Office of the Registrar
FORM 40 REV. 5/11

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

COASCCI#15-20

DEPARTMENT Chemistry

EFFECTIVE SESSION Spring 2017

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- [ ] 1. New course with supporting documents
- [x] 2. Add existing course offered at another campus
- [ ] 3. Expiration of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/type
- [ ] 7. Change in course attributes (department head signature only)
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

PROPOSED:	EXISTING:
Subject Abbreviation CHM	Subject Abbreviation CHM
Course Number 33300	Course Number 33300
Long Title Principles of Biochemistry	
Short Title Principles of Biochem	

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[ ] Fall [x] Spring [ ] Summer

CAMPUS(ES) INVOLVED
[ ] Calumet [ ] N. Central
[ ] Cont Ed [ ] Tech Statewide
[x] Ft. Wayne [ ] W. Lafayette
[ ] Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range: Minimum Cr. Hrs ____ (Check One) To [ ] Or [ ]
Maximum Cr. Hrs. ____
3. Equivalent Credit: Yes [ ] No [ ]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only [ ]
2. Satisfactory/Unsatisfactory Only [ ]
3. Repeatable [ ]
Maximum Repeatable Credit: [ ]
4. Credit by Examination [ ]
5. Fees: [ ] Coop [ ] Lab [ ] Rate Request
Include comment to explain fee
6. Registration Approval Type
Department [ ] Instructor [ ]
7. Variable Title [ ]
8. Honors [ ]
9. Full Time Privilege [ ]
10. Off Campus Experience [ ]

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture	50	3	15	100
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
P: 25500 or CHM 26100; P or C: CHM 25600 or CHM 26200. The course is intended to provide an overview of the structure and the function of biomolecules and the energy of metabolism of carbohydrates and lipids. The course will serve as a bridge between organic chemistry and more advance courses in biochemistry.

*COURSE LEARNING OUTCOMES:
To provide basic understanding of the structure and function of the major types of biomolecules; to introduce students to mechanistic and kinetic aspects of enzymes; to introduce students to the second law of thermodynamics and its applications to enzyme catalyzed reactions; to introduce students to energy metabolism involving carbohydrates and lipids.

Calumet Department Head: Ronald L. Swan	Date: 12-22-15	Calumet School Dean:	Date: 1-6-16
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date
North Central Faculty Senate Chair	Date	Vice Chancellor for Academic Affairs: Irwin J. Mandell	Date: 4 April 2016
West Lafayette Department Head: Timothy S Zwier	Date: 3/1/16	West Lafayette College School Dean	Date
		West Lafayette Registrar: Carol Stumbo	Date: 4/26/16

OFFICE OF THE REGISTRAR

DEPARTMENT OF CHEMISTRY
INDIANA UNIVERSITY–PURDUE UNIVERSITY FORT WAYNE
COLLEGE OF ARTS AND SCIENCES

March 3, 2016

Dr. Jeffrey Roberts
Professor and Hovde Dean of Science
Purdue University
BRWN 1147

Dear Dr. Roberts,

The IPFW Chemistry Department would like to offer on our campus three Chemistry courses currently in existence in the Purdue system. Please find attached the following:

- Form 40 requests for CHM 33300, CHM 37200 and CHM 53800
- Sample IPFW syllabi for the three new courses
- Sample Purdue-WL syllabi for the three courses

We hope to begin offering these courses as part of the development of a B.S. biochemistry degree on our campus. I kindly ask that you sign in the appropriate places and return all documents to Ron Friedman, IPFW, SB 496.

Thank you for your consideration. Please do not hesitate to contact me at friedmar@ipfw.edu if any questions arise.

Best Wishes,

Ron

Ronald S. Friedman
Department Chair

SCIENCE BUILDING, ROOM 496, 2101 EAST COLISEUM BOULEVARD, FORT WAYNE, INDIANA 46805-1499
p: 260-481-6289 ▼ f: 260-481-6070 ▼ ipfw.edu/chemistry

Syllabus

Principles of Biochemistry (CHM 33300)

Instructor:	TBD
Office:	TBD
Office hours:	TBD
Credit hours:	3
Prerequisite:	One semester of organic chemistry
Co-requisite:	Second semester of organic chemistry
Perspective students:	(i) Enrolled for biochemistry degree (ii) Planning to attend medical or dental school (iii) Going to pharmacy programs (iv) Planning for graduate studies in biological/biochemical sciences

Brief Description of the Course:
The course is intended to provide an overview of the structure and the function of biomolecules and the energy metabolism of carbohydrates and lipids. The course will serve as a bridge between organic chemistry and more advance courses in biochemistry.

Learning Objectives:

1. To provide basic understanding of the structure and function of the major types of biomolecules.
2. To introduce students to mechanistic and kinetic aspects of enzymes.
3. To introduce students to the second law of thermodynamics and its applications to enzyme catalyzed reactions.
4. To introduce students to energy metabolism involving carbohydrates and lipids.

Requirements:
Required textbook: :" **Essentials of Biochemistry**" by **Charlotte W. Pratt & Kathleen Cornely** (3rd ed.) publisher: Wiley. Chapters 1 to 17 will be covered in CHM33300.

Other useful textbooks(optional):
1. Biochemistry – Concepts and Connections by Dean R. Appling, Spencer J. Anthony-Cahill, Christopher K. Mathews, Pearson, chapters 1 to 16.
2. Biochemistry, the molecular basis of life by Trudy McKee and James R. McKee, 5th edition, Oxford University Press, chapters 1 through 13 and chapter 17.

Additional Materials:
(i) Reading materials provided by the instructor during the progress of the course.

Points (%)	Letter grade
≥97%	A+
93-96%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
60-69%	D
<60%	F

Schedule of lectures:

Lecture #	Topic/Material	Chapter
1	The Chemical Basis of Life	1
2	Aqueous Chemistry	2
3	Aqueous Chemistry	2
4	From Genes to Proteins	3
5	From Genes to Proteins	3
6	From Genes to Proteins	3
7	Protein Structure	4
8	Protein Structure	4
9	Protein Structure	4
Examination 1	Chapters 1 to 4	
10	Protein Function	5
11	Protein Function	5
12	How Enzymes Work	6
13	How Enzymes Work	6
14	How Enzymes Work	6
15	Enzyme Kinetics and Inhibition	7
16	Enzyme Kinetics and Inhibition	7
Examination 2	Chapters 5 to 7	
17	Lipids and Membranes	8
18	Lipids and Membranes	8
19	Membrane Transport	9
20	Membrane Transport	9
21	Signaling	10
22	Signaling	10
23	Carbohydrates	11

24	Carbohydrates	11
Lecture #	Topic/Material	Chapter
Examination 3	Chapters 8-11	
25	Metabolism and Bioenergetics	12
26	Metabolism and Bioenergetics	12
27	Glucose Metabolism	13
28	Glucose Metabolism	13
29	The Citric Acid Cycle	14
30	The Citric Acid Cycle	14
31	Oxidative Phosphorylation	15
32	Oxidative Phosphorylation	15
Examination 4	Chapters 12 to 15	
33	Photosynthesis	16
34	Photosynthesis	16
35	Lipid Metabolism	17
36	Lipid Metabolism	17
37	Review	
Final Exam		All

Class Rules:

1. Attendance is not required in this course but you are strongly advised to attend all classes. If you miss a class, it will be your responsibility to find the material covered that day from your friends.
2. Assignments are expected to be submitted in time. Delayed submission will result in the deduction of points. As a general rule one point will be deducted for each day the assignment is late.
3. Please be courteous to everyone in the class. Come on time and make sure to turn-off your cell phones.
4. Any act that disrupts the class proceedings will not be tolerated.

Academic Honesty:

1. Plagiarism or cheating will not be tolerated and may lead to failure in the class and dismissal from the University.
2. You are responsible for being attentive to or observant of campus policies about academic honesty as stated in the University's Student Conduct Code.

Students with Disabilities:

"If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb Union, Room

113, telephone number 481-6658) as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site for Services for Students with Disabilities."

IPFW Services for Students:

Services for Students with Disabilities, (SSD) Walb Student Union, Room 113, 260-481-6658, support in accommodating needs related to disabilities.
Center for Academic Support & Advancement (CASA), Kettler G23, 481-6817, study skills development, tutoring, STEPS short courses, supplemental instruction, English as a Second Language (ESL).
The Writing Center, Learning Commons on the 2nd floor of Helmke Library, 481-5740, peer tutors who can help with all phases of the writing process.
Career Services, Kettler 109, 481-0689, assistance with on and off-campus job placement and internships.
Information Technology Services Help Desk, Kettler 206, 481-6030, information on all aspects of computing at IPFW; hardware and software support (including Blackboard Vista 4); student e-mail accounts.
Studio M, Walb 220, 481-0114, Curriculum-based multimedia lab for students that offers assistance customized to student needs and course requirements.
Center for Women and Returning Adults, Walb 120, 481-6029, workshops, support groups, counseling, and other programs.
Multicultural Services, Walb 118, 481-6921, skills workshops, support groups, diversity training, counseling, mentoring, cultural heritage programs; ASAP program.
International Student Services, Kettler 104, 481-6034 or 481-6923, visa and INS issues; help with housing, counseling.
Mastodon Advising Center (MAC), Kettler 109, 481-6595, appointments with professional academic advisors; help with guiding students in deciding on their major and ultimately their career; help for exploring students, deciding students, and readmitted students; and various student resources.
Helmke Library Service Desk, 481-6505, reference librarian help, books, journals, reference, interlibrary loan reserve readings for courses. Other important library services for students:

- Ask a Librarian, to ask a librarian in person, by email, instant messenger chat, or phone.
- Find Your Librarian, to find a librarian specialist for the subject you are studying and get the help you need.
- Reserves Express (REX), to find readings from the library's online holdings that your instructor may have reserved for your course.

Dean of Students Office, Walb 111, 481-6601, student health insurance, mentoring, grade appeals; free short-term personal counseling and support.

Chemistry Department Policy on Chemistry Student's Code of Ethics and Conduct:

Students are expected to adhere to the code of ethics and conduct specific to the field of chemistry for the chemistry courses in which they are enrolled and for activities under the auspices of the IPFW department of chemistry. In particular, students are expected, where applicable, to abide by The Chemical Professional's Code of Conduct approved by the American Chemical Society (ACS). Students who intentionally commit serious violations are subject to the same disciplinary action incurred by academic and personal misconduct as described in the IPFW Student Rights, Responsibilities, and Conduct and Purdue's Regulations Governing Student Conduct, Disciplinary Regulations, and Appeals. This policy is intended to be consistent with and is not to be construed to conflict with or supersede any established IPFW or PUWL policy.

CHM333
Principles of Biochemistry
Spring 2013

INSTRUCTOR: **PROFESSOR CHRISTINE HRYCYNA**

Office: BRWN 3130D
e-mail: hrycyna@purdue.edu

LECTURE TIME AND PLACE: Monday, Wednesday, and Friday, 9:30 am – 10:20 am, WTHR 104

COURSE WEBSITE: **http://www.chem.purdue.edu/courses/chm333**

See this site for lecture notes, quizzes and exams from previous semesters, and other information relevant to the course. Please check often as it is updated regularly.

TAs:	Patty Wiley	pwiley@purdue.edu	BRWN 3124
	Kelsey Bohn	kbohn@purdue.edu	BRWN 3134
	Karen Olsen	olsen1@purdue.edu	BRWN 3124

OFFICE HOURS:

3 Office hours will be held each week, **one** by Professor Hrycyna, **one** by each of the TAs. The times will be tailored to maximize class availability and will be announced during the first week of class.

Office hours will take place in **BRWN 3130.**

Dr. Hrycyna's office hour is in **BRWN 3130D.**

TEXTBOOK: Pratt, Cornely: "*Essential Biochemistry, 2nd Edition*"
(OPTIONAL – Copy will be in Chemistry Library)

GRADING SCALE: Final grades will be based on the following scale:

97-100%	A+
90-96.9%	A
87-89.9%	B+
80-86.9%	B
77-79.9%	C+
70-76.9%	C
65-69.9%	D+
55-64.9%	D
0-54.9%	F

GRADED ACTIVITIES:

Eight	Homework Assignments (Sapling)(10 points each)	80 pts
Three	Semester Exams (100 points each)	300 pts
Four	Fifteen minute quizzes (20 points each)	80 pts
One	Final Exam (Not cumulative)	100 pts
Pre-drop Total		560 pts

You are allowed to drop **ONE** homework assignment	– 10 pts
You are allowed to drop **ONE** quiz	– 20 pts
You are allowed to drop **ONE** Semester Exam Score (NOT the Final)	– 100 pts
TOTAL	**430 pts**

Grades will be posted on Blackboard. Please check regularly.

QUIZZES will be held during the first or last 15 minutes of class and will be on lecture material covered since the last quiz or exam only.

Quizzes will be on the following Fridays: **January 25, February 15, March 22 and April 19.**

EXAMS: There are **three** in class exams to be given on the following Fridays.

February 1, March 1 and April 5

MISSED EXAMS AND QUIZZES: There are absolutely **NO** make-ups allowed. For quizzes or exams, use your allowed drop. If you miss a second exam, quiz or homework assignment, it will be recorded as a zero.

PROBLEM SETS: We will be using Sapling Learning. Due dates posted in the program. Purchase the access code online ($29.99). You can use it for 14 days for free. Follow prompts for "Find my School and Instructor". Pick "Purdue University, West Lafayette" and then Course: "CHM333 – Principles of Biochemistry".

http://www.saplinglearning.com

Purdue University - CHM 33300 – Spring 13 - HRYCYNA

RE-GRADING POLICY: After receiving back an exam, quiz or problem set, you have **ONE WEEK** from the day it is handed back (not the day you pick it up) to submit it for a re-grade or recount. It must be done in ink to be eligible for a re-grade. Be advised that your entire assignment will be re-graded. Therefore, your score may go up, stay the same or go down. If you find an addition error, you will NOT be subjected to re-grading and your work will simply be recounted. There are **NO** exceptions to this policy. You certainly may come and ask what you did wrong, but no points will be added unless submitted for a re-grade.

ACADEMIC INTEGRITY:

It is expected that all students will uphold the highest standards of academic integrity. The expectations are as follows:

1. All graded material must be your own independent effort. Plagiarism in any form – cheating on a test or quiz, copying someone else's written assignment – is unacceptable. You may not allow your work to be copied by other students.
2. You may discuss the take-home problem sets freely with other students. However, you must compose and write your own independent answers.
3. Turning in an altered quiz, exam or problem set for re-grading is a violation of academic integrity.
4. The minimum penalty for academic dishonesty of any sort is a score of 0 on the exam, quiz or assignment in question. Depending on the situation, the penalty may be a grade of "F" for the course and possible action by the Dean of Students.

IMPORTANT DATES:

Quizzes

January 25
February 15
March 22
April 19

Exams

February 1
March 1
April 5

CHM333
PRINCIPLES OF BIOCHEMISTRY

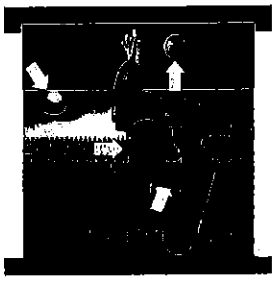
COURSE INFORMATION AND MATERIALS

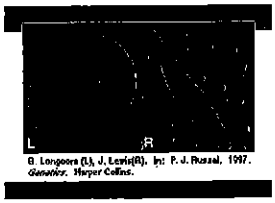
To access the PDF files, you'll need Adobe Acrobat. If you need to download it to your own computer for free, here is the website: Adobe Acrobat.

SYLLABUS & IMPORTANT DATES

LECTURE SYLLABUS

GRADES TO DATE ARE POSTED ON BLACKBOARD LEARN





B. Longoore (L), J. Lewis(R). In: P. J. Russel, 1997. *Genetics*. Harper Collins.

Instructor: **Professor Christine Hrycyna** **SPRING 2013**

Office: BRWN 3130D

E-Mail: hrycyna@purdue.edu

Lecture Time: Monday, Wednesday, and Friday, 9:30 - 10:20am

Lecture Place: WTHR 104

TAs:	Patty Wiley	BRWN 3124	pwiley@purdue.edu
	Kelsey Bohn	BRWN 3134	kbohn@purdue.edu
	Karen Olsen	BRWN 3124	olsen1@purdue.edu

Office Hours: Office hours will be held in **BRWN 3130.**

Dr. Hrycyna's office hour is in BRWN 3130D.

Follow the "Office Hours" link for days and times.

Exams: February 1, March 1 and April 5 in class

Web Sites: Follow the link to animations and information from class

Homework Problems: Additional Practice Problems From Textbook

LECTURE NOTES:

Lecture 1: Introduction

Lectures 2 - 4: Acids, Bases and Buffers

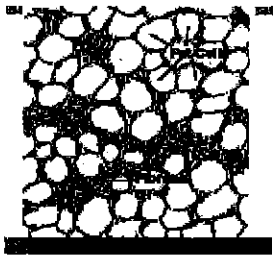
- Why soda hurts!
- KEY FOR PRACTICE BUFFER PROBLEMS

Lecture 5: Physiological Buffers and Amino Acids I

- Andromeda Strain Summary

Lecture 6: Amino Acids II

- NY Times Article on Resistance of Weeds to RoundUp
- USA Today Article on Resistance of Weeds to RoundUp
- Purdue Publication on Glyphosate Resistance



- Monsanto Patent Release

Lecture 7 & 8: Amino Acids III and Peptides

Lecture 9: Peptides & Proteins

- The Aspartame (NutraSweet) Controversy

Lecture 10 - 12: Protein Structure & Function

Lecture : Protein Purification (NOT FOR 2013)

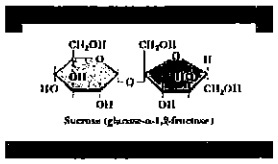
- SDS-PAGE Animation (needs PowerPoint)

Lecture 13 & 14: Introduction to Enzymes

Lecture 15: Enzyme Kinetics

Lecture 16 & 17: Enzyme Inhibition and Coenzymes

- Visual Guide to Enzyme Inhibition
- Practice Kinetics Problems
- Practice Kinetics Problems Key



Lecture 18 & 19: Carbohydrates I

- Carbohydrate Handout

Lecture 20: Carbohydrates II

Lecture 21: Lipids and Membranes I

Lecture 22: Lipids and Membranes II

Lecture 23: Lipids and Membranes III

Lecture 24 & 25: Introduction to Cellular Metabolism & the Chemistry of Metabolism

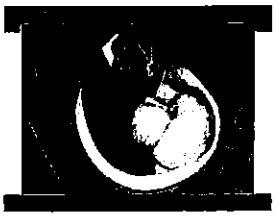
Lecture 26: Thermodynamics of Metabolism

Lecture 27 & 28: Glycolysis

- Glycolysis Handout Input
- Glycolysis Handout Payoff
- Pyruvate Fermentation

Lecture 29 & 30: Glycogen & Ethanol Metabolism and Gluconeogenesis

Lecture 31: Pentose Phosphate Pathway (NOT FOR 2013)

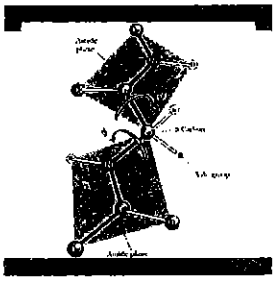


Lecture 32 & 33: Pyruvated Dehydrogenase & the TCA Cycle

- TCA Cycle Handout 1 - Biocarta
- TCA Cycle Handout 2 - Cycle and Reactions
- TCA Cycle Handout 3 - Reaction Schemes
- TCA Cycle Handout 4 - Pyruvate Dehydrogenase Complex
- Glycolysis and TCA Cycle Summary - Thinkwell

Lecture 34 - 36: Lipid and Fat Catabolism

- Beta-Oxidation Handout



Lecture 37 & 38: Electron Transport Chain and Oxidative Phosphorylation

- Oxidative Phosphorylation Handout - Thinkwell
- Electron Transport Chain Handout - Thinkwell

PAST EXAMS & ANSWER KEYS from SPRING 2012

Professor Christine Hrycyna

CHM333: Principles of Biochemistry
Spring 2013

Pratt & Cornely: *Essential Biochemistry 2nd Edition*

TOPIC		READINGS
	Always include the Closer Look and Clinical Notes Boxes in each Chapter	
1.	Introduction/Cell Structure	Ch. 1 – all sections
2.	Aqueous Chemistry and Buffers	Ch. 2 – all sections
3.	Amino Acids	Ch. 4 – section 4.1
4.	Protein Structure and Function	Ch. 4 – sections 4.2 – 4.4
5.	Techniques in Protein Chemistry	Ch. 4 – section 4.5
6.	Protein Function	Ch. 5 – all sections
7.	Enzymes	Ch. 6 – all sections
8.	Enzyme Kinetics and Inhibition	Ch. 7 – all sections
9.	Lipids and Membranes	Ch. 8 – all sections
10.	Membrane Transport	Ch. 9 – sections 9.1 – 9.3
11.	Carbohydrates & Glycoproteins	Ch. 11 – all sections
12.	Energy and Metabolism	Ch. 12 – all sections
13.	Glycolysis	Ch. 13 – section 13.1
14.	Glycogen, Gluconeogenesis and the Pentose Phosphate Pathway	Ch. 13 – sections 13.2 – 13.4
15.	Citric Acid Cycle	Ch. 14 – all sections
16.	Fatty Acid Oxidation	Ch. 17 – section 17.1
17.	Oxidative Phosphorylation and Electron Transport	Ch. 15 – all sections

Chapter 19 is also required reading and will be incorporated throughout Lecture Topics 12 – 16:
"Regulation of Mammalian Fuel Metabolism"