University of International Business and Economics

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International Summer School

MAT 120 Calculus II

Term: May 28th – June 28th, 2018
Instructor: Dr. Sergei V. Shabanov
Home Institution: University of Florida, Gainesville, USA
Office hours: to be announced
Discussion sessions: each Wednesday, time TBD
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Teaching Assistant: TBD
Total Contact Hours: 66 contact hours (45 minutes each)
Credit: 4 units

Course Description:
The course covers basic concepts and methods of integration of functions of one real variable, in particular, integration by parts, change of variables, integration of rational and trigonometric functions. It includes some applications of integration to calculating areas of planar regions, volumes of solids invariant under rotations about an axis, length of planar curve, and surface area, and probability. The second part of the course includes numerical sequences and series, basic criteria for convergence of a numerical series, and power series. The final part contains planar parametric curves and conic sections.

Course Goals:
A student who satisfactorily completes this course should be able to:

- ✧ Evaluate basis integrals (definite, indefinite, and improper);
- ✧ Calculate areas of planar figures, volumes of rotationally symmetric solids, etc.;
- ✧ Analyze convergence of basic numerical series;
- ✧ 4. Analyze properties of power series (radius of convergence, differentiation and integration of a power series).

Required Text:
M. Bona and S.V. Shabanov, Concepts in Calculus II, ISBN 978-1-61610-156-5, University Press of Florida (2012). A free PDF file of the latest 2014 edition of the textbook will be provided to all students enrolled into the course. Please do not buy a beta version of the book available online.

Prerequisites:
The course is based on Calculus I or its equivalent. Students are expected to know basic concepts of calculus for functions of a single real variable. They include: basic elementary functions and their properties, differentiation and geometrical significance of the derivative, definite and indefinite integrals, Fundamental Theorem of Calculus, indefinite integrals of basic elementary functions.

Exams:
There will be five one-hour exams. The exam dates are given in the course schedule below. Each exam contains 8 problems, 5-6 of which are taken directly from the homework assignment for the week prior to the exam or from Examples discussed in the textbook. The other 3-2 problems are conceptually similar to the homework problems. There will be one non-standard extra credit problem in each exam. All exams are free-response assignments. No credit for plain answers. The logic and technical details of solutions must be given in order to get a credit. No notes, no books, no calculators or any other electronic devices are permitted on the exams. One formula sheet is permitted. Makeups for missed exams are only with a written medical excuse approved by the school administration.

Grading Policy:
In five written assignments, there are total 40 problems. Each problem is worth a point if it is solved correctly. So the perfect score is 40 for regular problems (and 45 with all extra credit problems). There is a small partial credit for incomplete solutions (a fraction of a point). If P is the total number of points, then the course score G=100(P/40), that is, G=100 if P=40 and G=50 if P=20, etc.

Grading Policy:
If G is the course score as defined above, then the grade thresholds are

A	90 and above	**C+**	65-69
A-	85-89	**C**	60-64
B+	80-84	**C-**	55-59
B	75-79	**D**	50-54
B-	70-74	**F**	below 50

It should be noted that in many US colleges **C-** is not a passing grade if the course is required for a major.

General expectations:
Students are expected to:

- ✧ Do the homework regularly, even though the homework is not to be turned in. Remember that to get points toward your grade, every week you have to solve 5-6 problems randomly chosen from homework problems and 3-2 problems very similar to those in the homework or Examples in the textbook. So, read Examples in the textbook while doing the homework and review your solutions before exams.
- ✧ Review class notes and, if necessary, read the corresponding sections in the textbook, clarify questions about basic concepts of the course during office hours.
- ✧ Attend all classes and be responsible for all material covered in class and otherwise assigned. Any unexcused absence may impact a student's grade.
- ✧ Refrain from texting, phoning or engaging in computer activities unrelated to class during class. Students who do not do this will be asked to leave the class
- ✧ Participate in class discussions and complete required written work on time. While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.

Attendance policy:
Summer school is very intense and to be successful, students need to attend *every class*. Occasionally, due to illness or other unavoidable circumstance, a student may need to miss a class. A medical

certificate is required to be excused. Any absence may impact on the student's grade. Arriving late or leaving early will count as a partial absence. If a student is missing less than a point for a better grade, the better grade will be given, provided the student had no unexcused absences during the course.

Academic honesty:

Students are expected to maintain high standards of academic honesty. Specifically, no notes, no electronic devices, no books are permitted on Exams. One formula sheet on a piece of paper of a standard format (e.g., A4) is allowed on Exams. Admission to Exams is only with a picture ID. Zero tolerance to any kind of cheating (e.g., copying solutions from classmates, use of unauthorized materials or devices). Failure to abide by this will result in a zero score on the examination, or even failure in the course.

Course schedules and homework assignments:

The planned schedule sketched out below may be modified to suit the interests or abilities of the enrolled students or to take advantage of special opportunities or events that may arise during the term.

WEEK ONE (May 28 – May 31): Methods of Integration

Mon: Review of basic concepts of the integration theory, Assignment: A handout and 40.1(3-5, 13, 18, 19)
Tues: Sections 41-42, Assignment: 41.4 (1, 2, 4, 9, 12, 14, 16), 42.4 (1-5, 9, 11-13, 18, 19)
Wed: Sections 43-44, Assignment: 43.4 (2-7, 16-19), 44.4 (1- 3, 7-10, 13-15, 17, 18)
Thurs: Section 45, 48, Assignment: 45.5 (1-9, 19, 20), 48.4 (1-8, 11, 14-17)

WEEK TWO (June 4 – June 7): Applications of Integration

Mon: Exam 1 covers Sections 40-48 (one hour), Sections 36, Assignment: 36.4 (1-6, 12-14),
Tues: Sections 37-38, Assignment: 37.6 (1-4, 11-13), 38.2(1-3, 9-13)
Wed: Sections 39, 60-61, Assignment: 39.3(1-3, 5, 8, 9, 13), 60.3 (1-3, 6), 61.3 (1, 3, 5, 9, 10)
Thurs: Sections 62, 64, Assignment: 62.3 (1, 5, 7), 64.3 (1-10)

WEEK THREE (June 11 – June 14): Sequences and Series

Mon: Exam 2 covers Sections 36-39, 60-64 (one hour), Section 49, Assignment: 49.4 (1, 3, 4, 6, 7, 14, 15, 22, 28, 29)
Tues: Sections 50-51, Assignment: 50.2 (1, 3, 9, 12-14, 24), 51.4 (1, 2, 5-7, 12-14, 18)
Wed: Sections 52-53, Assignment: 52.4 (1-6, 16, 17, 24), 53.2 (1-6, 11, 16, 19, 23)
Tues: Sections 54-55, Assignment: 54.2 (1, 3-11, 21-23), 55.7 (1-6, 10-14, 21, 22)

WEEK FOUR (June 18 – June 21): Sequences and Series (continued)

Mon: Exam 3 covers Sections 49-55 (one hour), Section 56, Assignment: 56.2 (1, 2, 5, 6, 8, 11, 16, 17)
Tues: Section 57, Assignment: 57.3 (1, 2, 6, 7-10, 17, 18)
Wed: Sections 58-59, Assignment: 58.5 (1-3, 7, 13, 15, 16), 59.5 (1, 3, 5, 6, 7, 10, 11, 20, 21, 28, 30)
Thurs: Sections 65-66, Assignment: 65.4 (1-6, 13, 15), 66.4 (1, 4, 7, 10, 12, 19)

WEEK FIVE (June 25 – June 28): Integration

Mon: **Exam 4 covers Sections 56-59 (one hour),** Section 67, Assignment: 67.5 (1, 2, 3, 6, 11, 15, 19)
Tues: Section 68, Assignment: 68.5 (1-3, 8, 9, 13, 15),
Wed: Sections 69-70, Assignment: 69.4 (1, 2, 10, 13, 14), 70.6 (1-9, 11-13, 18-21)
Thurs: Discussion and **Exam 5 covers Sections 65-70 (one hour).**