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

SYLLABUS <mark>Fall/Spring 20xx</mark>

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

Engineering Mathematics 2: Multivariable Calculus MATH:1560:<mark>0xxx</mark>
<mark>Time and Place to be announced</mark>

Prerequisites: MATH:1550 with a minimum grade of C- or MATH:1850 with a minimum grade of C- or MPT Level 3 score of 15 or higher

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.

<mark>**Instructor:**</mark>
<mark>Office location and hours:</mark>
<mark>Phone:</mark>
<mark>E-mail:</mark>
<mark>Website address:</mark>

TA: To be announced
Supervisor: For this course, see the DEO.

DEO Contact Information: Professor Maggy Tomova, 14 MLH, 319-335-0714, e-mail: maggy-tomova@uiowa.edu

Catalog Description of Course: Vector geometry; functions of several variables; polar coordinates; partial derivatives, gradients, directional derivatives; tangent lines and planes; max/min/parametric curves, curvilinear motion; multiple integrals; vector fields, flows; integration on curves, work; divergence, flux, Green's theorem.

This is the second semester of a five-semester mathematics sequence for engineering students, but not restricted to engineering students. Topics include parametric equations for curves, vector geometry, functions of several variables, partial derivatives, tangent planes, maxima and minima, multiple integrals, vector fields, Green's Theorem, and Power Series. The course does not cover three-dimensional surfaces. Computers are used to visualize functions and to operate on these functions. Each week there are three lectures given by a faculty member; these are augmented by two meetings of a discussion section by a TA. Students are encouraged to use the Math Tutorial Laboratory for additional help.

Objectives and Goals of the Course: The goal of this course is to make you proficient users of calculus in three dimensional space in preparation for a variety of engineering and science courses. A general description of the goals is in the preface to the text. Topics to be covered include vector geometry; functions of several variables; polar coordinates; partial derivatives, gradients, directional derivatives; tangent lines and planes; parametric curves, curvilinear motion; multiple integrals; vector fields, flows; integration on curves, work; divergence, flux, Green's theorem; series and Taylor series. This means we will work from chapters 1-4, 8-13, and 21 of the text. See the weekly syllabus below for more details.

Required text: For Fall 20xx (Check the current textbook from Department Webpage)
https://math.uiowa.edu/undergraduate-program/course-information/book-list

For Fall 2018-2019:
Required eText: *Advanced Calculus using Mathematica* (.nb Edition) by K.D. Stroyan

Instructions on how to get the eText are posted on ICON
Registered students will receive an eMail just before classes with instructions to get a free copy of Mathematica.
Students should wait to buy the eBook for the course until after they have Mathematica on their computer.

Part of your grade in this course involves computing using the resources in the discussion section rooms 117 & 125 MLH or your own computer with Student Mathematica. If you registered on time, you will receive an eMail from U of I ITS on how to obtain Mathematica for your computer free. That eMail contains your individual activation code. If you registered late there are other instructions on ICON. The ITS helpdesk or your TA or I can try to help if you have difficulty setting up your computer.

Grading System: **Plus/minus** grading will be used.
Your grade (including + and - grades) will be based on several kinds of work that measure your progress toward achieving this goal. Your grades can be viewed on your "ICON" account accessible from http://icon.uiowa.edu/

Grading System: The grades are determined by 3-4 midterms and the final exam, and there may be additional graded items such as group work and written HW. The instructor will choose the percentages for each category below and may add other requirements. The dates and places of the exams and quizzes are to be announced.
       2-4 midterms
       Final exam
       Quizzes
       Homework
       Group work
       Attendance and class participation
ALL EXAMS ARE COMPREHENSIVE, unless specified otherwise.
NOTE: An alternative scenario may include scored clicker questions during lectures.

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 in part 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, but some Instructors and/or departments may set their own comparable percentages.

Written Homework

Some of the lowest homework grades may be dropped. You should try the problems on the lecture assignment and be ready to ask questions at the discussion section immediately following that lecture. Details will be given on the syllabus and on ICON. Sometimes, selected (not all) problems on your homework may be graded carefully; it is your responsibility to check the rest of your work.

Group work

This course has group activities in the discussion sections. All students in these groups must participate. Some of the group activities may have a computing part handed in after discussion, but most will have a portion turned in - paper & pencil - at the end of discussion. The groups may be reassigned a few times during the semester. Speak with your TA if your partner is not participating.

Course Policies: For 20xx

We expect you to attend lecture, discussion, and complete written and electronic homework on time. There may be topics discussed only in the lecture, which appear as test questions.

We will NOT accept late work without documented illness or other approved excused absences.

Taking all quizzes and all exams (midterms and final) is mandatory. 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. Official policies are 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.

You are strongly encouraged to go to your lecturer's office hours. 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.

Other course resources: Besides your **TA** for this course, help is available through the Math Tutorial Lab and through the College of Engineering. You are **strongly encouraged** to go to your lecturer's office hours for additional help as needed. If you have conflicts with the listed office hours, make an appointment for additional office hours.

About Engineering Tutoring
Engineering Tutoring provides group tutoring and review support to students taking foundational and core courses in the Engineering curriculum. Tutoring is available Sunday \[Dash] Thursday, 6:00pm \[Dash] 9:00pm, in 3612 SC. It is a free, walk-in service, so students do not need to schedule an appointment; they show up, sign-in, and receive the assistance they need.

Student Collaboration: Beginning with Fall 2013:

No collaboration is allowed in any of the exams.

The instructor will specify when collaboration is allowed (to what extent) on the assignments and, if so, will specify the expectations for a student's individual performance.

Calendar of Course Assignments and Exams:

<mark>**This is a tentative calendar.**</mark>

The starting dates and the time spent on each topic are subject to change. We will work from chapters 1-4, 8-13, and 21 of the text. See the tentative weekly syllabus below for more details.

Weeks	# of lectures	Chapter(s)	Subject
1	3	1	Graphs
2	3	2	Vector Geometry
3	3	(1, 2)	Lexicon & Exam 1
MIDTERM 1, week 3, date			
4	3	3-4	Partial & Total Derivatives
5	3	4	Directional Derivatives, Gradients & Level Sets
6	3	4	Implicit Tangents & Exam #2
MIDTERM 2, week 6, date			
7	3	8	Integration Weighted by Area
8	3	13	Polar Coordinates
9	3	9	Parametric Curves
10	3	9	Product & Chain Rules for Vector Functions & Exam#3
MIDTERM 3, week 10, date			
11	3	10,11	Motion in Space & Vector Fields
12	3	11,12	Conservation of Energy
13	3	12	Green's Theorem & Exam #4
MIDTERM 4, week 13, date			
14	3	21	Infinite Series
15	3	21	Power Series

FINAL EXAM: Date, time and place are to be announced
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 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.

Resources for Students:
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 chairperson 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 that 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. In addition, 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