**Regulations on Graduation from the Undergraduate Program at the Department of Chemistry, NTNU**

（for students who got admission after 2008）

2007.4.10 Revised at the Faculty Meeting of Chemistry Departemnt

2007.11.16 Approved at the Faculty Meeting of Chemistry Departemnt

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| (a) School Required Courses【28 credits】 | | | | | | | | | | | | | | |
| Fundamental Courses(10 credits) | | | | | General Education (Core Program) (12-16credits) | | | | | | Others | | | |
|  | | Chinese(2,2) | | |  | 1.Art and Aesthetics  2. Philosophical thinking and Moral Reasoning  3. Citizenship and Social Inquiry  4. History and Culture  5. Mathematic and Scientific Thinking  6. Science and Life | | | | students must take at least 2 credits from each area. |  | | Physical Education  (6 required, 2elective) | |
|  | | English(I)(2,2) | | |  | |  | |
|  | | English(II) (2,0) | | |
|  | | | | |
| General Education  (non-Core Program) (2-6credits) | | | | |
| students must take at most 2 credits from each area. | | | | |
| (b) Department Required Courses【61 credits】 | | | | | | | | | | | | | | |
| Fresh man | | | Sophomore | | | | Junior | | | | | Senior | | |
|  | General Chemistry  (4,4) | |  | Organic Chemistry  (4,4) | | |  | | Inorganic Chemistry  (3,3) | | |  | |  |
|  | General Physics  (4,4) | |  | Organic Chemistry Laboratory (1,1) | | |  | | Physical Chemistry (II,III) (3,3) | | |  | |  |
|  | General Chemistry Laboratory (1,1) | |  | Analytical Chemistry  (3,3) | | |  | | Physical Chemistry Laboratory (1,1) | | |  | |  |
|  | General Physics Laboratory (1,1) | |  | Analytical Chemistry Laboratory  (1,1) | | |  | |  | | |  | |  |
|  | Calculus (3,3) | |  | Physical Chemistry (I) (0,3) | | |  | |  | | |  | |  |
| (c) Department Elective Courses【39 credits】 | | | | | | | | | | | | | | |
| Fresh man | | | Sophomore | | | | | Junior | | | | Senior | | |
|  | Introduction to Earth Science (including Lab.) (4) | |  | Differential Equations (2) | | | | A | Instrumental Analysis  (2,2) | | | A | | Instrumental Analysis Labortory (1,1) |
|  |  | |  | Advanced Calculus  (2) | | | | I | Inorganic Chemistry Laboratory (2) | | | A | | Topics in Analytical Chemistry (3) |
|  |  | | I | Chemical Applications of Group Theory (2) | | | | O | Topics in Organic Chemistry (3) | | | A | | Environmental Chemistry (3) |
|  |  | | O | Organic Spectroscopy (3) | | | | O | Biochemistry (3) | | | I | | Topics in Inorganic Chemistry (3) |
|  |  | | P | Mathematics for Chemistry (2) | | | | O | Topics in Biohemistry  (3) | | | I | | Transition metal theory (3) |
|  |  | | P | Numerical Analysis  (2) | | | | P | Solvent theory(3) | | | I | | Inorganic Spectroscopy (3) |
|  |  | |  | General Biology  (3) | | | | C | Polymer Chemistry  (3) | | | I | | Inorganic Photochemistry (3) |
|  |  | |  | General Biology Laboratory (1) | | | | C | Industrial Chemistry  (3) | | | O | | Topics in Organic Chemistry (3) |
|  |  | | C | Scientific and Technical Japanese (I) (2) | | | | C | Topics in Industrial Chemistry (3) | | | O | | Fundamental Organic Synthesis (3) |
|  |  | | C | Scientific and Technical Japanese (II) (2) | | | | C | Chemistry Unit Activities (3) | | | O | | Organic Reaction Mechanism (3) |
|  |  | |  |  | | | | C | Materials and Methods in Teaching Chemistry (3) | | | O | | Metallorganic Chemistry (3) |
|  |  | |  |  | | | | C | Materials and Methods in Teaching Chemistry Laboratory (1,1) | | | O | | Advanced Biochemistry (I) (3) |
|  |  | |  |  | | | |  | Synthetic Techniques and Experiments (3) | | | O | | Advanced Biochemistry (II) (3) |
|  |  | |  |  | | | |  | Introduction to Modern Physics (2,2) | | | P | | Topics in Physical Chemistry (3) |
|  |  | |  |  | | | |  |  | | | P | | Chemical Kinetics (3) |
|  |  | |  |  | | | |  |  | | | P | | Quantum Chemistry  (3) |
|  |  | |  |  | | | |  |  | | | P | | Molecular Simulation  (3) |
|  |  | |  |  | | | |  |  | | | P | | Material Chemistry  (3) |
|  |  | |  |  | | | |  |  | | | P | | Atomic and Molecular Spectroscopy (3) |
|  |  | |  |  | | | |  |  | | | C | | Research on Chemistry Education  (2,2) |
|  |  | |  |  | | | |  |  | | |  | | Seminar (2,2) |
|  |  | |  |  | | | |  |  | | | C | | Computer Aided Instruction in Chemistry (2) |
|  |  | |  |  | | | |  |  | | |  | | Special Topics in Organic Chemistry  (2,2) |
|  |  | |  |  | | | |  |  | | |  | | Special Topics in Inorganic Chemistry  (2,2) |
|  |  | |  |  | | | |  |  | | |  | | Special Topics in Physical Chemistry  (2,2) |
|  |  | |  |  | | | |  |  | | |  | | Special Topics in Analytical Chemistry  (2,2) |
|  |  | |  |  | | | |  |  | | |  | | Special Topics in Applied Chemistry and Science Education  (2,2) |
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1, Total Credits for students without Educational Track

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| School Required | Department Required | Department Elective | Free Elective | Total |
| 28 | 61 | 27 | 12 | 128 |

2. Total Credits for students with Educational Track

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| School Required | Department Required | Department Elective | Free Elective | Educational Track Credits | Total |
| 28 | 61 | 27 | 12 | 26 | 154 |