

# 2020-21 WPI Graduate Catalog Supplement

The following page was omitted from the 2020-21 WPI Graduate Catalog. It should come between pages 133 and 134 in the published 2020-21 Catalog.

## Faculty

**R. D. Sisson, Jr.**, George F. Fuller Professor, Director, Manufacturing and Materials Engineering; Ph.D., Purdue University

Faculty from Management, Manufacturing Engineering, Materials Science and Engineering to Mechanical Engineering, and Systems Engineering work with this program. See those programs for complete faculty listings.

## Program of Study

The founders of Worcester Polytechnic Institute made their fortunes in the materials processing industries of wire drawing (Ichabod Washburn) and tin smithing (John Boynton). Since classes began in 1868, WPI has prepared young men and women for careers in materials processing. Many WPI alumni and faculty members have established materials processing companies including Norton Company, Wyman-Gordon, and PresMet.

WPI's Materials Process Engineering (MPE) Master of Science graduate degree program continues this outstanding legacy by providing engineers, scientists and managers with the knowledge, skills and experience to become the entrepreneurs, trend setters and executives in the materials processing industry in the 21st century. This 30-credit program offers the opportunity for serious professionals to become leaders by selecting courses from three programs:

**Manufacturing Engineering**

**Materials Science and Engineering**

**Management/Industrial Engineering**

## Admission Requirements

Admission requirements include a B.S. in engineering or science. The program is designed to be completed in three to four years while working full time. Classes are offered on campus one evening or two afternoons per week. Many classes are available through WPI's Corporate Online Graduate Programs.

## Degree Requirements

### For the M.S.

#### Course Requirements

For the master of science in materials process engineering, the student is required to complete a minimum of 30 graduate credit hours as follows:

#### Materials Science and Engineering Graduate Courses

(9 or more credits)

- MTE 511 Structure and Properties of Engineering Materials
- MTE 512 Properties and Performance of Engineering Materials
- MTE 526 Advanced Thermodynamics
- MTE 532 X-Ray Diffraction and Crystallography
- MTE 540 Analytical Methods in Materials Engineering
- MTE 550 Phase Transformations in Materials
- MTE 561 Mechanical Behavior and Fracture of Materials
- MTE 5844 Corrosion and Corrosion Control
- Any other MTE 5XX course

#### Manufacturing Engineering Graduate Courses

(6 credits)

- MFE 510 Control and Monitoring of Manufacturing Processes
- MFE 520 Design and Analysis of Manufacturing
- MFE 531 Computer Integrated Manufacturing
- MFE 541 Design for Manufacturability
- MFE 5841 Surface Metrology: Measurement and Analysis of Surface Textures
- Any other MFE 5XX course

#### Management/Industrial Engineering Graduate Courses

(9 credits)

These credits may be selected from any graduate management graduate courses. Typically, students will select from Operations and Industrial Engineering (OIE) or Entrepreneurship (ETR) topics. However courses from other topical areas in management may be selected.

## Electives (3 credits)

To ensure flexibility in this program, each student will select 3 credits of electives from any graduate-level course at WPI. Electives are typically selected from the topics listed here; however, electives from mathematics, chemistry, physics, computer science, social science, or any engineering program may be acceptable. Courses in nanotechnology and MEMS are also available.

## MPE Capstone Project (3 credits)

Each student must complete the MPE Capstone Project. This may be a team or independent project sponsored by industry. The project must address several issues in business analysis, operations, process design and quality, as well as the processing/structure/property relationships in the process being studied. The culmination of this project will be a business plan and/or a research proposal or a new product. The final report is presented in a seminar or class in materials science, manufacturing engineering, or management.

After at least twenty graduate credits have been successfully completed, the student registers for the 3-credit project with one or more faculty advisors. The project is completed over a 14-week semester. Ideally, the project is completed by a team of three; however, smaller or larger teams will be considered. Working with a faculty advisor, the team develops a clear statement of the goals and objectives of the project. Weekly meetings with the advisor with written and oral reports are required. The culmination of the project is a business plan and/or a research proposal or a new product. The project should integrate the skills obtained and knowledge acquired in the student's coursework as well as industrial experience.