

**A315 - Chemical Measurements Laboratory**  
**Fall 2009 – Section 7723**  
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<u>Associate Instructors</u>	<u>Office</u>	<u>Telephone</u>	<u>Email</u>
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### Course Structure

- 1) Four experiments
  - four pre-lab qualifying exams
  - two regular lab reports
  - two short lab reports
- 2) Research article summary
- 3) Class project

### Lecture Schedule (C001, 12:20-1:10 pm)

Aug. 31 – Class introduction  
Sep. 2 – Experiment overviews  
Sep. 7, 9, 11 – Lecture – paper #1, #2, #3  
Sep. 14, 16 – Lecture – paper #4, #5  
Sep. 21, 23, 25 – Lecture – paper #6, #7, #8  
Sep. 28, 30 – Lecture – paper #9, #10  
Oct. 5, 7, 9 – Lecture – paper #11, #12, #13  
Oct. 12, 14 – Lecture – paper #14, #15  
Oct. 19, 21, 23 – Lecture – paper #16, #17, #18  
Oct. 26, 28, 30 – Lecture – paper #19, #20, #21  
Nov. 2, 4 – Class Project  
Nov. 9, 11 – Class Project  
Nov. 16, 18 – Class Project  
Nov. 23 – Class Project  
Nov. 30, Dec. 2 – Class Project  
Dec. 7, 9, 11 – Class Project

### Experiment

A. Atomic Absorption Spectrometry (AAS)	<u>AI</u> Lim
B. Capillary Electrophoresis (CE)	Lim
C. Cyclic Voltammetry (CV)	Sa
D. Gas Chromatography-Mass Spectrometry (GC-MS)	Sa

### **Laboratory Schedule**

Section 8590: C133, Monday, 1:30-5:15 pm

Section 7724: C133, Wednesday, 1:30-5:15 pm

Sep. 7, 9 - Begin Laboratory Period 1

Sep. 21, 23 - Begin Laboratory Period 2

Oct. 5, 7 - Begin Laboratory Period 3

Oct. 19, 21 - Begin Laboratory Period 4

Nov. 2, 4 - Begin Class Project

### **Pre-Lab Qualifying Exams**

Exams will be given on the Friday before each experiment is scheduled to begin. Five to six questions are typically given. Meet in C001 at 12:20 pm.

Sep. 4 - Pre-Lab Qualifying Exam for Laboratory Period 1

Sep. 18 - Pre-Lab Qualifying Exam for Laboratory Period 2

Oct. 2 - Pre-Lab Qualifying Exam for Laboratory Period 3

Oct. 16 - Pre-Lab Qualifying Exam for Laboratory Period 4

Note: The first pre-lab exam will have a few questions related to the introductory material in the lab manual in addition to the lab you will be starting the next week. All other pre-lab exams will have a few questions from lectures.

### **Lab Reports**

Lab reports are due one week after completion of each experiment at the beginning of the lab period (submitted through turnitin.com). There will be four reports for four experiments. Regular laboratory reports will be submitted for the AAS and GC-MS experiments and short lab reports will be submitted for the CE, and CV experiments.

### **First Week**

#### **Section 8590**

Monday (8/31, 1:30 pm) - Lab tour

Friday (9/4, 12:20 pm) - Pre-lab qualifying exam

Monday (9/7, 1:30 pm) - Start Laboratory Period 1

#### **Section 7724**

Wednesday (9/2, 1:30 pm) - Lab tour

Friday (9/4, 12:20 pm) - Pre-lab qualifying exam

Wednesday (9/9, 1:30 pm) - Start Laboratory Period 1

## Experiment and Lab Partner Assignments (subject to revision)

Student Name	RA	Email	Period			
	date					
<b>AI – Hyuna Lim - Section 8590 (M)</b>			<b>#1</b>	<b>#2</b>	<b>#3</b>	<b>#4</b>
1 Laura Newman	9/9	launewma	A	B	C	D
2 Wyatt Heath	9/11	wheath	B	C	D	A
3 Eun Sohl Koh	9/16	eskoh	C	D	A	B
4 Rachel Wall	9/23	rnwall	D	A	B	C
5 Amit Pithadia	9/30	apithadi	A	C	D	B
6 Won Son Chung	10/7	wschung	B	D	A	C
7 Joe Rheinhardt	10/9	jrhein	C	A	B	D
8 Daniel Scott Thomas	10/14	dasthoma	D	B	C	A
9 Cassie Taylor	10/21	cjt	A	D	B	C
10 Brett Arndt	10/23	bdarndt	B	A	C	D
11 Sarga Skljarevsk	10/28	sskljave	C	B	D	A
12 Thao Le	CP	lett	D	C	A	B
<b>AI – Niya Sa - Section 7724 (W)</b>			<b>#1</b>	<b>#2</b>	<b>#3</b>	<b>#4</b>
1 Eunice Kahng	9/7	ekahng	A	B	C	D
2 Chelsey McCory	9/14	cmccory	B	C	D	A
3 Kyle Mandla	9/21	kmandla	C	D	A	B
4 Dana Caulton	9/25	dcaulton	D	A	B	C
5 Garrett Fiorenza	9/28	gfiorenz	A	C	D	B
6 Alex Jacobs	10/5	aldjacob	B	D	A	C
7 Emilia Blaser	10/12	eblaser	C	A	B	D
8 Kyle Tse	10/19	kytse	D	B	C	A
9 Jordyn Stuart	10/26	jmstuart	A	D	B	C
10 Chris Blosser	10/30	cblosser	B	A	C	D
11 Anna Reckelhoff	CP	anrureck	C	B	D	A
12 Chad Warkentien	CP	crwarken	D	C	A	B

### Required

\* A315 Lab Handouts – available online \* Lab Notebook – bound \* Safety glasses \*

### Research Article Summary

By the middle of this course, each student should have acquired a working knowledge of four different analytical techniques. In addition, students will be exposed to additional analytical techniques through research articles presented during lecture. Throughout the semester, each student will have the opportunity to earn 100 points by presenting to the rest of the class a Research Article Summary. Students will make individual presentations for this assignment.

Requirements for the Research Article Summary:

- Sufficient in length to describe the work presented in the Analytical Chemistry research article (25-30 minutes plus time for questions)
- Demonstrate a thorough understanding of the technique (simply re-reading the article will be viewed negatively)
- Explain prior work upon which the research article builds (references in the article may be useful)
- Article will be chosen and approved by the instructor at least one week prior to the day of presentation
- Each student must submit to the instructor three questions on the research article

### **Class Project**

Understanding and using analytical instruments is a fundamental part of analytical chemistry in the real world. In addition, analytical chemistry involves investigating a problem and looking for answers to challenging questions. We will pursue the question of whether atomic absorption spectrometry can be used to accurately measure specific elements in multivitamins. You will have already performed an experiment to address this question, but the class project will allow us to investigate the question further, analyze for more elements, and address key questions such as the best way to deal with the “matrix” – all the other components of the sample. The entire class will be involved in asking questions, assigning tasks, and compiling data. If our project is successful, there may be an opportunity to publish our work.

### **Grades**

Each experiment: 125 (4 total)	500
(a) Pre-lab qualifying exam: 25	
(b) Lab report: 100	
Notebook keeping, lab performance:	100
Research article summary/presentation	100
<u>Class project</u>	<u>200</u>
Total	900 points

### **Lab Safety**

- 1) Safety glasses at all times – No contact lenses
- 2) No sandals
- 3) Know location and proper use of safety equipment
- 4) Label all chemicals and solutions
- 5) No eating, drinking, or smoking in the lab
- 6) Work only when an instructor is present
- 7) No cell phones
- 8) If you are not sure, ASK!

### **Waste**

Dispose of waste properly!

Types:

- 1) Aqueous
- 2) Heavy metals
- 3) Organic

If you are not sure, ASK!

### **Important Information and Deadlines**

Students can find policies regarding drop/adds, incompletes, drop dates, and student etiquette at the [Policies for Students](#) link on the course homepage.

### **Writing Tutorial Services**

Assistance is available for any phase of the writing process – contact at 855-6738 or <http://www.indiana.edu/~wts/>

## Register and Join a Class in Turnitin.com Fall 2009

The lab report summaries you write for this class you are to submit to Turnitin.com [<http://turnitin.com>], an online plagiarism detection service. This system is designed to encourage academic integrity, accurate use of sources, and independent work in writing.

Before you can submit your papers to this service, you need to go to Turnitin.com, join this class, and create a user profile. To get started, follow these steps:

- 1) Open a web browser (e.g. Internet Explorer, Netscape, Safari, etc.).
- 2) Go to <http://turnitin.com/>
- 3) Click the "create a user profile" link, in the top right corner of the page.
- 4) Choose "student" as your user type.
- 5) Enter the class ID number and class enrollment password (*see box below*). Click "next".
- 6) Follow the next 3 steps to create your user profile, clicking the "next" button each time. NOTE: you can register with either your IU email account or an external email account (hotmail.com, etc.).
- 7) Read the entire user agreement. If you have questions, click the "I disagree – cancel profile" link and contact your instructor. If you understand the agreement and wish to continue, click "I agree – create profile."
- 8) Turnitin confirms that you have registered and joined this class. Click "log in".

<p>Class Name: <u>IUB A315 Fall 09</u></p> <p>Class ID: <u>2833097</u> Enrollment password: <u>arnold09</u></p>
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### Submit Work to Turnitin.com

If you are not already logged into Turnitin.com, log in from the homepage: <http://turnitin.com>

- 1) Click the name of the class for which you need to submit work.
- 2) Click the "submit" button next to the appropriate assignment.
- 3) In the "Submit a paper by" drop-down list, select either "file upload" or "cut & paste." For this course, it is preferred that you submit your report via "file upload".

#### *If submitting by "File Upload":*

- Your first and last name should already be provided.
- Enter the title of your paper.
- Click the "Browse" button. Locate and double-click on your paper file.
- Make sure the name of the file appears in the "Browse" box.
- When all fields are completed, click the "Submit" button.
- Turnitin asks you to confirm. If what is displayed is correct, click the "Yes, submit" button. If not, click the "no, go back" link and repeat the previous step, selecting the correct file.
- When the file is submitted, Turnitin.com shows you a submission receipt on the screen and emails you a copy. Save the email receipt for your records.

#### *If submitting by "Cut & Paste":*

- Your first and last name should already be provided.
- Enter the title of your paper.
- Copy (don't cut!) the text of your paper from within your word processor, including the works cited list if required.
- Back in the Turnitin.com window, click in the large text box and paste. To paste, click Edit > Paste, or right-click in the box > Paste, or press Control-V (apple-V for Macs). *Note that when you paste your paper, Turnitin does not give you the option to confirm your submission.*
- Click the "submit" button.
- When the file is submitted, Turnitin.com shows you a submission receipt on the screen and emails you a copy. Save the email receipt for your records.