**COURSE SPECIFICATION**

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| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmed specification. |

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| Baghdad University | 1. Teaching Institution |
| Faculty of Engineering / Department of Energy | 2. University Department/Centre |
| CE 10 210 ENCE | 3. Course title/code |
| B.Sc | 4. Programme(s) to which it contributes |
| Weekly | 5. Modes of Attendance offered |
| Yearly | 6. Semester/Year |
| 120 hours | 7. Number of hours tuition (total) |
| 1/10/2014 | 8. Date of production/revision of this specification |
| 9. Aims of the Course | |
| Atoms and molecules, structure-mail of atoms and molecules of gases energy transfer through the work and heat laws, chemical kinetic reactions, thermal chemistry, the forces between molecules, liquids and solids, electrical, balances the acid-base, ionic balance in solution system and method of calibration for analysis. | |
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| 10· Learning Outcomes, Teaching ,Learning and Assessment Method |
| 1. Knowledge and Understanding   A1. A1-that the student recognizes what the corn and the molecule.  A2-mail distribution of the atom.  A3- knowledge of the kinetic laws and thermodynamic chemical reactions.  A4 -redox chemical equations.  A5- knowledge calibration method.  A6- ion balance. |
| B. Subject-specific skills  B 1 Calculation concentrations to find models weight.  B 2 - Write chemical equations.  B 3 - Application of thermal and kinetic laws of chemical reactions.  B4- learn to write the equation. |
| Teaching and Learning Methods |
| . The method of lecturing.1  . discussion with the students.2  . Give examples solved by students groups.3  . Follow-up students in solving possible problems.4 |
| Assessment methods |
| . a daily and monthly tests.1  . practical and theoretical tests in the laboratory.2 |
| C. Thinking Skills  C1. A1-research sources.  C 2-learning scientific terms.  C 3-hold discussions with the students and the professor.  C 4- throw seminars between the students and the professor. |

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| D. General and Transferable Skills (other skills relevant to employability and personal development)  D1-education students to engineering knowledge.  D2-read the periodic table of the elements and nuclear scientifically incorrect.  D3-linking practical experience with theoretical ideas. |

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| 11. Course Structure | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
| Discussions | Lectures | Acid-Base equilibrium | Knowledge of the acid and the base | 3 | 1 |
| Discussions | Lectures | Stoichiometry calculations of chemical analysis | Weights account | 3 | 2 |
| Discussions | Lectures | PH of solutions | Make sure acidic solution | 3 | 3 |
| Discussions | Lectures | Oxidation –Reduction Analysis | Oxidation –Redox reactions | 3 | 4 |
| Discussions | Lectures | Evaluation of exp. measurements | Practical experience accounts | 3 | 5 |
| Discussions | Lectures | Equivalent weight calculation | Accounts equivalent weight | 3 | 6 |
| Discussions | Lectures | Normality and morality | The molar concentrations titer | 3 | 7 |
| Discussions | Lectures | Stoichiometry mole –mass number | Accounts of the number of malls and mass number | 3 | 8 |
| Discussions | Lectures | Equilibrium the extent of chemical reaction | Chemical balance of the interactions | 3 | 9 |
| Discussions | Lectures | Titration methods of analysis | Analytical methods Altzhih | 3 | 10 |
| Discussions | Lectures | Oxidation –Reduction analysis | Methods of correction redox | 3 | 11 |
| Discussions | Lectures | PH of solutions | Accounts pH (acidic) | 3 | 12 |
| Discussions | Lectures | Normality and morality | Questions about the titer and molar | 3 | 13 |
| Discussions | Lectures | Acid- base Equilibrium | Examples of the acid and the base interactions | 3 | 14 |
| Discussions | Lectures | Evaluation of experiment measurements | Calculations estimated ionic interactions | 3 | 15 |
| Discussions | Lectures | Nuclear reactions and their application | Nuclear reactions and their applications | 3 | 16 |
| Discussions | Lectures | Nuclear fission | Nuclear fission | 3 | 17 |
| Discussions | Lectures | Nuclear fuels | Nuclear fuel | 3 | 18 |
| Discussions | Lectures | Fuel processing flow sheets | Fuel interactions schemes | 3 | 19 |
| Discussions | Lectures | Isotope separation | Isotope separation | 3 | 20 |
| Discussions | Lectures | Uranium and uranium compounds | Uranium and uranium compounds | 3 | 21 |
| Discussions | Lectures | Thorium and plutonium | Thorium and plutonium | 3 | 22 |
| Discussions | Lectures | Structural components and materials | Structural components and materials | 3 | 23 |
| Discussions | Lectures | Effect of radiations on the biological sys. | Biological effect of radiation on the body | 3 | 24 |
| Discussions | Lectures | Radiation chemical yield | Production of radioactivity | 3 | 25 |
| Discussions | Lectures | Solvent extraction separation | Solvent extraction separation | 3 | 26 |
| Discussions | Lectures | Elements in nature and industry | See tables | 3 | 27 |
| Discussions | Lectures | Equations of radioactive decay | Learning equations | 3 | 28 |
| Discussions | Lectures | Nuclear fuels | Nuclear fuels | 3 | 29 |
| Discussions | Lectures | Nuclear reactions and their application | Nuclear reactions and their application | 3 | 30 |
| Discussions | Lectures | Nuclear fission | Nuclear fission | 3 | 31 |
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| 12. Infrastructure | |
| 1. Chemical Engineering. 2. Quantitative Analysis. | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
| Conduct experiments in chemistry lab and learn at their own experiences and scientific programs. | Special requirements (include for example workshops, periodicals, IT software, websites) |
| Practical training for students in the laboratories of the Ministry of Science and Technology / Renewable Energy Department, as well as lecturing. | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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| 13. Admissions | |
| 25 | Pre-requisites |
| 10 | Minimum number of students |
| 30 | Maximum number of students |