**TEMPLATE FOR COURSE SPECIFICATION**

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**COURSE SPECIFICATION**

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| **The different properties of engineering materials and their applications**  |

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| Collage of engineering | ***1. Teaching Institution*** |
| Baghdad Unv. | ***2. University Department/Centre*** |
| **Engineering Materials** | ***3. Course title/code& Description*** |
|  | ***4. Programme(s) to which itContributes*** |
| weekly | ***5. Modes of Attendance offered*** |
| 2017\2018 | ***6. Semester/Year*** |
| 90 | ***7. Number of hours tuition (total)*** |
|  | ***8. Dlsate of production/revision of this specification*** |
| ***9. Aims of the Cours***  To teach students the different properties of engineering materials and their applications |
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| ***10·Learning Outcomes******Learning the properties and applications of different* engineering materials and their applications , with knowledge f or different failure occurs in materials during services , and learning of modern materials which used for new applications .**  |
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| ***11.Teaching and Learning Method:*** theoretical with examples on t their applications in addition to reports |
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| ***12. Assessment Methods :***  Quizzes and examinations .  |
| ***13. Grading Policy***30% quizzes + 70% final exam |

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| ***14. Course Structure*** |
|  |  |  |  |  | Week |
|  |  |  |  | **Specification of materials**  | 1 |
|  |  |  |  | **Mechanical properties of materials : Tensile testing** | 2 |
|  |  |  |  | **Hardness Testing** | 3 |
|  |  |  |  | **Toughness testing**  | 4 |
|  |  |  |  | **Exam** | 5 |
|  |  |  |  | **Failure of materials : Fracture** | 6 |
|  |  |  |  | **Fatigue Failure** | 7 |
|  |  |  |  | **Creep** | 8 |
|  |  |  |  | **Corrosion**  | 9 |
|  |  |  |  | **Exam** | 10 |
|  |  |  |  |  **Steel : carbon steel phase diagram**  | 11 |
|  |  |  |  | **Effect of alloying elements on steel** | 12 |
|  |  |  |  | **Stainless steel**  | 13 |
|  |  |  |  | **Cast iron**  | 14 |
|  |  |  |  | **Tool steel**  | 15 |
|  |  |  |  | **Super alloy**  | 16 |
|  |  |  |  | **Exam** | 17 |
|  |  |  |  | **Aluminum and its alloys**  | 18 |
|  |  |  |  | **Copper and its alloys**  | 19 |
|  |  |  |  | **Exam** | 20 |
|  |  |  |  | **Magnesium**  | 21 |
|  |  |  |  | **Titanium**  | 22 |
|  |  |  |  | **Exam** | 23 |
|  |  |  |  | **Composite materials**  | 24 |
|  |  |  |  | **Exam** | 25 |
|  |  |  |  | **Polymers** | 26 |
|  |  |  |  | **Exam** | 27 |
|  |  |  |  | **Ceramics**  | 28 |
|  |  |  |  | **Exam** | 29 |
|  |  |  |  | **Modern materials : biomaterials , smart materials , Nano materials**  | 30 |

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| ***15. Infrastructure*** |
| 1. **Engineering materials /Dr Shakir Alsamarrai & Dr Qahtan Alkhazreji**

 **2.Engineering Metallurgy ,R.A.Higgins**1. **Mterials scince and engineering , Callister**
 | Required reading:· CORE TEXTS· COURSE MATERIALS· OTHER |
|  | Special requirements (include forexample workshops, periodicals,IT software, websites) |
|  | Community-based facilities(include for example, guestLectures , internship,field studies) |
| ***16. Admissions***  S tudents studying for BSc |
|  | Pre-requisites |
| 30 | Minimum number of students |
| 42 | Maximum number of students |
| Suhair Ghazi Hussein  | ***17. Course Instructors*** |