**University/Academy**: Benha

**Faculty/Institute:** Engineering

**Department:** Civil Engineering

**Form no. (12)**

**Course Specification**

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| **1- Course Data** | | | |
| **Course Code:**  C 1472 | **Course Title:**  Steel Structures Design (2) | | **Academic Year/Level:**  4th year Civil |
| **Specialization:**  Civil Engineering | **No. of Instructional Units:**  6 | **Lecture** 4 **Practical** 2 | |

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| **2- Course Aim** | 1- Understanding of design steel bridges  2- Understanding of design steel palte girders as a buit up section  3- Understanding of buckling of steel plates and it stiffenning. |
| **3- Intended Learning Outcome** | |
| **a- Knowledge and Understanding** | a.1 Understand types of steel bridges and its systems.  a.2 Understand the design of bridge floor system beams.  a.3 Understand the design plate girger buit up section  a.4 Understand the analysis of steel plate buckling and its stiffenning with horizontal and vertical stiffners.  a.5 Understand the design of steel stiffners and splices.  a.6 Understand the design of wind bracing systems and bearings. |

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| **b- Intellectual Skills** | b.1 Define the needed steel bridges problems.  b.2 Derive different safe solution alternatives for the steel bridges engineering problems.  b.3 Analyze the solution alternatives and choose the optimum one for bridges structure systems. |
| **c- Professional Skills** | c.1 Implement quality control procedures during construction of steel bridges structure elements.  c.2 Supervise steel bridges structure construction work.  c.3 Produce and read steel bridge 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** | Classical bridge types - Different bridge systems such as arches, trusses and suspension bridges - Design loads (Road way loading - Railway loading - Other loads on bridges) - Design of floor beams systems (Stringer - Cross girders - Floor connections) - Design for fatigue and stress range concepts - Design of plate girder bridges (Preliminary proportioning - Design for bending - Design for shear - Combined shear and moment - Buckling of plates - Longitudinal and transversal stiffeners - Load bearing stiffeners - Splices - Curtailment of flange plates - Details) - Wind bracing systems - Design of bridge bearings. |
| **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