Mathematics for the Biological Sciences
MATH:1440:0AAA
University of Iowa
The College of Liberal Arts and Sciences
Fall 2023

Title of Course: MATH:1440 Mathematics for the Biological Sciences
Course meeting time and place: MWF 2:30-3:20 in W10 PBB
Department of Mathematics: Webpage

Course ICON site: To access the course site, log into Iowa Courses Online (ICON) https://icon.uiowa.edu/index.shtml using your Hawk ID and password. **Regardless of the lecture or discussion section you are enrolled in, you will be using the ICON course for MATH:1440:0AAA.** Assignments, handouts, announcements, and grades will be posted on ICON. It is important that you check ICON regularly.

Course Home: The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, the "second-grade only" option (SGO), academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

Course Instructors:

Dr. Cindy Farthing **Office:** B1J MacLean Hall **Phone:** 319-384-4348 **Email:** cynthia-farthing@uiowa.edu **Drop-in Office hours:** Mondays 3:30 to 4:30 pm; Tuesdays 11:30 am to 12:30 pm; Thursdays 11:30 am to 12:30 pm; other times by appointment.	**Dr. Colleen Mitchell** **Office:** 225E MacLean Hall **Phone:** 319-335-3813 **Email:** colleen-mitchell@uiowa.edu **Drop-in Office hours:** Wednesdays 3:30 to 4:30 pm; Thursdays 1:30 pm to 3:30 pm.; other times by appointment.

Lecture Information

Each student is enrolled in the following lecture: **Lecture 0AAA:** 2:30 – 3:20 pm, MWF, W10 PBB.

Discussion Section Information

Each student is also enrolled in one discussion section. These discussion sections are taught by graduate student instructors who are graduate students in the Department of Mathematics.

The meeting time, classroom information, and instructor information for each section follows. Instructor office hours and Math Lab hours will be posted on ICON.

Section 0A02: 5:00 – 5:50 pm TTh, E215 CB TA: Elise Askelsen TA Email: elise-askelsen@uiowa.edu	**Section 0A04:** 9:30 – 10:20 am TTh, 218 MLH TA: Alperen Duyan TA Email: alperen-duyan@uiowa.edu
Section 0A05: 2:00 – 2:50 pm TTh, 213 MLH: TA: Liz Brass TA Email: elizabeth-brass@uiowa.edu	**Section 0A08:** 3:30 – 4:20 pm TTh, 221 MLH TA: Liz Brass TA Email: elizabeth-brass@uiowa.edu
Section 0A16: 3:30 – 4:20 pm TTh, 205 MLH TA: Cole Hengel TA Email: cole-hengel@uiowa.edu	**Section 0A17:** 5:00 – 5:50 pm TTh, 118 MLH TA: Cole Hengel TA Email: cole-hengel@uiowa.edu
Section 0A20: 6:30 – 7:20 pm TTh, 210 MLH TA: Samantha Chediak TA Email: samantha-warren@uiowa.edu	**Section 0A22:** 9:30 – 10:20 am TTh, 217 MLH TA: Niki Amaraweera Kalutotage TA Email: dulanjinarm-amaraweerakalutotage@uiowa.edu
Section 0A23: 12:30 – 1:20 pm TTh, 3321 SC TA: Alperen Duyan TA Email: alperen-duyan@uiowa.edu	

DEO Contact Information: Ryan Kinser 14 MLH, ryan-kinser@uiowa.edu

Course E-mail: *All course related email should be sent to*: math-1440@uiowa.edu.

- If you need to reach only Dr. Mitchell: colleen-mitchell@uiowa.edu
- If you need to reach only Dr. Farthing: cynthia-farthing@uiowa.edu
- You can find the contact info for your TA on ICON under "about your instructors" or in the chart above.

Description of Course: This course consists largely of precalculus topics, including relations, functions, coordinate systems, graphing, polynomials, trigonometric functions, and logarithmic and exponential functions. Examples and applications are chosen from the across the biological sciences. Material from this course may be applied to fields including epidemiology, ecology, orthopedics or exercise science, seismology, audiology, physiology, biochemistry, genetics, cell and molecular biology.

Learning Objectives: The primary objective of this course is for students to become familiar with the core concepts of precalculus level mathematics and to be able to use those concepts to solve problems arising in the biological sciences. Students will learn how to solve basic equations such as linear equations, quadratic equations, rational equations and equations involving radicals. Special emphasis will be given to biological applications and modeling with each equation type. Students will learn how to solve problems involving inequalities and absolute value equations and inequalities and apply these concepts to error bounds. Students will learn to use exponential and logarithmic functions in a variety of applications including biochemical, chemical, economic, and ecological problems. Students will be introduced to the use of trigonometric functions and certain trigonometric identities. Finally, students will learn to solve systems of linear equations.

Math1440 satisfies the general education requirement for quantitative and formal reasoning (QFR). It is designed to help you to develop important analytic skills and methods including the ability to present and evaluate mathematical reasoning.

Textbook/Materials: All materials are available via ICON Direct.

A) Textbook with MyLab for homework assignments.
- Title: MyLab Math with PreCalculus, 7th edition.
  ISBN 9780135925782
- Authors: Lial, Hornsby, Schneider, Daniels
- Publisher: Pearson
- See instructions on ICON
- Your U-Bill will be charged automatically by the Iowa Hawk Shop after your course has started, unless you opt out prior to the last day for tuition and fee reduction course deadline. (If you want to opt-out of this program, you will need to do so before September 1, 2023. You will lose all access to the eText features in ICON. More information about opting out is available at the ITS opt-out site.

B) TopHat license for in-class questions.
- You should have received an invitation via email.
  You may also use join code 138073.

C) Gradescope Account.
- Gradescope is a homework/test grading program that we will use. You will have access to this program through ICON, and it will be linked to your university ID.
- There is no charge for you to use this program.

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the CLAS Code of Academic Honesty. Undergraduate academic misconduct must be reported by instructors to CLAS according to these procedures. Graduate academic misconduct must be reported to the Graduate College according to Section F of the Graduate College Manual.

The homework for this course is designed to help you master your knowledge related to the topics covered during lecture. As such, you may work on the homework problems with others or use online resources. No collaboration is allowed for quizzes or exams.

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the Director or Chair of the school, department, or program offering the course.

Undergraduate students should contact CLAS Undergraduate Programs for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS Associate Dean for Graduate Education and Outreach and Engagement when additional support is needed.

Drop Deadline for this Course
You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the drop deadline for this course here. When you drop a course, a "W" will appear on your transcript. The mark of "W" is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the Registrar's website. Undergraduate students can find policies on dropping and withdrawing here.

Grading System: Letter grades with +/- will be used. The grade of A+ will only be given in extraordinary situations. Grades will be assigned with a standard scale:

A	**B**	**C**	**D**	**F**
	B+ 87-89.9	C+ 77-79.9	D+ 67-69.9	F < 59.9
A > 93	B 83-86.9	C 73-76.9	D 63-66.9	
A- 90-92.9	B- 80-82.9	C- 70-72.9	D- 60-62.9	

Course Grades: 500 total points are possible for the semester.

24% Weekly homework on MyLab: 12 x 10 points
6% Discussion activities: 15 x 2 points
6% Lecture/in class questions with TopHat: 30 points
24% Weekly quizzes in discussion: 12 x 10 points
24% Midterms, Tuesday 9/26 and 10/31: 2 x 60 points
16% Final: The final exam: 80 points

Date and Time of Midterm Exams:
Midterm 1: Tuesday 9/26 6:30-8:30 PM. Location TBA
Midterm 2: Tuesday 10/31 6:30-8:30 PM. Location TBA

Midterm Exam Retakes: You will have the option to retake Midterm 1 and Midterm 2. The retake exams will include problems testing similar information.
Retakes are Midterm 1 will be Oct 12, 6:30-8:30 PM. Location TBA
Retakes for Midterm 2 will be Nov 16, 6:30-8:30 PM. Location TBA
To retest, you will need to complete an exam error analysis and register for a proctored exam retake session. Times and dates will be posted on ICON.

Date and Time of the Final Exam: The final examination date and time will be announced by the Registrar generally by the fifth week of classes and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** According to Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a change if an exam conflict exists or if a student has more than two exams in one day (see the policy here).

Attendance: You are expected to attend class and a portion of the final grade is directly related to your attendance since you must attend lecture to receive credit for the In Class questions with TopHat and attend discussion to receive credit for the discussion activities.
For discussion absences, email your TA.
For all other absences, email math-1440@uiowa.edu.

Missed work will be accepted only for approved excused absences. (Official policies and link to absence form are available here.) University regulations require that students be allowed to make up examinations which have been missed due to illness or other unavoidable circumstances. Students with mandatory religious obligations or UI authorized activities must discuss their absences with me as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Tentative Calendar
A detailed calendar is posted on ICON. The instructors will make adjustments to this schedule as necessary. Any changes will be announced in class and posted on ICON. Detailed instructions and deadlines for all assignments are found on ICON.

DATE	SECTIONS	TOPIC
Week 1 8/21-8/25	1.1 1.2 1.4 1.5	Linear Equations Applications Quadratic Equations Applications
Week 2 8/28-9/1	1.6 1.7 1.8	Other Types of Equations Inequalities Absolute Value
Week 3 9/4-9/8	2.1 2.2 2.4	Graphs Circles Linear Functions
Week 4 9/11-9/15	2.5 2.7 2.8	Linear Models Graphing Techniques Function Operations
Week 5 9/18-9/22	 4.1	Chapter 1-2 wrap up Intro to Exponents and Logs Inverse Functions
Week 6 9/25-9/29	Review **Exam 1** 4.2 4.3	Review for Exam 1 **Exam 1 (Chapters 1 and 2) Tuesday 9/26 6:30PM** Exponential Functions Logarithmic Functions
Week 7 10/2-10/6	4.4 4.5 4.6	Evaluating Logarithms Exponential and Logarithmic Equations Applications
Week 8 10/9-10/13	 5.1 5.2	Semi Log Plots Chapter 4 Wrap up Angles Trigonometric Functions
Week 9 10/16-10/20	5.3 5.4	Special Angles Applications Chapter 5 Wrap Up

Week 10 10/23-10/27	6.1 6.2	Radian Measure Unit circle
Week 11 10/30-11/3	Review **Exam 2** 6.3 6.4	Review for Exam 2 **Exam 2 (Chapter 4 and 5) Tuesday 10/31 6:30PM** Graphs of Sine and Cosine Translations of Sine and Cosine
Week 12 11/6-11/10	7.1 7.3 7.4 7.5	Fundamental Identities Sum and Difference Double and Half Angle Inverse Trig Functions
Week 13 11/13-11/17	8.3 8.4	Vectors and Applications Dot Product
No Class 11/20-11/24		
Week 14 11/27-12/1	9.1 9.2 9.4	Systems of Linear Equations Matrix Solutions Partial Fractions
Week 15 12/4-12/8		Wrap up Chapter 7-9 Review
Exam Week 12/11-12/15	**Final Exam**	**Final Exam (time announced in week 5)**

College of Liberal Arts and Sciences (CLAS) Course Policies

Attendance and Absences

Exam Policies

Communication: UI Email
Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community.

Where to Get Help
The Math Tutorial Lab in 125 MacLean Hall offers free, drop-in tutoring for students enrolled in this class. Schedule and information about the Math Tutorial Lab is available at http://www.math.uiowa.edu/math-tutorial-lab.

Dr. Mitchell is also the director of the Math Platoon. Veterans and Military Connected students can drop in with math-related questions or just to say hello. ***. Location 208 Calvin Hall.

There are a variety of other places on campus where you can go for help with this course. Visit http://tutor.uiowa.edu for more information.

Some links for online resources are provided on ICON. If you find a favorite you think I should add to the list, let me know.

University Policies

Accommodations for Students with Disabilities
Basic Needs and Support for Students
Classroom Expectations
Exam Make-up Owing to Absence
Free Speech and Expression
Mental Health
Military Service Obligations
Non-discrimination
Religious Holy Days
Sexual Harassment/Misconduct and Supportive Measures
Sharing of Class Recordings