFGE24. ELECTRONICS MANUFACTURING 1

Printed circuit board assembly; printed circuit board fabrication process; electronics packaging; overview of

semiconductor manufacturing; design, documentation and fabrication of electronic units with emphasis on CAD/CAM. Credit : 3 Units

Prerequisites : 4th Year Standing

MFGE25. MAINTENANCE ENGINEERING AND TRIBOLOGY

The course deals with the study of maintenance of equipment and plant. It also introduces intro tribology which is the study of wear and tear, friction and lubrication.

Credit : 3 units Prerequisites : MFGE21

MFGE26P. CAPSTONE 2: MANUFACTURING FACILITIES DESIGN

Design concepts and input requirements in planning and design of new or renovation of existing manufacturing systems. Product, process, and flow and activity analysis techniques. Flow lines and buffering techniques. Computer-aided layout design and evaluation. Design of Credit : 3Units

Prerequisites : MFGE23P

MFGE 27. ELECTRONICS MANUFACTURING2

Design and fabrication of commercial electronic products; PCB layout design, bill of material analysis and component purchasing, production planning and scheduling, programming automated surface-mount assembly line, marketing of products. Multidisciplinary project teams exposed to real-world challenges of electronics manufacturers.

Credit : 3 Unit Prerequisites : MFGE24

MFGE28. MANUFACTURING ENGINEERING ETHICS

Study of engineering professional responsibility and ethical issues in work life of manufacturing engineers.

Credit : 2 Units Prerequisites : 4th Year Standing

MFGE100. METHODS OF RESEARCH

Nature and characteristics of research, the general approach to research studies, and processes and methodologies of research as applied to manufacturing engineering; elements of technical writing as applied to the preparation of reports, proposals and theses; writing of a research proposal.

Credit : 2 units Prerequisite : MATH30-8. 4th Year Standing

MFGE149F. PLANT INSPECTION TRIPS AND SEMINARS

The course involves trips to manufacturing and industrial plants. The course also involves reports by the student regarding the plants visited and problems in industrial equipment and processes.

Credit : 1 unit Prerequisite : ME101

MFGE199R. ON-THE-JOB-TRAINING

Industry exposure of students for them to actually observe the operations and to take advantage of the first hand information regarding the trends in modern technology. This is also to improve knowledge in MfgE. field by providing them with in-depth knowledge in specific areas through development and research concerns, training, ethical and behavioral concerns, environmental and safety concerns, decision making, logistics and personnel management.

Credit	: 3 units
Prerequisite	: For Graduating Students Only

PRT193. PETROLEUM REFINING EQUIPMENT

This course focuses on the major motive and thermal refining equipment, components of a Distributed Control System (DCS) set-up, tuning of a process control system, typically fluid flow systems, typical process control system and the different sources of process design standards. Credit : 3 units

Prerequisite/s : PRT191 (ChE), PRT192 (EE and ME)

PRT194. PETROLEUM REFINING SAFETY

This course discusses safety rules and regulations, possible sources of fire, electricity, chemical, dust, fatigue and confined space hazards, safe and unsafe acts and conditions, and, actions against unsafe acts and conditions in refining, home, school and leisure settings. The following topics are also discussed: proper usage and maintenance of personal protective equipment (PPE), and engineering, administrative and PPE controls to mitigate hazards identified.

Credit : 3 units Prerequisite : PRT193

RES100-5. METHODS OF RESEARCH

Nature and characteristics of research, the general approach to research studies, and processes and methodologies of research as applied to engineering; elements of technical writing as applied to the preparation of reports, proposals and theses; writing of a research proposal.

Credit	: 2 units
Prerequisite	: MATH30-8. 3rd Year Standing