
REGISTRATION METHODS

Upon registration, \$30.00 is payable to the University of New Brunswick. This fee is non-refundable.

The deadline for registration is May 30, 2018.

ONLINE APPLICATION (credit card only)

Please go to www.math.unb.ca/challenge to complete the registration submission online and to make payment with a credit card. Full payment is required at the time the registration is submitted.

DROP IN

Registration can also be made in person by visiting our office at 9 Macaulay Lane, Fredericton, NB to fill out the registration form and make payment. We are located on the 4th floor of Tilley Hall, Room 418, UNB Fredericton Campus. We only accept cheque/money order/cash if you come in person.

MAIL IN PAYMENT

Please go to www.math.unb.ca/challenge and print the pdf version of the registration form. Complete the form and include payment. **Cheque or money order is made payable to the University of New Brunswick** and sent to the address (Fredericton or Saint John) on the form.

If you have any questions regarding the Calculus Challenge Exam please contact:

Fredericton Campus:

Dr. Alyssa Sankey

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Department of Mathematics & Statistics

University of New Brunswick

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Fredericton, NB Canada E3B 5A3

Saint John Campus:

Dr. Rebecca McKay

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Department of Mathematics & Statistics

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Saint John, NB Canada E2L 4L5



UNB'S CALCULUS CHALLENGE EXAM

INFORMATION BROCHURE

The Calculus Challenge Exam is open to all high schools across New Brunswick.

The exam can be written at either UNB campus location: Fredericton or Saint John.

2018 Exam Date: June 6th



THE UNIVERSITY OF NEW BRUNSWICK

THE UNIVERSITY OF NEW BRUNSWICK CALCULUS CHALLENGE EXAM

Eligibility

To be eligible for the exam, a student must be registered in a calculus course at a high school or have completed such a course.

In New Brunswick, students should be taking Calculus 120 or have completed it last Fall.

Permission to participate in this exam is not granted to students who have already started college or university.

Students may only attempt this exam once.

Credit

A letter grade of B- or higher must be achieved on the exam to qualify for credit.

Students who pass this examination will receive a certificate from UNB entitling them to credit for an exemption from Math 1003, only if they register at UNB. Accepting credit for Math 1003 is optional.

Upon the student's acceptance of credit, the letter grade of the exam will be recorded on their transcript.

Students who accept credit for Math 1003 should consult their program advisor or the Department of Mathematics and Statistics for individual advising on course choices.

Calculus Challenge Exam Topics

1. Functions and Graphs

- Combinations of functions, including composites, transformations
- Trigonometric functions
- Inverse trig functions
- Hyperbolic functions
- Exponential and logarithmic functions

2. Limits

- Limit laws
- Continuity
- Limits at infinity and horizontal asymptotes
- Infinite limits and vertical asymptotes
- Indeterminate forms and L'Hospital's rule

3. Derivatives

- Definition of the derivative, calculation from the definition
- Tangent lines
- Derivative rules: product, quotient, chain rules

- Derivatives of trig and inverse trig functions
- Derivatives of exponential and logarithmic functions
- Derivatives of hyperbolic functions
- Implicit differentiation

Logarithmic differentiation

4. Antiderivatives

- Basic integration formulas (from known derivatives)

5. Applications

- Rates of change, examples in natural and social sciences, position-velocity-acceleration
- Related rates
- Local/absolute extrema
- Curve sketching
- Optimization

6. Theorems

- Intermediate Value Theorem
 - Extreme Value Theorem
 - Rolle's Theorem and Mean Value Theorem
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