Purpose: This course is designed for you to understand a wonderful and very important mathematical theory—differential and integral Calculus. Not only will we investigate the underlying concepts and methods of this branch of mathematics but you can expect to leave the course with a collection of analytic tools you can use in a variety of college courses and beyond. There is a follow-on course continuing the integral Calculus, Math 131, which would be the next logical step to take in learning more about this subject.

The Calculus was a conceptually great leap as mathematics moved from the mostly static formulas for length, areas, volumes, angles, averages, etc to a more dynamic view of modeling the world. The essential feature of the Calculus is to understand and make precise the notion of the limit of a function. Once this leap is made, we can concentrate on how to apply this tool to a variety of physical and theoretical situations.

Mastering the Calculus is not intrinsically difficult but you cannot hope to succeed in this endeavor without doing some deep thinking about notation, functions, graphs, and physical concepts such as speed and position. Be prepared for some thought provoking sessions.

Prerequisites: You cannot register for this class if you have not completed Math 100 or taken the mathematics placement exam and made a sufficiently high score. If you completed a Calculus course in high school, I strongly recommend you not take this course but move on to Math 131, Calculus II. You should not expect to repeat your previous experience with Calculus, as this is rarely how the process plays out.

One important thing to know is that competence with basic algebra is critical to your success in this course. If you feel the need to review some material from pre-calculus, there is a review of such material in Appendix C of our textbook.

Text: The book we are using is a fairly standard text for this subject. The material is laid out quite explicitly and reading through it will provide you with most of the necessary information needed to learn the important concepts and pass this class. I will not be repeating the examples from the book in the lecture as I assume you have read the assignments from the text and we can spend our time on more useful conversations. Expect to be challenged at times as we move beyond the text material and encounter new material not covered first in lecture.

Homework: Homework exercises will be assigned each week and usually are due during the following class meeting or two. The homework sets are typically not long or too difficult but require you to think essentially every day about this course. As a result of exploring the exercises, a deeper understanding of the subject is built piece by piece over time. Work the homework exercises regularly! It is the best way to build up your intuitions about this material, it makes the exams much easier, and it counts substantially toward your grade! You can work in groups on homework problems but I do NOT want to receive essentially identical
papers. You must do your own writeups of the homework problems assigned. **Note: I do not accept late homework papers or lab writeups, period.** To allow for inevitable illness, alien abductions, or other unforeseen events, I will drop the two lowest homework/lab grades.

**Labs:** Laboratory sessions each week allow you to spend quality time working with a small group, usually of size three, to dig into details of the Calculus and have time to create and write up answers to the problems given in each lab. Each lab, every group must designate a scribe whose responsibility to create the write up each group will be graded on. The student having this role will change each week so everyone takes a turn doing the lab writeups. More details will be provided in the lab assignments.

**Math Colloquia:** To foster connections with the mathematics community at HWS, I encourage you to attend two Math department colloquia talks this term for extra credit. Details on schedules and topics will be provided throughout the term.

**Attendance/Etiquette:** You must physically be in class and lab to fully understand the material. I realize emergencies, ill health, school activities, etc contribute to absence but you need to inform me ASAP in advance if you are going to miss class. Missing class or lab more than three times for unexcused absence will substantially decrease your letter grade in the class. If you need a drink of water or need to use the toilet, do so **BEFORE** class begins! Do not spend time in class texting or otherwise being distracted by your phone, Blackberry, or laptop.

**Exams:** There are three (3) exams in this course. Each exam is held during class or lab time, with one or two take-home questions, covering the material contained in about 1/3 of the course. As you will see, the course content is in some ways unavoidably cumulative so the material in each exam is not limited strictly to just the previous few weeks. Below is the exam schedule. **Do NOT make any travel plans without first consulting these dates and times!**

- Exam I Friday February 19th in class
- Exam II Thursday April 1st in lab
- Exam III Sunday May 9, 8:30 – 11:30 AM in Napier 201

We will discuss sample questions and suitable answers beforehand so you have a clear idea what is involved in each exam.

**Grades:** Yes, you will get a grade in this class. Your grade is based on all your activities including homework, exams, lab writeups, class participation, and extra credit work. Exact percentages depend on the number of homework assignments but they work out something like this:

Homework is 25%, exams are 45%, labs are 25%, and class participation/attendance/extra credit is 5%.

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**A Message from the Center for Teaching and Learning (CTL)** Hobart and William Smith Colleges encourage students to seek academic collaborations and resources that will enable them to do their best work. Students who would like to enhance their study skills, writing skills, or other academic skills may visit the CTL website at http://www.hws.edu/academics/ctl/index.aspx or contact the CTL at x3351.

Disability Accommodations: If you are a student with a disability for which you may need accommodations, you should self-identify and register for services with the Coordinator of Disability Services at the Center for Teaching and Learning (CTL), and provide documentation of your disability. Disability related accommodations and services generally will not be provided until the registration and documentation process is complete. The guidelines for documenting disabilities can be found at the following website: http://www.hws.edu/disabilities. Please direct questions about this process or Disability Services at HWS to David Silver, Coordinator of Disability Services, at silver@hws.edu or x3351.