



CIM 4060-001 INTRODUCTION TO CEMENT MANUFACTURING

3 Credit Hours

Instructor Information

Instructor: Mr. Jon Huddleston, CIM Professor, CIM Director
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Office Hours:

Monday	by appointment
Tuesday	8:00 – 11:00
Wednesday	8:00 – 11:00
Thursday	8:00 – 11:00
Friday	by appointment

Class Location: SCCM 224
Class Days/Times: Monday/Wednesday 12:40pm – 2:05pm

Course Information

Course Description

CIM 4060 explores a range of the critical elements involved in cement manufacturing from the quarry design and operation to the manufacturing process, quality control and product specifications and performance. The course will involve discussion and understanding of the methods used in the industry by engineers and quality control managers. Students should get a broad perspective of the process and equipment and have the knowledge of the basic activities required to operate and optimize the plant.

Course Learning Outcomes

1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.5	5.2	5.3	5.4	Goals Measured	USO
D						D							PD			1,3,5	1,2,3,4,5,6

1. Explain chemical reactions of cementitious and pozzolanic materials
2. Analyze tests data and interpret the results and their effects on concrete performance
3. Discuss industry standards pertaining to efficiency and quality management practices in concrete production
4. Discuss advantages and disadvantages, and special applications of various types of concrete

This will be done through the discussion of:

- Common terms and practices used in cement manufacturing with regard to raw material requirements, quarry reserves and resource management.
- Raw mix design, preparation, and control; and design a raw mix given required specifications and raw material properties.
- Pyroprocessing system designs and operation principles, and the advantages and disadvantages of the various component designs. Understand the kiln audit process and demonstrate the ability to identify areas for improvement given a set of operational data for the main components and the overall system.
- The importance of milling systems and the principles and methods used. Understand the advantages and disadvantages of the various systems as they are applied to different raw materials and products. Demonstrate knowledge of the methods to audit and optimize mill performance and be able to analyze an audit report to determine opportunities for improvement.
- The key air emission issues, the causes and the methods to control them. Understand the basic operation of the main emission control technologies, their effectiveness and relative costs.
- Cement manufacturing maintenance and reliability process and tasks. Understand the lubrication and vibration tasks in more detail and be able to interpret the implications of a simple set of data.
- The range of products and key properties of the main product produced in the US. Show the ability to conduct a simple product design and testing program. Understand the impact of product particle size distribution and be able to recognize what steps should be taken to improve performance.

Prerequisites and Co-requisites

CIM 3100 - Applications of Concrete Construction

COURSE MATERIALS

Required Textbooks

The Phillips Bookstore provides textbook services for students seeking to make purchases on-campus and online. Certain textbooks may only be available through the publisher or other alternatives as noted below (if applicable).

The Cement Plant Operations Handbook 6th Edition. 2014. Tradeship Publications Ltd

Supplementary Materials

- Construction Safety Kit – includes hardhat, safety goggles, gloves, and safety vest. Kits maybe purchased from the CIM office for \$20. Safety PPE is required for all students finishing activities.

Assessment and Grading

Formative and summative assignments (i.e., social events, exercises, quizzes, exams, papers, presentations, etc.) will be specified in the course syllabus and will either be provided by the instructor in class or in D2L.

In addition to formative and summative assignments there will be a critical assignment used for formal assessment purposes. The critical assignment for this class will be posted in D2L with detailed instructions and formal grading rubric. The critical assignment must be submitted in D2L - hard copy and email submissions of the critical assignment will not be accepted.

Upon gaining full access to the course in D2L, on the course start date, be sure to navigate the course entirely in D2L to ensure there is access to all of the links, assignments, and instructions that will be needed to complete all of the course assignments. Should there be any questions or challenges locating or accessing any of the content be sure to notify the instructor immediately so these challenges may be addressed promptly.

Late work will be accepted at the discretion of the instructor and, if accepted, may be subject to a 10% grade deduction for every day late. Submissions that are illegible or incoherent will automatically receive a zero.

Grading Procedure

Points Range	Letter Grade
90%-100%	A
80%-89.9%	B
70%-79.9%	C
60%-69.9%	D
59.9% and below	F

Course Communication and Feedback

- MTMail should be used for all email communication and checked on a daily basis.
- D2L announcement notifications should be activated for email and checked within D2L daily.

- The timely turnaround for communication is 48 hours. Communication may be handled by email, phone, or in person.
- Timely turnaround for minor assignments and quizzes is 1 week (after submission and excluding weekends/holidays).
- The timely turnaround for major assignments and exams is 2 weeks (after submission and excluding weekends/holidays).
- Students are encouraged to communicate with the instructor and provide feedback as needed throughout the semester. At the end of the semester students will have the opportunity to provide additional feedback regarding the course and the learning experience via a formal course evaluation.

Testing Policies

- Students must arrive at class on time. Additional time will not be granted for testing if a student arrives at class late on an exam day.
- Make-up exams are permitted for excused absences that are related to illness and personal emergencies only. These determinations will be made at the discretion of the instructor and will be handled on a case-by-case basis.
- When taking online exams access D2L through <http://elearn.mtsu.edu> instead of through PipelineMT.
- Save each answer to online test questions in case a computer crashes or loses Internet connectivity. Students may reboot their computers or wait for internet connectivity to access the test again, and D2L will allow students to continue taking the test using the time left and the question answers they have saved.

Academic Integrity/Misconduct

Please review the [information on Academic Integrity and Misconduct](#). The instructor will be submitting materials to an online service (Turnitin.com) which will review the work for plagiarism. Students should also review the report generated for each assignment and self-check for plagiarism. Information on how to cite work correctly is provided within the course modules, and you may read more about how to avoid plagiarism from the [TN eCampus Virtual Library](#).

Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Such conduct includes, but is not limited to:

- Submitting as one's own work, themes, reports, drawings, laboratory notes, computer programs, or other projects prepared by another person.
- Knowingly assisting another student in obtaining or using unauthorized materials.
- Submitting assignments previously used in other courses where you received credit for the work.
- Improperly crediting or lack of crediting an original author's work.

Students guilty of academic misconduct are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions (including expulsion from the university), which may be imposed through the regular institutional procedures as a result of academic misconduct, the instructor has the authority to assign an “F” or zero for an activity or to assign an “F” for the course. Students guilty of plagiarism will be immediately reported to the Director of Student Academic Ethics.

Incomplete Grades

Incomplete grades are given rarely and only in extenuating circumstances. Page 56 of the MTSU Undergraduate Catalog states: “The grade I indicates that the student has not completed all course requirements because of illness or other uncontrollable circumstances, especially those which occur toward the end of the term. Mere failure to make up work or turn in required work on time does not provide the basis for the grade of “I” unless extenuating circumstances noted above are present for reasons acceptable to the instructor.”

The Undergraduate Catalog states: “The incomplete must be removed during the succeeding semester, excluding summer. Otherwise, the instructor’s default grade is entered. A student should not make up the incomplete by registering and paying again for the same course. The “I” grade carries no value until converted to a final grade.”

The MTSU Undergraduate Catalog states: “Students must make arrangements with the instructor who assigned the incomplete to finish the course during the succeeding semester, excluding summer.” Please refer to the Undergraduate catalog for the complete Incomplete Grade Policy.

Assignments and Participation

Assignments and Projects

Graded Assignment	Percent of Overall Grade
Tests (2) & Industry Topic Paper	45%
ASTM Lab Exercises	15%
Social	5%
Quizzes	15%
Final Exam	20%

* All CIM and CM students are required to attend one school (concrete and construction) social events per semester. Check the Events Calendar online at www.mtsu.edu/events.php to find events and check your email for information to sign-up. Contact Nicole Green with any questions at nicole.green@mtsu.edu or 615-904-8599.

The Concrete Industry Management program’s goals include producing graduates with good written and oral communication skills, computer skills, and critical thinking ability. Therefore, these skills will be incorporated into grading criteria wherever appropriate.

Class Participation

Class participation is gauged by student involvement and engagement in the lectures and discussions. All students are expected to understand the following requirements related to class participation:

- Participation is required.
- Communication with other students is required.
- Communication with the instructor is required.
- Checking the course announcements frequently in D2L is required.
- Actively participating in threaded discussions is required, when applicable.

Attendance and Punctuality Reporting

Class attendance is required and will be monitored. Excused absences with written documentation will be reviewed and decided on a case-by-case basis at the discretion of the instructor. If a student is sick or has a personal emergency, the student should contact the instructor immediately to discuss the nature of the situation.

Course Ground Rules

The following rules and expectations are vital for student success:

- Cell phones and mobile devices may not be used while class is in session.
- Social media may not be used while class is in session.
- Laptop and notetaking devices may be used if/when appropriate for notetaking and class related learning activities only.
- Under no circumstances may lectures or any part of a course session be recorded or shared on social media without the explicit and written consent of MTSU and the instructor.

Communication Guidelines

Email

Per the [Family Educational Rights and Privacy Act \(FERPA\)](#), all course communication will be conducted using MTMail/D2L email. Faculty will not respond to student emails via a non-institutional assigned email account.

Email Netiquette

The [University of South Florida](#), recommends the guidelines below when communicating in an online course.

- *Always identify yourself and keep your messages brief and to the point. Remember that not everyone accesses email from a computer these days. Many people use portable devices such as cell phones to quickly check their email while they are away from a computer. They will appreciate not having to wait for the long messages to download.*
- *Include a concise subject line with all of your emails. Use standard fonts.*
- *Let your recipient know right away if any action is required of them.*
- *Avoid “flaming” (inflammatory or antagonistic criticism) or sending insulting, abusive, or threatening remarks.*
- *Avoid using all capital letters in a message.*
- *Remember that email is not necessarily private. Your messages can be forwarded to many people without your knowledge. Before sending a message, read it over, double check the recipient(s) and make sure it would not become an embarrassment if it were forwarded to others not on your recipient list.*
- *Do not spam others. Spam is the practice of sending unsolicited email messages in bulk or overloading someone’s mailbox or server with messages.*
- *Include a signature that has your phone number or if you are sending internal email, your extension. This will make it easier for your recipient to contact you if they need to speak to you in person. Avoid recalling messages. Take the time to really determine if a message is necessary or not before sending it in the first place.*

Discussion Groups

- Review the discussion threads thoroughly before entering the discussion. Be a lurker then a discussant.
- Try to maintain threads by using the "Reply" button rather starting a new topic.
- Do not make insulting or inflammatory statements to other members of the discussion group. Be respectful of other's ideas.
- Be patient and read the comments of other group members thoroughly before entering your remarks.
- Be cooperative with group leaders in completing assigned tasks.
- Be positive and constructive in group discussions.
- Respond in a thoughtful and timely manner.

D2L Chat

- Introduce yourself to the other learners in the chat session.
- Be polite. Choose your words carefully. Do not use derogatory statements.
- Be concise in responding to others in the chat session.
- Be prepared to open the chat session at the scheduled time.
- Be constructive in your comments and suggestion

Student Resources

<http://www.mtsu.edu/university-college/forms.php#StudentSupport>[http://w1.mtsu.edu/universitycollege/distance/frequently used resources.php](http://w1.mtsu.edu/universitycollege/distance/frequently_used_resources.php)

Title IX

Students who believe they have been harassed, discriminated against or been the victim of sexual assault, dating violence, domestic violence or stalking should contact a Title IX/Deputy Coordinator at 615-898-2185 or 615-898-2750 for assistance or review MTSU's Title IX website for resources. <http://www.mtsu.edu/titleix/>

MTSU faculty are concerned about the well-being and development of our students and are legally obligated to share reports of sexual assault, dating violence, domestic violence and stalking with the University's Title IX coordinator to help ensure student's safety and welfare. Please refer to MTSU's Title IX site for contact information and details. <http://www.mtsu.edu/titleix/>

Technical Support

Students who experience problems logging into their course, timing out of their course, using the course web site tools or experience other technical problems, should be encouraged to contact the [MTSU Help Desk](#) online (24/7) or at 1-615/898-5345.

Students with Disabilities

Middle Tennessee State University is committed to campus access in accordance with Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973. Any student interested in reasonable accommodations can consult the [Disability & Access Center \(DAC\)](#) website and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu. Also, if you require the use of assistive technology, please make sure to download the documents in order to access the accessibility that I have built into the content for you.

Hope (Lottery) Scholarship Information

Do you have a lottery scholarship? To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility.

If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you may not be able to regain eligibility at a later time.

For additional Lottery rules, please refer to your [Lottery Statement of Understanding form](#) or contact your [MT One Stop Enrollment Counselor](#).

Are You Registered to Vote?

Please check your registration, register for the first time, or re-register at your new address at mtsu.edu/vote.

The True Blue Pledge

[I am True Blue](#)

As a member of this diverse community, I am a valuable contributor to its progress and success. I am engaged in the life of this community. I am a recipient and a giver. I am a listener and a speaker. I am honest in word and deed. I am committed to reason, not violence. I am a learner now and forever. I am a BLUE RAIDER. True Blue!

Notice: Changes in assignments, schedule, and policies may occur at any time at the instructors discretion. Students will be given at least two class periods notice of changes in schedule or assignments.

Social Credit Policies

Social Credit Policy

1. **All students enrolled in a CCM, CIM or CMT course are required to attend one social per semester** – It counts as 5% of the grade in all CCM, CIM and CMT courses.
 - You can also find a calendar of events online at www.mtsu.edu/ccm/calendar.php, scrolling on the display screens in the SCCM building, posted in classrooms and around the building. You will also receive notification of upcoming events and opportunities that might result via email.
 - Outside industry events or projects may be approved for credit, but **ONLY** if you are contributing to the project and interacting directly with industry professionals. Showing up and observing does not count. The Fall Networking Event or Spring Interviewing Day do **not** count. When in doubt...ask!
2. **Sign-up to attend** – You must sign up to attend. Sign-up links can be found posted in classrooms and around the SCCM building, in email announcements, on our calendar on the website, or online under [Student Resources | Connect with Employers](#)
3. **48-hour notice is required to cancel** – If you are unable to attend a social for any reason, let a staff member know 48 hours prior to the event start time. If you are past the 48-hour deadline, you may find another student who is NOT already signed up to take your spot.
4. **Dress to impress** – You must dress as if you are attending an industry conference or interview. No shorts, t-shirts or flip flops! It is to your advantage that you present yourself in a professional manner.
5. **\$20 fee for no-shows** – If you fail to show up for an event you signed up for or arrive excessively late (or if you are turned away at the door due to improper dress), you will be required to pay a \$20 fee to the department to make up for the cost of the food that was ordered for you.

Course Schedule

MODULE	LEARNING ACTIVITIES
Module 1	Course Introduction/Cement Basics
8/26	Course Introduction/Syllabus/Training Module Access
8/28	Review PowerPoint: CIM 4060 Production-Cement
Module 2	Raw Materials
9/2	Labor Day Holiday – No Class
9/4	Review PowerPoint: Raw Materials/
Module 3	Quiz/Raw Materials Preparation
9/9	ASTM C 191 Testing Training Module /ASTM C 109 Testing Training Module / Quiz: CIM 4060Production-Cement
9/11	Review PowerPoint: Raw Materials Preparation
Module 4	Quiz/Exam
9/16	ASTM C 266 Testing Training Module &/ Quiz: Raw Materials
9/18	Exam #1 / Cement Basics, Raw Materials, Raw Materials Preparation, ASTM C 191/109/266
Module 5	Quiz/Raw Materials Quality Control
9/23	Quiz: Raw Materials Preparation
9/25	Review PowerPoint: Raw Materials Quality Control/Paper Assignment
Module 6	Industry Speaker
9/30	ASTM C 185 Testing Training Module/
10/2	Guest Speaker
Module 7	Networking Event

10/7	ASTM C 187 Testing Training Module
10/9	Networking Career Fair 1:00 – 4:00
Module 8	Fall Break/Presentation
10/14	Fall Break – No Classes
10/16	Paper Presentation
Module 9	Pyroprocessing 1
10/21	ASTM C 1437 Testing Training Module
10/23	Review PowerPoint: Pyro processing 1
Module 10	Quiz/Pyro processing 2
10/28	Quiz: Raw Materials Quality Control
10/30	Review PowerPoint: Pyro processing 2
Module 11	Quiz/Environmental Impact/Sustainability in Cement
11/4	ASTM C 204 Testing Training Module/Quiz: Pyro processing 1
11/6	Environmental Impact/Sustainability in Cement
Module 12	Quiz/Guest Speaker
11/11	ASTM C 451 Testing Training Module/ Quiz Pyro processing 2
11/13	Guest Speaker
Module 13	Cement Quality/Finish Grinding
11/18	Exam #2 Raw Materials Quality Control, Pyro processing 1, Pyro processing 2, ASTM C 185/187/1437/204
11/20	PowerPoint: Cement Quality/Finish Grinding
Module 14	Thanksgiving Break

11/25	ASTM C 430 Testing Training Module/ ASTM Laboratory Exercise in Cement and Soils Lab/
11/27	Thanksgiving Break - No Class
Module 15	Quiz/Laboratory Exercise / Review
12/2	Quiz Cement Quality/Finish Grinding
12/4	ASTM Laboratory Exercise in Cement and Soils Lab
12/5	Study Day / Cement Plant Tour

Final Exam: Monday December 9th 12:30 p.m.-2:30 p.m. on D2L

August 26 – Classes Begin

September 2 – Labor Day Holiday – No Classes/University Closed

October 12-15 – Fall Break – No Classes

November 27-30 – Thanksgiving Holidays – No Classes (University Closed November 28-30)

December 4 – Last Day of Classes

December 5 – Study Day, No Classes/Exams/Mandatory Meetings

December 6-12 – Final Exams as Determined by University Approved Exam Schedule

December 12 – Last Day of Term

December 14 – Commencement (Days and Times TBD), Official Fall Graduation Date

December 15 – Deadline for Submission of Final Grades, 11:59 p.m.