**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 Aesthetics2. Philosophical thinking and Moral Reasoning3. Citizenship and Social Inquiry4. History and Culture5. Mathematic and Scientific Thinking6. 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

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| --- | --- | --- | --- | --- |
| 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 |