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| **Identification** | **Subject** | Reinforced Concrete Fundamentals 1 (3 Credits) | | |
| **Department** | Civil Engineering | | |
| **Program** | Undergraduate | | |
| **Term** | Fall 2018 | | |
| **Instructor** | Ziaaddin Zamanzadeh | | |
| **E-mail:** | zzamanzadeh@khazar.org | | |
| **Phone:** |  | | |
| **Classroom/hours** |  | | |
|  | **Office hours** |  | | |
| **Prerequisites** | Strength of Materials - Structural Analysis | | | |
| **Language** | English | | | |
| **Compulsory/Elective** | Compulsory | | | |
| **Description** | This course deals with the concrete and steel bars used to reinforce it. This is an important field in civil engineering and applicable for many purposes. | | | |
| **Required textbooks and course materials** | *“Reinforced Concrete, Design Theory and Examples” by T. J. MacGinley and B. S. Choo, Second edition, E & FN Spon press (1990).* | | | |
| **Course website** |  | | | |
| **Course outline** | General principals, Definition of ingredients & mix design, acceptance conditions, design for flexure, shear in concrete, torsion, axial loading, columns, slabs, walls, seismic design, introduction to precast/prestressed concrete | | | |
| **Course objectives** | The objective of this course is that the student acquires the basis of the Strength of Materials and Structural analysis. In this way, the student will be able to design different types of elements for construction procedure for reinforced buildings. For this purpose, many practical and applicable examples will be analyzed. | | | |
| **Learning outcomes** | * Understand the basic concepts of mixing, pouring, curing, and maintenance of concrete. * Perform design of beams, columns, slabs and walls subjected to gravity and lateral loads using ACI code, * Understand the analyze and design procedure of a regular building. | | | |
| **Teaching methods** | **Lecture** | | | x |
| **Experiential exercise** | | | x |
| **Assisted work** | | | x |
| **Assisted lab work** | | | x |
| **Others** | | |  |
| **Evaluation** | **Methods** | | **Date/deadlines** | **Percentage (%)** |
| **Midterm Exam** | |  | 25 |
| **Class Participation and Attendance** | |  | 5 |
| **Quizzes** | |  | 20 |
| **Lab Exercises** | |  | - |
| **Project (3 phases)** | |  | 15 |
| **Final Exam** | |  | 35 |
| **Total** | |  | 100 |
| **Policy** | • NO CELL PHONES are allowed during lecture and lab sessions. PLEASE turn them off before lecture! (Not silent or vibrating mode)  • No late assignments will be accepted without prior arrangement with the instructor for acceptable excuses. Medical and family emergency will be considered on case-by-case basis.  • No late homework will be accepted. Homework is to be completed on an individual basis. Students may discuss homework with classmates, but students are responsible for your own work. If students have consulted classmates, please note the individuals name on the top of students’ assignment.  • Quizzes may be given unannounced throughout the term and will count as one homework. There will be no make-up quizzes.  • No make-up exams. If students miss an exam, a zero score will be assigned to the missed exam.  • If students should miss class due to personal emergency or medical reasons, please notify the instructor by email immediately. A doctor’s note will be required for make-up work.  • Students are responsible for completing the reading assigned from the textbook related to the covered topics and for checking email regularly for important information and announcements related to the course.  • University policy on academic honesty concerning exams and individual work will be strictly enforced.  • BE ON TIME! | | | |

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| Tentative Schedule | | | |
| Week | **Date/Day** (Tentative) | Topics | Textbook/Assignments |
| 1 |  | Introduction and General Principles | Chapter 1 |
| 2 |  | Mixing and ingredients | Chapter 1 |
| 3 |  | Design Considerations | Chapter 2 |
| 4 |  | Design for flexure | Chapter 3 |
| 5 |  | Design for flexure | Chapter 3 |
| 6 |  | Design for shear | Chapter 4 |
| 7 |  | Design for shear | Chapter 4 |
| 8 |  | Midterm Exam | - |
| 9 |  | Design for torsion | Chapter 5 |
| 10 |  | Design for torsion | Chapter 5 |
| 11 |  | Design of slabs | Chapter 6 |
| 12 |  | Design of slabs | Chapter 6 |
| 13 |  | Precast/prestressed concrete | Chapter 7 |
| 14 |  | Seismic design | Chapter 8 |
| 15 |  | Building systems | Chapter 9 |
|  |  | Final Exam |  |

This syllabus is a guide for the course and any modifications to it will be announced in advance.