# Course Syllabus for MATH 104

| COURSE NAME | TERM/YEAR: |
|---|---|
| Differential Calculus with Applications to Commerce and Social Sciences | Winter 2020 (Sep 14th) |

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## COURSE DESCRIPTION:

This course examines the concept of functions, limits, continuity, asymptotes, differentiation, derivatives of polynomial, exponential, and trigonometric functions, the product and quotient rules, the chain rule, implicit differentiation. Applications to commerce and social sciences.

## COUSE PRE-REQUISITE(S):

Principles of Math 12

## REQUIRED TEXTS & RESOURCES:

Stewart, James. *Single Variable Calculus: Early Transcendentals, Volume I, 8th Edition.*
ISBN: 978-1-305-27034-3
or
Stewart, James. *Calculus: Early Transcendentals, 8th Edition*. (eBook)
ISBN: 978-1-305-79905-9
Available at www.nelson.com

## COURSE REQUIREMENTS:

All students are expected to access Canvas weekly to watch the lectures and study the textbook to achieve the learning objectives. Also they are expected to do the weekly assignments based in the textbook and submit them on time. Assignments are important part of the course evaluation. Students must also submit the mandatory **video assignment** by due time to pass the course. Access to **Microsoft Excel** or **Mathcad software** or **graphing calculator** is recommended, and it would help to better understand and experiment the course content.

## GRADE DISTRIBUTION:

The grading schema for the course is as follows: (Students must pass the final exam, in order to pass the course. Also, students must submit the **video assignment** in order to pass the course.)

|  | GRADE % |
|---|---|
| Assignments | 30% |
| Midterm (Remotely proctored online) Webcam required | 30% |
| Final Exam (Remotely proctored online) Webcam required | 40% |

## COURSE POLICIES:

It is the responsibility of every student to read and understand the College Policies.  The College Policies on Academic Honesty, Academic and Exam Accommodations, Grading Practices, Student Conduct, Technology Usage, and more can be found here: http://corpuschristi.ca/about-us/academic-policies

In addition to the College Policies, this course also upholds the following policies and practices:

## TESTS:

- There will be a midterm and a final exam, which will cover the entire course material.

## GRADING SCALE:

| LETTER GRADE | NUMERICAL EQUIVALENTS | GRADE POINT | GRASP OF SUBJECT MATTER | OTHER QUALITIES EXPECTED OF STUDENTS |
|---|---|---|---|---|
| **A RANGE:** | | | Excellent: Student shows original thinking, analytic and synthetic ability, critical evaluations, broad knowledge base. | |
| A+ | 90-100 | 4.33 | Extraordinary | Strong evidence of original thought, of analytic and synthetic ability. Superior grasp of subject matter with sound and penetrating critical evaluations, which identify assumptions of those they study as well as their own; ; mastery of an extensive knowledge base. |
| A | 85-89 | 4.0 | Excellent | Clear evidence of original thinking, of analytic and synthetic ability; Strong grasp of subject matter with sound critical evaluations; evidence of broad knowledge base. |
| A- | 80-84 | 3.67 | Very, very good | Strong grasp of subject matter and sound critical assessments with appreciation for the larger context. |

| **B RANGE:** | Good: Student shows critical capacity and analytic ability, understanding of relevant issues, familiarity with the literature. |
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| LETTER GRADE | NUMERICAL EQUIVALENTS | GRADE POINT | GRASP OF SUBJECT MATTER | OTHER QUALITIES EXPECTED OF STUDENTS |
|---|---|---|---|---|
| B+ | 76-79 | 3.33 | Very good | Good critical capacity and analytic ability; reasonable understanding of relevant issues; good evidence of familiarity with literature |
| B | 72-75 | 3.0 | Good | |
| B- | 68-71 | 2.67 | Satisfactory | Adequate critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with literature. |

| C RANGE | | Acceptable to minimum. | | |
|---|---|---|---|---|
| C+ | 64-67 | 2.33 | Acceptable | Very basic critical capacity and analytic ability; some understanding of relevant issues; some evidence of familiarity with literature. |
| C | 60-63 | 2.0 | Barely Acceptable | Generally clear in expression but deficient in analysis or in structure. |
| C- | 55-59 | 1.67 | Needs Improvement | Acceptable in expression but deficient in both analysis and in structure. |
| D | 50-54 | 1.0 | Minimum Pass | Addresses the topic but significant deficiencies in expression, analysis and structure. |

| FAILED | | | | |
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| F | 0-49 | 0 | | Failure to meet the above criteria |

## COURSE SCHEDULE
The following schedule may be altered according to the instructor´s judgment.

| Week | Date(s) | Course Content | Readings For Each Class | Other Information |
|---|---|---|---|---|
| | | | | |
| 1 | Sep 14-21 | Four Ways to Represent a Function, Mathematical Models: A Catalog of Essential Functions, New Functions from Old Functions | §1.1 §1.2 §1.3 | **Homework-1, Due Sep 21th** |
| 2 | Sep 21-28 | Exponential Functions, Inverse Functions and Logarithms | §1.4 §1.5 | **Homework-2, Due Sep 28th** |
| 3 | Sep 28-Oct 5 | The Tangent and Velocity Problems, The Limit of a Function, Calculating Limits Using the Limit Laws | §2.1-2.3 | **Homework-3, Due Oct 5st** |

| Week | Date(s) | Course Content | Readings For Each Class | Other Information |
|------|---------|----------------|-------------------------|-------------------|
| 4 | Oct 5-12 | Continuity, Derivatives and rate of change Derivative as a function | §2.5,2.7 §2.8 | **Homework-4, Due Oct 12th** <br> **Video assignment Due Oct 11th** |
| 5 | Oct 12-19 | Derivatives of Polynomials and Exponential Functions, The Product and Quotient Rules, Derivatives of Trigonometric Functions | §3.1-3.3 | **Homework-5, Due Oct 19th** <br><br> **Midterm** |
| 6 | Oct 19-26 | The Chain Rule, Implicit differentiation, Derivative of logarithmic functions | §3.4, 3.5, 3.6 | **Homework-6, Due Oct 26th** |
| 7 | Oct 26-Nov 2 | Rates of Change in the Natural and Social Sciences, business and economics, Maximum and Minimum Values, Optimization Problems with application in economics | §3.7 §4.1, 4.7 | **Homework-7, Due Nov 2nd** |
| 8 | Nov 2-6 | Final Exam (TBD) | | **Final Exam** |

# Appendix

**RECOMMENDATIONS FOR RELATED COURSES AT CORPUS CHRISTI COLLEGE:**

Students are recommended to take MATH 105: Integral calculus (online) after this course.

**OTHER RELEVANT INFORMATION FOR THIS COURSE:**

*Credit transferability*: Consult http://www.bctransferguide.ca

*The calculator question*: Although graphing calculators may be helpful in exploring the topics in this course, they will not be permitted for midterm or final exam. Only basic non-programmable, non-graphing scientific calculators will be permitted. Therefore, the purchase of a graphing calculator for the purposes of this course is unnecessary. The following free-of-charge sites are other options for the purposes of exploration and consolidation of learning:
> https://www.desmos.com/calculator
> https://desmos.s3.amazonaws.com/Desmos_User_Guide.pdf
> http://www.wolframalpha.com/

*Full textbook step-by-step solutions*: Although the textbook provides solutions to odd numbered questions, students will find full solutions available on www.slader.com