1. **Basic Information:**

|  |  |
| --- | --- |
| **Program Title** | **All Programs** |
| **Department Offering the Program** | **Basic Science and Engineering** |
| **Department Responsible for the Course** | **Basic Science and Engineering** |
| **Course Title** | **Production Engineering** |
| **Course Code** | **ENG105** |
| **Year/Level** | **Level 1** |
| **Specialization** | **Major** |
| **Authorization Date of Course Specification** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Teaching hours** | **Lectures** | **Tutorial** | **Practical** |
| 3 | - | 2 |

1. **Course Aims:**

|  |  |
| --- | --- |
| **No.** | **Aims** |
| 02 | Design a system for components, process the types of production and mechanical cutting process |
| 04 | Use the techniques, skills and codes of practice effectively and professionally in projects managements. |

1. **Intended Learning Outcomes (ILO’S):**
2. **Knowledge and understanding:**

|  |  |
| --- | --- |
| **No.** | **Knowledge and understanding** |
| A3 | List the engineering materials related to characteristics in engineering analysis compound materials. |

1. **Intellectual Skills:**

|  |  |
| --- | --- |
| **No.** | **Intellectual Skills** |
| B2 | Select the appropriate solutions for engineering problems and system design to produce of iron and steal in many furnaces and convertors. |
| B5 | Solve engineering problems, often on the basis of limited and possibly contradicting information. |

1. **Professional Skills:**

|  |  |
| --- | --- |
| **No.** | **Professional Skills** |
| C2 | Apply engineering knowledge and understanding to improve design, products and services of modern tools, systems and procedure, to make the engineering process more balanced costs, benefits, safety, quality and reliability and environmental impact. |
| C8 | Apply safe systems including the use laboratory and field equipment competently |

1. **General Skills:**

|  |  |
| --- | --- |
| **No.** | **General Skills** |
| D6 | Effectively manage tasks, time, and resources. |

**4. Course Contents:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Topics** | **Lectures** | **Tutorial** | **Practical** |
| 1 | The engineering substances and its properties | 3 |  | 3 |
| 2 | Heating and cooling diagrams | 3 |  | 3 |
| 3 | Heating equilibrium diagrams | 3 |  | 3 |
| 4 | Alloys - Casting operation (sand casting and the preparation of the mold) | 6 |  | 6 |
| 5 | Forming processes (cold and hot forming: forging rolling – Wire drawing – Blanking and piercing - Deep drawing - The extrusion) | 6 |  | 6 |
| 6 | Processes of metal connections (the riveting – welding with its types sticking) | 6 |  |  |
| 7 | Cutting machining: Lathing - Shaping – Drilling –Milling - Grinding – Work Piece fixation - Cutting tools fixation - Specifications of the operating machine) | 6 |  | 6 |
| 8 | Methods of solving problems | 3 |  | 3 |
| 9 | M**e**asuring tools (venire caliper – micrometers and its types) | 3 |  | 3 |
| 10 | Production cycle  production efficiency - Industrial safety – Practical training in the different workshops | 3 |  | 3 |
| Total | | 42 | - | 42 |

**5. Teaching and learning methods:**

|  |  |
| --- | --- |
| **No.** | **Teaching Methods** |
| 1 | Lectures |
| 2 | Discussion sessions |
| 3 | Information collection from different sources |
| 4 | Research assignment |
| 5 | Practical training/lab |

**6. Teaching and learning methods for disable students:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Teaching Methods** | **Reason** |
| 1 | Presentation of the course in digital material | Better access any time |
| 2 | Web communication with students | Better communication with certain cases |
| 3 | Asking small groups to do assignments; each composed of low, medium and high performance students. | Knowledge and skills transfer among different levels of students |

**7. Student evaluation:**

**7.1 Student evaluation method**:

|  |  |  |
| --- | --- | --- |
| **No.** | **Evaluation Method** | **ILO’s** |
| 1 | Midterm examination | A3,B2 |
| 2 | Semester work (reports) | C2,C8,D6 |
| 3 | Practical Exam | C2,C8,D6 |
| 4 | Final term examination | A7,B5 |

**7.2 Evaluation Schedule:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Evaluation Method** | **Weeks** |
| 1 | Midterm examination | **08th** |
| 2 | Semester work | **7th,9th ,14th** |
| 3 | Final term examination | **15th** |

**7.3 weighting of Evaluation:**

|  |  |  |
| --- | --- | --- |
| **No.** | **evaluation method** | **Weights** |
| 1 | Mid-term examination | **10%** |
| 2 | final examination | **60%** |
| 3 | Practical examination | **10%** |
| 4 | Semester work | **20%** |
|  | total | **100%** |

**8. List of References:**

|  |  |
| --- | --- |
| **No.** | **Reference List** |
| 1 | Graham T. Smith,"Cutting Tool Technology Industrial Hand book", Springer-Verlag London 2008. |
| 2 | Klas Wermam,"Welding processes handbook"/Woodhwed publishing Ltd, 2003. |
| 3 | مكتبة الأنجلو المصرية د.أنور عبدالواحد  Book>https://www.anglo-egyption.com |

**9. Facilities required for teaching and learning:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Facility** |  |
| 1 | Lecture classroom |  |
| 2 | Presenter |  |
| 3 | White board |  |
| 4 | Data show system |  |
| 5 | Sound system |  |

**10. Matrix of knowledge and skills of the course:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Topic** | **Aims** | **Knowledge and understanding** | **Intellectual Skills** | **Professional Skills** | **General Skills** |
| 1 | The engineering substances and its properties | 2 | A3,A7 | B2,B5 | C2,C8 | D6 |
| 2 | Heating and cooling diagrams | 2 | A3 | B2 | C2,C8 | D6 |
| 3 | Heating equilibrium diagrams | 2 | A3 | B2 | C2 | D6 |
| 4 | Alloys - Casting operation (sand casting and the preparation of the mold) | 4 | A7 | B5 | C2 | D6 |
| 5 | Forming processes (cold and hot forming: forging rolling – Wire drawing – Blanking and piercing - Deep drawing - The extrusion) | 2,4 | A7 | B2,B5 | C8 | D6 |
| 6 | Processes of metal connections (the riveting – welding with its types sticking) | 2,4 | A3,A7 | B2,B5 | C2,C8 | D6 |
| 7 | Cutting machining: Lathing - Shaping – Drilling –Milling - Grinding – Work Piece fixation - Cutting tools fixation - Specifications of the operating machine) | 2,4 | A3,A7 | B2,B5 | C2,C8 | D6 |
| 8 | Methods of solving problems | 2,4 | A3,A7 | B2,B5 | C2,C8 | D6 |
| 9 | M**e**asuring tools (venire caliper – micrometers and its types) | 2,4 | A3,A7 | B2,B5 | C2,C8 | D6 |
| 10 | Production cycle  production efficiency - Industrial safety – Practical training in the different workshops | 2,4 | A3,A7 | B5 | C2,C8 | D6 |

**Course Coordinator: Dr. Abdu El-Naquib**

**Head of Department: Prof. Dr. Mohamed Saad Elkady**

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