

Course Name	Chemistry and English for Life Science		
Semester, Year	Second Semester, 2018 (Fall Term)	Number of Credits	2 credits
Course level	2000	Course Number	27084
Instructor(s) (Institution)	GARCIA MARTIN FAYNA MARIA (大学院先端生命科学研究院)		
Course Objectives	<p>Welcome to Chemistry and English for Life Science! The purpose of the course is to learn by theory and practice the fundamentals of Chemical Biology in English language. English is the language of Science and international communication, so this course is addressed to become familiar with scientific terms in English. Further, the students will be able to improve and feel confident on English language.</p> <p>At the end of the course, the students will learn basic organic chemistry and chemistry of life science in English. This knowledge will be of great importance for their future career and they will feel confident writing manuscripts or reports and having scientific talks. Also, it is the purpose of the course to become more effective listeners and scientific texts readers by developing critical thinking. Multi-media are used to facilitate their comprehension of the subject and participation in the class.</p> <p>Through this course, students will be encouraged to learn basic concepts in Biological Chemistry by solving problems and working in groups and individually.</p>		
Course Goals	<p>The main learning goals are:</p> <ol style="list-style-type: none"> 1. Understanding fundamental of Chemical Biology in English. 2. Developing skills for learning organic chemistry through understanding organic reaction mechanisms. 3. Understanding the relation between organic chemistry and biological systems. 4. Assimilating the scope of Biological Chemistry. 5. Developing the ability to do scientist talks using English language. 6. Enlarging communication competence and confidence in English scientific language. 7. Developing critical thinking and becoming effective readers of scientific texts. 		
Course Schedule	<ol style="list-style-type: none"> 1. INTRODUCTION. Organic chemistry and chemistry in life science 2. A REVIEW OF ORGANIC CHEMISTRY I. Molecules. Functional Groups. Naming in English (IUPAC and common names) 3. A REVIEW OF ORGANIC CHEMISTRY II. Organic reaction mechanisms 4. NUCLEOPHILIC SUBSTITUTIONS. SN1 and SN2 reactions and mechanisms 5. ELIMINATION REACTIONS. E1 and E2. When is Elimination and when is Substitution reaction? 6. CHEMISTRY REVIEW and EXERCISES PRACTICE. 7. THE SCOPE OF CHEMICAL BIOLOGY. The structures of biological macromolecules 8. AMINO ACIDS AND PROTEINS. Protein function. Enzymes. 9. CARBOHYDRATE and ESSENTIAL ROLES of SUGARS. 10. THE GENETIC CODE: NUCLEOTIDES AND NUCLEIC ACID. 11. LIPIDS AND MEMBRANES. 12. BIOENERGETICS AND PATHWAYS. 13. ORAL PRESENTATIONS. Annex: Great applications in organic chemistry and biological process. 14. CONCLUSIONS AND SUMMARY. Annex: Chemist in Life Science, possible careers. 15. FINAL EXAM 		
Homework	Each topic and english skills can only be learnt by practicing, so students are required to do homeworks, and prepare presentations. Students will be encouraged to read scientific readings. Students are required to work as a team in some lessons.		
Grading System	<p>Students are evaluated with a relative evaluation system based on 11 grades.</p> <p>Pass: (A+, A) 5~20% (A+ within 5%), (A-, B+) 20~40%, (B, B-) 30~50%, (C+, C) 10~20%. Non pass: D, D- and F</p> <p>The score of the course is based on continuous evaluation. The following tasks and scores are a tentative of the continuous evaluation of this course.</p> <p>CLASS PARTICIPATION, TEAM WORK AND COMPANIONSHIP (15 %). All students are highly encouraged to contribute in class, answer questions, team work and respect other classmates.</p> <p>HOMEWORKS (17 %). All students are highly encouraged to contribute in class and respect to other classmates.</p> <p>QUIZ AND CLICKER ANSWERS (20 %). During each class a quizzes will be given to the students. Only announced questions, students will be able to answer through clickers.</p> <p>EXAM (30 %). In this assignment, students will demonstrate their knowledge of the subject. All exams are closed-book and closed-notes.</p> <p>CHEMICAL BIOLOGY PRESENTATION (10 %). Students will be asked to give a presentation about a topic related with the subject of the class.</p> <p>NO ABSENTEES (3 %). Students with no absence will have higher score.</p> <p>PEER FINAL EVALUATION (5 %). This score will be based on classmates' evaluation</p>		

Textbooks / Reading List	<p>Cambridge English for Scientists T. Armer Cambridge University Press 2011</p> <p>Foundations of Chemical Biology C.M. Dobson, J.A. Gerrard, A.J Pratt Oxford University Press 2001 (Non-mandatory, recommended)</p> <p>Foundations of organic chemistry M. Hornby and J. M. Peach Oxford University Press 2010</p> <p>Essentials of chemical biology : structure and dynamics of biological macromolecules A. Miller, J. Tanner John Wiley & Sons 2008 (Non-mandatory, recommended)</p>
Websites	<p>IUPAC Chemical Nomenclature : http://www.chem.qmul.ac.uk/iupac/</p> <p>IUBMB Biochemical Nomenclature : http://www.chem.qmul.ac.uk/iupac/</p> <p>MIT Open Course: Principles of Chemical Science. http://ocw.mit.edu/courses/chemistry/5-111-principles-of-chemical-science-fall-2008/videolectures/</p>
Website of Laboratory	
Additional Information	<p>Use of clickers</p> <p>For routine clicker questions, students are encouraged to answer the question by their own. Apart from announced in-class quiz questions, students will not be graded if they answer clicker questions correctly. For announced quiz questions, any talking or sharing answers is forbidden.</p> <p>Policies</p> <ul style="list-style-type: none"> - Cell phones are totally forbidden. - Use of computers for non-class purpose is totally forbidden. - It is not permitted to sleep during class hours. - Attendance is expected and it will be checked daily (students will be permitted to only three unexcused absences). - Class participation is important for getting personal skills on scientific English and self-confidence. - Plagiarism is not permitted.