DEPARTMENT OF MATHEMATICS, PHYSICS AND COMPUTER SCIENCE

COURSE SYLLABUS

for

MATH 131-11	Introduction to Calculus with Applications	3.00 s.h.

FALL SEMESTER 2015

PROFESSOR: **Dr. Tyler Markkanen**
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Office Phone: 413-748-3228
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LECTURE CLASS TIMES & LOCATION:

MWF 12:00 - 12:50 PM MAIN Campus, Babson Library, CR 1

TEXTS FOR THE COURSE:

Calculus with Appl: Brief (w/MML,MSL Access)(LoosePgs) Edition: 10th
Author: Lial
Edition: 10th
Publisher: Pearson Education Inc.

PROFESSOR'S OFFICE HOURS:

Mondays 10-11 AM
Tuesdays 2:30-3:30 PM
Wednesdays 8-9 AM
Thursdays 12-1 PM
Fridays 11 AM-12 PM
Or by appointment
(Any changes to these office hours will be posted on Moodle.)

COURSE DESCRIPTION:

This course is an introduction to differential and integral calculus for those students who intend to take calculus as a terminal mathematics course. Topics to be considered include limits; continuity; the definition of the derivative; the product, quotient, and chain rules of differentiation; implicit differentiation; optimization; indefinite and definite integrals; and the Fundamental Theorem of Calculus. Applications of calculus are stressed, including applications to the biological sciences.

Prerequisites & Notes
MATH 125 or equivalent.

Credits: 3

Global Learning Objectives:

1. To be able to reason quantitatively.
2. To be able to use mathematical and technological tools for problem-solving and analysis.
3. To develop the skill to construct a mathematical algorithm using acquired mathematical skills to solve a problem.
4. To be able to analyze data mathematically in order to form meaningful conclusions.
5. To be able to translate mathematical findings into a graphical representation for interpretation and meaning.
6. To apply mathematical skills to solving a host of real-life types of problems.
7. To discover and learn new mathematical techniques, skills, and concepts to enhance one's problem-solving ability of real-world problems and render an analytical and quantitative perspective of real-world problems and issues.

Specific Learning Objectives and Methods of Assessment:

Specific Learning Objective:	**Methods of Assessment:**
1. To solve problems involving the following topics: a. the derivative and its formal definition (which the student should be able to state) b. derivatives of various functions c. optimization (using Calculus methods) d. indefinite and definite integrals of various functions e. area and volume (using the definite integral) 2. To express and represent functions and mathematical relationships in different ways (e.g., numerically, graphically, analytically, and verbally). 3. To solve application problems in various disciplines including economics and the life sciences using the tools of Calculus. 4. To model a written description of a physical situation with functions and/or simple differential equations. 5. To use technology to help solve problems, experiment, interpret results, and verify conclusions.	All of the learning objectives will be assessed in the following ways: Homework Quizzes Exams

TEACHING METHOD

1. Lecture;
2. Homework help & hints (Approximately 5-10 minutes, most meeting times);
3. Frequent problem-solving by students at their desks individually;
4. Occasional problem-solving by students at their desks in pairs or small groups;
5. Occasional presenting of homework problems by students at the board.

GRADING SCHEDULE FOR THE COURSE:

Grading Category	**Percentage of Grade**
Homework	20%
Quizzes	15%
Exams	45% (15% each)
Final Exam	20%

Letter grades will be determined according to the following scale.

≥ 93	**A**	**79 - 82**	**B -**	**67 - 68**	**D +**
89 - 92	**A -**	**77 - 78**	**C +**	**63 - 66**	**D**
87 - 88	**B +**	**73 - 76**	**C**	**57 - 62**	**D -**
83 - 86	**B**	**69 - 72**	**C -**	**< 57**	**F**

MOODLE:

Visit our course webpage by going to Moodle. You can get to Moodle in one of the following two ways:

1. Go to the Springfield College's main website (www.springfieldcollege.com) and log in to PrideNET. Then click on the "Moodle" tab at the top of the screen and follow the onscreen instructions.

OR…

2. Go to https://scmoodle2.springfieldcollege.edu/ and log into Moodle directly. If you choose this method, you will probably have to reset your password the first time you log in. (Click on "Forgotten your username or password?" and follow the onscreen instructions.) This is because the password to get directly into Moodle is different from your PrideNET password.

Our Moodle course webpage is where you can find the syllabus and other handouts during the semester. Office hours, homework assignment details, and helpful links will also be posted on Moodle. Moodle will occasionally have important messages, homework hints, and other course-related information. So you should visit Moodle on a daily basis.

HOMEWORK:

There will be a homework assignment for many of the sections we cover from the textbook. Most of the exercises will be odd numbered, so their answers will be in the back of the book. When working on an exercise, do NOT look at the answer right away! Try to solve it first. This will be the best way to prepare yourself for the environment of an in-class quiz or exam (where you won't have the luxury of "looking in the back of the book"). A handful of exercises will be even numbered. The answers (and the worked-out steps, time permitting) to these exercises will be posted after that assignment's due date. So please hand in homework on time! Once the answers to the even numbered exercises have been posted, submissions for that homework assignment will no longer be accepted. On all assignments, you must show all of your work for each problem, not just the answers.

MyMathLab:

To help you study at home, we will use MyMathLab. This is an online educational system, which provides a digital version of the textbook as well as interactive study materials. Please register and enroll in our course on MyMathLab (MATH 131-11: Introduction to Calculus with Applications) by going to www.mymathlab.com. Under "Register Now," click on "Student." Before continuing you will need two things:

1. Course ID: **markkanen48255**
2. Access Code: This should have come with your textbook. Check with the bookstore if you do not have an Access Code. There is also an option to buy an Access Code with a credit card online (at a later step in the registration process).

Continue through the registration process by following the onscreen instructions.

You should familiarize yourself with the MyMathLab course. A good place to start is the "Quizzes & Tests" section. Try taking the "Prerequisite Skills Test for Applied Calculus" and the "Getting Ready for Applied Calculus Test A & B." You should also try some of the Pre-Tests (at least for Chapters 1, 2, and 3). Afterward, you should go to the "Study Plan" section and start working on the problems in Section 3.1. The Study Plan learns how well you do and will start making suggestions on what you need to study based on your previous work.

POLICY ON CALCULATORS, PHONES & OTHER DEVICES:

It is recommended that you have a TI-83 or TI-84 graphing calculator. Calculators will be allowed during quizzes and exams, unless otherwise announced.

Phones and *Internet devices* (i.e., devices capable of accessing the Internet) will NOT be allowed during quizzes and exams. You are NOT allowed to access the Internet during class, except during specific times when the instructor explicitly tells you otherwise. However, you may use phones and Internet devices as calculators (except during quizzes and exams). **You are NOT allowed to text, use social media, or use non-calculator apps during class, except during times when the instructor explicitly tells you otherwise.** (Here is a list of apps that you are allowed to use during class, except for quizzes and exams: Calculator, Wolfram|Alpha, Khan Academy, and Socrative. This list is likely to grow during the semester, so stay tuned to Moodle for the most up-to-date version of the syllabus. After class or during office hours, please ask if you would like a certain app to be added to the list of approved apps. If the instructor deems the app appropriate for class, it will be added to the list.)

Upon entering the classroom, please silence your phones and other electronic devices. **You are NOT allowed to wear headphones, earbuds, or any kind of headset while in the classroom, unless the instructor tells you otherwise.** Such devices should be put away and should be completely out of sight. If you have any concerns regarding these policies, please speak with the instructor after class or during office hours.

NOTE: *New England winters can be severe! If the College should cancel classes due to inclement weather, any exam or quiz scheduled on that day will be administered at the next class meeting. Check for class cancellations by calling the school closing information line at 748-5999, or by referring to the SC CableTV station, or by checking announcements aired on radio stations WHYN, WAQY, WTTT, WNNZ, WHMP, and WMAS or television stations Channel 22 and Channel 40.*

MAKE-UP EXAMS:

Make-up exams are generally not allowed unless you notify the instructor in advance that you will be absent on the exam day. You must also have written documentation for the reason of the absence. For more information, see the make-up exam policy of the Department of Mathematics, Physics, and Computer Science below (in the section titled "Attendance").

COURSE WITHDRAWAL

Students who wish to withdraw from the course must do so through the registrar by the official deadline of **November 25, 2015.** The deadline to withdraw without receiving a grade of withdrawal is **September 21, 2015.**

ATTENDANCE:

In accordance with the Springfield College Student Handbook:

"Springfield College students are expected to attend all class sessions for which they are registered; they are also responsible for the material covered in each class session and completion of assigned work by the announced due dates. Instructors are responsible to clearly communicate to the students via the syllabus their policies regarding class attendance and make-up work. Certain situations are recognized as College-excused absences from class, including:

1. Participation in an athletic activity approved by the athletic director and on file in the Dean of Students' office.
2. Participation in a scheduled curricular or co-curricular activity approved by the appropriate dean or vice president and on file in the Dean of Students' office.
3. Observation of religious holidays. Instructors should excuse absences of the above nature if the student follows the guidelines listed below. If possible, the instructor should allow the student to make up the class work or complete an alternative assignment. A student who anticipates absences of this nature:
    - Must provide his or her instructors with a list of dates of expected absences by the end of the first week of class and discuss with each instructor the impact of such absences. If the instructor deems that the absences will interfere with the student's ability to successfully complete the objectives of the course, the student must seek to reduce the absences or withdraw from the course.
    - Should arrange in advance of the absence for make-up of any work that will be missed.
    - Should notify the instructor as soon as possible in the event of a sudden change of schedule (for example, participation in a game rescheduled due to rain or joining a team mid-season) and provide documentation if requested. Again, impact of the absence(s) must be discussed with the instructor.

Absences due to illness or emergency:

- In the event of a missed class, students should notify professors as soon as possible and discuss options for obtaining missed material. Contact instructions are available on class syllabi.
- In the event of an absence due to illness or emergency extending longer than two days, students are required to contact the student affairs office at 413.748.3100 in order to notify professors and the residence life staff if necessary."

In addition, the course in which you are enrolled is subject to the following departmental policy of the Department of Mathematics, Physics, and Computer Science.

- *Students must be prompt. Once the lecture has started, students who enter must do so quietly without disrupting the class. Repetitive tardiness for class will be reported to the Dean of Students.*
- *Unless a student can provide written documentation to justify an absence, more than four unexcused absences will result in a reduction of the student's letter grade in the course by one full letter grade for every unexcused absence beyond the four unexcused absences.*
- *Make-up exams will be given only to those students who can provide written documentation that justifies the student's absence at the scheduled time for the exam. If the student is unable to supply written documentation for his/her absence at a scheduled exam, then the student will receive a zero for that exam.*
- *If a student misses a quiz for any reason, the student will receive a zero for that quiz. There are no make-ups for missed quizzes.*

Please note: There are no make-ups for missed quizzes. If you miss a quiz, then a grade of zero will be recorded for that quiz.

ACADEMIC ASSISTANCE: A wide variety of academic assistance is offered through the **Academic Success Center**. Students can receive a variety of services, such as tutoring through **Writing Support Services**, **Math-Science Support Services** and the **Content Tutorial Program**. The **Academic Coaching Program** is available to help students improve time management and study skills. The **Assistive Technology Program** provides training in a range of assistive technology software. The **MTEL Assistance Program** provides support for students preparing to take the Communications and Literacy Skills portion of the Massachusetts Tests for Educator Licensure®. The **Conversation Partners Program** provides support for non-native speaking students wishing to improve linguistic skills in English, Spanish, French, Chinese, and other languages as available.

The **Academic Success Center** is located on the first floor of **Hickory Hall, room 109** and can be

contacted at **413-748-3747** or asc@springfieldcollege.edu. The most up to date information and support service schedules are available on the ASC's PrideNet page:
https://pridenet.spfldcol.edu/ICS/Academic_Departments/Academic_Success_Center/

Accommodation Planning: If you have a documented physical, learning, or psychological disability on record with the Academic Success Center's **Learning Support Services,** you may be eligible for reasonable academic accommodations to help you succeed in this course. It is your responsibility to request such accommodation in advance and to provide appropriate documentation. Students on the main campus should contact the **Director of Learning Support Services,** who is located on the first floor of **Hickory Hall, room 105**, and can be contacted at **413-748-3768.** Please let your instructor know of your request as soon as possible so that he can work with you and the Director to arrange for appropriate and reasonable accommodations.

INCOMPLETE POLICY

"An instructor may give a grade of incomplete (I) following a student's request in situations where incapacitating illness or exceptional circumstances beyond the control of the student **prevent the student from completing course requirements as determined in the sole discretion of the instructor.** A student will have a specified period of time, not to exceed one semester exclusive of summer or prior to graduation, to complete incomplete work. A contract for incomplete grades must be completed and signed by both the instructor and the student. The student must complete the incomplete work *and a valid grade submitted by the faculty member to the Registrar's Office* no later than the *last day* of the term subsequent to the term in which the 'I' was received. **A copy of this contract will remain with the student, the instructor, the registrar, and the academic department (or SHS Campus) offering the course. If the student does not meet the conditions of the contract for the completion of the incomplete by the time specified or prior to graduation, the registrar will automatically change the 'I' grade to an 'F' grade or an alternate grade designated by the instructor that is based on work completed. This policy applies to all students enrolled at Springfield College effective Fall 1999; it does not affect 'I' grades issued prior to this date."**

DECORUM

As adults, students are expected to exercise proper decorum at all times. Students who are disruptive and disorderly will be requested to leave the classroom and will be reported to the Office of the Dean of Student Affairs.

ACADEMIC INTEGRITY AND HONESTY:

Students are expected to exercise academic integrity and honesty. In the completion of all assignments, exams, quizzes, and laboratory reports, students are to do their own work! Students who are caught cheating or committing plagiarism on assignments, exams, quizzes, and laboratory reports will be reported to the Dean of Students Office for further possible disciplinary action. Students should refer to the section, "ACADEMIC HONESTY AND INTEGRITY POLICY," in the Student Handbook under "Academic Policies and Procedures" regarding details of the College's policy.

SYLLABUS MODIFICATIONS:

This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However, the professor reserves the right to modify, supplement, and make changes as the course needs arise. Such changes will be made on this document and an up-to-date version of this document will always be made available on Moodle.

COURSE OUTLINE: (See the next page.)

C O U R S E O U T L I N E

Please note that there are no classes on Columbus Day, October 13 AND no classes until 4:00 PM on "Humanics In Action Day," September 29. Thanksgiving break is November 25-27.

We will have approximately 6 quizzes. Quiz dates will be announced at least a week ahead of time in class and on Moodle.

Week #	Dates	Sections	Topics	Comments
1	9/8-11	3.1	Limits	
2	9/14-18	3.2	Continuity	
3	9/21-25	3.3, 3.4	Rates of Change; Definition of the Derivative	***Quiz in Week 3***
4	9/28-10/2	4.1, 4.2, 4.3, 6.4	Techniques for Finding Derivatives; Derivatives of Products and Quotients; The Chain Rule; Implicit Differentiation	***Quiz in Week 4***
5	10/5-9	6.5	Related Rates	**Exam 1 is on Wed 10/7.**
6	10/12-16	5.1	Increasing and Decreasing Functions	
7	10/19-23	5.2, 5.3	Relative Extrema; Higher Derivatives, Concavity, and the Second Derivative Test	***Quiz in Week 7***
8	10/26-30	6.1	Absolute Extrema	***Quiz in Week 8***
9	11/2-6	6.2, 6.6	Applications of Extrema; Differentials: Linear Approximations	
10	11/9-13	2.4, 4.4, 2.5	Exponential Functions; Derivatives of Exponential Functions; Logarithmic Functions	**Exam 2 is on Mon 11/9.**
11	11/16-20	4.5, 2.6	Derivatives of Logarithmic Functions; Applications: Growth and Decay (Mathematics of Finance)	
12	11/23-27	7.1	Antiderivatives	***Quiz in Week 12***
13	11/30-12/4	7.2, 7.3	Substitution; Area and the Definite Integral	***Quiz in Week 13***
14	12/7-11	7.3 Cont'd		**Exam 3 is on Fri 12/11.**
15	12/14-18	7.4, 8.2	The Fundamental Theorem of Calculus; Volume and Average Value	

Final Exam Date and Time:
Tuesday, December 22, 2:45-4:45 PM

(I will give you proper notice if any of the dates or times on this course outline get changed.)