Syllabus for CET1141 - Fundamentals of Cemented Aggregate Mixtures

General Information

Course Title - Fundamentals of Cemented Aggregate Mixtures
Course Number - CET1141

Credits - 4 credits
Class Hours - 42 hours (3 hours per week)
Laboratory Hours - 42 hours (3 hours per week)
Prerequisite Courses - None

Professor - Larry Sutter
Room 232 EERC Building
487-2268
llsutter@mtu.edu
Office Hours: By Arrangement

Course Outcomes - This course introduces cemented aggregate mixtures and standardized field and laboratory tests to verify properties of these materials. This information is fundamental to any person solving civil engineering or construction problems requiring a knowledge of construction materials.

Course Description - Introduce the fundamentals of aggregates, asphalt and portland cement concrete construction materials including physical properties, testing, and placing. Students receive certification as an ACI Level I Concrete Technician and as an MDOT Certified Aggregate Technician.

Textbooks - "Design and Control of Concrete Mixtures"
Steven H. Kosmatka and William C. Panarese
Portland Cement Association, 1988

- "Compilation of ASTM Standards Relating to Concrete"
National Ready Mixed Concrete Association
NRMCA Publication Number 187

Computer Usage - Moderate - Must use a word processor to prepare reports, spreadsheets for calculations and plotting data, and e-mail program for communicating with the Professor and other students.

Calculus Usage - None

Library usage - Minimal - As needed by the student

Syllabus for CET1141 - Fundamentals of Cemented Aggregate Mixtures

Grading

Attendance/Participation - Recommended **20 Points Overall**

Communication Skills Required - Students will be asked to write lab reports and write paragraphs as part of the quizzes and examinations. **10 Points Overall**

Quizzes and Homework - Quizzes lasting approximately 20 minutes will be given in class as appropriate. Approximately 1 homework assignment (average) will be collected for grading each week. A quiz or homework assignment is weighted for significance by the total possible number of points allotted for the individual assignment. **25 Points Overall**

Hour Examinations - 3 - One (1) hour examinations. **25 Points Overall**

Final Examination - Comprehensive **20 Points Overall**

Laboratory - Students will become certified as MDOT Aggregate Technicians and ACI Level 1 Concrete Technicians. The student will receive a lab grade in large part determined by the written exam for concrete certification, written exam for aggregate certification, and practical exams for both concrete and aggregate certification. Participation will also be considered for laboratory grades. **100 Points Overall**

Lab Point Breakdown

20 lab points Concrete Written Certification Exam
20 lab points Concrete Practical Certification Exam
20 lab points Aggregate Written Certification Exam
20 lab points Aggregate Practical Certification Exam
20 lab points Lab Participation

Overall Grading 200 point system / Converted to Percent Overall via a straight curve
Note: Straight curve means 100%-95%=A, 94%-90%=AB, 89%-85%=B, 84%-80%=BC, 79%-75%=C, 74%-70%=CD, 69%-65%=D, below 65%=F. All fractional values of Overall Grade rounded up.

Late Assignments All late assignments will have 10% deducted for each day late. No assignments accepted after 7 calendar days.

Syllabus for CET1141 - Fundamentals of Cemented Aggregate Mixtures

Grading cont.

Example Calculation

Quizzes and Homework

Homework 1 - 5/5
Homework 2 - 6/10
Homework 3 - 9/10
Homework 4 - 8/10
Homework 5 - 9/10
Homework 6 - 8/10
Homework 7 - 7/10
Homework 8 - 14/20
Homework 9 - 8/10
Homework 10 - 9/10
Homework 11 - 7/10
Homework 12 - 9/10
Quiz 1 - 8/10
Quiz 2 - 0/20
Quiz 3 - 8/10

Quiz/Homework Grade = 115/165 = 69.7% = 17.4 overall points

Examinations

Exam 1 - 94%
Exam 2 - 89%
Exam 3 - 88%

Examination Ave. = 89.7% = 22.4 overall points

Final Examination **Final - 81% = 16.2 points**

*Class Participation ** **100% = 20.0 points**
*Communication ** **90% = 9.0 points**

** Based upon instructor review, and as applicable, peer review.*

Laboratory

Concrete Written Certification Exam = 80% =18 points
Concrete Practical Certification Exam = 80% =17 points
Aggregate Written Certification Exam = 80% =16.5 points
Aggregate Practical Certification Exam = 80% =16 points
Overall Lab Participation = 90% =17 points

84.5 of 100 possible points = 84.5/100 =84.5% = 84.5 points

Overall Grade **169.5 of 200 possible points = 169.5/200 =84.8% = B**

Syllabus for CET1141 - Fundamentals of Cemented Aggregate Mixtures

Cheating and Plagiarism

Anyone engaging in activities deemed to constitute cheating or plagiarism will be given an F in the course and turned over to the Dean of Students for disciplinary action consistent with the Code of Student Conduct and University Policies.

Unless otherwise instructed in writing by the Professor, all students are expected to do their own

MTU complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990 (ADA).

If you have a disability and need reasonable accommodation for equal access to education or services, please contact the Dean of Students Office for assistance. For other concerns about discrimination, you may contact your advisor, department head, or the Affirmative Action Office.

Syllabus for CET1141 - Fundamentals of Cemented Aggregate Mixtures

	Recitation	Laboratory
Week 1	Introduction Aggregate Properties Aggregate Geology	Weighing, Sampling, Loss by Wash
Week 2	Gradation Aggregate Characterization	Sieve Analysis Introduce Deleterious Picks
Week 3	Aggregate Specifications	Deleterious Picks, Consensus Properties
Week 4	Aggregate Technician Certification Requirements	Specific Gravity Determination, Color Tests
Week 5	Portland Cement Production Cement Hydration	Aggregate Certification Testing
Week 6	Required Aggregate Properties for Concrete Materials Related Distress in Concrete Admixtures	Mixing concrete, Introduce ASTM Level I Training - Slump, Temperature
Week 7	Hardened Concrete Properties Concrete Testing	Continue ASTM Level I Training - Unit Weight Determination, Air Content
Week 8	Placing & Finishing Introduction to Asphalt	Continue ASTM Level I Training - Air Content
Week 9	Required Aggregate Properties	ASTM Level I Testing
Week 10	Binder properties Binder Characterization	Binder characterization
Week 11	Introduction to Mix Design Methods Asphalt Pavement Properties	Mixing asphalt, aggregate gradations
Week 12	Asphalt Production	Mixing asphalt, aggregate gradations
Week 13	Asphalt Placement	Marshall Testing
Week 14	Introduction to Superpave	Superpave Demonstration