

Module Code	19349046	Course Term	<h1 style="color: magenta;">Spring</h1> <h2>The 6th Semester</h2>
Course Subject Name	Bioresource and Bioenvironment Experiments and Practice 3		
Course Tutor	Douglas Drummond		
Credit	1	Taught Day	<h1 style="font-size: 2em;">WED-3,4</h1> <p>Wednesday, 3rd and 4th period (13:00-16:20)</p>
Schools	School of Agriculture		
Taught Year	The 3rd year		
Campus	Ito campus		
Subject Area	Lecture		
Course Subject Classification	Fieldwork Practice Subjects		
Course Requirements	Basic knowledge of Chemistry		
Course Requirement (Pre-requisite)	Basic knowledge of chemical laboratory techniques		
Course Outline			
Chemical experiments in analytical and chemical purification methods related to Bioresource and Bioenvironment.			
key words			
Analytical chemistry, natural product purification			
Study Objectives (General)			
To practise the skills involved in basic chemical laboratory procedures and the skills required for collecting, interpreting and reporting experimental data.			
Study Objectives (Specific) The course aims to achieve the following:			
To learn:			
Good laboratory practice in chemistry			
basic analytical methods			
Use of analytical instruments			
collection of chemical data and record keeping			
data analysis and report writing			
Purification methods for natural products			
Course Plan			
Weekly schedule (may be subject to revision)			
1. Introduction and laboratory safety. Analytical weighing and error handling.			
2. Making standard solutions.			
3. Acid base titration.			
4. Redox titration.			
5. Practical exam 1 and report (using skills from weeks 1-4).			
6. Isolation of a natural product: caffeine by liquid phase extraction.			
7. Isolation of a natural product: essential oils from plants by steam distillation.			
8. Isolation and analysis of plant pigments by chromatography.			
9. Isolation and analysis of fats and oils by TLC.			
10. Bio-fuel (bio-diesel) production and analysis.			
11. Bio-fuel by-product: soap.			
12. Protein extraction and quantitation using a standard curve.			
13. Purification of IgG from Eggs. Analysis by protein gel electrophoresis.			
14. Purification of Lysozyme from Eggs. Analysis by protein gel electrophoresis.			
15. Practical Exam 2 and report (using skills from weeks 6-14)			
Course Approaches	Experiments and written reports		
Textbooks	Materials will be provided		
Reference Books			
Study consultation (office hour)	Office: Rm.679, WEST ZONE 5, Faculty of Agriculture, Kyushu University Ito Campus Office Hours: 9:00-18:00 Email: d.drummond@agr.kyushu-u.ac.jp Phone: (092)-802-4768		
Exams/Results Evaluation Method	1. Laboratory performance (20%) 2. written laboratory reports (40%) 3. Practical exams. Application of techniques to an analytical problem with a written report of findings. (40%)		
Others	A minimum of 80% attendance is mandatory.		