

개설SYLLABUS

대학분류 : GIST대학 년도 : 2019 학기 : 1학기 교과목번호 : CH2101

Classification	GIST College	Course No.	CH2101-01	Hrs:E:Credits	3/0/3	Instructor	Kim, Tae-Young	Lecture Language	English
Course Title	Korea	분석화학							
	English	Analytical Chemistry							
Course Outline	The course aims at providing a solid understanding of the underlying principles of quantitative analysis employed in chemistry and other disciplines in science. It covers the fundamentals of chemical measurements including experimental error and statistics, systematic treatment of equilibrium, acid-base titration, and the basics and applications of electrochemistry.								
Prerequisite	OR GS1203 (고급일반화학 및 연습 I), OR GS1204 (고급일반화학 및 연습 II), AND GS1201 (일반화학 및 연습 I), AND GS1202 (일반화학 및 연습 II),								
Textbook & References									
Etcetera									

Weekly Course Schedule

Week	Description	*Remarks
1st	Introduction & Chemical Measurements (Ch 1)	
2nd	Tools of the Trade (Ch 2) & Experimental Error (Ch 3)	
3rd	Statistics (Ch 4)	
4th	Statistics (Ch 27-1) & Quality Assurance & Calibration Methods (Ch 5)	
5th	Chemical Equilibrium (Ch 6) & Activity & the Systematic Treatment of Equilibrium (Ch 7)	
6th	Monoprotic Acid-Base Equilibria (Ch 8)	
7th	Polyprotic Acid-Base Equilibria (Ch 9)	
8th	Mid-term exam (Ch 1-9)	
9th	Acid-Base Titrations (Ch 10)	
10th	EDTA Titrations (Ch 11)	
11th	Fundamentals of Electrochemistry (Ch 13)	
12th	Electrodes & Potentiometry (Ch 14)	
13th	Redox Titrations (Ch 15)	
14th	Electoranalytical Techniques (Ch 16.1 - 3)	
15th	Electoranalytical Techniques (Ch 16.4 - 6)	
16th	Mid-term exam (Ch 10-16)	

*If there will be experiments, mark it in the "Remarks" section.

Instructor

(seal)

Lecture Language

개설SYLLABUS

대학분류 : GIST대학 년도 : 2019 학기 : 1학기 교과목번호 : CH2102

Classification	GIST College	Course No.	CH2102-01	Hrs:E:Credits	3/0/3	Instructor	Pang, Yoonsoo	Lecture Language	English
Course Title	Korea	물리화학A							
	English	Physical Chemistry A							
Course Outline	This course will cover quantum mechanics in relation to atomic and molecular electronic structures and spectroscopy. The course objectives include fundamental understanding of structure and dynamics of chemical systems, and applications of quantum mechanics to rotational, vibrational, and electronic spectroscopy of molecules.								
	This course will cover quantum mechanics in relation to atomic and molecular electronic structures and spectroscopy. The course objectives include fundamental understanding of structure and dynamics of chemical systems, and applications of quantum mechanics to rotational, vibrational, and electronic spectroscopy of molecules.								
	This course will cover quantum mechanics in relation to atomic and molecular electronic structures and spectroscopy. The course objectives include fundamental understanding of structure and dynamics of chemical systems, and applications of quantum mechanics to rotational, vibrational, and electronic spectroscopy of molecules.								
Prerequisite	OR GS1203 (고급일반화학 및 연습 I), OR GS1204 (고급일반화학 및 연습 II), AND GS1202 (일반화학 및 연습 II), AND GS1201 (일반화학 및 연습 I),								
Textbook & References									
Etcetera									
Weekly Course Schedule									
Week	Description								*Remarks
1st	The dawn of the quantum theory								Ch. 1
2nd	The classical wave equation								Ch. 2
3rd	The Schrödinger equation and a particle in a box								Ch. 3
4th	The postulates and principles of quantum mechanics								Ch. 4
5th	The harmonic oscillator and the rigid rotor								Ch. 5
6th	Hydrogen atom								Ch. 6
7th	Approximation method								Ch. 7
8th	Mid-term								
9th	Multielectron atoms								Ch. 8
10th	The chemical bond: diatomic molecules								Ch. 9
11th	The chemical bond: diatomic molecules (continued)								
12th	Bonding in polyatomic molecules								Ch. 10
13th	Molecular spectroscopy								Ch. 13
14th	Molecular spectroscopy (continued)								
15th	Laser spectroscopy and photochemistry								CH. 15
16th	Review & Final								

*If there will be experiments, mark it in the "Remarks" section.

Instructor

(seal)

Lecture Language

개설SYLLABUS

대학분류 : GIST대학 년도 : 2019 학기 : 1학기 교과목번호 : CH2103

Classification	GIST College	Course No.	CH2103-01	Hrs:E:Credits	3/0/3	Instructor	Li, Jiaojie	Lecture Language	English
Course Title	Korea	유기화학 I							
	English	Organic Chemistry I							
Course Outline	This course is the first semester in a two-semester introductory Organic Chemistry course. In Organic Chemistry I, a brief introduction to the structure, reactivity, and properties of organic compounds is presented using modern views of chemical bonding. These fundamental concepts are applied to topics ranging from synthetic chemistry to complex functional structures as well.								
Prerequisite	AND GS1202 (일반화학 및 연습 II), OR GS1204 (고급일반화학 및 연습 II),								
Textbook & References									
Etcetera									

Weekly Course Schedule

Week	Description	*Remarks
1st	Chapter 1. Structure and Bonding	
2nd	Chapter 2. Polar Covalent Bonds: Acids and Bases	
3rd	Chapter 3. Alkanes and Their Stereochemistry	
4th	Chapter 4. Cycloalkanes and Their Stereochemistry	
5th	Chapter 5. An Overview of Organic Reactions	
6th	Chapter 6. Alkenes: Structure	
7th	Chapter 7. Alkenes: Reactivity, Reactions and Synthesis	
8th	Midterm Exam	
9th	Chapter 8. Alkynes: An Introduction to Organic Synthesis	
10th	Chapter 9. Stereochemistry	
11th	Chapter 10. Organohalides	
12th	Chapter 11. Reactions of Alkyl Halides	
13th	Chapter 12. Structure Determination: Mass Spectrometry and Infrared Spectroscopy	
14th	Chapter 13. Structure Determination: Nuclear Magnetic Resonance Spectroscopy	
15th	Chapter 14. Conjugated Compounds and Ultraviolet Spectroscopy	
16th	Final Exam	

*If there will be experiments, mark it in the "Remarks" section.

Instructor

(seal)

Lecture Language

개설SYLLABUS

대학분류 : GIST대학 년도 : 2019 학기 : 2학기 교과목번호 : CH3106

Classification	GIST College	Course No.	CH3106-01	Hrs:E:Credits	3/0/3	Instructor	Park,Chin Ju	Lecture Language	English
Course Title	Korea	생화학 I							
	English	Biochemistry I							
Course Outline	The course introduces chemical and physical properties of the building blocks of life. It contains the review of the essential topics such as properties of aqueous solution and thermodynamic principles, and the systematic study of amino acids, proteins, nucleic acids, carbohydrates and lipids. The structures and functions of the biological molecules will be extensively discussed and basic bioinformatics will be introduced.								
Prerequisite	OR GS2201 (유기화학 I),								
Textbook & References	Biochemistry by Garrett & Grisham, 5th edition (Brooks/Cole, 2013) Biochemistry by Voet & Voet, 4th edition (Wiley & Sons, 2010)								
	Biochemistry by Berg, Tymoczko & Stryer, 7th edition (W.H.Freeman, 2011)								
Etcetera									

Weekly Course Schedule

Week	Description	*Remarks
1st	Introduction, The fact of life	
2nd	Water: The medium of life, Thermodynamics of biological system I	
3rd	Thermodynamics of biological system II, Protein purification techniques	
4th	Proteins: their primary and secondary structures	
5th	Proteins: their tertiary and quaternary structures	
6th	Carbohydrates and Glycoconjugates	
7th	Lipids	
8th	Function of lipids and current topics	
9th	Midterm	
10th	Nucleotides and nucleic acids	
11th	Nucleic acid structures and recombinant DNA technologies	
12th	Enzyme kinetics and Enzyme specificity	
13th	Mechanisms of enzyme action	
14th	Enzyme regulations	
15th	Current topics in biochemistry & Review	
16th	Final	

*If there will be experiments, mark it in the "Remarks" section.

Instructor

(seal)

Lecture Language

개설SYLLABUS

대학분류 : GIST대학 년도 : 2019 학기 : 1학기 교과목번호 : CH3107

Classification	GIST College	Course No.	CH3107-01	Hrs:E:Credits	3/0/3	Instructor	Junhyeok Seo	Lecture Language	English
Course Title	Korea	무기화학							
	English	Inorganic Chemistry							
Course Outline	This course will cover fundamental principles in inorganic chemistry. Lecture topics have been chosen to teach major concepts and theories regarding molecular structures, chemical bonding, solid state in coordination, organometallic, and bioinorganic chemistry.								
Prerequisite									
Textbook & References									
Etcetera									

Weekly Course Schedule

Week	Description	*Remarks
1st	Ch 1. Introduction to Inorganic Chemistry, Ch 2. Atomic Structure	
2nd	Ch 3. Simple Bonding Theory	
3rd	Ch 4. Symmetry and Group Theory	
4th	Ch 4. Symmetry and Group Theory	
5th	Ch 5. Molecular Orbital	
6th	Ch 6. Acid-Base and Donor-Acceptor Chemistry	
7th	Ch 7. The Crystalline Solid State	
8th	Mid-term exam	
9th	Ch 9. Coordination Chemistry I: Structures and Isomers	
10th	Ch 10. Coordination Chemistry II: Bonding	
11th	Ch 10. Coordination Chemistry II: Bonding	
12th	Ch 11. Coordination Chemistry III: Electronic Spectra	
13th	Ch 12. Coordination Chemistry IV: Reactions and Mechanisms	
14th	Ch 13. Organometallic Chemistry	
15th	Ch 14. Organometallic Reactions and Catalysis	
16th	Final exam	

*If there will be experiments, mark it in the "Remarks" section.

Instructor

(seal)

Lecture Language

개설SYLLABUS

대학분류 : GIST대학 년도 : 2019 학기 : 1학기 교과목번호 : CH4219

Classification	GIST College	Course No.	CH4219-01	Hrs:E:Credits	3/0/3	Instructor	Kim, Jung Wook	Lecture Language	English
Course Title	Korea	생화학 II							
	English	Biochemistry II							
Course Outline	This course is to understand the cellular metabolism of biological energy focusing on the synthesis, storage and breakdown of biological molecules. The topics include 1) the basic concept of metabolism, 2) biosynthesis, breakdown and storage of sugar, 3) biosynthesis and breakdown of lipids and steroids, 4) biosynthesis of amino acids, 5) biosynthesis of nucleic acids, 6) the integration of metabolism. DNA replication, protein folding and signal transduction will be also discussed. This course will provide a comprehensive view for understanding of advanced biological courses such as cell biology, molecular biology and medicinal chemistry.								
Prerequisite									
Textbook & References	Garett & Grisham Biochemistry, 5th edition								
Etcetera									
Weekly Course Schedule									
Week	Description								*Remarks
1st	Introduction								
2nd	DNA metabolism (Ch 28)								
3rd	Transcription and the regulation of gene expression (Ch 29)								
4th	Protein Life cycle: synthesis, folding, processing, degradation (Ch 30, 31)								
5th	The reception and transmission of extracellular information (Ch 32)								
6th	Nitrogen acquistion and amino acid metabolism (Ch 25)								
7th	Synthesis and degradation of nucleotides (Ch 26)								
8th	Mid-term exam								
9th	Metabolism overview, Glycolysis (Ch 17, 18)								
10th	TCA cycle (Ch 19)								
11th	Electron transport and oxidative phosphorylation (Ch 20)								
12th	Photosynthesis (Ch 21)								
13th	Fatty acid catabolism (Ch 23)								
14th	Lipid biosynthesis (Ch 24)								
15th	Summary for final								
16th	Final Exam								

*If there will be experiments, mark it in the "Remarks" section.

Instructor

(seal)

Lecture Language