



Course Documentation Outline

School of Business, Biosciences and Justice Studies

1. Course Name: Extraction Technology
2. Course Code: BIOS 3001 Credit Value: 4

Assignment Description	Value	Due date
<i>Professionalism:</i> (includes attendance, preparation, attitude, attention to detail, critical thinking, commonsense, safety awareness, cleanliness and completion of the entire task.	20 %	Weekly
<i>Formal Reports:</i>	40 %	Weekly
<i>Term Project/Presentation:</i>	10 %	Week 14
<i>In class:</i>	30 % (Quiz, assignments, tests)	Periodic

***Pass Mark is 60 %**

Please consult the Biosciences Handbook for Students (2009-2010) for information and policies on Course Outlines, Assessment, Evaluation and Grading, Supplemental Exams and Plagiarism and Academic Dishonesty. Briefly:

- ◆ You must always submit your own work for evaluation. The minimum penalty for plagiarism is a mark of 0% on the assignment, report, test, etc.
- ◆ Class assignments and problem sets are due as outlined when the assignment is given. Some assignments may be designed to be completed during class time. If you are absent for the class, you may not make up the assignment.
- ◆ Please advise us in advance if you cannot write a test or exam, or meet deadlines for labs or assignments. However, we reserve the right to refuse to reschedule assessments or accept late labs or assignments. If we accept a late submission, be aware that a penalty (10-50%) will accrue, depending on the circumstances.

- ◆ A supplemental exam is available if you meet the criteria as outlined in the Biosciences Handbook for Students

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Curriculum Delivery, Learning Plan and Learning Outcomes:

Course Components/Content	Related Learning Outcomes	Learning Activities/Resources
1. Supercritical CO ₂ Extraction (SCE)	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Predict physical properties and understand general chemical properties of specific families of compounds.</p> <p>Discuss the use/feasibility of various extraction methods in a range of applications.</p>	<p>In-class theory Hands-on laboratories Class discussion/activities Literature review Formal lab report Term project Class Challenge</p>
2. Accelerated Solvent Extraction (ASE)	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Predict physical properties and understand general chemical properties of specific families of compounds.</p> <p>Discuss the use/feasibility of various extraction methods in a range of applications.</p>	
3. Microwave Assisted Solvent Extraction (MASE)	<p>Discuss the use/feasibility of various extraction methods in a range of applications.</p>	

<p>4. Ultrasonic Extraction (USE)</p>	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Discuss the use/feasibility of various extraction methods in a range of applications.</p> <p>Perform necessary purification steps for various crude extracts.</p>	
<p>5. Solid Phase Extraction (SPE)</p>	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Recognize major chemical/biological structures based on functional groups.</p> <p>Predict physical properties and understand general chemical properties of specific families of compounds.</p> <p>Develop chromatographic separation strategies and methods.</p> <p>Perform necessary purification steps for various crude extracts.</p>	
<p>6. Steam Extraction</p>	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Recognize major chemical/biological structures based on functional groups.</p> <p>Draw chemical/biological structures using computer software.</p> <p>Predict physical properties and understand general chemical properties of specific families of compounds.</p> <p>Implement spectroscopic methods for structure elucidation.</p>	

<p>7. Soxhlet Extraction</p>	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Draw chemical/biological structures using computer software.</p> <p>Predict physical properties and understand general chemical properties of specific families of compounds.</p> <p>Develop chromatographic separation strategies and methods.</p> <p>Perform necessary purification steps for various crude extracts.</p>	
<p>8. Reflux Extraction</p>	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Recognize major chemical/biological structures based on functional groups.</p> <p>Predict physical properties and understand general chemical properties of specific families of compounds.</p> <p>Develop chromatographic separation strategies and methods.</p> <p>Perform necessary purification steps for various crude extracts.</p>	
<p>9. Liquid-liquid Extraction</p>	<p>Recognize chemical/laboratory hazards and maintain Good Lab Practice (GLP)</p> <p>Understand and perform both fundamental and advanced methods of extraction.</p> <p>Apply principles of extraction technology in choosing appropriate methods/solvent for selective extractions.</p> <p>Recognize major chemical/biological structures based on functional groups.</p> <p>Predict physical properties and understand general chemical properties of specific families of compounds.</p>	