

# **graduate COMMITTEE curriculum PROPOSAL FORM**

## A. Cover page (rover over text for more instructions- please delete red instructions)

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| A.1[. Course or program](#_acknowledge) | **MATH 510 Exploring Calculus: Renew, Revisit, Reexamine** |  |
| Academic Unit | Faculty of Arts and Sciences  |  |
| A.2. [Proposal type](#type) | Course: creation |  |
| A.3. [Originator](#Originator) | Leonardo Pinheiro. Lisa Humphreys  | [Home department](#home_dept) | Department of Mathematical Sciences |
| A.4. [Rationale](#Rationale) | This course should provide students with a deeper understanding and appreciation of calculus beyond the traditional calculus sequence. The class has been taught as a topics course over the years and it is a very popular choice for students in the M.A. program. We often see enrollment from CCRI professors and math teachers in public schools looking for professional development opportunities. |
| A.5. [Student impact](#student_impact) | The creation of this course will simplify course selection and advising.  |
| A.6. [Impact on other programs](#impact) | None |
| A.7. [Resource impact](#Resource) | [Faculty PT & FT](#faculty" \o "Need to hire new full-time or part-time faculty? This is where you indicate if this proposal will be affecting FLH in your department/program.):  | No change in faculty load hours. |
|  | [Library:](#library) | None  |
|  | [Technology](#technology) | None |
|  | [Facilities](#facilities): | None |
| A.8. [Semester effective](#Semester_effective) | Fall 2022 | A.9. [Rationale if sooner than next Fall](#Semester_effective) |  |
| A.10 [Changes to the website](#Signature_2) | None |

## B. NEW OR REVISED COURSES

|  | Old ([for revisions only](#Revisions))ONLY include information that is being revised, otherwise leave blank | NewExamples are provided within some of the boxes for guidance, delete just the examples that do not apply. |
| --- | --- | --- |
| B.1. [Course prefix and number](#cours_title)  |  | MATH 510 |
| B.2. Cross listing number if any |  |  |
| B.3. [Course title](#title)  |  | Exploring Calculus: Renew, Revit, Reexamine |
| B.4. [Course description](#description)  |  | A deeper analysis of the definitions, concepts and theorems of single variable calculus is presented. Classical and reform approaches are explored. Connections to higher mathematics are examined. |
| B.5. [Prerequisite(s)](#prereqs) |  | Graduate status or consent of department chair |
| B.6. [Offered](#Offered) |  | As needed. |
| B.7. [Contact hours](#contacthours)  |  | 3  |
| B.8. [Credit hours](#credits) |  | 3 |
| B.9. [Justify differences if any](#differences) |  |
| B.10. [Grading system](#grading)  | Letter grade | Letter grade |
| B.11. [Instructional methods](#instr_methods) |  | Lecture  |
| B.11.a [Delivery Method](#instr_methods) |  | On campus  |
| B.12.[Categories](#required) |  | Free elective  |
| B.13. [How will student performance be evaluated?](#performance) |  | Attendance | Class participation | Exams |Presentations | Papers | Class Work | | Projects  |
| B.14. [Redundancy with, existing courses](#competing) |  | None |
| B. 15. Other changes, if any |  |

| B.16. [Course learning outcomes](#outcomes): List each outcome in a separate row | [Professional organization standard(s)](#standards), if relevant  | [How will each outcome be measured?](#measured) |
| --- | --- | --- |
| Students will understand the statements and proofs of the main theorem of single-variable calculus. |  | See B.13.  |
| Students will make connections between the formal results of calculus and their intuitive understanding of the topics. |  | See B.13. |
| Students will understand different approaches to the teaching of calculus including classical and reformed calculus . |  | See B.13. |
| Students will make connections between calculus and other areas of the K-16 curriculum. |  | See B.13. |

| B.17. [Topical outline](#outline): Please do not include a full syllabus |
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| 1.Formal Definition of a Limit (delta-epsilon)2.Formal Definition of Continuity3.The Intermediate Value Theorem4.Differentiability & Continuity & Limit Connections5.The Extreme Value Theorem6.The Mean Value Theorem7. Formal Definition of the Definite Integral8. The Fundamental Theorem of Calculus9. L’Hopital’s Rule10. Arc Length11.Volumes of Revolution |

## D. Signatures

##### D.1. Approvals:

##### Required from department chairs, program directors, and deans from the academic unit originating the proposal.

| Name | Position/affiliation | [Signature](#_Signature" \o "Insert electronic signature, if available, in this column) | Date |
| --- | --- | --- | --- |
| Dr. Lisa Humphreys  | Program Director - Mathematical Studies M.A. | Lisa Humphreys | 03/18/2022 |
| Dr. Rebecca Sparks | Chair of Mathematical Sciences | Rebecca Sparks | 03/18/2022 |
| Dr. Earl Simson | Dean of Arts and Sciences | Earl Simson | 04/01/2022 |