MNGE 420: Mineral and Coal Processing – Fall 2013

Instructor: Dr. Manoj K. Mohanty
Department of Mining and Mineral Resources Engineering
Southern Illinois University at Carbondale

COURSE SYLLABUS

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Office: Engineering E-8
Phone: 453 7910
Office Hrs: 3.15 to 5.00 pm, M, W

4 Credit Hours
2.00 to 3.15 pm M, W; 2.00 to 4.00 pm F
Rooms # A-29 M, W and A-29/D-51/E-11 on F

Prerequisites: MNGE 270; Chemistry 200; Physics 205a and Mathematics 250
Concurrent Enrollment: Civil Engineering 370

Important Note: If you have not satisfied the prerequisite and concurrent enrollment requirements, you will get an “F” grade for MNGE 420 no matter how well you do in this course.

Course Objective: To provide basic knowledge and fundamental understanding of individual unit operations used in mineral and coal processing along with associated metallurgical accounting techniques and some design considerations. A coal/mineral processing plant simulator will be demonstrated. Practical experience will be provided through laboratory exercises and at least one field trip.


Lecture Topics

1. Introduction
2. Metallurgical Accounting
3. Particle Size Analysis
4. Comminution-Crushing & Grinding
5. Industrial Screening and Classification
6. Density Separation
   - Gravity Concentration
   - Heavy Medium Separation
7. Froth Flotation
8. Magnetic and Electrical Separation
9. Dewatering

Required Reading

<table>
<thead>
<tr>
<th>Lecture Topics</th>
<th>Required Reading</th>
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<tbody>
<tr>
<td>1. Introduction</td>
<td>Chapter 1</td>
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<tr>
<td>2. Metallurgical Accounting</td>
<td>Chapter 3</td>
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<tr>
<td>3. Particle Size Analysis</td>
<td>Chapter 4</td>
</tr>
<tr>
<td>4. Comminution-Crushing &amp; Grinding</td>
<td>Chapters 5, 6 &amp; 7</td>
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<tr>
<td>5. Industrial Screening and Classification</td>
<td>Chapters 8 &amp; 9</td>
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<td>6. Density Separation</td>
<td>Chapter 10</td>
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<tr>
<td>- Gravity Concentration</td>
<td>Chapter 11</td>
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<td>- Heavy Medium Separation</td>
<td>Chapter 12</td>
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<td>7. Froth Flotation</td>
<td>Chapter 13</td>
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<td>8. Magnetic and Electrical Separation</td>
<td>Chapter 15</td>
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<td>9. Dewatering</td>
<td>Chapter 15</td>
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Additional Reading Materials:


Grading:

Quiz: 15%
Homework: 15%
Laboratory: 15%
Field Tour Report: 5%
Midterm Exam: 25%
Final Exam: 25%

The standard grading policy is described as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 – 100</td>
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<td>B</td>
<td>80 – 89</td>
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<td>C</td>
<td>70 – 79</td>
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<tr>
<td>D</td>
<td>60 – 69</td>
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<tr>
<td>F</td>
<td>&lt; 60</td>
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Exception to the standard grading policy may be considered at the discretion of the instructor.

Late Policy:

Late homeworks and lab reports will be penalized at a rate of 5 points for each day after the assigned due date. No homework will be accepted one week after the due date.

Make-up exams may be given only in emergency situations with verifiable documentations.