**Minoufiya University,**

**Faculty of Engineering,**

**Post Graduate Studies and Research.**

Menoufiya University

Faculty of Engineering

***COURSE SPECIFICATION***

***Course Title:*** ***Forming technology***

***Course Code:*** ***PRE 507***

***Department Offering the Course:*** **Production Engineering & Mechanical Design**

***Last Date of Approval:*** **2012**

***B- PROFESSIONAL INFORMATION:***

***A- COURSE IDENTIFICATION AND INFORMATION:***

**B.1.*Description as in Post Graduate Studies Bulletin:***

Classification of forming processes- Basics of plastic forming- Temperature effects-Metallurgical variations-

formability-Rolling- Rod and wire drawing - Sheet forming - Forging

**B.2.*Course Objectives:***

The objective of this course is to build the capacities of the students to conduct quantitative research

through application of statistics to test the validity of a hypothesis. Targets includes, but not limited

to:

1. Demonstration of the knowledge and understanding the basic conceptes of forming technology.

2. Definition of the requirements of metal forming technology.

3. Realizing the difference between different forming processes.

4. Analysis of different techniques for manufacuring different products based on material and

process selection criteria.

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| Field | Programme ILOs that the course  contribute in achieving | Course ILOs |
| Knowledge&  Understanding | a1. Integrate theories, fundamentals and  knowledge of mathematics, science and  information technology in production  engineering practice. | a1.1. Define the basic concepts of  forming technology and their  applications in production |
| a4. Understand the moral and legal  principles of professional practice in  production engineering | a4.1. Identify and analyze the  different trouble causes to take the  required corrective action. |
| Intellectual  skills | b1. Identify and analyze problems in the  area of production engineering  specialization and rank the results  according to their priorities. | b.1.1. Design and Create the most  suitable manufacturing flow chart to  select the suitable design of a product  based on different criteria of the  material and the forming process for  solving engineering problems .. |
| b5. Make career decisions in the light of  available production engineering  information. | b.5.1. Create criteria suitable for  selecting the best material, process  and product design and redesign  throughout chart of the final  product. |
| Professional  skills | c1. Apply the professional production  engineering technologies in the field of  specialization. | c.1.1. use the professional production  engineering technologies related to  engineering material and forming  processes using design and feedback  of the design to improve products. |
| c2. Write professional production  engineering reports. | c.2.1. Write       and       evaluate  professional reports about  production engineering. |
| General skills | d4. Use of different sources for  information knowledge | d.4.1. Share the students to use  different sources for information  knowledge |

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| Field | National Academic Reference Standard(NARS) | | | |
| Knowledge &  Understanding | Intellectual  Skills | Professional  Skills | General Skills |
| Programme Academic  Standards that the course  contribute in achieving | a1, a4 | b1, b5 | c1,c2 | d4,d7 |



5. Analysis of different techniques for modeling the forming processes.

6. Work with mechanical design and manufacturing systems

***B.3. Relationship between the course and the programe***

**B.4.*Intended Learning Outcomes (ILOs)***

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| --- | --- | --- |
| **Week**  **No.** | **Contents** | **ILOs covered by this topic** |
| 1 | Classification of forming processes. | b1.1, b5.1, c1.1,c2.1, d4.1 |
| 2 | Plastic forming and temperature effects | a1.1, b1.1, b5.1, c1.1,c2.1 |
| 3 | Plastic forming and temperature effects | a1.1, b5.1, c1.1,c2.1,  d4.1,d7.1 |
| 4 | Plastic forming and temperature effects | a1.1, a4.1, b1.1, b5.1,  c1.1,c2.1, d7.1 |
| 5 | Metallurgical variations and formability | a1.1, a4.1, b1.1, b5.1, c1.1,  d4.1,d7.1 |
| 6 | Metallurgical variations and formability | a1.1, a4.1, b1.1, b5.1, c1.1,  d4.1,d7.1 |
| 7 | Metallurgical variations and formability | a1.1, , b5.1, c1.1,c2.1,  d4.1,d7.1 |
| 8 | Bulk forming of metals |  |
| 9 | Metallurgical variations and formability | a1.1, a4.1, b1.1, b5.1, c2.1,  d4.1,d7.1 |
| 10 | Rolling and drawing of rod and wire | a4.1, b1.1, b5.1, c1.1,d7.1 |
| 11 | Rolling and drawing of rod and wire. | a1.1, a4.1, b1.1, b5.1, c1.1 |
| 12 | Rolling and drawing of rod and wire | a1.1, a4.1, b1.1, b5.1, d7.1 |
| 13 | Sheet forming-forging | a1.1, b1.1, b5.1, c1.1,c2.1,  d4.1,d7.1 |
| 14 | Sheet forming-forging | a1.1, a4.1, c1.1,c2.1,  d4.1,d7.1 |
| 15 | Sheet forming-forging. | a4.1, b1.1, b5.1, d4.1,d7.1 |

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| Field | Programme ILOs that the course  contribute in achieving | Course ILOs |
|  | d7. Self- learning continuously. | d.7.1. Improve the ability of the  students to Self- learning  continuously |



**B.5.*Syllabus to be Covered:***

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| **No.** | **Assessment methods** | **To Assess Course**  **ILOs Item No.** | **To Assess (ARSEP) Outcomes**  **No.** |
| 1 | Written exam | a1, a4, b1, b5, c1,c2**,**  d4,d7 | a1, a4, b1, b5, c1,c2**,** d4,d7 |

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| **No.** | **Teaching and Learning**  **Methods** | **To Assess Course**  **ILOs Item No.** | **To Assess (ARSEP) Outcomes**  **No.** |
| 1 | Assignments and  Exercises | a1, a4, b1, b5, c1,c2**,**  d4,d7 | a1, a4, b1, b5, c1,c2**,** d4,d7 |

**B. 7.*Assessments:***

**B. 6.*Teaching and Learning Methods:***

***Weighting of assessments:***

***Student assessment methods:***

**B.8.*List of References:***

***Essential books (text books):***

-W.F.Hasford,R.M.Caddeell,Metal Forming,Mechanics,Metallurgy.2nd ed.prenhi Hall.

-S. Kalpakjian and S.R. Schmid, "Manufacturing Engineering and technology" 4th Edition

Pearson Education Inc., 2010.

***Periodicals, Web sites, Course notes, etc:***

**B. 9.*Facilities Required for Teaching and Learning:***

Indicate requirements for the course including size of classrooms and laboratories (i.e.; classrooms

and laboratories, extent of computer access, etc.).

1. Computers with MS Office (Excel) and SPSS or any other statistical package for social

statistics.

2. A lecture room with LCD or show

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**Course coordinator**

Prof. Dr. Ahmed El- Sissy

**Head of Dept.**

Prof. Taha El-Taweel

**Date--** 5 Feb. 2012