# http://www.ric.edu/webcommunications/images/SealWithText_Small_Black.pngUNDERGRADUATE CURRICULUM COMMITTEE (UCC)PROPOSAL FORM

## Cover page scroll over blue text to see further important [instructions](#instructions): please read.

**N.B. DO NOT USE HIGHLIGHT, please DELETE THE WORDS THAT DO NOT APPLY TO YOUR PROPOSAL**

**ALL numbers in section (A) need to be completed, including the impact ones.**

|  |  |  |
| --- | --- | --- |
| A.1. [Course or program](#Proposal) | **PhyS 104 Calculus Applications in Electricity and Magnetism** |  |
| [Replacing](#Ifapplicable)  |  |
| A.2. [Proposal type](#type) | **Course: creation**  |
| A.3. [Originator](#Originator) | **Andrea Del Vecchio** | [Home department](#home_dept) | **Physical Sciences** |
| A.4. [Context and Rationale](#Rationale)  | **This elective one credit course would be a supplement to PHYS 102 and would further explore topics introduced in PHYS 102 by introducing a calculus-based approach to these topics. Since we are removing the calculus-based physics course from the curriculum, this course would allow students to cover the more mathematically rigorous material that is not in PHYS 102. This course is intended primarily for physics majors to prepare them for upper level physics courses, but would allow any student who has taken PHYS 102 and MATH 212 to explore more mathematically rigorous approaches to physics.** |
| A.5. [Student impact](#student_impact) | **Students would have the opportunity to improve their understanding of the role calculus plays in physics.** |
| A.6. [Impact on other programs](#impact)  | **None.** |
| A.7. [Resource impact](#Resource) | [*Faculty PT & FT*](#faculty):  | **Since this course is only one credit, it will have minimal faculty load impact** |
| [*Library*:](#library) | **none** |
| [*Technology*](#technology) | **none** |
| [*Facilities*](#facilities): | **none** |
| A.8. [Semester effective](#Semester_effective) | **Fall, 2019** | A.9. [Rationale if sooner than next Fall](#Semester_effective) |  |
| A.10. INSTRUCTIONS FOR CATALOG COPY: This single file copy must include ALL relevant pages from the college catalog, and show how the catalog will be revised. (1) Go to the “Forms and Information” page on the UCC website. Scroll down until you see the Word files for the current catalog. (2) Download ALL catalog sections relevant for this proposal, including course descriptions and/or other affected programs. (3) Place ALL relevant catalog copy into a single file. Put page breaks between sections and delete any catalog pages not relevant for this proposal. (4) Using the track changes function, revise the catalog pages to demonstrate what the information should look like in next year’s catalog. (5) Check the revised catalog pages against the proposal form, especially making sure that program totals are correct if adding/deleting course credits. If new copy, indicate where it should go in the catalog. If making related proposals a single catalog copy that includes all is acceptable. Send as a separate file along with this form. |

B. [NEW OR REVISED COURSES](#delete_if)  **DO NOT use highlight. Delete this whole page if the proposal does not include a new or revised course.**

|  | Old ([for revisions only](#Revisions))Only include information that is being revised, otherwise leave blank (delete provided examples that do not apply) | NewExamples are provided for guidance, delete the ones that do not apply |
| --- | --- | --- |
| B.1. [Course prefix and number](#cours_title)  |  | **PHYS 104** |
| B.2. Cross listing number if any |  |  |
| B.3. [Course title](#title)  |  | **Calculus Applications in Electricity and Magnetism** |
| B.4. [Course description](#description)  |  | **Students explore calculus-based topics in electricity and magnetism including force from extended charge distributions, calculation of electric potential, Gauss’s Law, Ampere’s Law, Faraday’s Law and electromagnetic waves.** |
| B.5. [Prerequisite(s)](#prereqs) |  | **PHYS 102, MATH 212** |
| B.6. [Offered](#Offered) |  | **Spring** |
| B.7. [Contact hours](#contacthours)  |  | **1** |
| B.8. [Credit hours](#credits) |  | **1** |
| B.9. [Justify differences if any](#differences) |  |
| B.10. [Grading system](#grading)  |  | **Letter grade**  |
| B.11. [Instructional methods](#instr_methods) |  | **|Lecture | Small group |**  |
| B.12.[Categories](#required) |  | **Free elective**  |
| B.13. Is this an Honors course? |  | **NO** |
| B.14. [General Education](#ge)N.B. Connections must include at least 50% Standard Classroom instruction. |  | **NO |****:** |
| B.15. [How will student performance be evaluated?](#performance) |  | **Attendance | Class participation | Exams |** **Class Work | Quizzes |** |
| B.16. [Redundancy statement](#competing) |  |  |
| B. 17. Other changes, if any |  |

| B.18**.** [**Course learning outcomes**](#outcomes)**: List each one in a separate row** | [**Professional Org.Standard(s)**](#standards)**, if relevant** | [**How will each outcome be measured**](#measured)**?** |
| --- | --- | --- |
| 1. Use integration to calculate the Coulomb force from extended charge distributions. |  | Homework and assessments |
| 2. Use integration to calculate the electric potential of different charge distributions. |  | Homework and assessments |
| 3. Calculation of the electric field with Gauss;s Law |  | Homework and assessments |
| 4. Calculation of the magnetic field with Ampere’s Law |  | Homework and assessments |
| 5. Understand the relationship between electric and magnetic fields. |  | Homework and assessments |

| B.19. [**Topical outline**](#outline)**: Do NOT insert whole syllabus, we just need a two-tier outline** |
| --- |
| 1. Coloumb’s Law and extended charge distributions
	1. Review of Coulomb’s Law calculations for point sources
	2. Using integration to find the force from an extended charge distribution

2) Electic potential a) Definition of electric potential in terms of work b) Calculation of the electric potential of various charge Distributions.3. Introduction to the Maxwell Equations a) Gauss’s Law and the electric field b) Ampere’s Law and the magnetic field c) Faraday’s Law and electromagnetic induction d) Electromagnetic waves |
|  |

## D. Signatures

* Changes that affect General Education in any way MUST be approved by ALL Deans and COGE Chair.
* Changes that directly impact more than one department/program MUST have the signatures of all relevant department chairs, program directors, and relevant dean (e.g. when creating/revising a program using courses from other departments/programs). Check UCC manual 4.2 for further guidelines on whether the signatures need to be approval or acknowledgement.
* Proposals that do not have appropriate approval signatures will not be considered.
* Type in name of person signing and their position/affiliation.
* Send electronic files of this proposal and accompanying catalog copy to curriculum@ric.edu and a printed or electronic signature copy of this form to the current Chair of UCC. Check UCC website for due dates.

##### D.1. Approvals: required from programs/departments/deans who originate the proposal. may include multiple departments, e.g., for joint/interdisciplinary prposals.

| Name | Position/affiliation | [Signature](#_Signature" \o "Insert electronic signature, if available, in this column) | Date |
| --- | --- | --- | --- |
| Sarah Knowlton | Chair of Physical Sciences  |  |  |
| Earl Simson | Dean of Arts and Sciences |  |  |
|  |  |  |  |

##### D.2. [Acknowledgements](#acknowledge): REQUIRED from OTHER PROGRAMS/DEPARTMENTS IMPACTED BY THE PROPOSAL. SIGNATURE DOES NOT INDICATE APPROVAL, ONLY AWARENESS THAT THE PROPOSAL IS BEING SUBMITTED. CONCERNS SHOULD BE BROUGHT TO THE UCC COMMITTEE MEETING FOR DISCUSSION

| Name | Position/affiliation | [Signature](#Signature_2) | Date |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  | Tab to add rows |