Minors

Mechanical Engineering
Materials Science Engineering
Minor in Materials Science and Engineering

The Department of Mechanical Engineering and Materials Science offers a minor for students in the School of Engineering who are not currently majoring in Materials Science and Engineering. The minor consists of five (5) courses for a total of fifteen (15) units. Students must obtain a GPA of at least 2.0 for the courses taken.

**Required core courses:**

- ENGR 0022: Materials Structure and Properties (3 units)
  *Pre-req: MATH 0230 and PHYS 0175*

- MEMS 0040: Materials and Manufacturing (3 units)
  *Pre-req: ENGR 0022*

- MEMS 1053: Structure of Crystals and Diffraction (3 units)
  *Pre-req: ENGR 0022*

- MEMS 1059: Phase Equilibria in Materials (3 units)
  *Pre-req: ENGR 0022 and MEMS 0051*

- MEMS 1063: Phase Transformation and Microstructure Evolution (3 units)
  *Pre-req: MEMS 1053 and MEMS 1059*
Minor in Mechanical Engineering

The Department of Mechanical Engineering and Materials Science is offering a minor for students in the School of Engineering who are not currently majoring in Mechanical Engineering. A total of fifteen (15) units required to complete the minor. Students must obtain a GPA of at least 2.0 for the courses taken.

**Required core courses:**
To provide students with a background in mechanical design the following two courses are required for the Mechanical Engineering minor:

- MEMS 0024: Intro. to Mechanical Engineering Design (3 units)
  \[ \text{Pre-req: ENGR 0011} \]
- MEMS 1028: Mechanical Design 1 (3 units)
  \[ \text{Pre-req: ENGR 0145} \]

**Options:**
Students must choose one of the four options to complete the courses required for the minor.

**Thermal-Fluids option:**
- MEMS 0051: Introduction to Thermo-Fluids Engineering (3 units)
  \[ \text{Pre-req: PHYS 0175 and CHEM 0960 Co-req: MATH 0290} \]
- MEMS 1051: Applied Thermodynamics (3 units)
  \[ \text{Pre-req: MEMS 0051} \]
- MEMS 1072: Applied Fluid Dynamics (3 units)
  \[ \text{Pre-req: MEMS 0051} \]

**Dynamic Systems option:**
- MEMS 1014: Dynamic Systems (3 units)
  \[ \text{Pre-req: MEMS 0031} \]
- MEMS 1015: Rigid-Body Dynamics (3 units)
  \[ \text{Pre-req: MATH 0240 and ENGR 0135} \]
- MEMS 1045: Automatic Controls or ECE controls course (3 units)
  \[ \text{Pre-req: MEMS 1014} \]

**Mechanical Design option:**
- MEMS 1029: Mechanical Design 2 (3 units)
  \[ \text{Pre-req: MEMS 0024 and MEMS 1028} \]
- MEMS 1033: Fracture Mechanics for Manufacturing and Performance (3 units)
  \[ \text{Pre-req: ENGR 0022 and MEMS 1028} \]
- MEMS 1047: Finite Element Analysis (3 units)
  \[ \text{Pre-req: MEMS 1028. MEMS 1052 and MEMS 1072} \]

**Mechanical Measurements option:**
- MEMS 1014: Dynamic Systems (3 units)
  \[ \text{Pre-req: MEMS 0031} \]
- MEMS 1041: Mechanical Measurements 1 (3 units)
  \[ \text{Pre-req: ENGR 0145 and MEMS 0031 Co-req: MEMS 1014} \]
- MEMS 1042: Mechanical Measurements 2 (3 units)
  \[ \text{Pre-req: MEMS 1041} \]
Minor Application

Check one: Materials Science and Engineering _____ Mechanical Engineering _____

Name ___________________________________ ID#__________________________

Local Address____________________________ Local Phone (_____)_________________
(street)

__________________________ ____________________________
(city) (state) (zip code)

Permanent Address___________________________ Permanent Phone (_____)_________________
(street)

__________________________ ____________________________
(city) (state) (zip code)

Email: __________________________________________

Major ____________________________________________

Academic Standing: Sophomore _____ Junior _____ Senior_____

Please read the following statement and sign

I understand that my academic records will be evaluated for this application process, therefore, I authorize for all of my academic records to be made available as necessary.

____________________________________            ___________________
(signature)     (date)

Submit completed application form to:

Undergraduate Administrator
636 Benedum Hall
Pittsburgh, PA 15261
(412) 624-9780