

Ge Eng 375, Aggregates and Quarrying

This will be a multi-disciplinary course that will be offered to seniors and graduate students in Geology, Geological Engineering, Mining Engineering, and Civil Engineering. It will cover a broad aspect of aggregate and quarrying issues and applications:

1. **Relevance and Economics of Aggregates:** Importance to the economy, jobs, infrastructure creation. The economics of aggregate extraction, processing, distribution, and marketing.
2. **Aggregate Properties:** Representative sampling, approved sampling procedures. Geological and physical description, petrographic analysis. Testing and classification of aggregates for their suitability for concrete, mortar, asphalt, unbound pavement, railroad ballast, and filter media using the following methods: Size and shape, strength, durability and chemical soundness.
3. **Geology of Aggregates:** Evaluation of geological terrains from field observations and geological maps and reports and evaluation of the potential for naturally occurring aggregate deposits, terrain analysis, field investigations.
4. **Extraction of Aggregates:** Reserves calculations based on drilling or test pit data. Environmental, regulatory, and community relations issues as they relate to quarrying. Open pit layouts, including slope angles, haulage roads, processing plants (crushing and screening), and conveyor belts. Explain and contrast all aspects of high wall control (slope stability) that could be used to prevent and mitigate failures. Underground extraction and alternative use for underground space.
5. **Processing of Aggregates:** Blasting, Secondary breakage, loading, hauling, crushing, grinding, screening, separation. Equipment requirements. Environmental considerations.
6. **End uses of Aggregates:** Flexible pavements, concrete stone, unbound pavements, mortar, filter media, and ballast. Issues of alkali reactivity, impurities, thermal properties.
7. **Armor stone.** Special geological constraints. Special cutting, lifting and handling equipment.

Planned Activities: Quarry site visits, Guest lecturers, Student seminars.

Prerequisites: Introductory geology course, or consent of Instructor (Dr. Norbert H. Maerz)

Preliminary Schedule: Mon., Wed., Fri., 8:00-8:50 am B10 McNutt (on campus), class times subject to change to accommodate student schedules. Distance ed version of the class will also be available.

This class will only be offered if there is enough interest.

PLEASE CONTACT Dr. Norbert H. Maerz, 341-6714 or norbert@mst.edu if you are interested.