

Cover Sheet: Request 11708

MCB 4XXX Applications and Technologies of Synthetic Biology

Info

Process	Course New Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Monika Oli molli@ufl.edu
Created	6/15/2017 9:59:59 AM
Updated	11/22/2019 4:13:41 PM
Description of request	Approval of new course: Applications and Technologies of Synthetic Biology- MCB 4xxx

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett		6/15/2017
No document changes					
College	Recycled	CALS - College of Agricultural and Life Sciences	Joel H Brendemuhl	Email sent to submitter with comments.	8/31/2017
No document changes					
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett		12/12/2017
Reisch UCC consults.pdf					
College	Recycled	CALS - College of Agricultural and Life Sciences	Joel H Brendemuhl	This request has been recycled by the CALS CC. Needed corrections were sent to the submitter on 1/29/18.	8/31/2017 2/7/2018
No document changes					
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett		3/9/2018
No document changes					
College	Recycled	CALS - College of Agricultural and Life Sciences	Joel H Brendemuhl	Recycled by CALS Curriculum Committee. Comments will be sent to submitter.	5/7/2018
No document changes					
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett		8/8/2018
No document changes					
College	Recycled	CALS - College of Agricultural and Life Sciences	Joel H Brendemuhl	Recycled by the CAL CC on 10/12/18. Comments sent to submitter.	11/5/2018
No document changes					
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett		6/6/2019

Step	Status	Group	User	Comment	Updated
No document changes					
College	Recycled	CALS - College of Agricultural and Life Sciences	Joel H Brendemuhl	Recycled per department chair request.	6/9/2019
No document changes					
Department	Approved	CALS - Microbiology and Cell Science 514910000	Eric Triplett		10/28/2019
Applications and Technologies of Synthetic Biology.docx					10/28/2019
College	Approved	CALS - College of Agricultural and Life Sciences	Joel H Brendemuhl	Approved by the CALS CC on 11/15/19.	11/22/2019
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			11/22/2019
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Course|New for request 11708

Info

Request: MCB 4XXX Applications and Technologies of Synthetic Biology

Description of request: Approval of new course: Applications and Technologies of Synthetic Biology-
MCB 4xxx

Submitter: Monika Oli moli@ufl.edu

Created: 11/8/2019 9:25:05 AM

Form version: 5

Responses

Recommended Prefix MCB

Course Level 4

Number xxx

Category of Instruction Advanced

Lab Code None

Course Title Applications and Technologies of Synthetic Biology

Transcript Title Synthetic Biology

Degree Type Baccalaureate

Delivery Method(s) Online, UF Online - Please attach a letter of support from the Director of the UF
Online program

Co-Listing No

Effective Term Earliest Available

Effective Year Earliest Available

Rotating Topic? No

Repeatable Credit? No

Amount of Credit 3

S/U Only? No

Contact Type Regularly Scheduled

Weekly Contact Hours 3

Course Description Synthetic biology is the the construction and reconstruction of biological systems, and its practical applications in research and industry. Advanced molecular biology tools for DNA assembly, the construction of biological pathways and circuits, genome editing, and strategies for transcriptional control will be examined in the course.

Prerequisites MCB 3020 or MCB 3023

Co-requisites N/A

Rationale and Placement in Curriculum This course is an important addition to our curriculum, explaining the most current technologies to our students. None of the other course cover the topics discussed in this class.

Course Objectives 1. Define synthetic biology and understand its importance in the 21st century.

2. Classify and analyze biological parts and their function on the systems level.

3. Describe and discuss advanced molecular biology techniques that facilitate the building of biological parts and systems.

4. Argue both sides of ethical decisions and containment strategies in synthetic biology

Course Textbook(s) and/or Other Assigned Reading N/A

Primary papers and literature are listed week by week

Weekly Schedule of Topics Date (week) Topic Readings

1 Introduction to Synthetic Biology, Molecular Biology, and Biochemistry Foundations for engineering biology Endy, D. (2005). Nature, 438(7067), 449–453.

A brief history of synthetic biology Cameron, D. E., Bashor, C. J., & Collins, J. J. (2014). Nature Reviews Microbiology, 12(5), 381–390.

- 2 - 3 Biological Parts – Promoters, Regulators, Genes, Terminators, Proteins Design, construction and characterization of a set of insulated bacterial promoters. Davis, J. H., Rubin, A. J., & Sauer, R. T. (2011). *Nucleic Acids Research*, 39(3), 1131–1141.
Automated design of synthetic ribosome binding sites to control protein expression. Salis, H. M., Mirsky, E. A., & Voigt, C. A. (2009). *Nature Biotechnology*, 27(10), 946–950.
Characterization of 582 natural and synthetic terminators and quantification of their design constraints. Chen YJ1, Liu P, Nielsen AA, Brophy JA, Clancy K, Peterson T, Voigt CA. *Nature Methods*,(7) 659-64
- 4 Controlling Gene Expression and Protein Production, Independent and tight regulation of transcriptional units in *Escherichia coli* via the LacR/O, the TetR/O and AraC/I1-I2 regulatory elements. 1997. R Lutz and H Bujard, *Nucleic Acids Res.* 25(6): 1203–1210.
Synthetic Riboswitches That Induce Gene Expression in Diverse Bacterial Species. Topp, S ... J.P. Gallivan, *Applied and Environmental Microbiology*.
- 5 Recombinant DNA technologies, Cloning techniques and strategies Polymerase Chain Reaction
https://en.wikipedia.org/wiki/Polymerase_chain_reaction
The SLIC, Gibson, CPEC and SLiCE assembly methods (and GeneArt® Seamless, In-Fusion® Cloning)
<https://j5.jbei.org/j5manual/pages/22.html>
Enzymatic assembly of DNA molecules up to several hundred kilobases. Gibson, D. G., Young, L., Chuang, R.-Y., Venter, J. C., Hutchison, C. A., & Smith, H. O. (2009). *Nature Methods*, 6(5), 343–345.
- 6 Artificial Gene Circuits, Noise in Gene Expression, Test 1 Construction of a genetic toggle switch in *Escherichia coli*
Collins, J. J., Gardner, T. S., & Cantor, C. R. (2000). *Nature*, 403(6767), 339–342.
- 7 BioSensors – Construction and Application Synthetic biology devices for in vitro and in vivo diagnostics
Slomovic, S., Pardee, K., & Collins, J. J. (2015). *PNAS* 112(47), 14429–14435.
<https://doi.org/10.1073/pnas.1508521112>
- 8 - 9 Genome Editing - Transposons, Recombinases, Zinc Fingers, TALEN's, CRISPR/Cas9 ZFN, TALEN, and CRISPR/Cas-based methods for genome engineering. Gaj, T., Gersbach, C. A., & Barbas, C. F. (2013). ZFN, TALEN, and CRISPR/Cas-based methods for genome engineering. *Trends in Biotechnology*, 31(7), 397–405.
Strecker, J. ... Zhang, F. (2019). RNA-guided DNA insertion with CRISPR-associated transposases. *Science*, 364(6448), 48–53.
- 10 DNA synthesis and Assembly, Test 2 Large-scale de novo DNA synthesis: technologies and applications. Kosuri, S., & Church, G. M. (2014). Large-scale de novo DNA synthesis: technologies and applications. *Nature Methods*, 11(5), 499–507.
- 11 Metabolic Engineering – Techniques and Applications, Metabolic evolution of energy-conserving pathways for succinate production in *Escherichia coli*. Zhang, X., Jantama, K., Moore, J. C., Jarboe, L. R., Shanmugam, K. T., & Ingram, L. O. (2009). *PNAS* 106(48), 20180–5.
Production of the antimalarial drug precursor artemisinic acid in engineered yeast. Ro, D.-K., Paradise, E. M., Ouellet, M., Fisher, K. J., Newman, K. L., Ndungu, J. M., ... Keasling, J. D. (2006). *Nature*, 440(7086), 940–943.
- 12 Accelerated Evolution Systems - MAGE, PACE, A system for the continuous directed evolution of biomolecules. Esvelt, K. M., Carlson, J. C., & Liu, D. R. (2011). *Nature*, 472(7344), 499–503.
- 13 Synthetic Cells - Recoded *E. coli* and JCVIsyn1-3.0 Total synthesis of *Escherichia coli* with a recoded genome.
J. Fredens... J.W. Chin. *Nature* 569, 514–518 (2019)
Genomically Recoded Organisms Expand Biological Functions. Lajoie, M. J.... Isaacs, F. J. (2013). Genomically Recoded Organisms Expand Biological Functions. *Science*, 342(6156), 357–360.
Design, synthesis, and testing toward a 57-codon genome
Ostrov, N., Landon, M., Guell, M., Kuznetsov, G., Teramoto, J., Cervantes, N., ... Church, G. M. (2016). *Science*, 353(6301), 819–822.

14 Containment strategies, Ethical considerations Biocontainment of genetically modified organisms by synthetic protein design Mandell, D. J., Lajoie, M. J., Mee, M. T., Takeuchi, R., Kuznetsov, G., Norville, J. E., ... Church, G. M. (2015). Nature, 518(7537)

Links and Policies Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Grading Scheme Evaluation of Learning/Grades

3 Exams (100 pts each) – 300 points

Discussion, Quizzes, Homework – 200 points

Written Proposal – 100 points

Exams

There will be 3 exams administered throughout the semester at approximately 5 week intervals. All material covered during class will be subject to testing. Tests are conceptually cumulative because understanding of topics covered early in the course will be required to understand materials covered later in the course.

Discussion, Quizzes, Homework

Throughout the semester there will be quizzes, discussions, and homework assigned for grades that will total 200 points.

Proposals

Each student will be responsible for writing a research proposal that aims to investigate a novel idea in the field of synthetic biology that is of scientific or industrial interest. The proposal for students in the 4xxx level course will be 3 pages single-spaced, while the 6xxx level students are expected to write 6 pages with more detailed experimental approaches. Grading rubrics will be provided in class.

Grading Policy

Final letter grades will be assigned based on the number of points earned, as follows:

A = 564-600 points, A- = 540 – 563 points

B+ = 516 – 539 points, B = 498-515 points, B- = 480-497 points

C+ = 456-479 points, C = 438-455 points, C- = 420-437 points

D+ = 396-419 points, D = 378-395 points, E = 0-377 points

More information on grades and grading policies is here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Instructor(s) Dr. Christopher Reisch - creisch@ufl.edu

Applications and Technologies of Synthetic Biology

MCB 4934, Fall- 2019

Instructor

Dr. Christopher Reisch - creisch@ufl.edu

Microbiology and Cell and Science, Office – MCS 1152

Office Hours: Monday 10am – 12 noon

Preferred methods for communication with the instructor regarding the course is through UF email (creisch@ufl.edu).

Please resolve technical issues by contacting the UF helpdesk (e.g. <http://helpdesk.ufl.edu> ; (352) 392-HELP (4357); helpdesk@ufl.edu · HUB 132).

Delivery Method/Meeting time

Online (asynchronous)

Credits

3- Credit hours

Course Description

This course will introduce the concept of synthetic biology, which is loosely defined as the construction and reconstruction of biological systems, and its practical applications in research and industry. Advanced molecular biology tools for DNA assembly, the construction of biological pathways and circuits, genome editing, and strategies for transcriptional control will be examined in the course.

Course Objectives/Goals/Learning Outcomes

Students enrolled in this course will be able to:

1. Define synthetic biology and understand its importance in the 21st century.
2. Classify and analyze biological parts and their function on the systems level.
3. Describe and discuss advanced molecular biology techniques that facilitate the building of biological parts and systems.
4. Argue both sides of ethical decisions and containment strategies in synthetic biology

Prerequisites

MCB 3020 or 3023 with a grade of C or better.

Course Material and Assignments

All required course materials will be available through the Canvas e-Learning site (<http://elearning.ufl.edu/>). Instructions for and submission of assignments will also be through Canvas.

Required Textbooks

There is no required textbook.

Required reading materials will be posted to Canvas.

Weekly Course Schedule

Date (week)	Topic	Readings
1	Introduction to Synthetic Biology, Molecular Biology, and Biochemistry	Foundations for engineering biology Endy, D. (2005). <i>Nature</i> , 449–453. A brief history of synthetic biology Cameron, D. E., Bashor, C. J. J. (2014). <i>Nature Reviews Microbiology</i> , 12(5), 381–390.
2 - 3	Biological Parts – Promoters, Regulators, Genes, Terminators	Design, construction and characterization of a set of insulated promoters. Davis, J. H., Rubin, A. J., & Sauer, R. T. (2011). <i>Nature Research</i> , 30(3), 1131–1141.

Automated design of synthetic ribosome binding sites to control gene expression. Salis, H. M., Mirsky, E. A., & Voigt, C. A. (2009). *Nature Biotechnology*, 27(10), 946–950.

Characterization of 582 natural and synthetic terminators and quantification of their design constraints.

Chen YJ1, Liu P, Nielsen AA, Brophy JA, Clancy K, Peterson J, et al. Nature Methods,(7) 659-64

	<p>Controlling Gene Expression and Protein Production,</p>	<p>Independent and tight regulation of transcriptional units in <i>Escherichia coli</i> via the LacR/O, the TetR/O and AraC/I1-I2 regulatory elements. Lutz and H Bujard, <i>Nucleic Acids Res.</i> 25(6): 1203–1210.</p> <p>Synthetic Riboswitches That Induce Gene Expression in Diverse Bacterial Species. Topp, S ... J.P. Gallivan, <i>Applied and Environmental Microbiology</i>.</p>
<p>5</p>	<p>Recombinant DNA technologies, Cloning techniques and strategies</p>	<p>Polymerase Chain Reaction https://en.wikipedia.org/wiki/Polymerase_chain_reaction</p> <p>The SLIC, Gibson, CPEC and SLiCE assembly methods (and Seamless, In-Fusion® Cloning) https://j5.jbei.org/j5manual/pages/22.html</p> <p>Enzymatic assembly of DNA molecules up to several hundred kilobases. Gibson, D. G., Young, L., Chuang, R.-Y., Venter, J. C., Hutchison III, S. M., & Smith, H. O. (2009). <i>Nature Methods</i>, 6(5), 343–345.</p>
<p>6</p>	<p>Artificial Gene Circuits, Noise in Gene Expression, Test 1</p>	<p>Construction of a genetic toggle switch in <i>Escherichia coli</i>. Collins, J. J., Gardner, T. S., & Cantor, C. R. (2000). <i>Nature</i>, 404, 339–342.</p>
<p>7</p>	<p>BioSensors – Construction and Application</p>	<p>Synthetic biology devices for in vitro and in vivo diagnostics. Slomovic, S., Pardee, K., & Collins, J. J. (2015). <i>PNAS</i> 112(47) 14429–14435. https://doi.org/10.1073/pnas.1508521112</p>
<p>8 - 9</p>	<p>Genome Editing - Transposons, Recombinases, Zinc Fingers, TALEN's, CRISPR/Cas9</p>	<p>ZFN, TALEN, and CRISPR/Cas-based methods for genome editing. Gaj, T., Gersbach, C. A., & Barbas, C. F. (2013). ZFN, TALEN, CRISPR/Cas-based methods for genome engineering. <i>Trends in Biotechnology</i>, 31(7), 397–405.</p> <p>Strecker, J. ... Zhang, F. (2019). RNA-guided DNA insertion with associated transposases. <i>Science</i>, 364(6448), 48–53.</p>
<p>10</p>	<p>DNA synthesis and Assembly, Test 2</p>	<p>Large-scale de novo DNA synthesis: technologies and applications. Kosuri, S., & Church, G. M. (2014). Large-scale de novo DNA synthesis: technologies and applications. <i>Nature Methods</i>, 11(5), 499–500.</p>
<p>11</p>	<p>Metabolic Engineering – Techniques and Applications,</p>	<p>Metabolic evolution of energy-conserving pathways for succinate production in <i>Escherichia coli</i>. Zhang, X., Jantama, K., Moore, Jarboe, L. R., Shanmugam, K. T., & Ingram, L. O. (2009). <i>PNAS</i> 106, 20180–5.</p> <p>Production of the antimalarial drug precursor artemisinic acid in engineered yeast. Ro, D.-K., Paradise, E. M., Ouellet, M., Fish</p>

Newman, K. L., Ndungu, J. M., ... Keasling, J. D. (2006). *Nature* 440(7086), 940–943.

12	Accelerated Evolution Systems - MAGE, PACE,	A system for the continuous directed evolution of biomolecules M., Carlson, J. C., & Liu, D. R. (2011). <i>Nature</i> , 472(7344), 499–503.
13	Synthetic Cells - Recoded <i>E. coli</i> and JCVIsyn1-3.0	Total synthesis of <i>Escherichia coli</i> with a recoded genome. J. Fredensborg, J.W. Chin. <i>Nature</i> 569, 514–518 (2019) Genomically Recoded Organisms Expand Biological Functions J.... Isaacs, F. J. (2013). Genomically Recoded Organisms Expand Biological Functions. <i>Science</i> , 342(6156), 357–360. Design, synthesis, and testing toward a 57-codon genome Ostrov, N., Landon, M., Guell, M., Kuznetsov, G., Teramoto, J. N., ... Church, G. M. (2016). <i>Science</i> , 353(6301), 819–822.
14	Containment strategies, Ethical considerations	Biocontainment of genetically modified organisms by synthetic design Mandell, D. J., Lajoie, M. J., Mee, M. T., Takeuchi, R., ... Church, G. M. (2015). <i>Nature</i> , 518(7537), 403–408.

Exam Dates/Calendar/Critical dates and deadlines

Week 5 - Test 1

Week 6 - Proposal Abstracts Due

Week 9 – Proposal Outline Due

Week 10 – Test 2

Week 14 - Proposal Due

Finals week – Test 3

Exam Administration - ProctorU

All exams will be administered through ProctorU using Canvas in E-learning with students using personal computers. The exam may be taken at any location approved by ProctorU during previously announced times.

For students to sign up for a ProctorU account go to:

<http://www.proctoru.com/forstudents.php>

Evaluation of Learning/Grades

3 Exams (100 pts each) –

300 points

Discussion, Quizzes, Homework – 200 points

Discussion (70 points)

Quizzes (80 points)

Homework (50 points)

Written Proposal –

100 points

Exams

There will be 3 exams administered throughout the semester at approximately 5 week intervals. All material covered during class will be subject to testing. Tests are conceptually cumulative because understanding of topics covered early in the course will be required to understand materials covered

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later in the course.

Exams will be composed of multiple choice, fill in the blank, and essay questions. There will be three essay questions from each module, but you will only be required to answer one question from each module.

Discussion, Quizzes, Homework

Quizzes (70 points) – There will be a non-proctored quiz at the end of each module. The quizzes are intended to help you find out how well you know the material.

Discussion groups (80 points) – The class will be divided into discussion groups of approximately 15-20 students. The purpose of the discussion group is to encourage student-student interaction and peer learning. Students are free to ask and answer questions on the discussion group. I will moderate the responses and also pose questions to facilitate the discussion. Each student will be required to post at least once during each module, half of the discussion group will be required to post during the first week of a module and the other half during the second. Check the due dates on Canvas to know which group you are in for each module. Each module will have a separate group and each group will close after 2-3 weeks.

Homework (50 points) – There will be homework assignments that will be exercises based on material we have learned. For example, you will be asked to design a plasmid and describe its function.

Proposals

Each student will be responsible for writing a research proposal that aims to investigate a novel idea in the field of synthetic biology that is of scientific or industrial interest. The proposal should be 6-8 pages single spaced. A brief rubric of the proposal is provided below.

Introduction (1 page) – Clearly provide relevant background information in the context of research that has previously been performed in synthetic biology and fields related to your topic. At least 5 sources of primary research papers or literature reviews must be cited.

Significance and Novelty (0.5-1 page) – Identify the gap in knowledge that your proposal will address. Explain why this work is important to the field. What are the benefits to science and society that will result from successful completion of this work? Demonstrate that you understand the subject matter and its greater implications. Cite the primary literature and reviews as necessary.

Experimental Plan (1-2 pages) – Describe 1 research aim that will be used to address the gap in knowledge identified above. Provide a logical workflow that will be used to investigate the research question. The purpose of the experiments should be clear, but the exact experimental conditions do not need to be provided.

Grading Policy

Final letter grades will be assigned based on the number of points earned, as follows:

A = 564-600 points, A- = 540 – 563 points
B+ = 516 – 539 points, B = 498-515 points, B- = 480-497 points
C+ = 456-479 points, C = 438-455 points, C- = 420-437 points
D+ = 396-419 points, D = 378-395 points, E = 0-377 points

More information on grades and grading policies is here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Class Attendance and Make-Up Policy

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx> .

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation - 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides

encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- *Career Connections Center, First Floor JWRU, 392-1601, <https://career.ufl.edu/>* .

Academic Resources

- E-learning technical support , 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.
- Career Resource Center , Reitz Union, 392-1601. Career assistance and counseling. <http://www.crc.ufl.edu/>
- Library Support , <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center , Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>

Course Evaluation

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <https://evaluations.ufl.edu> . Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results> .

Netiquette guide for online courses

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

University Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “ *We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.*” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: “*On my honor, I have neither given nor received unauthorized aid in doing this assignment .*”

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be

Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code> .

Additional comments regarding academic integrity :

Students are encouraged to discuss material with each other from the course, help each other understand concepts, study together, and even discuss assessment questions with each other once the quiz window is closed. However, the following is considered academic dishonesty, and I expect that no student will ever do any of the following:

- Have another person complete a quiz in this course
- Copy another student's quiz in this course
- Collaborate with anyone during a quiz in this course
- Discuss the questions and answers of a quiz with other students while the quiz window is still open
- Manipulate and/or distribute any materials provided in this course for any purpose (including course lecture slides).
- Use any materials provided by a previous student in the course

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Microsoft Office 365 Software is free for UF students

<http://www.it.ufl.edu/gatorcloud/free-office-365-downloads/>

Other free software is available at:

<http://www.software.ufl.edu/>

To check for availability of the media and technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357).

University of Florida Complaints Policy and Student Complaint Process

The University of Florida and most instructors believe strongly in the ability of students to express concerns regarding their experiences at the University. Most problems, questions and concerns about courses can be resolved by professionally communicating with the instructor. Please try to meet your instructor in person, make an appointment to call, or try to set up a remote meeting through Skype or other media.

If this does not help the University encourages the students who wish to file a written complaint to submit that complaint directly to the department that manages that course. If a problem really persists and cannot be resolved by communicating with the instructor and the department, contact... for

Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

Online Course: <http://www.distance.ufl.edu/student-complaint-process>

This said, professionalism is a two-way-street. Unprofessional behavior of students includes, among other things: lack of communication, blaming other people or external factors, lying, affecting others negatively in a group or in the class, not accepting criticism and not being proactive in solving problems or seeking help. Furthermore, faculty often have family and other obligations to tend to. Over the weekend, replies to your inquiries or questions may be delayed.

If a student is lacking professionalism repeatedly, the instructor has the rights to file formal complaint against the student through the Dean of Student office.

External Consultation Results (departments with potential overlap or interest in proposed course, if any)

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

External Consultation Results (departments with potential overlap or interest in proposed course, if any)

Department Biology	Name and Title Prof. Marta Wayne
Phone Number 352-392-9925	E-mail mlwayne@ufl.edu
<p>Comments</p> <p>The Department of Biology is also offering a course on synthetic biology taught by Dr. Ed Braun. Dr. Braun and I have been in contact and aim to make the two courses complementary and not competing. See the attached correspondence for details on the the specifics of each course.</p>	

Department	Name and Title
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<p>Comments</p>	

Department	Name and Title
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Phone Number	E-mail
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<p>Comments</p>	

Re: External Consult for MCS course

Pullammanappallil,Pratap C

Wed 3/1/2017 6:36 PM

To: Haman, Dorota Zofia <dhaman@ufl.edu>; Chris Reisch <creisch@ufl.edu>;

Hi Chris

The Applied Microbiology and Biotechnology covers industrial fermentation and wastewater treatment applications of biotechnology. The focus is on the process engineering aspects along with mathematical modeling of processes. So I do not see any overlap with your proposed course.

I will be recommending your Synthetic Biology course to my graduate students.

Best Regards

Pratap

From: Dorota Haman <dhaman@ufl.edu>

Date: Wednesday, March 1, 2017 at 12:35 PM

To: Chris Reisch <creisch@ufl.edu>

Cc: "Correll, Melanie J" <correllm@ad.ufl.edu>, Pratap Pullammanappallil <pcpratap@ufl.edu>

Subject: Re: External Consult for MCS course

Chris,
Pratap Pullammanappallil is teaching ABE4600 and as far as I know, he does not teach synthetic biology in it. I have copied him on this email. Melanie Correll is also very interested in your class – she talked about synthetic biology in her class and works with a team of students on synthetic biology competition – I also copied her on this email. These are two faculty members that you may want to talk to. I am glad to see this class being developed at UF.

Dorota

Dr. Dorota Z. Haman
Professor and Chair
Agricultural and Biological Engineering
120 Rogers Hall
PO Box 110570
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Tel: (352) 392-1864 ext 120

Fax: (352) 392-4092

email: dhaman@ufl.edu

<http://abe.ufl.edu/>

From: Chris Reisch <creisch@ufl.edu>
Date: Wednesday, March 1, 2017 at 10:18 AM
To: Dorota Haman <dhaman@ufl.edu>
Subject: External Consult for MCS course

Hi Dr. Haman,

I'm developing a 4000/6000 level course in synthetic biology that will be listed in Microbiology and Cell Sciences and need to get external consultations for potential course overlap. The course will focus on techniques and microbial applications of synthetic biology, including; methods for transcriptional and transnational control of gene expression, genome evolution and editing, metabolic engineering, and synthetic cell creation. I was specifically concerned about overlap with ABE4600 - Applied Microbial Biotechnology. Is the course still being taught and is there a faculty member that I should contact for consultation? I've attached a draft of the syllabus for your reference.

Best,
Chris

Christopher R. Reisch
Assistant Professor
Department of Microbiology and Cell Science
1355 Museum Road, Room 1146
University of Florida

FW: External Consult for MCS course

Flanegan,James B

Thu 3/23/2017 12:04 PM

To:Chris Reisch <creisch@ufl.edu>;

Cc:Yang,Thomas P <tpyang@ufl.edu>; Triplett,Eric <ewt@ufl.edu>;

Dear Chris,

I asked Dr. Tom Yang to look at your new course for potential overlap with courses in our department. I agree with Dr. Yang's assessment that the relatively small amount of overlap with our courses is not a concern to our department. Let me know if you have any additional questions.

Bert

James B. Flanegan, Ph.D.
Professor and Chair
Department of Biochemistry & Molecular Biology
College of Medicine
University of Florida
flanegan@ufl.edu
(352) 294-8384 (office)

From: Yang,Thomas P
Sent: Wednesday, March 22, 2017 8:55 AM
To: Flanegan,James B <flanegan@UFL.EDU>
Subject: Re: External Consult for MCS course

Bert

There appears to be a bit of overlap in course content but nothing that really concerns me. The emphasis of this new course is so different than ours that it really appears to be a different course.

Tom

On Mar 21, 2017, at 5:45 PM, "Flanegan,James B" <flanegan@UFL.EDU> wrote:

Tom,

Please look at this and let me know if you think that there is potential overlap with BCH 6415 or BCH 5413. If there is overlap, is it significant enough for us to be "concerned" about it.

Thanks,

Bert

From: Chris Reisch
Sent: Monday, March 20, 2017 1:18 PM
To: Flanagan,James B <flanegan@UFL.EDU>
Subject: External Consult for MCS course

Hi James,

I'm developing a 4000/6000 level course in synthetic biology that will be listed in Microbiology and Cell Sciences and I need to get external consultations for potential course overlap from Department Chairs. The course will focus on techniques and prokaryotic applications of synthetic biology, including; methods for transcriptional and translational control of gene expression, genome evolution and editing, metabolic engineering, and synthetic cell creation. I think there will be minor overlap with BCH 6415 - Advanced Molecular and Cell Biology. I've attached a draft of the syllabus for your reference. Please let me know if you have concern about overlap with this, or any other course offered in BCH.

Best,
Chris

Christopher R. Reisch
Assistant Professor
Department of Microbiology and Cell Science
1355 Museum Road, Room 1152
University of Florida
<Reisch UF synbio syllabus -1.docx>

RE: External consult for MCS course

Baker, Henry V

Tue 3/28/2017 10:53 AM

To: Chris Reisch <creisch@ufl.edu>;

Dear Dr. Reisch,

Thank you for giving me the opportunity to review your proposed syllabus. From the perspective of the department of molecular genetics and microbiology we do not see a potential conflict with your proposed course and the courses we offer. In fact we believe that your course is complementary to some of our offerings and we wish you luck with getting it launched.

Kindest regards,

Henry V. Baker, Ph.D.
Hazel Kitzman Professor of Genetics
Professor of Surgery
Chair, Dept. Molecular Genetics and Microbiology
University of Florida College of Medicine
Associate Director University of Florida Genetics Institute

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From: Chris Reisch
Sent: Tuesday, March 28, 2017 10:45 AM
To: Baker, Henry V <hvbaker@UFL.EDU>
Subject: External consult for MCS course

Dear Dr. Baker,

I'm developing a 4000/6000 level course in synthetic biology that will be listed in Microbiology and Cell Sciences and I need to get external consultations for potential course overlap from Department Chairs. The course will focus on techniques and prokaryotic applications of synthetic biology, including; methods for transcriptional and translational control of gene expression, genome evolution and editing, metabolic engineering, and synthetic cell creation. I have attached a draft of the syllabus for your reference. Please let me know if you have concern about overlap with any course in MBM.

Best,
Chris

Christopher R. Reisch
Assistant Professor
Department of Microbiology and Cell Science
1355 Museum Road, Room 1152
University of Florida

Re: external consult for MCB

Wayne, Marta L

Fri 8/18/2017 10:38 AM

To: Chris Reisch <creisch@ufl.edu>;

Cc: Braun, Edward Louis <ebraun68@ufl.edu>;

Dear Chris,

Many thanks! I am really pleased that you and Ed are working together to make complementary courses. I would like to see the two proposals go forward together so that they appear at UCC simultaneously and consults are signed off by Micro and Bio simultaneously as well, so I am cc'ing Ed here and asking him to move forward getting a proposal together. Ed, I think that Tangelyn would be happy to help you if you will just provide her with a syllabus.

Cheers,
Marta

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Marta L. Wayne, Ph. D.
Professor and Chair
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(courier: 876 Newell Drive)
vox: 352-392-9925
fax: 352-392-3704
<http://people.biology.ufl.edu/mlwayne/>

On Aug 17, 2017, at 5:09 PM, Chris Reisch <creisch@ufl.edu> wrote:

Hi Dr. Wayne,

I'm teaching a course in synthetic biology in the department of microbiology and cell science and need to get an external consult from Biology. Ed Braun and I have communicated and plan on making our two courses complimentary, not competing. Below is a brief explanation of the two courses and how they will be different. I've also attached a draft of my syllabus. Hopefully this is satisfactory, let me know what you think.

The proposed course "Microbial Applications of Synthetic Biology," currently being offered by Dr. Christopher Reisch as MCB 4934, will not overlap in any significant way with another course in the same general field that I am developing in the Department of Biology. The Microbiology and Cell Science course and the Biology course have distinct foci, formats, and target audiences. Specifically, the course proposed by Dr. Reisch is heavily focused on methods used in synthetic biology in microbiology and it is an online course. In contrast, the Biology course is focused on conceptual issues associated with the use of synthetic biology to understand minimal genomes and it will be a face-to-face course with student projects.

Dr. Reisch and I have discussed our courses and both of us feel that we will not be competing for students. Given these clear delineation between the courses students that would like to focus on the details of methodology will be best served by Dr. Reisch's course whereas those focused on

8/24/2017

Re: external consult for MCB - Chris Reisch

understanding issues of building minimal genomes will be best served by my course. Obviously, there may be some students that will wish to take both courses. However, the differences between our courses mean that students will have complementary experiences.

Best,
Chris

Christopher R. Reisch
Assistant Professor
Department of Microbiology and Cell Science
1355 Museum Road, Room 1152
University of Florida
<Reisch UF synbio syllabus 4.docx>