**Montana Tech**
**Metallurgical and Materials Engineering Department**
**Spring 2018**

# COURSE SYLLABUS

**COURSE NUMBER AND TITLE**: EMET 2340 Particulate Systems Processing Lab

**DATE REVISED**: Spring, 2018 **SEMESTER CREDITS**: 1

**PREREQUISITE (COREQUISITE)**: EMET 2320

**INSTRUCTORS NAME**: Avimanyu Das **EMAIL**: adas@mtech.edu
**PHONE NUMBER**: 496-4794
**OFFICE LOCATION**: ELC 213
**OFFICE HOURS**: MWF 1.00-2.00 or by appointment

**COURSE OBJECTIVE**:
Course is designed to give students a "hands-on" experience with comminution and classification equipment. Having that experience is essential to acquiring a working knowledge of this technology. The student has practice in applying theory as well as making performance, efficiency calculations such as circulating load in a comminution circuit and power requirements.

**COURSE OUTCOMES:**
Students passing this class will be able to:

- Perform proper laboratory sampling and sieving techniques.
- Obtain and analyze data from Mineral Processing operations.
- Write formal technical reports.

**TOPICS COVERED:**

1) Laboratory Orientation and Safety
2) Writing Lab Reports
3) Demonstrations and reviews
4) Introduction to the Lab/ Unit Operations (lab report handed in)
5) Specific Gravity & Bulk Density Determinations (lab report handed in)
6) Sieve Analysis (lab report handed in)
7) Comminution – Jaw crusher and roll crusher (lab report handed in)
8) Gravimetric Concentration - Knelson Concentrator (lab report handed in)
9) Gravimetric Concentration - Spiral Concentrator (lab report handed in)
10) Gravimetric Concentration – Wilfley Table Concentrator (lab report handed in)
11) Magnetic Concentration (lab report handed in)
12) Flotation (lab report handed in)
13) Sampling (lab report handed in)

**STUDENT GRADING:**
Students work in lab groups and are graded on safety, participation, cooperation and papers. Papers are prepared by the individual students and are due the week after the lab unless a specific date is assigned. They will typically about 4 pages long. Required formats for the papers will be given to the students as will the grading matrix. Late papers are accepted for one week after the due date with a loss of 5 points per day.

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| Papers | 90% | Lab | 10% |

**ATTENDANCE POLICY:**
Attendance is required. No make-up labs will be offered. Missing group members will not be allowed to hand in reports.

**SAFETY POLICY:**
There are many ways to hurt yourself and/or others in the lab. Safety is to be considered at all times, and no safety rules can be compromised. Disregarding safety practices, endangering yourself or others in the lab or acting carelessly around the equipment will result in removal from the class and denial of lab access.
No student will be allowed in the lab without covered shoes and full length pants. Eye protection is mandatory at all times in the lab area.

**REQUIRED TEXT:**
None. Written lab assignments will be handed out. Supplementary notes will be given as needed.

**SUGGESTED REFERENCE MATERIALS:**
B. A. Wills, Mineral Processing Technology, 7th Edition, Pergamon Press.

If you are found to be copying someone else's work from the past or the present, you will be reported to Administration and will not pass the class. There will be no exceptions to this policy.

**ABET Criteria covered:** 1, 4, 6, 7, 9 and 10

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. acquire and apply new knowledge as needed, using appropriate learning strategies
9. integrate the understanding of the scientific and engineering principles underlying the four major elements of the field: structure, properties, processing and performance related to metallurgical and materials systems appropriate to the field, and
10. apply and integrate knowledge from each of the above four elements of the field using experimental, computational and statistical methods to solve materials problems including selection and design consistent with the program educational objectives.

**Prepared by**: Avimanyu Das **Date**: 12th November, 2018