# 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. ALL numbered categories in section (A) must be completed. 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 delete any of the numbered categories—if they do not apply leave them blank. If there are no resources impacted please put “none” in each A. 7 category.**

|  |  |  |
| --- | --- | --- |
| A.1. [Course or program](#Proposal) | **BIOT 270W Introduction to Biotechnology** |  |
| [Replacing](#Ifapplicable)  |  |
| A. 1b. Academic unit | **Faculty of Arts and Sciences**  |  |
| A.2. [Proposal type](#type) | **Course: creation**  |  |
| 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) | **This course is the first course in the Biotechnology BS program, expected to be taken in the third year after two years of General Education and foundational courses in the sciences. This lecture/lab course will introduce students to the concepts and techniques used in biotechnology with an emphasis on drug discovery and development. As a WID course, conventions of laboratory notebook record keeping, standards of practice (SOPs), and reporting of experimental results will be taught.****It is expected that this course will be offered for the first time in Fall 2024.** |
| A.5. [Student impact](#student_impact)Must include to explain why this change is being made? | **To provide foundational material in biotechnology, this course is required for the Biotechnology BS program (proposed).** |
| A.6. [Impact on other programs](#impact)  | **Because CHEM 205W and BIOL 314 (which are part of the program) are listed as prerequisites to BIOT 270W, it is anticipated that additional seats will be needed in these and prerequisite courses in Biology and Chemistry (also part of the program).**  |
| A.7. [Resource impact](#Resource) | [*Faculty PT & FT*](#faculty):  | **One new full time faculty member is being funded by the state of RI. A search commences Spring 2023.** |
| [*Library*:](#library) | **None** |
| [*Technology*](#technology) | **None** |
| [*Facilities*](#facilities): | **Space in Fogarty Life Science is being remodeled for Biotechnology laboratory courses and is funded by the state of RI.** |
| 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:A new entry for BIOT-Biotechnology courses the Courses listing, after BIOL-Biology<https://ric.smartcatalogiq.com/en/2022-2023/Catalog/Courses/BIOL-Biology>to include this and the other proposed BIOT courses. |
| A. 12 **Check to see if your proposal will impact any of our** [**transfer** **agreements,**](transfer%20agreements) **and if it does explain in what way. Please indicate clearly what will need to be updated.****None of the cognate courses will be affected, but BIOT 270W courses may need to be articulated with other state institutions.**  |
| A. 13 Check the section that lists “Possible NECHE considerations” on the UCC Forms and Information page and if any apply, indicate what that might be here and contact Institutional Research for further guidance. |

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. NOTE: course learning outcomes and topical outlines only needed for new or substantially 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)  |  | **BIOT 270W** |
| B.2. Cross listing number if any |  |  |
| B.3. [Course title](#title)  |  | **Introduction to Biotechnology** |
| B.4. [Course description](#description)  |  | **Students will learn concepts and laboratory techniques relevant to biotechnology with an emphasis on drug discovery and development. Students will write lab notebook entries, standard operating protocols, and scientific reports. This is a Writing in the Discipline (WID) course. Lecture and laboratory. 6 contact hours.** |
| B.5. [Prerequisite(s)](#prereqs) |  | **BIOL 314 with a grade of C or better and CHEM 205W.** |
| B.6. [Offered](#Offered) |  | **Fall**  |
| B.7. [Contact hours](#contacthours)  |  | **6 (3 lecture, 3 lab)** |
| B.8. [Credit hours](#credits) |  | **4** |
| B.9. [Justify differences if any](#differences) | This is the typical lecture/lab allocation in Biology.  |
| B.10. [Grading system](#grading)  |  | **Letter grade**  |
| B.11. [Instructional methods](#instr_methods) |  | **Laboratory | Lecture**  |
| B.11.a [Delivery Method](#instr_methods) |  | **On campus**  |
| B.12. CATEGORIES 12. a. [How](#required) to be used |  | **Required for major** |
|  12 b. Is this an Honors  course? |  | **NO** |
|  12. c. [General Education](#ge) N.B. Connections must include at  least 50% Standard Classroom instruction. |  | **NO**  |
|  12. d. Writing in the  Discipline (WID) |  | **YES** |
| B.13. [How will student performance be evaluated?](#performance) |  | **Exams | Papers | Lab Work | Quizzes**  |
| B.14 [Recommended class-size](#class_size" \o "Check appendix XVIII in the UCC Manual for Best Practices) |  | **24** |
| B.15. [Redundancy statement](#competing) |  | **n/a** |
| 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)**?** |
| --- | --- | --- |
| 1. Describe and distinguish between various types of biotechnologies.
 |  | 1. B. 13.
 |
| 1. Explain the major steps, and required tests and trials, in drug discovery and development for small molecule and biologicals.
 |  | 1. B. 13
 |
| 1. Students will keep an electronic laboratory notebook that is accurate, complete, and organized.
 |  | 1. Laboratory notebooks will be assessed periodically.
 |
| 1. Describe biochemical binding parameters (Kd and Keq) associated with drug action, apply them to drug selectivity and possible off-target effects, and perform assays to determine drug action.
 |  | 1. B.13 (exams) and SOP.
 |
| 1. Describe, the components of SOPs (standard operating procedures). Construct and synthesize SOPs for use in the laboratory.
 |  | 1. B.13 and lab reports.
 |
| 1. Execute searches and synthesize information relevant to drug discovery and development using relevant databases. Use the information to develop a logically organized scientific report that is clear, concise, accurate and uses appropriate terminology
 |  | 1. Research report.
 |
| 1. Describe how drug exposures are measured, define clinically validated biomarkers, discuss the basic principles of selected ADME (absorption, distribution, metabolism, excretion) assays.
 |  | 1. B. 13
 |
| 1. Discuss the various phases of clinical trials and the range of activities involved.
 |  | 1. B.13
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| B.18. [**Topical outline**](#outline)**: DO NOT INSERT WHOLE SYLLABUS, JUST A TWO-TIER TOPIC OUTLINE suitable for the contact hours requested. Proposals that ignore this request will be returned for revision.** |
| --- |
| 1. Biotechnology overview
2. Stages of drug discovery and development
	1. Assay development
	2. Primary screening
	3. Lead optimization
	4. Preclinical studies
	5. Clinical trials
3. Mechanisms of drug action
	1. Small molecules
	2. Biologicals
4. Measures of distribution
	1. Pharmacokinetics
	2. Pharmacodynamics and relevant assays
5. Preclinical toxicology studies
	1. ADME (absorption, distribution, metabolism, excretion)
	2. FDA regulatory framework
6. Human clinical trials
	1. Phase I
	2. Phase II
	3. Phase III
7. Genes, genomes, and mutations
8. Research techniques commonly used in drug discovery
	1. DNA sequencing technologies
	2. Bioinformatics
	3. Disease model systems
	4. Small molecule screens
	5. Chemi-informatics and drug optimization
9. Non-drug applications of biotechnology
	1. Aquatic biotechnology
	2. Food biotechnology
	3. Bioremediation
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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 to the current Chair of UCC. Check UCC website for due dates. Do NOT convert to a .pdf.

##### 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 | \*Approved by email | 2/24/2023 |
| Andrea Del Vecchio | Chair of Physical Sciences | \*Approved by email | 3/3/2023 |
| Michael Michaud | Chair, Writing Board | \*Approved by email  | 2/28/2023 |

##### 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 |
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