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| Date: | Examination No.: | Version:30/6/2022 | Start: 1/9/2022 |
| **Module Name - Code** | Casting Technology -3145 | | |
| **Module Language:** | English | | |
| **Responsible:** | Dr.Gawhar Ibraheem Khidhir | | |
| **Lecture (s):** | Dr.Gawhar Ibraheem Khidhir | | |
| **College:** | College of Engineering – Salahaddin University | | |
| **Duration:** | 15 week – 7th semester | | |
| **Course outcomes:** | Upon completion of this course, the students can able to: Understand the processes for creating products by casting and demonstrate different type of casting processes, Steps involved in making a casting, its applications, patterns and types of patterns and solidification of casting. Also know the defects, inspection methods, metals for Casting. | | |
| **Course Content:** | Casting Processes, Sand-Casting Molds, Heating and Pouring, Fluidity , Solidification and Cooling, Shrinkage ,Directional Solidification , Riser Design ,Sand Casting ,Patterns and Cores ,Molds and Mold Making , Shell Molding, Vacuum Molding, Expanded Polystyrene Process, Investment Casting, Plaster-Mold and Ceramic-Mold Casting, Permanent-Mold Casting Processes, The Basic Permanent-Mold Process, Variations of Permanent-Mold Casting, Die Casting, Squeeze Casting and Semisolid Metal Casting, Centrifugal Casting, ,Foundry Practice, Furnaces, Pouring, Cleaning, and Heat Treatment, Casting Quality, defects, Inspection Methods, Metals for Casting, Product Design Considerations. | | |
| **Literature:** | M. P. Groover, “Fundamentals of Modern Manufacturing: Materials, Processes, and Systems”, Third edition. Wiley India Private Limited, (2009).  S. Kalpakjian, “Manufacturing Processes for Engineering Materials”, Fifth edition. Pearson Education, (2009). | | |
| **Type of Teaching:** | 4 hrs in lectures( Face to Face learning)  2 hrs laboratory working. | | |
| **Pre-requisites:** | Background in production and material science  is recommended | | |
| **Frequency:** | Yearly in fall semester | | |
| **Requirements for  credit points:** | For the award of credit points it is necessary to pass the module exam. The module exam contains: 20% quizzes + 50% final Exam + 5% assignments]. 15% weekly reports and discussions and seminars + 10% Final discussion].  Student's attendance is required in all classes. Students with more than 10% absence and/or less than 20% effort in continuous exams are NOT allowed to attend the final exam | | |
| **Credit point:** | 5 | | |
| **Grade Distribution:** | The Grade is generated from the examination result(s) with the following  Theoretical Part "w": 75% [ 20% quizzes + 50% final Exam + 5% assignments]  Practical Part "w": 25% [ 15% weekly reports and discussions and seminars + 10% Final discussion] | | |
| **Work load:** | The workload is 135hrs. It is the result of 90hrs attendance and 45hrs self-studies. | | |

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| Weekly lectures and their date of Casting Technology subject | |
| Dates start from 13/9/2022 | subjects |
| Week 1 | Course description, Introduction to Casting Processes. |
| Week 2 | Sand-Casting Molds. |
| Week 3 | Heating and Pouring and example. |
| Week 4 | Fluidity. |
| Week 5 | Solidification and Cooling, quiz. |
| Week6 | Shrinkage, Directional Solidification. |
| Week7 | Riser Design and example. |
| Week 8 | Sand Casting, Patterns and Cores, Molds and Mold Making, and example. |
| Week 9 | Shell Molding, Vacuum Molding. |
| Week10 | Expanded Polystyrene Process, Investment Casting, quiz. |
| Week 11 | Plaster-Mold and Ceramic-Mold Casting, Permanent-Mold Casting Processes |
| Week 12 | Die Casting, Squeeze Casting, Semisolid Metal Casting, Centrifugal Casting, Example about Rotation Speed. |
| Week 13 | Foundry Practice, Furnaces, Pouring, Cleaning, and Heat Treatment. |
| Week 14 | Casting Quality, defects. |
| Week15 | Inspection Methods, Metals for Casting, Product Design Considerations, quiz. |