The University of Iowa
The College of Liberal Arts and Sciences
Spring 2023

Title of Course: MATH:1440 Mathematics for the Biological Sciences
Course meeting time and place: MWF 10:30-11:20 in W290 CB
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.

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.

Instructor: Dr. Colleen C Mitchell
Office location: 225E MLH
Student drop-in hours: You can find Dr. M in the Mathlab (125 MLH) during these times. Stop by to say hello and to ask all your questions. Tentative schedule: Mondays 11:30-12:30 and Tuesdays 2:30-4:30.
Phone: 310-335-3813
E-mail: If you need to reach Dr. Mitchell: colleen-mitchell@uiowa.edu
All course related email should be sent to: math-1440@uiowa.edu
You can find the contact info for your TA on ICON under "about your instructors"
DEO: Dr. Ryan Kinser, 14 MLH, ryan-kinser@uiowa.edu

Description of Course: This course consists largely of precalculus topics, but also includes a treatment of probability and introduction to linear algebra. The precalculus topics include relations, functions, coordinate systems, graphing, polynomials, trigonometric functions, and logarithmic and exponential functions. Probability topics include random experiments and random variables, algebra of sets, methods of enumeration, sampling, conditional probability, and distributions of discrete type. Examples and applications are chosen from the biological sciences. Material from this course may be applied to: spread of disease, orthopedics or other medical topics where rotation is involved, earthquake measurement, wave motion of any kind, for example in the study of hearing, physiology, biochemistry, cell and molecular biology.

Learning Objectives: To familiarize the students with the basic concepts of precalculus level mathematics and probability. The students will learn how to solve basic equations such as linear and quadratic equations, equations involving fractions and radicals, as well as applications and modeling with basic equations. The students will also learn how to solve various inequalities and absolute value equations and inequalities, as well as to draw graphs of basic functions. We will learn the equation of a circle in the general form as well as the center-radius form and some applications of circles. We will learn various formulas of linear functions, and other functions such as exponential and logarithms as well as applications using these

functions. We will learn basic trigonometric functions and certain trigonometric identities. Systems of linear equations will be presented using a few methods to solve them such as the Gauss-Jordan method, the echelon method, as well as some properties of matrices. Finally, elements of sets and probabilities will be studied.

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: Mathematics for the Biological Sciences, PreCalculus, 6th edition coupled in one presentation with Finite Mathematics, 11th edition. ISBN 780321922137
   - Authors: Lial, Hornsby, Schneider, Daniels, Greenwell, Ritchey
   - Publisher Pearson
   - Copyright Year Special Edition for the University of Iowa
   - See instructions on ICON, you will need the access code DSCGOZ-CLVII-HITCH-TECHY-HIJAZ-ROVES

B) TopHat license for in-class questions.
   - You should have received an invitation via email. You may also use join code 206813.

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 x 1 point
24% Weekly quizzes in discussion: 12 x 10 points
20% Midterms, Tuesday 2/21 and 4/4: 2 x 50 points
20% Final: The final exam is worth 100 points

Date and Time of Midterm Exams:
Midterm 1: Tuesday 2/21 6:30-8 PM. Location TBA
Midterm 2: Tuesday 4/4 6:30-8 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. 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 be in class to receive credit for the Lecture/In Class questions and the discussion activities. For discussion absences, email your TA. For all others email math-1440@uiowa.edu. Missed work will not be accepted except 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

The instructor 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
Week1 1/17-1/20	1.1 1.2	Linear Equations Applications
Week2 1/23-1/27	1.4 1.5 1.6	Quadratic Equations Applications Other Types of Equations
Week3 1/30-2/3	1.7 1.8 2.1	Inequalities Absolute Value Graphs
Week4 2/6-2/10	2.2 2.4 2.5	Circles Linear Functions Linear Models
Week5 2/13-2/17	 4.1 4.2	Intro to Exponents and Logs Inverse Functions Exponential Functions
Week6 2/20-2/24	Review **Exam 1** 4.3 4.4	Review for Exam 1 **Exam 1 (Chapters 1 and 2) Tuesday 2/21 6:30PM** Logarithmic Functions Evaluating Logarithms
Week7 2/27-3/3	4.5 4.6 5.1	Exponential and Logarithmic Equations Applications Angles
Week8 3/6-3/10	5.2 5.3 6.1	Trigonometric Functions Special Angles Radian Measure
No Classes 3/13-17		
Week9 3/20-3/24	6.2 6.3 6.7	Unit circle Graphs of Sine and Cosine Harmonic Motion
Week10 3/27-31	 F2.1 F2.2	Into to Matrices and Linear Systems Echelon Method Gauss-Jordan Method
Week11 4/3-4/7	Review **Exam 2** F2.3 F2.4	Review for Exam 2 **Exam 2 (Chapter 4, 5 and 6) Tuesday 4/4 6:30PM** Addition and Subtraction of Matrices Multiplication of Matrices
Week12 4/10-4/14	F2.5 F2.6 F7.1	Matrix Inverse Applications Sets
Week13 4/17-4/21	F7.2 F7.3 F7.4	Venn Diagrams Probability Rules for Probability

Week14 4/24-4/28	F7.5 F7.6 F8.1	Conditional Probability Bayes' Theorem Permutations
Week15 5/1-5/5	F8.2 Review	Combinations
Exam Week 5/8-5/12	**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.

I am proud to be the director of the Math Platoon. Veterans and Military Connected students can drop in with math-related questions or just to say hello. Tuesdays 9:30-11:00 and Friday 11:00-12:30. 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