

**PAPER ENGINEERING MINOR  
DEPARTMENT OF PAPER & CHEMICAL ENGINEERING  
21 SEMESTER HOURS**

For information contact the Department of Paper and Chemical Engineering, 64 Engineering Building (513-529-0760). The minor introduces the science and engineering of papermaking. The educational experience will prepare the student for a career as a project/ process engineering in the paper and allied industries.

The minimum cumulative g.p.a. of 2.00 is required for all courses in the minor. Twenty-one semester hours beyond the prerequisite chemistry, physics, and mathematics are required. None of these courses may be taken on a credit/ no credit basis.

**Program Requirements:**

**Prerequisites:** EAS 101, EAS 102, ECO 201, MTH 251, PHY 181, and STA 368

**All of these:**

**PCE 201 PRINCIPLES OF PULP AND PAPER(3)** Introduction to the pulping and papermaking. Carry out experiments in paper science. Apply engineering skills to problem solving related to paper and allied industries. Prerequisite: CHM 141 or instructor approval.

**PCE 202 PULP AND PAPER PHYSICS (3)** Discovery of how pulping, papermaking and converting are utilized to develop required performance properties of products from paper. Conduct laboratory investigations to determine properties of paper made in the laboratory and from the pilot paper machine. Prerequisite: PCE 201 and a grade of C or better in PHY 181 and one of the following: i) PCE 219 or ii) MME 211.

**PCE 219 STATICS AND MECHANICS OF MATERIALS (3)** This course provides an introduction to the fundamentals of the mechanics of materials for engineering students in Electrical, Chemical, and Paper Engineering. The course stresses statics, mechanics of deformable media, and material behavior. Elements of dynamics, elasticity, and viscoelasticity will be covered. The central theme of the course that binds these subjects together is proper problem formulation in terms of kinematics, constitutive behavior, equilibrium, and compatibility. Prerequisite: EAS 102. Co-requisite: PHY 181.

**or**

**MME 211 (3) STATIC MODELING OF MECHANICAL SYSTEMS** Introduction to mechanics. Study of the theory and application of the mechanics of rigid bodies in equilibrium. Prerequisite: EAS 101, MTH 151. Co-requisite: EAS 102, PHY 181.

**PCE/MME 313 FLUID MECHANICS (3)** Fundamentals and application of the mechanics of fluids including properties, statics and dynamics of fluids, dimensional analysis and similitude, steady state flow, and topics in compressible flow. Prerequisites: MTH 251, PHY 181 and PCE 219 or MME 211. Cross-listed with MME 313.

**PCE/MME 341 ENGINEERING ECONOMICS (3)** Engineering economic decisions; break-even and minimum cost analysis; engineering methods of resource allocation; concepts of interest; time evaluation of tactical and strategic alternatives. Prerequisite: ECO 201, MTH 151. Co-requisite: STA 368 or PCE 204. Cross-listed with MME 341.

**PCE 404 PAPERMAKING (3)** Contemporary paper manufacturing processes with emphasis on the chemical engineering principles. Prerequisite: PCE 313 and PCE 202. Co-requisite: PCE/MME 341.

**PCE 471, 472 ENGINEERING DESIGN I AND II (1, 2)** Involves application and synthesis of accumulated knowledge in a major, open-ended, industrial research/design project. Critical elements of the design process and real world constraints (economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability) are considered. Emphasis is placed on oral and written communication skills. Students from different academic backgrounds are assigned to multidisciplinary project teams in order to utilize their varied experiences, knowledge, learning styles, and skills to achieve a successful conclusion to each project. Prerequisite: senior standing, or permission of instructor.

**Strongly Recommended: PCE 320 Professional Practice (0)**