

MATH 101: INTEGRAL CALCULUS WITH APPLICATIONS TO PHYSICAL SCIENCES AND ENGINEERING

SUMMER 2017

Instructor: Kateryna Melnykova
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General information.

Lecture times: Monday, Thursday, Friday 16.00-18.00;
Wednesday 16.00-17.00 in LSK200

Office hours: Wednesday 2:00pm-3:00pm and Thursday 2:00pm-3:00pm at LSK300C

Course webpage: <http://www.math.ubc.ca/~melnykova/teaching/MATH101/>

Recommended (not required) textbook: "Integral Calculus Notes for Mathematics 101" written by our UBC professors Joel Feldman and Andrew Rechnitzer
http://www.math.ubc.ca/~feldman/m101/clp/clp_notes_101.pdf

iClicker: required

Piazza webpage: <https://piazza.com/class/j3xjsnw1iy13u6>

Course description.

Sequences and limits; Riemann sums; definite and indefinite integration; the fundamental theorem of calculus; substitution methods; improper integrals; work, volume, and centroids; integration by parts; partial fraction decomposition; approximation of integrals; separable differential equations; series; convergence tests; absolute and conditional convergence; Taylor series; power series.

Mark breakdown.

50% Final exam
40% Quizzes (on Wednesdays; best 4 of 5 will be counted)
10% WeBWorK (due Fridays at 22.00)

Homeworks will cover topics learnt in the previous calendar week; the final exam will be cumulative.

Tentative schedule.

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| Week 1. | Areas and Distances The Definite Integral The Fundamental Theorem of Calculus Indefinite Integrals and the Net Change Theorem The Substitution Rule |
| Week 2. | Areas Between Curves Volumes Integration by Parts Trigonometric Integrals |

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| Week 3. | Trigonometric Substitution Integration of Rational Functions by Partial Fractions Approximate Integration Improper Integrals |
| Week 4. | Applications to Physics and Engineering Separable Equations Sequences, Their Limits and Properties. Squeeze theorem. |
| Week 5. | Series The Integral Test and Estimates of Sums The Comparison Test Alternating Series Absolute Convergence and the Ratio and Root Tests |
| Week 6. | Power Series Representations of Functions as Power Series Taylor and Maclaurin Series |

Academic misconduct.

The official policy of UBC on academic misconduct is outlined on this webpage:

<http://www.calendar.ubc.ca/vancouver/?tree=3,54,111,959>

Any form of academic misconduct, including (but not limited to) plagiarism, cheating, or impersonation of another student, is taken very seriously by UBC. Cases of possible academic misconduct are reported to the undergraduate chair, then forwarded to the faculty of science. After due investigation, students found in breach of the academic honesty policy are usually given a grade of 0 for the course, possibly together with other penalties such as suspension, forfeiture of scholarships, or possible expulsion; information on penalties is available on this webpage:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,960>