

## Graduation Credits of PME Undergraduate Student

### (For 2020 Fall Semester)

| <b>Mandatory Courses(30 credits)</b>                      |                        |
|-----------------------------------------------------------|------------------------|
| College Chinese (2)                                       | Physical Education (0) |
| English (8)                                               | Student Service (0)    |
| General Education (20)                                    |                        |
| <b>Major Requirement(64 credits)</b>                      |                        |
| General Physics B (I), with Labs (4)                      |                        |
| General Physics B (II),with Labs (4)                      |                        |
| PME 4021 Introduction to Modern Physics (3)               |                        |
| PME 3212 Electromagnetics (3)                             |                        |
| PME 4031 Engineering Optics (3)                           |                        |
| <b>select 2 out of 5 courses (6)</b>                      |                        |
| CHEM1030 General Chemistry I with Labs (4)                |                        |
| MATH1030/MATH1040 Calculus I,II (6)                       |                        |
| PME 2001/PME 2002 Engineering mathematics I,II(6)         |                        |
| PME 1018 Programming Design (3)                           |                        |
| PME 1016 Work Shop Practices (1)                          |                        |
| PME 1341/PME 2342 Applied Mechanics I, II (4)             |                        |
| PME 2350 Mechanics of Materials (3)                       |                        |
| PME 2103/PME 2104 Thermal and fluid Science I, II (6)     |                        |
| PME 3006 Introduction to Materials Science (3)            |                        |
| PME 2431 Manufacturing Processes (3)                      |                        |
| PME 3433 Machine Design (3)                               |                        |
| PME 2201 Electric Circuits (3)                            |                        |
| PME 3203 Microelectronics Labs. I (1)                     |                        |
| PME 3011 Solid Mechanics and Nanomaterials Laboratory (1) |                        |
| PME 4013 Thermo-fluid and Power System Lab (1)            |                        |
| PME 4003/ PME 4002 Undergraduate Research I, II (3)       |                        |
| PME 3201 Electronics I (3)                                |                        |
| PME 1013 Engineering Drawing (2)                          |                        |
| E1001 Introduction to Engineering (2)                     |                        |

| <b>Specialized Programs (15 credits)</b><br>Minimum credit(s) required 15(select 1 out of 4 programs)                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| Electrical and Control                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Course(s) for Electrical and Control program:</b><br>PME 3207 , PME 3208 Control System I, II (6)<br>PME 3202 Electronics II (3)                                                                                   | <b>Undergraduate Elective Course(s) for Electrical and Control program:</b><br>PME 3205 Electrical Machinery (I) (3)<br>PME 3212 Electromagnetism (3)<br>PME 3209 Logic Design and Applications (3)<br>PME 4209 Introduction to Microcomputer (3)<br>PME 3320 Mechanical Vibrations (3)<br>PME 3005 System Dynamics Analysis (3)<br>PME 4005 Numerical Analysis (3)                                                                                                                                                                                                                                     |
|                                                                                                                                                                                                                                | <b>Graduate Elective Course(s) for Electrical and Control program:</b><br>PME 5201 Linear System Theory (3)<br>PME 5203 Digital Control System (3)<br>PME 6250 Nonlinear Control systems (3)<br>PME 5233 Biomedical Microsystem (3)<br>PME 5260 Robotics (3)<br>PME 5269 Electronic Circuits Analysis (3)<br>PME 5230 Sensing and Actuation in Miniaturized Systems (3)<br>PME 5270 Digital Circuit Analysis and Design (3)<br>PME 5368 Acoustics : theory and application (3)<br>PME 5206 Microphone Array Signal Processing (3)<br>PME 5256 Special Topics in Mobile Robots and Self-Driving Cars (3) |
| Micro/ Nano and Solid Mechanics                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Course(s) for Micro/Nano and Solid Mechanics program:</b><br>PME 4352 Introduction to Microelectromechanical Systems (3)<br>PME 3349 Nanotechnology and its applications (3)<br>PME 3320 Mechanical Vibrations (3) | <b>Undergraduate Elective Course(s) for Micro/Nano and Solid Mechanics program:</b><br>PME 3010 Introduction to Microsystem Technology (I) (3)<br>PME 3310 Advanced Strength of Materials (3)<br>PME 3347 Introduction to Finite Element Methods(3)<br>PME 3436 Opto-Mechatronic Systems Design (3)                                                                                                                                                                                                                                                                                                     |

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|                                                                                                                                                                               | PME 3346 Introduction to Solid and Nano/Micro Mechanics (2)<br>PME 4021 Introduction to Modern Physics (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                               | <b><i>Graduate Elective Course(s) for Micro/Nano and Solid Mechanics program:</i></b><br>PME 5442 Micro and Nano Fabrication Technology (3)<br>PME 5360 Atomistic-Continuum Mechanics (3)<br>ESS 5850 Micro System Design (3)<br>PME 5230 Sensing and Actuation in Miniaturized Systems (3)<br>PME 5341 Nanoengineering (3)<br>PME 5343 Finite Element Methods (3)                                                                                                                                                                                                                                                       |
| <b>Energy Systems</b>                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b><i>Required Course(s) for Energy System program:</i></b><br>PME 3121 Energy Engineering (3)<br>PME 3113 Advanced Fluid Dynamics (3)<br>PME 3120 Heat and Mass Transfer (3) | <b><i>Undergraduate Elective Course(s) for Energy System program:</i></b><br>PME 4021 Introduction to Modern Physics (3)<br>PME 3007 Linear Algebra (3)<br>PME 4005 Numerical Analysis (3)<br>PME 4147 Flight Mechanics(3)                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                               | <b><i>Graduate Elective Course(s) for Precision Machine Design and Intelligent Manufacturing program:</i></b><br>PME 5131 Introduction to Combustion (3)<br>PME 5111 Laminar Flow Theory (3)<br>PME 5122 Heat Convection (3)<br>PME 5113 Computational Fluid Dynamics (3)<br>PME 5128 Heat exchangers and System simulation of HVAC (3)<br>PME 5170 Thermo-fluidics in Bio-MEMS (3)<br>PME 5112 Gas Phase Dynamics (3)<br>PME 5123 Cooling Systems for Electronic Equipment (3)<br>PME 5142 Jet Propulsion (3)<br>PME 5103 Advanced Microfluidic System (3)<br>PME 5141 Experimental methods in Thermo-Fluid Science (3) |

| Precision Machine Design and Intelligent Manufacturing                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <b>Required Course(s) for Precision Machine Design and Intelligent Manufacturing program:</b><br>PME 3436 Opto-Mechatronic Systems Design (3)<br>PME 4432 Computer Aided Design and Manufacturing (3)<br>PME 4430 Introduction to Artificial Intelligence (3) | <b>Undergraduate Elective Course(s) for Precision Machine Design and Intelligent Manufacturing program:</b><br>PME 3207 Control System I (3)<br>PME 4031 Engineering Optics (3)<br>PME 3320 Mechanical Vibrations (3)<br>PME 4426 Introduction to Magnetic Devices (3)<br>PME 4352 Introduction to Microelectromechanical Systems (3)<br>PME 3347 Introduction to Finite Element Methods(3)<br>PME 3437 Innovations in Engineering Design (3)                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                               | <b>Graduate Elective Course(s) for Precision Machine Design and Intelligent Manufacturing program:</b><br>PME 5435 Precision Machine Design I (3)<br>PME 5436 Precision Machine Design (II) (3)<br>PME 5459 Process Diagnosis and Analysis (3)<br>PME 5431 Special Topics in Computer-Aided Manufacturing (3)<br>PME 5442 Micro and Nano Fabrication Technology (3)<br>PME 5452 Evolutionary Computation (3)<br>PME 5256 Special Topics in Mobile Robots and Self-Driving Cars (3)<br>NEMS5101 Microsensor and Microinstrument System (3)<br>PME 5230 Sensing and Actuation in Miniaturized Systems (3)<br>PME 5443 Opto Electronics (3)<br>PME 5441 Design and manufacture of miniaturized systems (3) |
| <b>Other Elective Courses(20 credits)</b><br><b>Any Course other than the ones listed above.</b>                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |