**University/Academy**: Benha

**Faculty/Institute:** Engineering

**Department:** Civil Engineering

**Form no. (12)**

**Course Specification**

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| **1- Course Data** | | | |
| **Course Code:**  C 1372 | **Course Title:**  Design of Steel Structures(1-b) | | **Academic Year/Level:**  3rd year Civil |
| **Specialization:**  Civil Engineering | **No. of Instructional Units:**  5 | **Lecture** 3 **Practical** 2 | |

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| **2- Course Aim** | 1- Understanding of composite material as one of the construction materials  2- Under standing of design composite elements having different types of internal forces  3- Understanding of design the steel structure with limit states design method. |
| **3- Intended Learning Outcome** | |
| **a- Knowledge and Understanding** | a.1 Understand composite sections and its properties.  a.2 Understand the design of composite beams floor system  a.3 Understand the design and analysis of composite columns  a.4 Understand the analysis and design of steel connections(flexible, rigid, and semi rigid ..)  a.5 Understand the design using limit state design method  a.6 Understand the design of steel elements using LRFD approach |

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| **b- Intellectual Skills** | b.1 Define the needed composite structure problems.  b.2 Derive different safe solution alternatives for the steel structure engineering problems using LRFD approach..  b.3 Analyze the solution alternatives and choose the optimum one for composite structure systems. |
| **c- Professional Skills** | c.1 Implement quality control procedures during construction of composite structure elements.  c.2 Supervise composite and steel structure construction work.  c.3 Produce and read steel structure engineering drawings. |
| **d- General Skills** | d.1 Present and share ideas.  d.2 Work in a team, and communicate with others. |

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| **4- Course Content** | Introduction to composite construction - Design of composite floor beams (Strength requirement - Design of shear connectors - Use of formed metal deck) - Design of composite columns - Flexure design of slender sections - Connection classification and design (Flexible - Rigid - Semi-rigid) - Design of base plates and anchor bolts - Introduction to Load and Resistance Factor Design (LRFD) - Identification of Limit states (Strength limit state and Serviceability limit state) - Design of tension, compression and flexure members using LRFD approach. |
| **5- Teaching and Learning Methods** | 1- Case studies.  2- Discussion sessions.  3- Lectures. |
| **6- Teaching and Learning Methods for Students with Special Needs** | 1- Case studies.  2- Discussion sessions.  3- Lectures. |
| **7- Student Assessment:** | 1. Written examinations at the mid and end of the term to assess understanding and scientific knowledge.  2. Assignments and quizzes to assess ability to solve problems and analyze results. |
| **a- Procedures used:** | 1. Assignments.  2. Quizzes.  3. Mid term exam.  4. Final exam. |

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| **b- Schedule:** | Assignment 1 Week 4  Quiz 1 Week 5  Assignment 2 Week 7  Mid-term exam Week 8  Assignment 3 Week 10  Quiz 2 Week 12  Assignment 4 Week 13  Assignment 5 Week 14  Quiz 3 Week 14 |
| **c- Weighing of Assessment:** | Mid-term examination 20 %  Final-term examination 60 %  Quiz 10 %  Assignments 10 %  Total 100 % |
| **8- List of Textbooks and References:** | 1- Egyptian code for design of steel structure  2- Steel structures design by Prof Dr. Abdelrahim Khalil Dessouki |
| **a- Course Notes** | - Staff lectures notes |
| **b- Required Books (Textbooks)** | 1- steel design hand book by. Prof Dr. Bahaa M. Mashaly Part 1  1- steel design hand book by. Prof Dr. Bahaa M. Mashaly Part 2  1- steel design hand book by. Prof Dr. Bahaa M. Mashaly Part 3 |
| **c- Recommended Books** | Steel structures design by Prof Dr. Abdelrahim Khalil Dessouki |
| **d- Periodicals, Web Sites, ..., etc.** |  |

**Course Instructor:** Assist. Prof. Dr. Nader Nabih Khalil  **Head of Department:** Assoc. Prof. Dr. Khaled M. El Sayed

**Date:** 25/3/2013