

Module Code	20349014	Course Term
Course Subject Name	Introductory Biochemistry	Spring The 4th Semester
Course Tutor	Yasuaki Hiromasa	
Credit	2	Taught Day
Schools	School of Agriculture	MON-3
Taught Year	The 2nd year	
Campus	Ito campus	
Subject Area	Lecture	
Course Subject Classification	Common Basic Subjects	
Course Requirements	Class attendance, quiz and exams. Students who fail to attend 3 or more lectures may be recognized "DROPPED" from the course. The course will not be dropped if a valid excuse is given.	
Course Requirement (Pre-requisite)	Taking Introductory Biology (I, II: 1304) & Fundamental Cell Biology (I, II: 1408) course subjects are recommended.	
Course Outline		
The course involves the study of the molecular composition of living cells. The biological macromolecules which this course focuses on are nucleotides including DNA/RNA, nucleic acids, amino acids, proteins, carbohydrate, and lipid. Also Higher structure of nucleic acids and proteins are also examined. Methods and approaches used in biochemical research will be presented as will the biochemical basis of some diseases.		
key words		
Biological macromolecule, nucleic acid, nucleotide, amino acid, peptide, protein, carbohydrate, lipid, lipid bilayer, membrane protein.		
Study Objectives (General)		
The overall goal is for the student to understand fundamental principle of biochemical concepts. Upon completion of the course, the student should achieve		
Study Objectives (Specific) The course aims to achieve the following:		
Knowledge & understanding: understand the structure and function of biomolecules. Scientific thinking: By having fundamental concepts of biomolecules, biochemical phenomena will be understood logically and scientifically. Intentionality and scientific communication: acquisition of positive learning by presentation opportunity.		
Course Plan		
Students should look at the moodle site at this class for e-learning.		
<ol style="list-style-type: none"> 1. Introduction of the class and small test. DNA Structure, Function, and Engineering (1): Nucleic acid structure and function. 2. DNA Structure, Function, and Engineering (2): Nucleic acid sequencing; Manipulating DNA. 3. Amino Acids: Amino acid structure, stereochemistry, amino acid derivatives. 4. Proteins: Primary structure (1): Polypeptide diversity; Protein purification and analysis. 5. Proteins: Primary structure (2): Polypeptide sequencing; Protein evolution. 6. Protein Structure and Folding (1): Secondary and tertiary structures. 7. Protein Structure and Folding (2): Quaternary structure and symmetry, protein folding. Presentation of the topics relating with the subjects. 8. Physiological activities of protein(1). Oxygen Binding to Myoglobin and Hemoglobin 9. Physiological activities of protein(2). Muscle Contraction & other proteins 10. Saccharide Chemistry (1): Monosaccharides Polysaccharides & Glycoproteins 11. Saccharide Chemistry (2) & presentations of the topics(protein function & saccharides). 12. Lipids, Bilayer, and Membranes: Lipid Classification, Lipid Bilayers, Membrane Proteins, Membrane Structure and Assembly 13. Passive and Active Transport (1) Passive-Mediated Transport, Thermodynamics of Transport 14. Passive and Active Transport (2) Active Transport & presentations 		
Course Approaches	Lecture is based on e-learning (2020) Using powerpoint slides, homework and presentation.	
Textbooks	Principles of Biochemistry, 4th edition by Voet, Voet & Pratt (Wiley Inc) ISBN 978-1-118-09244-6	
Reference Books	Sadava, Hillis, Heller, Berenbaum (2012) Life; The Science of Biology	
Study consultation (office hour)	I prefer that you can schedule an appointment by email. Office: W475, Office hours : by appointment, email: hiromaassr@agr.kyushu-u.ac.jp	
Exams/Results Evaluation Method	<p>Evaluation of 2020 class will be announced at the 1st class(e class) Following is for regular lecture style class. Grades will be based on the following items:</p> <ul style="list-style-type: none"> • Attendance 20% • Class activities (homework, presentation) 20% • Final exam 60% <p>Grade A: >90-100, B: 89-80, C: 79-70, D: 69-60, F: <60 ** Rubric of Final exam:</p> <p>A: Required categories of molecules are fully understood and their knowledge can be applied to understand biochemical reactions and phenomena. B : Understanding of the required categories of sugar section is satisfactory. C : Basic principles of biomolecules and their basic function are comprehended. D : Basic principles of structure and function of biomolecules can be described/understood. E : Understanding the basis of structure and function of the biomolecules aren't satisfactory.</p>	
Others		