هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | Design Project I |
| **Course Code:** | CE 452 |
| **Program:** | B.Sc. in Civil Engineering |
| **Department:** | Civil Engineering |
| **College:** | Jubail University College |
| **Institution:** | Jubail University College |

## Table of Contents

## A. Course Identification

| |
|---|
| **1. Credit hours:** 1 |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered:** Level 6, Third Year |
| **4. Pre-requisites for this course** (if any)**:**<br>CE 312 Reinforced Concrete I<br>CE 438 Foundation of Earth Structure Design |
| **5. Co-requisites for this course** (if any)**:**<br>None |

**6. Mode of Instruction** (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | **Traditional classroom** | ✓ | 100 |
| 2 | **Blended** | | |
| 3 | **E-learning** | | |
| 4 | **Correspondence** | | |
| 5 | **Other** | | |

**7. Contact Hours** (based on academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| **Contact Hours** | | |
| 1 | **Lecture** | |
| 2 | **Laboratory/Studio** | 45 |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | **45** |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

**CE 452 Design Project I (0-3-1)** **Prerequisite: CE 312 and CE 438**

This is the first phase of the capstone design project that is spanning over two semesters and involves students working as one team tackling different aspects of the civil engineering works. Each student starts the planning and undertaking of a suitable design project in consultation with the course advisor. This phase introduces the knowledge of ethical responsibilities, along with real-life constraints such as economic, environmental, global and contemporary issues. The students compile the work in a final report and in a presentation of his proposal before a committee.

**2. Course Main Objective**

Main purpose of this course is to prepare the students to design a civil engineering system/component incorporating appropriate engineering standards and constraints by utilizing the knowledge and skills gained through prior courses in the program."

**3. Course Learning Outcomes**

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| **2** | **Skills** | |
| 2.1 | Explain the design project topic and its significance to Civil Engineering | 1 |
| 2.2 | Discuss the past and recent knowledge from literature review | 1 |
| 2.3 | Formulate the methodology of design based on the real life constraints such as economic, environmental, global and contemporary issues and objectives | 1 |
| 2.4 | Show good presentation and communication skills while doing the design project presentations | 3 |
| 2.5 | Function effectively within the team members and provide leadership to organize the work assigned, to establish the goals and meet the objectives of design project.. | 5 |
| **3** | **Values** | |
| 3.1 | Express the ethical responsibilities and professionalism while conducting the design project | 4 |
| 3.2 | Acquire the new knowledge required and apply it for achieving the design project objectives | 7 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Unit 1.** Selection of Topic | 3 |
| 2 | **Unit 2.** Literature Review | 6 |
| 3 | **Unit 3.** Problem definition | 3 |
| 4 | **Unit 4.** Formulation of Constraints | 6 |
| 5 | **Unit 5.** Scope and Objectives | 6 |
| 6 | **Unit 6.** Design philosophy and methodology | 9 |
| 7 | **Unit 7.** Report Preparation & Submission , Final Presentation | 12 |
| **Total** | | 45 |

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 1.0 | **Knowledge and Understanding** | | |
| 2.0 | **Skills** | | |
| 2.1 | Explain the design project topic and its significance to Civil Engineering | Collaborative learning | • weekly log sheet/ reports<br>• Evaluation of midterm report<br>• Evaluation of project final report<br>Final Presentation and oral exam |
| 2.2 | Discuss the past and recent knowledge from literature review | | • weekly log sheet/ reports<br>• Evaluation of midterm report<br>• Evaluation of project final report<br>Final Presentation and oral exam |
| 2.3 | Formulate the methodology of design based on the real life constraints such as economic, environmental, global and contemporary issues and objectives | | • Weekly log sheet/ reports<br>• Evaluation of project final report |
| 2.4 | Show good presentation and communication skills while doing the design project presentations | | • Oral examinations and discussions<br>Evaluation of presentations |
| 2.5 | Function effectively within the team members and provide leadership to organize the work assigned, to establish the goals and meet the objectives of design project.. | | •Weekly log sheet/ reports Evaluation of midterm presentation<br>•Evaluation of project final report<br>•Final Presentation and oral exam |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | | | • Weekly log sheet/ reports<br>Evaluation of project final report |
| **3.0** | **Values** | | |
| 3.1 | Express the ethical responsibilities and professionalism while conducting the design project | Collaborative learning | • Weekly log sheet/ reports<br>• Evaluation of project final report<br>Final presentation |
| 3.2 | Acquire the new knowledge required and apply it for achieving the design project objectives | | • Evaluation of project final report<br>Final Presentation and oral exam |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Midterm Report | 8th | 20 % |
| 2 | Final Report | 16h | 50% |
| 3 | Oral Examination | 17th | 30 % |

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :**

- Office hours 5 hr/week; students can go in times of office hours for teacher to explain what could not be understood from the lesson.
- Students can communicate with a staff member outside the official working hours by email.
- Students are also encouraged to visit their academic advisors.

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | N/A |
| **Essential References Materials** | Braja, M.D. (2010), *Principles of Foundation Engineering*, USA: Wadsworth Publishing Co. inc |

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|---|---|
| | McCormack, J. C. and Brown, R. H. (2014). *Design of Reinforced Concrete*, USA: John Wiley & sons, Inc. |
| **Electronic Materials** | www.howstuffworks.com<br>www.engineerstoolbox.com |
| **Other Learning Materials** | AutoCad, WaterCad, Primavera, STAAD pro, P-Frame etc.<br>AISC. (2010), Steel Construction Manual, USA, The American Institute of Steel Construction (AISC), handouts<br>ACI 318-08, Building Code Requirement for Structural Concrete, American Concrete Institute, USA. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Conference room with at least 6 seats and fitted with multimedia projector and a PC. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Computer lab with minimum 5 Pc's and design software (AutoCAD, STAAD pro, and Water CAD etc.) |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | N/A |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching and assessment as per QMS-Policy-006 Feedback Survey, QMS-QAP-116 Monitoring Students' Satisfaction | Students | Indirect: Analyzing the results of the following surveys<br>Course Evaluation Survey(CES), Program Evaluation Survey (PES), Student Experience Survey (SES) |
| Quality of Exam papers and Verifying Standards of Student Achievement as per QMS-Policy-004 Policy for Examinations and Marking, QMS-ACP-102 Procedure for Marking Examinations | Examination Committee | Direct: Peer review of examination papers and review or double check a minimum of three or 10% of answer papers. Verifying the entries in the Activity Mark Sheet. |
| Achievement of learning outcomes as per QMS-Policy-001 Course Review, QMS-CDP-106, QMS-CDP-112<br>Curriculum Review | Faculty | Direct: Course Report (Section B-3) |
| Implementation of the action plans based on previous semester as per | | |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS-CDP-112 Procedure for Curriculum Review | Faculty | Direct and Indirect: Course report (Section G-1, G-2) |
| Monitoring Teaching and Learning as per QMS-Policy-005 Monitoring of Teaching and Learning | Chairperson/Program Director/Course Director | Indirect: Feedback by Chairperson/Program director/Course director. Program Delivery Record. |
| Effectiveness of planned Teaching Strategies QMS-Policy-001 Course Review | Faculty | Indirect: Course Report (Section B-4) |
| Course effectiveness and planning for improvement as per QMS-Policy-001 Course Review, QMS-CDP-106 Procedure for Course Review, QMS- CDP-112 Procedure for Curriculum Review | Faculty | Direct and Indirect: Course report (Section G-3) |
| Verifying Standards of Student Achievement and Quality of Exam papers as per QMS-ACP-119 External Assessment Review | Assessment External Reviewer | Direct: Report of assessment external reviewer. Review of sample of ten or 10% of student's assessments and coursework scripts. |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

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|---|---|
| **Council / Committee** | Civil Engineering Department Council |
| **Reference No.** | REG MIN-CED-10 |
| **Date** | 27-04-2020 |

### Appendix A
### Revision Details

| Revision no. | DESCRIPTION | Reference MoMs | | | |
|---|---|---|---|---|---|
| | | DC | | CDC | |
| | | Sem | # | Sem | # |
| 1 | Revision of Course Teaching Strategies and action verbs based on the comments of NCAAA reviewer | 392 | 4 | 392 | 4 |

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|---|---|---|---|---|---|
| 2 | Course Specification Template 2018 | 402 | | | |