Revised on Dec. 28, 2017

List of Compulsory Courses for Graduate Programs (Master degree)
Department of Power Mechanical Engineering
National Tsing Hua University

1. Energy Systems Program: Pick 2 out of the 4 courses
   I. Laminar Flow Theory
   II. Heat Convection
   III. Combustion (I)
   IV. Computational Fluid Dynamics
2. Electrical and Control Program: Pick 4 out of 10 (12 credits)
   I. Linear System Theory
   II. Digital Control System
   III. Biomedical Microsystem
   IV. Digital Signal Processing
   V. Electronic Circuits Analysis
   VI. Microphone Array Signal Processing
   VII. Design and Control of AC Electric Machines
   VIII. Robotics
   IX. Nonlinear Control Systems

   Students who took the courses during their undergraduate degree may choose to waive the course for their graduate degree if their grade is equal to or greater than B- (70 points).
3. Micro/Nano and Solid Mechanics Program
   I. Elasticity
   II. Finite Element Methods

   Graduate students from a non-mechanical background are recommended to take the undergraduate course, Machine Design (3 credits) to strengthen their foundation in mechanical engineering.
4. Precision Machine Design and Manufacturing Program: Pick 3 out of the 5 courses
   I. Design for Reliability
   II. Micro and Nano Fabrication Technology
   III. Special Topics in Computer-Aided Manufacturing
   IV. Precision Machine Design I
   V. Precision Machine Design II
5. Opto-Mechatronics Program: Pick 1 course from I and II, (2 courses in total)
   I. **PME Courses:** PME5443 Opto Electronics, PME5341Nanoengineering.
      NEMS Courses: NEMS5100 Micro & Nano Technology, NEMS5860 Optics

Transducers. (Pick 1 out of the 4 courses)

II. Pick 1 required course from the total of required courses of Energy and Systems Programs, Electrical and Control Program, Micro/Nano and Solid Mechanics Program, Precision Machine Design and Manufacturing Program, Opto-Mechatronics Program, MicroSystems Bio-Engineering Program.

6. MicroSystems Bio-Engineering Program: Pick 2 out of the 6 courses
   I. NEMS5100 Micro & Nano Technology (NEMS course)
   II. PME5170 Thermo-fluidics in Bio-MEMS
   III. PME5602 BioMEMS & BioNEMS
   IV. PME5502 Biosensor and Bioelectronics
   V. PME5103 Advanced Microfluidic System
   VI. PME5230 Sensing and Actuation in Miniaturized Systems