# 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): [if not working select “COMMents on rollover” in your Word preferences under view] please read these.

**N.B. Please do not use highlight to select choices within a category but simply delete the options that do not apply to your proposal (e.g. in A.2 if this is a course revision proposal, just delete the creation and deletion options and the various program ones, so it reads “course revision”) Do not ever delete any of the numbered categories—if they do not apply leave them blank. ALL numbered categories in section (A) must be completed. If there are no resources impacted it is okay to put “none” in A. 7**

|  |  |  |
| --- | --- | --- |
| A.1. [Course or program](#Proposal) | **BIOL 240 – Biostatistics and Experimental Design** |  |
| [Replacing](#Ifapplicable)  | **BIOL 240 – Biostatistics** |
| A. 1b. Academic unit | **Faculty of Arts and Sciences** |  |
| A.2. [Proposal type](#type) | **Course: revision**  |  |
| A.3. [Originator](#Originator) | **Dana Kolibachuk** | [Home department](#home_dept) | **Biology** |
| A.4. [Context and Rationale](#Rationale) Note: Must include additional information in smart tip for all [new programs](#type) | **Until this year BIOL 240 was taught by an instructor who recently retired (Roland de Gouvenain). The course has been adopted by new faculty member, Carla Narvaez Diaz, who has extensive experience teaching a very similar course at a different institution. Carla would like to make the following changes to reflect a slightly different emphasis in content and delivery.**1. **Change title to reflect additional content in experimental design.**
2. **Change course description to reflect a change in content coverage, particularly the use of a different statistical software program (SPSS** 🡪 **R). The latter is also free.**
3. **Change delivery structure to match that of typical biology laboratory courses due to what will be an increase in time working on computers in a lab situation working on programming. R is the most commonly used statistical software in biology (in part because it is free). But using R requires coding skills, that SPSS does not. Currently, the two 2-hour lecture format does not provide enough time with the instructor for students to work through coding and statistical concepts.**

**We propose two 1.5 hr lectures to facilitate instruction on statistics and experimental design plus a 3 hr lab session with students on computers where they work through statistical problems relevant to biology. Thus can be done in the biology classrooms as most have laptops and the department has ones they can borrow if not. Students generate a weekly lab report that reflects their increasing understanding of how experimental design determines statistical analyses. Learning coding skills represents significant challenges for students, so that time with the instructor is a necessary resource.** **This two 1.5 hr lecture + one 3 hr lab is typical of all currently offered biology laboratory courses. Student will get four credits and be in class for six hours.** |
| A.5. [Student impact](#student_impact)Must include to explain why this change is being made? | **Students will get additional time with the instructor as they learn the coding skills necessary to run statistical analysis. Because R is free, the skills they learn in this new iteration of this course will be applicable to many educational and workplace settings.****The weekly laboratory exercises will give the students practice in choosing the correct statistical analysis for different experimental designs, as well as analyzing, visualizing, and reporting the data from real world examples. The instructor will provide feedback in both statistical concepts and coding on each report.****Students will have 6 total contact hours instead of 4, which may present scheduling challenges, but it is usual for lab courses.****The change in delivery will not change the number of course credits, thus it will not impact the number of credits in the Biology BS or Biotechnology BS (proposed) programs where this course is an option.** |
| A.6.a. [Impact on other programs](#impact)  | **BIOL 240 has been and remains an option with MATH 240, in both the Biology BS and Biotechnology BS (proposed) programs, thus there should be no impact on class enrollments in Math. The course is also used in the Environmental Studies major and the Community and Public Health Promotion major, so those departments will need to be informed of the changes.**  |
| A.6.b. Will this impact [transfer agreements](Check%20relevant%20JAAs%2C%202%2B2s%2C%20and%20if%20a%20course%20you%20are%20revising%20or%20deleting%20is%20one%20with%20a%20transfer%20agreement)? Explain how and list what needs to be updated. | **No.** |
| A.7. [Resource impact](#Resource) | [*Faculty PT & FT*](#faculty):  | **This will change the faculty load for this course from 4 to 6 FLH. (Faculty in Biology receive 3 FLH for lecture and 3 FLH for lab.)** |
| [*Library*:](#library) | **None.** |
| [*Technology*](#technology) | **Students will be able to get the R program software for free and use it on their own laptops. Reservation of a campus computer lab will not be necessary.** |
| [*Facilities*](#facilities): | **None.**  |
| A.8. [Semester effective](#Semester_effective) | **Fall 2023** | A.9. [Rationale if sooner than next Fall](#Semester_effective) |  |
| A.10. INSTRUCTIONS FOR CATALOG COPY: Use the Word copy versions of the catalog sections found on the UCC Forms and Information page. Cut and paste into a single file **ALL the relevant pages from the college catalog that need to be changed.** Use tracked changes feature to show how the catalog will be revised as you type in the revisions. If totally new copy, indicate where it should go in the catalog. If making related proposals a single catalog copy that includes all changes is preferred. Send catalog copy as a separate single Word file along with this form. |
| A.11. List here (with the relevant urls), any RIC website pages that will need to be updated (**to which your department does not have access**) if this proposal is approved, with an explanation as to what needs to be revised:Change title of course on Biology course listings page:<https://ric.smartcatalogiq.com/en/2022-2023/Catalog/Courses/BIOL-Biology>Change title and description of course BIOL 240 page.<https://ric.smartcatalogiq.com/2022-2023/Catalog/Courses/BIOL-Biology/200/BIOL-240>Change title of course on Biology BS course requirements page.<https://ric.smartcatalogiq.com/en/2022-2023/Catalog/Faculty-of-Arts-and-Sciences/Biology/Biology-B-S>If Biotechnology program proposal is approved, the course title will also need to change on the future Biotechnology BS course requirements page. |

B. [NEW OR REVISED COURSES](#delete_if)  **Delete section B if the proposal does not include a new or revised course. As in section A. do not highlight but simply delete suggested options not being used. Always fill in b. 1 and B. 3 for context.**

|  | 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)  | **BIOL 240** |  |
| B.2. Cross listing number if any |  |  |
| B.3. [Course title](#title)  | **Biostatistics** | **Biostatistics and Experimental Design** |
| B.4. [Course description](#description)  | **Elementary probability theory serves as a foundation to learn research design, sampling, hypothesis testing, and statistical inferences in biology. Students use SPSS to statistically analyze problems typical of biological research.** | **Students will learn about experimental design, hypothesis testing, and statistical inference. Students use R to analyze problems typical of biological research and to visualize results. Lecture and laboratory. 6 contact hours**. |
| B.5. [Prerequisite(s)](#prereqs) |  |  |
| B.6. [Offered](#Offered) |  |  |
| B.7. [Contact hours](#contacthours)  | **4** | **6**  |
| B.8. [Credit hours](#credits) | **4** | **4** |
| B.9. [Justify differences if any](#differences) | **This is the typical credit (4) and contact hour (3+3) distribution for other biology laboratory courses.** |
| B.10. [Grading system](#grading)  |  |  |
| B.11. [Instructional methods](#instr_methods) |  |  |
| B.11.a [Delivery Method](#instr_methods) |  |  |
| B.12. CATEGORIES 12. a. [How](#required) to be used |  |  |
|  12 b. Is this an Honors  course? | **NO** | **NO** |
|  12. c. [General Education](#ge) N.B. Connections must include at  least 50% Standard Classroom instruction. | **NO** | **NO** |
|  12. d. Writing in the  Discipline (WID) | **NO** | **NO** |
| B.13. [How will student performance be evaluated?](#performance) |  |  |
| B.14 [Recommended class-size](#class_size" \o "Check appendix XVIII in the UCC Manual for Best Practices) |  | **24** |
| B.15. [Redundancy statement](#competing) |  |  |
| B. 16. Other changes, if any |  |

| B.17**.** [**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)**?** |
| --- | --- | --- |
|  |  | Click Tab from here to add rows |

| B.18. [**Topical outline**](#outline)**: DO NOT INSERT WHOLE SYLLABUS, JUST A TWO-TIER TOPIC OUTLINE. Proposals that ignore this request will be returned for revision.** |
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| * 1. No substantial changes.
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## 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 their 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 signature copy of this whole 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. THESE may include multiple departments, e.g., for joint/interdisciplinary proposals.

| Name | Position/affiliation | [Signature](#_Signature" \o "Insert electronic signature, if available, in this column) | Date |
| --- | --- | --- | --- |
| Earl Simson | Dean of FAS | \*approved by email | 2/24/2023 |
| Dana Kolibachuk | Chair of Biology | Dana Kolibachuk | 2/24/2023 |
|  |  |  |  |

##### D.2. [Acknowledgements](#acknowledge): REQUIRED from OTHER PROGRAMS/DEPARTMENTS (and their relevant deans if not already included above) that are 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; all faculty are welcome to attend.

| Name | Position/affiliation | [Signature](#Signature_2) | Date |
| --- | --- | --- | --- |
| Rebecca Sparks | Chair of Mathematics | \*acknowledged by e-mail | 2/27/2023 |
| April Kiser | Director of Environmental Studies | \*acknowledged by e-mail | 2/28/2023 |
| Jason Sawyer | Chair HPE/CPHP | \*Acknowledged by email | 2/28/2023 |
| Jeaninne Dingus-Eason | Dean FSEHD | \*Acknowledged by email | 2/28/2023 |
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