UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

1. **Course: BIOCHEMISTRY 543 - ENZYMOLOGY**

Lecture Sections:	L01	MWF	12:00-12:50	SB 144	WINTER 2017
Course Coordinator:Instructor:	Dr. K. Ng	BI 430B	220-4320		ngk@ucalgary.ca

D2L course website: W2017BCEM543L01 - BCEM 543 L01 (Winter 2017) – Enzymology
Biological Sciences Department BI 186; (403) 220-3140; biosci@ucalgary.ca

2. **Prerequisites:** Biochemistry 393 and 443, and Chemistry 353 or 355.
See section 3.5.C in the Faculty of Science section of the online Calendar
(http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html)

3. **Grading:** The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Assignments	**20%**			
Midterm Exam	**35%**	**March 4, 2017**	**9:30AM-12 Noon**	**ENG 60**
Final Exam	**45%**			

(There will be a final examination scheduled by the Registrar.)

Percent grades will be converted to letter grades as follows:

A+	**>92%**
A	**86%**
A-	**82%**
B+	**78%**
B	**74%**
B-	**70%**
C+	**66%**
C	**62%**
C-	**58%**
D+	**54%**
D	**50%**
F	**<50%**

Each piece of work (assignment, midterm test or final examination) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize himself/herself with these regulations. See also Section E.3 of the University Calendar

5. **Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours.

Midterm Exam	Saturday, March 4, 2017	9:30 am - 12:00 noon	ENG 60

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** TEXT: Recommended: Enzymology – Excerpts from Bugg and Stein (custom eBook). Wiley. 2015. ISBN: 9781118869987

A permanent, non-expiring copy of the custom eBook ccan be purchased on-line through U of C Bookstore.

Single-user access to the complete texts is also available through eBrary.
Webpage links to the complete Bugg text and Stein text are found on this page:
http://people.ucalgary.ca/~ngk/bcem543/bcem543.html

A hard copy of each text is also available at the Reserve Desk at the TFDL

7. **Examination Policy**: No electronic or written aids (eg. cell phones, tablets, computers, PDAs, notes, textbooks) will be allowed during writing of any exams. Non-programmable calculators will be permitted to answer quantitative questions on exams, if applicable, and permission to do this will be clearly indicated on the examination paper. Students should also read the Calendar, Section G, on Examinations.

8. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

(a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K. Student Misconduct to inform yourself of definitions, processes and penalties.

(b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.

(c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf.

Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email addy@ucalgary.ca or phone 403 220-3140.

(d) **Safewalk:** Campus Security will escort individuals day or night (http://www.ucalgary.ca/security/safewalk/). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

(e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also http://www.ucalgary.ca/secretariat/privacy.

(f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; http://ucalgary.ca/provost/students/ombuds

(f) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

(g) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

Department Approval ORIGINAL SIGNED Date

Associate Dean's Approval for
out of regular class-time activity: ORIGINAL SIGNED Date:

C543 co W17; 12/9/2016 1:56 PM

BCEM 543 Winter 2017 TENTATIVE SCHEDULE (there may be minor changes)

January 9	Binding
January 11	Binding
January 13	Binding
January 16	Catalysis
January 18	Catalysis
January 20	**In-class assignment 1 (4%)**
January 23	Catalysis
January 25	Catalysis
January 27	Catalysis
January 30	Protease case study
February 01	Protease case study
February 03	**In-class assignment 2 (4%)**
February 06	Chemical kinetics
February 08	Enzyme kinetics
February 10	Enzyme kinetics
February 13	Enzyme kinetics
February 15	Enzyme kinetics
February 17	**In-class assignment 3 (4%)**
February 19-26	**READING DAYS -- NO LECTURES**
February 27	Enzyme kinetics
March 01	**In-class tutorial & review**
March 03	Enzyme kinetics

March 4 – Midterm Exam (9:30 am – 12 noon, ENG 60) (35%)

March 06	Enzyme kinetics
March 08	Enzyme kinetics
March 10	**In-class assignment 4 (4%)**
March 13	Enzyme regulation
March 15	Enzyme regulation
March 17	Enzyme regulation
March 20	Enzyme regulation
March 22	Enzyme regulation
March 24	**GOOD FRIDAY – NO LECTURES**
March 27	Enzyme regulation
March 29	Medical and industrial enzymology
March 31	**In-class assignment 5 (4%)**
April 03	Medical and industrial enzymology
April 05	Medical and industrial enzymology
April 07	Medical and industrial enzymology
April 10	Medical and industrial enzymology
April 12	Tutorial/review

(APRIL 15-26 – Final Exam to be scheduled by the registrar) (45%)

Reserve Reading List – BCEM 543 W2017

	*	AUTHOR	TITLE	PUBLISHER/DATE/EDITION	CALL NUMBER
1.	1	Bugg, T.D.H.	Introduction to Enzyme and Coenzyme Chemistry, 3rd Ed.	John Wiley, 2012 ISBN 9781119995951	QP601.B94 2012
2.	3	Stein, R.L.	Kinetics of Enzyme Action: Essential Principles for Drug Hunters	John Wiley. 2011 ISBN 978-0-470-41411-8	QP601 .S5685 2011
3.	1	Frey, P.A. & Hegeman, A.D.	Enzymatic Reaction Mechanisms	Oxford University Press, 2007 ISBN 9780195122589	QP601.F725 2007
4.	3	Copeland, R.A.	Enzymes: a practical introduction to structure, mechanism, and data analysis	John Wiley, 2000 ISBN: 0471359297	QP601 .C664 2000
5.	3	Cook, P.F. & W.W. Cleland	Enzyme Kinetics and Mechanism	Garland Science, 2007 ISBN 0-8153-4140-7	QP601.3 .C66 2007
6.	3	Creighton, T.E.	Proteins: Structures and Molecular Properties	W.H. Freeman 2nd Ed. 1993 ISBN 0-7167-2317-4	QP 551.C73 1993
7.	3	Fersht, A.	Structure and Mechanism in Protein Science	W.H. Freeman 1999 ISBN 0-7167-3268-8	QD 431.25.S85 F47 1999
8.	2	Jencks, W.P.	Catalysis in Chemistry and Enzymology	Dover Publications 1969 ISBN 0-486-65460-5	QD 501.J44 1969
9.	2	Copeland, R.A.	Evaluation of enzyme inhibitors in drug discovery : a guide for medicinal chemists and pharmacologists	John Wiley, 2013 ISBN 9781118540404	QD271 .M46 V.46 2005
10.	2	Petsko, G.A. & D. Ringe	Protein Structure and Function	New Science Press 2004 ISBN 0-87893-663-7	QP551 .P44 2004
11.	2	Silverman, R.P.	The Organic Chemistry of Enzyme-Catalyzed Reactions	Academic Press 2002 ISBN 0-12-643731-9	QP601 .S55 2002

*Number of copies on reserve. Electronic access to books 1, 2, 4 and 9 are also available through Ebrary (http://people.ucalgary.ca/~ngk/bcem543/bcem543.html).