For students

This is a template syllabus. This file contains course specific information, such as catalog description, goals and objectives, which does not change. The parts highlighted in red are to be determined by the individual instructors. The official syllabus for each section will be provided by the instructor in the beginning of the semester.

MATH 1440

SYLLABUS Fall 20xx

The University of Iowa
The College of Liberal Arts and Sciences
Department of Mathematics

Mathematics for Biological Sciences MATH 1440: xxxx

Time & Location for Lecture: xxxx

Some of the policies relating to this course (such as the drop deadline) are governed by its administrative home, the College of Liberal Arts and Sciences, 120 Schaeffer Hall.

Prerequisites: MATH:1005 with a minimum grade of C- or MATH:1340 with a minimum grade of C- or ALEKS score of 55 or higher or MATH:1010 with a minimum grade of C- or MPT Level 3 score of 9 or higher.

Approved GE: Quantitative or Formal Reasoning.

Instructor:
Office location and hours:
Phone:
E-mail:
Website address:
TA:
Supervisor: For this course, see the DEO.
DEO Contact Information: Professor …, 14 MLH, 319-335-0714, …@uiowa.edu

Description of Course:

This course consists largely of precalculus topics, but also includes a substantial treatment of probability and introduction to linear algebra. It is similar to MATH:1020, except for the biology emphasis and probability topics. 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 types. Examples and applications are chosen from the biological sciences.

Objectives and Goals of the Course: To familiarize the students with the basic concepts of precalculus level mathematics.

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.

Required text: (Check the current textbook from Department Webpage)

https://math.uiowa.edu/undergraduate-program/course-information/book-list

The textbook used in 2018: ***Mathematics for the Biological Sciences*** by Faires, DeFranza, Tan including the Pearson e-text

Material to be covered: The Chapters are from the text above. The topics will be essentially same if the textbook changes.

Chapter 1 (Equations and inequalities): Linear Equations, Applications and Modeling with Linear Equations, Complex Numbers, Quadratic equations, Applications and Modeling with Quadratic Equations, Other types of Equations and Applications, Inequalities, Absolute Value Equations and Inequalities
Chapter 2 (Graphs and Functions): Rectangular coordinates and graphs, Circles, Functions, Linear functions, Equations of lines and linear models, Graphs of basic functions, Function operations and composition
Chapter 4 (Inverse, Exponential and logarithmic functions): Inverse functions, Exponential functions, Logarithmic functions, Evaluating logarithms and the change-of-base theorem, Exponential and logarithmic equations, Applications and models of exponential growth and decay
Chapter 5 (Trigonometric functions): Angles, Trigonometric functions, Trigonometric function Values and angle measures
Chapter 6 (The circular functions and their graphs): Radian measure, The unit circle and circular functions, Graphs of the sine and cosine functions

Chapter F2 (Systems of linear equations and matrices): Solution of linear systems by the echelon method, Solution of linear systems by the Gauss-Jordan method, Addiction and subtraction of matrices, Multiplication of matrices, Matrix inverses
Chapter F7 (Sets and probability): Sets, Applications of Venn diagrams, Basic concepts of probability, Conditional probability and independent events
Chapter F8 (Counting principles; further probability topics): The multiplication principle and permutations, Combinations, Probability applications of counting principles

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Grading:

For each course, the instructor chooses a grading strategy appropriate to departmental and college guidelines, and the related discipline. Some of the recommended options include (but not limited to) the following:

With **criterion-reference grading**, students receive grades based on the quality of their work in relation to the criteria defined by the instructor and by the rubrics or models specifying the qualities of each grade. Some instructors may choose to adjust the scale (criteria) if a need arises.

Norm-based grading is used in the course which is based on how others in the class perform. This method is generally used in large lecture courses or coordinated multi-section courses. The distribution of grades may be based on CLAS recommendations.

Grading System: Plus/minus grading will be used.
XX% X midterms (dates)
XX% Final exam (date, time and place to be announced)
XX% X Quizzes, about every other week (dates)
XX% Homework, assigned weekly, and usually due the following week
XX% Attendance and class participation (optional)

All exams are comprehensive, unless specified otherwise.

A Word about the Date and Time of the Final Exam: The date and time of every final examination is announced by the Registrar generally by the fifth week of the classes. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of the final exam.

Make-up policy:

As stated in CLAS webpage: https://clas.uiowa.edu/faculty/student-attendance-and-absences:

"University policy requires that students be permitted to make up examinations missed because of illness, mandatory religious obligations, authorized UI activities, or unavoidable circumstances. An unavoidable circumstance is defined as an event beyond the student's control and often involves a serious and unexpected hospitalization, a family tragedy, or a related incident. Such circumstances **do not include** attendance at a wedding, a family vacation, obligations related to work or other such matters. The instructor of a student participating in an authorized UI activity is sent a statement generally by email from the UI official in charge of the event before the absence occurs; this statement will include the specific date and time that the student will miss class. Activities related to employment, fraternities or sororities, or volunteer activities are not UI authorized activities."

Student Collaboration: Student collaboration is NOT permitted on exams. Any attempt to collaborate during exams will result in a 0 score on that test. The instructors will specify if collaboration is allowed on assignments and, if so, the expectations for a student's individual performance.

Other Course Policies: For Fall 20xx

Students are expected to attend all lectures, and do all of the homework regularly. Students are responsible for everything covered in the lectures, textbook and the prerequisites. Important announcements about changes (if necessary) to the syllabus, homework, exams, etc. will be done in the lectures or they will be e-mailed to your UI e-mail address.

There may be quizzes, depending on the section (excluding the weeks of the exams), consisting of problems similar to those assigned as homework. Taking all quizzes and all exams (midterms and final) is mandatory. In the exams, you are expected to show all of your work in an organized and coherent fashion. In the long problems, all work must be shown, and giving only a final solution obtained by guessing or using a calculator may not earn full credit. Make-ups may be given for the exams missed due to unavoidable circumstances and compelling reasons which are documented in writing. If you have a conflict or a medical reason, discuss your situation with your lecturer as soon as possible.

You are strongly encouraged to go to your lecturer's office hours as well as your TAs. Make an appointment, if you have a conflict with the listed office hours.

Cell phones must be turned off during the lectures and exams. If you have to read or text a message during the lecture, please do it outside the classroom. During the exams, the cell phones are required to be put (far) away, preferably at the bottom of your backpack. During the exams, you cannot hold them in your hand, not keep them on your desk, chair, or anywhere easily accessible, and you cannot use it as a calculator.

Resources for Students:

Math Tutorial Lab: 125 MLH http://www.math.uiowa.edu/math-tutorial-lab

Students will find the Writing Center and the Speaking Center very useful for this course:

Writing Center: http://www.uiowa.edu/~writingc/

Speaking Center: http://clas.uiowa.edu/rhetoric/for-students/speaking-center

Notes to the Students:

1. All students in the College have specific rights and responsibilities. You have the right to adjudication of any complaints you have about classroom activities or instructor actions. Information on these procedures and your responsibilities is available in the Schedule of Courses and on-line in the College's Student Academic Handbook, (https://clas.uiowa.edu/students/handbook) In summary, first see the person you wish to complain about, and then see his/her immediate supervisor. The chain is: graduate or undergraduate assistants, then Prof. XX, then the Chairman of the Department of Mathematics Prof. YY, and then an appropriate Dean. The Department of Mathematics has offices in 14 MLH (MacLean Hall). To make an appointment to talk to the chairman of the department call 335-0714 or contact the departmental secretary in 14 MLH.

2. We would like to hear from anyone who has a disability which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. Please contact your lecturer during his office hours, in the beginning of the semester and far in advance of the exams. You should notify the Office of Student Disability Services, SDS and obtain the form(s) needed. The necessary modifications will be made available to you after the SDS processes and approves your request.

3. We are planning to use ICON for posting grades and other course material. Also, some announcements may be e-mailed through ICON to your UI e-mail. Check ICON and your UI e-mail regularly, and make sure that UI has your correct e-mail address.

4. This course plan may be modified during the semester. All changes will be announced in class in advance. It is solely the student's responsibility to be informed of such announced changes.

CLAS Teaching Policies & Resources — Syllabus Insert
https://clas.uiowa.edu/faculty/teaching-policies-resources-syllabus-insert