# CIM 210 – Concrete Applications I

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| **COURSE NUMBER** | CIM 210 |
| **COURSE NAME** | Concrete Applications I |
| **COURSE STRUCTURE** | (2-2-3) (lecture hr/wk - lab hr/wk – course credits) |
| **COURSE DESCRIPTION** | This course is the first of two courses designed to provide a detailed study of the many applications of concrete in the construction of buildings, pavements, and other facilities as they relate directly to the concrete industry. Emphasis will be placed on the advantages, disadvantages and unique problems facing the concrete industry and suppliers of materials used in the manufacture of concrete products. |
| **PREREQUISITE(S)** | CIM 101- Introduction to the Concrete Industry |
| **COREQUISITE(S)** | CIM 305 - Concrete Applications II |
| **REQUIRED OR SELECTED ELECTIVE** | Required Elective |
| **REQUIRED MATERIALS** | 1. Main Text: Various resources and handouts will be disseminated in class.<br>2.Supplementary References: PCA College Literature,<br>(ACPA, CRMCA Literature, Concrete Pipe Handbook, ACI Manual of Inspection, PCA Concrete Masonry Handbook, PCI Architectural Precast Concrete). |
| **COMPUTER USAGE** | Word, Excel, PowerPoint |
| **STUDENT LEARNING OUTCOMES (SLO)** | By the end of the course students should be able to:<br>1. Define concrete applications and their industrial use.<br>2. Define parameters related to concrete mix design including the properties of concrete and its performance.<br>3. Apply principles of concrete mix design towards various concrete applications.<br>4. Define health and safety issues with handling construction materials.<br>5. Apply knowledge of concrete strength and sustainability towards selection for concrete applications.<br>6. Define concrete industry safety practices. |
| **PROGRAM LEARNING OUTCOMES** | The Student Learning Outcomes support the achievement of the following CIM Program Learning Outcomes<br><br>OUTCOME 1 an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering/science problems appropriate to the discipline; (Relates to SLO 1-6)<br><br>OUTCOME 2 an ability to apply built environment knowledge, project management skills and business acumen to meet specified needs for broadly-defined Concrete Industry problems. (Relates to SLO 3 and 5)<br><br>OUTCOME 3 an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature; (Relates to SLO 3 and 5) |

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<tr><td>ACADEMIC INTEGRITY</td><td>Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of Integrity policy that is found at: https://www.njit.edu/dos/sites/njit.edu.dos/files/NJIT%20University%20Policy%20on%20Academic%20Integrity_0.pdf<br><br>Please note that is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any Student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of “F” and/or suspension or dismissal from the university. If you have any questions about the Code of Academic Integrity, please contact the Dean of Student Office at https://www.njit.edu/dos.<br><br>Student use of artificial intelligence (AI) is permitted in this course for certain assignments and activities. It is not permitted to be used in the assignments noted by the instructor, as doing so would undermine student learning and achievement of course learning outcomes. Additionally, if and when students use AI in this course, the AI must be cited as is shown within the NJIT Library AI citation page for AI. If you have any questions or concerns about AI technology use in this class, please reach out to your instructor prior to submitting any assignments.<br><br>Closed Book Policy for Exams (SAET):<br>Students are allowed to bring in printed and handwritten notes, but no textbooks (electronic or physical).</td></tr>
<tr><td>MODIFICATION TO COURSE</td><td>The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the course outline.</td></tr>
<tr><td>GRADING POLICY</td><td>Attendance 10%<br>Homework 10%<br>Quizzes 15%<br>Projects/Presentation 35%<br>Mid-Term/Final Exam 30%<br><br>Grading Legend<br><table><tr><th>GRADE</th><th>NUMERIC RANGE</th></tr><tr><td>A</td><td>90 to 100</td></tr><tr><td>B+</td><td>85 to 89</td></tr><tr><td>B</td><td>80 to 84</td></tr><tr><td>C+</td><td>75 to 79</td></tr><tr><td>C</td><td>70 to 74</td></tr><tr><td>D</td><td>60 to 69</td></tr><tr><td>F</td><td>0 to 59</td></tr></table><br>Note: Cannot pass course if you having failing grades on final exam</td></tr>
<tr><td>STUDENT BEHAVIOR</td><td>No eating is allowed at lectures, recitations, workshops, and laboratories.<br>Cellular phones must be turned off during class hours – if you are expecting an emergency call, leave it on vibrate.<br>No headphones can be worn in class.<br>Unless the professor allows the use during lecture, laptops should be closed during lecture.<br>Class time should be participative. You should try to be part of a discussion.</td></tr>
<tr><td>COURSE COORDINATED BY</td><td>Disan K. Katumba</td></tr>
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| **CLASS HOURS** | **Wednesday – Lecture 6:00 pm - 7:55 pm CKB 320**<br>**Wednesday – Lab 8:05 pm - 10:00 pm Mall PC36** |
| **OFFICE HOURS** | By appointment<br>Dk273@njit.edu |

**COURSE OUTLINE: CIM 210 – CONCRETE APPLICATIONS I**

| WK | Wednesday | CKB 320<br>Lecture<br>6:00 pm - 7:55 pm | STUDENT MALL PC39<br>Lab<br>8:05 pm - 10:00 pm |
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| 1 | 3-Sep | Course Introduction<br>Overview Strength of Material | Concrete Basics<br>Concrete Quiz |
| 2 | 10-Sep | Admixtures (Specs, Testing, Sales)<br>Admixtures HW<br>Admixture Dosage | Admixtures Quiz<br>Visio Decision Tree<br>Admixture Dosage |
| 3 | 17-Sep | Roller Compacted Concrete<br>1'X1' Slab Project | RCC HW<br>Wood Shop Training |
| 4 | 24-Sep | Asphalt Cement/Hot Mix Asphalt Concrete<br>Highway Construction, Joints | Pavement Basics HW<br>Asphalt Quiz<br>DOT Plans, Asphalt Details Scope of Work |
| 5 | 1-Oct | High/Ultra-High-performance concrete<br>Heavyweight concrete, High density<br>ACI 304.3R-96 Heavyweight Concrete | Self- Consolidated Concrete |
| 6 | 8-Oct | Concrete Bridge Types & Applications | Self- Consolidated/Bridges Quiz |
| 7 | 15-Oct | Catch-up Day | Midterm Review |
| 10 | 22-Oct | Precast Structures<br>Pre-stressed/Post tensioned Concrete | Precast/Pre-stressed Concrete<br>Precast Shop Drawing<br>Dock Street Residential Tower Structural Plan<br>Structural Scope of Work |
| 8 | 29-Oct | **MID-TERM EXAM** | |
| 9 | 5-Nov | Sustainability/Carbon Reduction/ Suspended Slabs, Tilt-up Concrete | Sustainability HW/ Tilt up HW |
| 11 | 12-Nov | Concrete Masonry/Blocks Grout, Mortar, Flowable Fill<br>Pump Mix vs Non-Pump Mix<br>Low/ non shrink grouts | Hazleton Logistics (Tilt-up) Plans Scope of Work<br>Paver Project - Mix Design Lab (AI) |
| 12 | 19-Nov | Pervious Concrete<br>Pervious Concrete Basics | Paver (SCC) Concrete Lab Trial<br>Pervious Concrete Quiz |
| 13 | 26-Nov | No Class (Thursday Classes Meet) | |
| 14 | **THANKSGIVING RECESS (11/27 - 11/30)** | | |
| 14 | 3-Dec | Decorative Concrete<br>Lightweight Concrete (LWC)<br>Concrete Overlays | 1'X1' Paver Project Concrete Pour |
| 15 | 10-Dec | **FINAL EXAM REVIEW** | **PROJECT PRESENTATIONS**<br>Demold Paver Sample & Complete Report |
| 16 | 17-Dec | Dec 11th (Last Day of Classes)<br>**FINAL EXAM - WED 12/17/2025, CKB 210 (6:00pm – 8:30pm)** | |