

City College of NY: Department of Mathematics
Mathematics 20200 (Calculus II) Syllabus

Prerequisite: Grade of C or higher in Math 20100 or its equivalent

Text: 1. Text: *Essential Calculus* 2st edition by James Stewart, 2013, Cengage Learning (Thompson-Brooks-Cole):

ISBN10: 1133112293	ISBN 13: 9781133112297
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2. Review of Conic Sections by James Stewart (available in CCNY Math Dept web page of MATH 20200)

[\[http://math.sci.ccny.cuny.edu/course/list\]](http://math.sci.ccny.cuny.edu/course/list)

3. Rotation of Axes Notes by Professor J. Douglas Faires, Youngstown State University (also available in CCNY Math Dept web page of MATH 20200)

<http://www.as.ysu.edu/~fares/PreCalculus4/rotatedconics.pdf>

<p>COURSE #: 20200 COURSE TITLE: Calculus II</p> <p>CATEGORY: Introductory TERM OFFERED: Every Term HOURS/CREDITS: 4 hrs/wk; 3 credits DATE EFFECTIVE: 08/25/16 COURSE COORDINATOR: Mr. Chun S. Park</p>	<p>CATALOG DESCRIPTION</p> <p>Applications of integration to areas and volumes of revolution. Integration techniques. Introduction and application of the calculus of e, logarithms. Improper integrals and L'Hopital's Rule. Polar coordinates.</p>
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		NOTE: 1 Unit = 50 minutes
Section	Title	Unit
5.1	Inverse Functions	1.5
5.2	The Natural Logarithmic Function	1.5
5.3	The Natural Exponential Function	1.5
5.4	General Logarithm and Exponential Functions	1.5
5.5	Exponential Growth and Decay (Omit Compound Interest)	1.5
5.6	Inverse Trigonometric Functions	2
5.7	Hyperbolic Functions	1.5
5.8	Indeterminate Forms and L'Hospital's Rule	2.5
6.1	Integration by Parts	2
6.2	Trigonometric Integrals and Substitutions	4
6.3	Partial Fractions	3
6.5	Approximate Integrals (set up the expansion "calculators are not allowed")	1.5
6.6	Improper Integrals	2.5
7.1	Areas Between Curves	2
7.2	Volumes by Method of Disc or Washer	1.5
7.3	Volumes by Cylindrical Shells	1.5
7.4	Arc Length	1.5
7.5	Work (Omit: Hydrostatic Pressure and Force, Moments and Centers of Mass)	2.5
9.1	Parametric Curves (Omit Graphing Devices)	1.5
9.2	Calculus with Parametric Curves	2

9.3	Polar Coordinates	2.5
9.4	Areas and Lengths in Polar Coordinates	2.5
	Conic Sections (Shifted Conics) [use Review of Conic Sections by James Stewart]	2
	Conic Sections (Rotation of Axes) [use Rotation of Axes by J. Douglas Faires]	2

Total 48 hours

There are usually 56 semester hours.

COURSE LEARNING OUTCOMES

The student is expected to acquire the skills which are presented in the text and demonstrated by the instructor in class. These skills include the following, with associated departmental learning outcomes(see below):

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| 1. use of integration to compute areas and volumes of revolution. | a,b |
| 2. solution of work problems. | c |
| 3. use of integration techniques to integrate. | a |
| 4. use of the calculus of exponentials and logarithms. | a,b |
| 5. definition and calculation of Improper integrals. | a, e1, e2. |
| 6. use of L'Hospital's Rule. | a. |
| 7. sketching and integration using polar coordinates. | a,b |

COURSE ASSESSMENT TOOLS

Please describe below all assessment tools that are used in the course.
You may also indicate the percentage that each assessment contributes to the final grade.

- 3 or 4 in class tests
- departmental final exam

DEPARTMENTAL LEARNING OUTCOMES (to be filled out by departmental mentor)

The mathematics department, in its varied courses, aims to teach students to

- perform numeric and symbolic computations*
- construct and apply symbolic and graphical representations of functions*
- model real-life problems mathematically*
- use technology appropriately to analyze mathematical problems*
- state (e1) and apply (e2) mathematical definitions and theorems*
- prove fundamental theorems*
- construct and present (generally in writing, but, occasionally, orally) a rigorous mathematical argument.*

Course Supervisor: Mr. Chun S. Park