

## Course Syllabus

### Math 203 — Applied Calculus (3 Credits/CRN# 60345)

INSTRUCTOR: Navtej (Johnny) Singh

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OFFICE: Manaopono 110

OFFICE HOURS: M F 10:00am – 11:30am\*\*; W 11:30am – 12:30pm, & by appointment

TELEPHONE: (808) 236 – 9278 <Use this during office hours for help on long questions>

EFFECTIVE DATE: Fall 2015 Semester

MAIN WEBSITE: [www.MyMathLab.com](http://www.MyMathLab.com)

### Windward Community College Mission Statement

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide O'ahu's Ko'olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

### Catalog Description

Basic mathematical concepts, topics in differentiation and introductory integration of algebraic, exponential and logarithmic functions. Related applications to management, finance, economics and social science will be considered. Prerequisite for this course is grade of "C" or better in MATH 135 or equivalent, satisfactory math placement test score or consent of instructor.

### Learning Resources and Materials

Everything you need for this course is available online at the <http://www.MyMathLab.com> website. We will utilize most of the tools available through this website. You must get an access code for this course to use all course material. You can get this by one of two ways: Buy the access code directly from MyMathLab website when registering for the course online or buy the textbook which comes with the access code. Textbook for this online course is "Calculus for Business, Economics, Life Sciences & Social Sciences" 13<sup>th</sup> edition by Raymond Barnett, Michael Ziegler and Karl Byleen. Purchase of this textbook is not required since all material including e-book is available online. If you are going to purchase a hard copy of this textbook, please make sure that your textbook comes with a valid access code. Buying just an access code is cheaper than buy the textbook with code. I recommend that you have a graphing calculator utility to help you with homework. A free graphing calculator can be downloaded for your computer from <http://www.graphcalc.com>. In addition, there are various graphing applications available for use on smartphones and tablets. If you are planning to buy a stand along graphing calculator, I recommend TI 83 or higher.

## Getting Started With This Online Course

- Go to [www.MyMathLab.com](http://www.MyMathLab.com) and click on Register under students.
- Enter the Course ID **singh74962** when required.
- Follow the online instructions to complete the registration process.
- There will be an option to either buy an access code or enter the one that came with your textbook.
- Note that you may need to turn off pop-up blocker so that some plug-ins can be installed.

## Disabilities Accommodation

If you have a physical sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at (808) 235-7448, [lemke@hawaii.edu](mailto:lemke@hawaii.edu), or you may stop by Hale 'Akoakoa 213 for more information.

## Assessment, Tasks, and Grading

### Point Distribution

Consultations	(Four visits @ 5 points each)	20 points
Online-Homework	(14 assignments @ 10 points each)	140 points
Online-Quizzes	(14 quizzes @ 10 points each)	140 points
Exams	(Three exams @ 100 points each)	300 points
<u>Total</u>		<u>600 points</u>

**Grades:** Letter grades will be assigned based on the following scale:  
A  $\Rightarrow$  90%  $\uparrow$ ; B  $\Rightarrow$  80%  $\uparrow$ ; C  $\Rightarrow$  70%  $\uparrow$ ; D  $\Rightarrow$  60%  $\uparrow$ ; F  $\Rightarrow$  below 60%;

**Exams** There will be three scheduled exams for this course, worth 100 points each. Graphing calculators are not permitted on the exams, but you can use scientific calculators instead. A sample exam will be provided to assist you in studying for the proctored exam. Best way to prepare for the exam is to study homework and quiz problems along with practice exam. The first exam will cover homework assignments 1 – 4, the second exam will cover homework assignments 5 – 11, and the third/final exam will cover homework assignments 12 – 14. You are allowed to bring one 8½ by 11 sheet of notes for the proctored exams. Your third exam in this class is the final exam. Note that due to the nature of the subject, you need to know the previous information in order to understand the next topic. For exam dates, refer to the last page of this syllabus.

**Testing Site:** The website <http://www.hawaii.edu/dl/testcenters> provides information on all available testing sites in Hawaii. Your default test taking site will be The Testing Center (TTC) located in the WCC library Room 228. You may call at (808) 235 – 7498 to find out additional information at this testing site. If this location is inconvenient or you reside on one of the neighboring islands, please let me know your preferred test taking location at

the beginning of the semester so that I can mail your exam to the appropriate testing location.

**Quizzes** There are 14 online quizzes worth 10 points each. Each quiz covers the material learned on the corresponding homework. You must complete at least 70% of the homework before the system will allow you to take the quiz on that particular homework. To improve your score, each quiz may be taken twice. A quiz will become available to work on 6 days before the due date.

**Homework** All homework assignments are available online. I encourage you to work together on homework by utilizing the online tools such as message board to communicate with each other. You must complete at least 70% of the homework assignment in order to move on to the next homework assignment. However, you may continue to work on previously due homework assignments to improve your scores. To receive help on the homework, students are welcome to come by my office during the office hours or make an appointment for consultation.

**Make-up Work:** Make-up for any missed exams or quizzes are not allowed after the due date. If you need to discuss your performance, I recommend you get in touch with me as soon as possible. E-mail is the preferred method of communication. There may be an opportunity to earn extra credit. Instructor will inform you of this opportunity when applicable.

**Important Info:** Please check your @hawaii.edu e-mail account frequently for important announcements. Note this syllabus is subject to change in extenuating circumstances. All online homework assignments and quizzes are due by midnight of the deadline date. All due dates for quizzes, homework assignments, and exams are listed on the schedule below. For important academic information refer to WCC website [www.windward.hawaii.edu](http://www.windward.hawaii.edu) or go to [www.hawaii.edu](http://www.hawaii.edu) for system wide information. Plagiarism, or copying and use of another's work without proper acknowledgment, is not permitted and may result in failing grade for the course.

**Getting Help** I encourage you to stop by my office anytime you need help. If you live away from WCC campus, you can call my office during office hours or Skype me (ID: nsj006) with advanced noticed. You may get additional help by utilizing the free walking tutoring service by going to the math lab located in WCC library room 226 or at your native campus. There is a free online 24 hours live tutoring available through Brainfuse ([wcc.hawaii.edu/brainfuse](http://wcc.hawaii.edu/brainfuse)) via myuh.hawaii.edu (find Brainfuse link under my tools). You may also utilize the following websites:  
<http://manoa.hawaii.edu/ola> - Provides free live interactive tutoring during weekdays  
<http://www.khanacademy.org> – Provides small lecture videos on selected topics  
[www.wolframalpha.com](http://www.wolframalpha.com) – Provides computational tools, facts, and examples.

**N Grade:** "The 'N' grade indicates that the student has worked conscientiously, attended regularly, finished all work, fulfilled course responsibilities, and has made measurable progress. However, either the student has not achieved the minimal student learning objectives and is not yet prepared to succeed at the next level, or the student has made consistent progress in the class but is unable to complete the class due to extenuating circumstances, such as major health, personal or family emergencies." If you would like to request for N grade in this class, you must provide a formal letter of request to me no later than the time of final examination addressing how you have met the criteria for N grade. Then I will make a decision on whether or not you qualify for the N grade.

**Consultation:** There are four required consultations for this class worth 5 points per attendance. I prefer students to come in person for these consultations but can be done via phone or Skype.  
*1<sup>st</sup> Consultation:* This must be done within first week of classes so that I can go over any questions you may have regarding the syllabus, quizzes, homework assignments, exams, where to get help, or getting started to use the online system.  
*2<sup>nd</sup> Consultation:* This must be done a week after the first exam has been completed. This is to help you understand your mistakes from the first exam and ways to improve on future exams. Any general questions regarding the class and the assignments can be discussed.  
*3<sup>rd</sup> Consultation:* Since the 2<sup>nd</sup> exam covers more material, I would like to make sure you are prepared for the third exam. This is why I would like to meet with you a week prior to the third exam.  
*4<sup>th</sup> Consultation:* This meeting will take place a week before the final. The time can be used to ask questions about the final exam or discuss grades.

**Contact:** The following methods will be used to communicate:

- You can send me an e-mail anytime and I will do my best to response within 24 hours on instructional days (perhaps much sooner). This is an effective method of communication if you expect a short response.
- If you need to speak with me, you can call me at my office (808) 236 – 9278 during my office hours or leave a message for me to return your call.
- If you go to windward community college or live nearby, you can stop by office anytime during my office hours or make an appointment to see me. This is a good way to get help of homework problems.
- If you live at a distance and visual communication is necessary such as help on complicated homework problems, you can connect with me via Skype using the id nsj006. You need to make an arrangement for this, since I only login to Skype when needed.
- Online discussion board can be used to interact with classmates by asking homework questions and answering previously posted problems.

## Student Learning Outcomes

- Understand and use the intuitive definition of limits and apply them in limit calculations and in determining continuity.
- Demonstrate proficiency in determining derivatives and apply different interpretations of the derivative.
- Utilize precise mathematical language and symbols to effectively communicate mathematics in written and/or oral form.
- Use calculus techniques to analyze and solve applied problems.
- Use derivatives to analyze graphs and sketch graphs.
- Demonstrate proficiency in determining antiderivatives and integrals.
- Utilize integration in applied problems.
- Utilize techniques of differentiation with functions of several variables.

*\*Note: All SLOs assessment are embedded in class activities, homework, quizzes, or exams.*

## Foundations Hallmarks

Math 203 fulfills the three credits General Education Requirement for Foundations Symbolic for both the AA degree at WCC and a Bachelor's degree at UH Manoa as well as UH West Oahu. Consequently, it meets the hallmarks of the symbolic reasoning requirement.

- Students will be exposed to the beauty, power, clarity and precision of formal systems.
- Instructors will help students understand the concept of proof as a chain of inferences.
- Instructors will teach students how to apply formal rules or algorithms.
- Students will be required to use appropriate symbolic techniques in the context of problem solving, and in the presentation and critical evaluation of evidence.
- The course will not focus solely on computational skills.
- Instructors will build a bridge from theory to practice and show students how to traverse this bridge.

## ***Course Topics***

- 1-1. Functions (review)
- 1-2. Elementary Functions: Graphs and Transformations (review)
- 1-3. Linear and Quadratic Functions (omitted/review)
- 1-4. Polynomial and Rational Functions (omitted/review)
- 1-5. Exponential Functions (review)
- 1-6. Logarithmic Functions (review)
- 2-1. Introduction to Limits
- 2-2. Infinite Limits and Limits at Infinity
- 2-3. Continuity
- 2-4. The Derivative
- 2-5. Basic Differentiation Properties
- 2-6. Differentials (omitted/optional)
- 2-7. Marginal Analysis in Business and Economics
- 3-1. The Constant  $e$  and Continuous Compound Interest
- 3-2. Derivatives of Exponential and Logarithmic Functions
- 3-3. Derivatives of Products and Quotients
- 3-4. The Chain Rule
- 3-5. Implicit Differentiation
- 3-6. Related Rates
- 3-7. Elasticity of Demand (omitted/optional)
- 4-1. First Derivative and Graphs
- 4-2. Second Derivative and Graphs
- 4-3. L'Hopital's Rule
- 4-4. Curve-Sketching Techniques
- 4-5. Absolute Maxima and Minima
- 4-6. Optimization
- 5-1. Antiderivatives and Indefinite Integrals
- 5-2. Integration by Substitution
- 5-3. Differential Equations: Growth and Decay (omitted/optional)
- 5-4. The Definite Integral
- 5-5. The Fundamental Theorem of Calculus
- 6-1. Area between Curves
- 6-2. Applications in Business and Economics
- 7-1. Functions of Several Variables
- 7-2. Partial Derivatives

### **Math 203 Fall 2015 Tentative Schedule & Assignments**

<b>Week</b>	<b>Dates (M-F)</b>	<b>Homework / Sections</b>	<b>HW Due Dates</b> (Saturdays)	<b>Quizzes Due Dates</b> (Sundays)
1	8/24 – 8/28	HW #1 (Chapter 1 Review)	29-Aug	QZ #1 Due by 30-Aug
2	8/31 – 9/4	HW #2 (Section 2-1 & 2-2)	5-Sep	QZ #2 Due by 6-Sep
3*	9/7 – 9/11	HW #3 (Section 2-3 & 2-4)	12-Sep	QZ #3 Due by 13-Sep
4^	9/14 – 9/18	HW #4 (Section 2-5 & 2-7)	19-Sep	QZ #4 Due by 20-Sep
5	9/21 – 9/25	Exam 1 (Written) Available on 21-Sep & Must Complete by 25-Sep		
6	9/28 – 10/2	HW #5 (Section 3-1 & 3-2)	3-Oct	QZ #5 Due by 4-Oct
7	10/5 – 10/9	HW #6 (Section 3-3 & 3-4)	10-Oct	QZ #6 Due by 11-Oct
8	10/12 – 10/16	HW #7 (Section 3-5 & 3-6)	16-Oct	QZ #7 Due by 18-Oct
9	10/19 – 10/23	HW #8 (Section 4-1 & 4-2)	24-Oct	QZ #8 Due by 25-Oct
10	10/26 – 10/30	HW #9 (Section 4-3 & 4-4)	31-Oct	QZ #9 Due by 1-Nov
11	11/2 – 11/6	HW #10 (Section 4-5 & 4-6)	7-Nov	QZ #10 Due by 8-Nov
12*	11/9 – 11/13	Exam 2 (Written) Available on 9-Nov & Must Complete by 13-Nov		
13	11/16 – 11/20	HW #11 (Sections 5-1 & 5-2)	21-Nov	QZ #11 Due by 22-Nov
14*	11/23 – 11/27	HW #12 (Sections 5-4 & 5-5)	28-Nov	QZ #12 Due by 29-Nov
15	11/30 – 12/4	HW #13 (Sections 6-1 & 6-2)	5-Dec	QZ #13 Due by 6-Dec
16	12/7 – 12/11	HW #14 (Sections 7-1 & 7-2)	12-Dec	QZ #14 Due by 13-Dec
17**	12/14 – 12/18	Final Exam (Computer) Available on 14-Dec & Must complete by 17-Dec		

^Drop Dates: September 14, 2015 – Last day to withdraw without a W grade

\*Holidays: September 7, 2015 – Labor Day  
November 11, 2015 – Veterans' Day  
November 26-27, 2015 – Thanksgiving Break