

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 |

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|--------------|--------|---|-------------|-------------|-------------|--|--|-----------|
| | 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 |
| 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 |

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|--------------|-------|--------------------------------|-------------|------------|-------------|-------------------------------|--|------|
| | 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 |

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| | 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 |

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| | | 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 |
|----|-----|------|-------|---------|---------|--------------|---------|---------------|-----------|
|----|-----|------|-------|---------|---------|--------------|---------|---------------|-----------|

MECHATRONICS ENGINEERING

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

AUTOMOTIVE ENGINEERING

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

HEATING, VENTILATING, AIRCONDITIONING & REFRIGERATION

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

PETROLEUM REFINING TECHNOLOGY

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

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 | | | |

| 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 |

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

| 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
Prerequisites : 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 such losses. The course draws on experience and 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.

Credit : 1 unit

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
Prerequisites : MATH 24-1, PHY 13/PHY13L

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 : 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. V-belts 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 : 3 units

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

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.

Credit : 3 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.

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 high-tech 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