MASTER OF ENGINEERING DEGREE PLAN

1. REQUIRED GRADUATE LEVEL MATH COURSE (CHOOSE 1 COURSE – 3 HRS)
   □ MEEN 602 - Modeling & Analysis of Mechanical Systems (MATH requirement)  **** Required

2. REQUIRED COURSES (CHOOSE 7 GRADUATE MEEN COURSES FROM THE FOLLOWING LIST)
   □ MEEN 601 – Advanced Product Design
   □ MEEN 603 – Theory of Elasticity
   □ MEEN 604 – Time Frequency Nonlinear Vibration and Control
   □ MEEN 605 – Gas Dynamics
   □ MEEN 606 – Polymer Lab
   □ MEEN 607 – Polymer Physical Properties
   □ MEEN 608 – Continuum Mechanics
   □ MEEN 609 – Materials Science
   □ MEEN 610 – Applied Polymer Science
   □ MEEN 611 – Advanced Internal Combustion Engines
   □ MEEN 612 – Mechanics of Robot Manipulators
   □ MEEN 613 – Engineering Dynamics
   □ MEEN 614 – Design and Modeling of Viscoelastic Structures
   □ MEEN 615 – Advanced Engineering Thermodynamics
   □ MEEN 616 – Surface Science
   □ MEEN 617 – Mechanical Vibrations
   □ MEEN 618 – Energy Methods
   □ MEEN 619 – Conduction and Radiation
   □ MEEN 620 – Kinetic Processes in Materials Science
   □ MEEN 621 – Fluid Dynamics
   □ MEEN 622 – Advanced Fluid Dynamics
   □ MEEN 624 – Two-Phase Flow and Heat Transfer
   □ MEEN 625 – Mechanical Behavior of Materials
   □ MEEN 626 – Lubrication Theory
   □ MEEN 627 – Heat Transfer-Conduction
   □ MEEN 628 – Heat Transfer-Convection
   □ MEEN 629 – Heat Transfer-Radiation
   □ MEEN 630 – Intermediate Heat Transfer
   □ MEEN 631 – Microscale Thermodynamics
   □ MEEN 632 – Advanced Computer-Aided Engineering
   □ MEEN 633 – Combustion Science and Engineering
   □ MEEN 634 – Dynamics and Modeling of Mechatronics Systems
   □ MEEN 635 – Flow and Fracture of Polymeric Solids
   □ MEEN 636 – Turbulence: Theory and Engineering Applications
MEEN 637 – Turbulence Measurement and Analysis
MEEN 638 – Mechanics of Non-Linear Fluids
MEEN 639 – Dynamics of Rotating Machinery
MEEN 640 – Thermodynamics in Material Science
MEEN 641 – Quantitative Feedback Theory
MEEN 642 – Gas Turbine Heat Transfer and Cooling Technology
MEEN 644 – Numerical Heat Transfer and Fluid Flow
MEEN 645 – Engineering Applications of Solid Mechanics
MEEN 646 – Aerothermodynamics of Turbomachines
MEEN 648 – Manufacturing Systems Planning and Analysis
MEEN 649 – Nonlinear Vibrations
MEEN 650 – Control Issues in Computer Integrated Manufacturing
MEEN 651 – Control System Design
MEEN 652 – Multivariable Control System Design
MEEN 653 – Scientific Writing
MEEN 655 – Design of Nonlinear Control Systems
MEEN 656 – Mechanical and Physical Properties of Thin Films
MEEN 657 – Viscoelasticity of Solids and Structures
MEEN 658 – Fundamentals of Ceramics
MEEN 659 – Vibration Measurement in Rotating Machinery and Machine Structures
MEEN 660 – Corrosion Engineering
MEEN 661 – Principles of Composite Materials
MEEN 662 – Energy Management in Industry
MEEN 663 – Cogeneration Systems
MEEN 664 – Energy Management in Commercial Buildings
MEEN 665 – Application of Energy Management
MEEN 666 – Plasticity Theory
MEEN 667 – Mechatronics
MEEN 668 - Rotor dynamics
MEEN 669 – Alternative Energy Conversion
MEEN 672 – Introduction to Finite Element Method
MEEN 673 – Nonlinear Finite Element Methods in Structural Mechanics
MEEN 674 – Modern Control
MEEN 675 – Adaptive Control
MEEN 676 – Fuzzy Logic and Intelligent Systems
MEEN 677 – Aerosol Science
MEEN 678 – Aerosol Mechanics
The (M. Eng.) degree consists of a total of 30 credit hours (10 courses) of graded coursework from the College of Engineering. **Classroom courses must include MEEN 602 Modeling and Analysis of Mechanical Systems and at least 7 MEEN classes from the list above. Of the remaining 2 courses, students may select any other free electives from MEEN or other programs in The College of Engineering/College of Science. **

3 hours of MEEN 684-Professional Internship and/or MEEN 685-Directed Studies (Independent Study) may be used if desired.

MEEN 689 Special Topics Courses: Special topics in an identified area of mechanical engineering. May be repeated for credit.

### 3. SUGGESTED EXAMPLES OF SPECIALIZATION TRACK OPTIONS LISTED BELOW

Below are some example recommendations of how to create a specialization from the 7 courses requirement (students are not restricted to these recommendations).

#### Design and Manufacturing
- MEEN 601 Advanced Product Design
- MEEN 689 Bioinspired Design
- MEEN 689 Finite Element Analysis in Mechanical Engineering
- MEEN 632 Advanced Computer-Aided Engineering
- MEEN 625 Mechanical Behavior of Materials
- MEEN 689 Multidisciplinary System Analysis and Design Optimization
- One more elective from the list above, and two more electives of your choice to get to 10 electives total.
- Or two courses from Industrial Engineering (for more manufacturing focus) or two courses from Architecture (for more design focus), and one more elective of your choice to get to 10 electives (can include MEEN 684/MEEN 685).

#### Thermal, Fluid and Combustion Sciences
- MEEN 615 Advanced Engineering Thermodynamics
- MEEN 621 Fluid Dynamics
- MEEN 630 Intermediate Heat Transfer
- MEEN 689 Solar Energy Engineering
- MEEN 663 Cogeneration
- MEEN 662 Energy Management in Industry
- MEEN 633 Combustion Science and Engineering or MEEN 611 Advanced IC Engines
- Two other electives of your choice (can include MEEN 684/MEEN 685).

#### Robotics and Control Systems
- MEEN 612 Mechanics of Robot Manipulators
- MEEN 667 Mechatronics
- MEEN 634 Dynamics and Modeling of Mechatronic Systems
- MEEN 613 Engineering Dynamics
- MEEN 651 Control Systems Design
- MEEN 689 Multidisciplinary System Analysis and Design Optimization
- One more from the list above and two other electives of your choice (can include MEEN 684/MEEN 685).
Dynamics and Turbomachinery
- MEEN 646 Aerothermodynamics of Turbomachines
- MEEN 689 Finite Element Analysis in Mechanical Engineering
- MEEN 621 Fluid Mechanics
- MEEN 604 Time Frequency Nonlinear Vibration Control
- MEEN 613 Engineering Dynamics
- MEEN 659 Vibration Measurement in Rotating Machinery and Machine Structures
- One more from the list above and two other electives of your choice (can include MEEN 684/MEEN 685).

Materials and Manufacturing
- MEEN/MSEN 625 Mechanical Behavior of Materials
- MEEN 686/MSEN 618 Composite Materials Processing and Performance
- MSEN 601 Materials Science
- MEEN 632 Advanced Computer-Aided Engineering
- MEEN 689 Engineering Applications of Solid Mechanics
- Two more from the list above and two other electives of your choice (can include MEEN 684/MEEN 685).

Structural and Computational Mechanics
- MEEN 632 Advanced Computer-Aided Engineering
- MEEN 689 Finite Element Analysis in Mechanical Engineering
- MEEN 645 Engineering Applications of Solid Mechanics
- MEEN 672 Introduction to Finite Element Method
- MEEN 625/MSEN 625 Mechanical Behavior of Materials
- MEEN 657 Viscoelasticity of Solids and Structures
- MEEN 603 Theory of Elasticity
- Two more electives (can include MEEN 684/MEEN 685).

**TOTAL MINIMUM SEMESTER HOURS: 30**

All Graduate Student Forms & Information can be found on the Office of Graduate & Professional Studies website at [http://ogs.tamu.edu/Incoming-students/student-forms-and-information/](http://ogs.tamu.edu/Incoming-students/student-forms-and-information/)