MINERAL PREPARATION ENGINEERING (MPR)

**MPR F601  Froth Flotation**
3 Credits
Offered Fall
Theory and application of bulk and differential froth flotation to metallic minerals, nonmetallic minerals and coal.
**Prerequisites:** Admission by arrangement.
**Lecture + Lab + Other:** 2 + 3 + 0

**MPR F606  Plant Design**
3 Credits
Offered Fall Odd-numbered Years
Selection and design of equipment for the operation of mineral and coal beneficiation plants for specific custom and milling problems.
**Prerequisites:** Admission by arrangement.
**Lecture + Lab + Other:** 1 + 6 + 0

**MPR F611  Hydrometallurgy**
3 Credits
Study of the theoretical and engineering aspects of the processes to recover metals from different types of ores and/or scraps, in which aqueous solutions play the predominate role.
**Prerequisites:** MATH F253X; CHEM F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**MPR F612  Solution Concentration and Purification**
3 Credits
The physical chemistry of reaction encountered in solution concentration and purification processes. The types of reaction discussed are cementation, solvent extraction, ion exchange and carbon absorption which are studied in terms of solution chemistry, reaction kinetics and mass transfer effects.
**Prerequisites:** MATH F253X; CHEM F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**MPR F613  Waste Problems and Treatments**
3 Credits
Waste problems and treatments encountered in mineral processing and metallurgical industries. Includes waste problems and treatments in gold, copper, zinc, iron and steelmaking, aluminum and non-metal industries as well as in electronic and electroplating industries.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**MPR F684  Mineral Preparation Research**
3 Credits
Basic research and its needs in the field of mineral beneficiation, including magnetic susceptibility, dielectric constants and electrical conductivity of minerals; chemical theory and mechanism of bubble contact in flotation; and the effect of ultrasonic vibration in unit processes.
**Prerequisite:** Admission by arrangement.
**Lecture + Lab + Other:** 1 + 6 + 0

**MPR F688  Graduate Seminar I**
1 Credit
Preparation and presentation of research outlines by graduate students and participation in regularly organized mineral engineering department seminars.
**Prerequisites:** Admission to graduate program.
**Cross-listed with MIN F688.**
**Lecture + Lab + Other:** 1 + 0 + 0

**MPR F698  Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 1-9 + 0 + 0

**MPR F699  Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0