

## A. Leon Linton Department of Mechanical Engineering

### BSME Concentrations and Technical Electives

Concentrations for the BSME degree are available in the areas of manufacturing, solid mechanics, thermal fluids, automotive and alternative energy. If requested, a concentration is awarded to the student who takes at least three (3) electives in a given concentration area. Since there are a total of four (4) technical electives in the BSME program, one technical elective (i.e., the fourth one) can be chosen from any of the areas. A student can receive more than one concentration. To ensure the ability to schedule desired technical electives, students are advised to take their tech electives as early as possible after satisfying course prerequisites.

#### Manufacturing Concentration

| Course No. | Course Name                           | Prerequisites   |
|------------|---------------------------------------|---|
| EME4143    | World Class Manufacturing             | EME3023 Manufacturing Processes                       |
| EME4153    | Robotics Applications                 | EME3023 Manufacturing Processes                       |
| EME4313    | Fundamentals of Quality Systems       | EME3023 Manufacturing Processes, MCS3403 Prob & Stats |
| EME4333    | Safety Engineering                    | Senior standing                                       |
| EME5113    | Polymer Materials and Processes       | EGE1023 Engineering Materials                         |
| EME5123    | Optimization of Manufacturing Systems | EME3023 Manufacturing Processes                       |
| EME5603    | Engineering Systems Simulation        | MCS3403 Prob & Stats and senior standing              |

#### Solid Mechanics Concentration

| Course No. | Course Name                     | Prerequisites  |
|------------|---------------------------------|--|
| EME4243    | Finite Element Analysis         | EME3013 Mechanics of Materials, EME3003 Eng. Num. Method |
| EME5103    | Fasteners and Bolted Joints     | EME4003 Design of Machine Elements                       |
| EME5203    | Design of Mechanical Joints     | EME4003 Design of Machine Elements                       |
| EME5213    | Mechanical Vibrations           | EME3043 Dynamics   |
| EME5223    | Advanced Mechanics of Materials | EME3013 Mechanics of Materials                           |
| EME5243    | Finite Element Analysis II      | EME4243 Finite Element Analysis                          |

#### Thermal Fluids Concentration

| Course No. | Course Name                           | Prerequisites                                       |
|------------|---------------------------------------|---|
| EGE3903    | Alternative Energy Engineering        | EEE2123 or EEE2114 and CHM1213 University Chemistry |
| EME4163    | Aeronautical Engineering Fundamentals | EME3024 or EME3123 and EME4003                      |
| EME4323    | Applied Fluid Mechanics               | EME3024 or EME3123 Fluid Mechanics                  |
| EME5143    | Internal Combustion Engines           | EGE3003 Thermodynamics                              |
| EME5153    | Applied Thermodynamics                | EGE3003 Thermodynamics                              |
| EME5173    | Transport Phenomena                   | EME3024 or EME3123 Fluid Mechanics                  |

#### Automotive Concentration

| Course No. | Course Name                           | Prerequisites   |
|------------|---------------------------------------|---|
| EME4333    | Safety Engineering                    | Senior standing   |
| EME5103    | Fasteners and Bolted Joints           | EME4003 Design of Machine Elements                        |
| EME5143    | Internal Combustion Engines           | EGE3003 Thermodynamics                                    |
| EME5203    | Design of Mechanical Joints           | EME4003 Design of Machine Elements                        |
| EME5433    | Vehicle Dynamics 1                    | EME3043 Dynamics and EME3034 or EME3133                   |
| EME5573    | Automotive HVAC 1                     | EME4103 Heat Transfer or EME4613 Intro to Thermal Systems |
| MSE5133    | Modern Control in Mechatronic Systems | EEE3153 and EEE4513                                       |

#### Alternative Energy Concentration

| Course No. | Course Name                          | Prerequisites                                       |
|------------|--------------------------------------|---|
| EGE3903    | Alternative Energy Fundamentals      | EEE2123 or EEE2114 and CHM1213 University Chemistry |
| EGE5303    | Energy & Environmental Management 1  | Admission by program director                       |
| EGE5323    | Energy & Environmental Management 2  | EGE5303 Energy & Environmental Management 1         |
| EME5163    | Fuel Cells and Hydrogen              | CHM1213, PHY2423, EGE3003, EEE2123                  |
| EME5193    | Solar and Wind Energy Generation Sys | CHM1213, PHY2423, EGE3003, EEE2123                  |
| EME5263    | Energy Resources and Technology      | Senior Standing                                     |