RECEIVED

MAR 22 2016

OFFICE OF THE SENATE COUNCIL

1. General Information

1a. Submitted by the College of: ARTS &SCIENCES

Date Submitted: 12/7/2015

1b. Department/Division: Biology

1c. Contact Person

Name: Jennifer Osterhage

Email: jennifer.osterhage@uky.edu

Phone: 8592579322

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

1d. Requested Effective Date: Semester following approval

1e. Should this course be a UK Core Course? No

2. Designation and Description of Proposed Course

2a. Will this course also be offered through Distance Learning?: No

2b. Prefix and Number: BIO 604

2c. Full Title: Genetic Analysis

2d. Transcript Title:

2e. Cross-listing:

2f. Meeting Patterns

LECTURE: 3

2g. Grading System: Letter (A, B, C, etc.)

2h. Number of credit hours: 3

2i. Is this course repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester?

2j. Course Description for Bulletin: This course in contemporary genetic analysis emphasizes experimental approaches to biological questions in a variety of eukaryotic organisms. The course includes discussion of the application of methodologies spanning a wide range of genetics, including classical, molecular, quantitative and genome-wide approaches. Primary scientific literature is investigated to understand the development and application of these methods. The course is intended to provide a good working understanding of current genetic techniques, how to select appropriate approaches to modern biological problems, and how to interpret results of genetic analyses.

2k. Prerequisites, if any: BIO 304 (Introductory Genetics) or equivalent or consent of the instructor is required. BIO 315 (Cell Biology) or equivalent is recommended, but not required.

2l. Supplementary Teaching Component:

3. **Will this course taught off campus?** No

   If YES, enter the off campus address:

4. **Frequency of Course Offering:** Spring,

   Will the course be offered every year?: Yes

   If No, explain:

5. **Are facilities and personnel necessary for the proposed new course available?:** Yes

   If No, explain:

6. **What enrollment (per section per semester) may reasonably be expected?:** 10

7. Anticipated Student Demand

   Will this course serve students primarily within the degree program?: Yes

   Will it be of interest to a significant number of students outside the degree pgm?: Yes

   If Yes, explain: This course may be of interest to graduate students in life science-related disciplines.

8. **Check the category most applicable to this course:** Relatively New – Now Being Widely Established,

   If No, explain:

9. Course Relationship to Program(s).

   a. **Is this course part of a proposed new program?:** No

   If YES, name the proposed new program:

   b. **Will this course be a new requirement for ANY program?:** No

   If YES, list affected programs:

10. Information to be Placed on Syllabus.

   a. **Is the course 400G or 500?:** No

   b. **The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from 10.a above) are attached:** Yes

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1.How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2.How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3.How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4.Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5.How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6.How do course requirements ensure that students make appropriate use of learning resources?

7.Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8.How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (http://www.uky.edu/UKIT/)?

9.Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10.Does the syllabus contain all the required components? NO

11.I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|VCASS2|Vincent Cassone|BIO 604 NEW Dept Review|20151103

SIGNATURE|ACSI222|Anna C Harmon|BIO 604 NEW College Review|20151125

SIGNATURE|ZNNIKO0|Roshan N Nikou|BIO 604 NEW Graduate Council Review|20160322

New Course Form

https://myuk.uky.edu/sap/bc/soap/rfc?services=

Open in full window to print or save

Generate R

Attachments:

Browse... Upload File

	ID	Attachment
Delete	5959	BIO 604 Syllabus S16.pdf

First 1 Last

(*denotes required fields)

1. General Information

a. * Submitted by the College of: ARTS & SCIENCES Submission Date: 12/7/2015

b. * Department/Division: Biology

c.

* Contact Person Name: Jennifer Osterhage Email: jennifer.osterhage@uky.e Phone: 8592579322

* Responsible Faculty ID (if different from Contact) Email: Phone:

d. * Requested Effective Date: ◉ Semester following approval OR ○ Specific Term/Year [1]

e.

Should this course be a UK Core Course? ○ Yes ◉ No

If YES, check the areas that apply:

☐ Inquiry - Arts & Creativity	☐ Composition & Communications - II
☐ Inquiry - Humanities	☐ Quantitative Foundations
☐ Inquiry - Nat/Math/Phys Sci	☐ Statistical Inferential Reasoning
☐ Inquiry - Social Sciences	☐ U.S. Citizenship, Community, Diversity
☐ Composition & Communications - I	☐ Global Dynamics

2. Designation and Description of Proposed Course.

a. * Will this course also be offered through Distance Learning? ○ Yes [4] ◉ No

b. * Prefix and Number: BIO 604

c. * Full Title: Genetic Analysis

d. Transcript Title (if full title is more than 40 characters):

e. To be Cross-Listed [2] with (Prefix and Number):

f. * Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours[3] for each meeting pattern type.

3	Lecture		Laboratory[1]		Recitation		Discussion
	Indep. Study		Clinical		Colloquium		Practicum
	Research		Residency		Seminar		Studio
	Other	If Other, Please explain:					

g. * Identify a grading system:

◉ Letter (A, B, C, etc.)
○ Pass/Fail
○ Medicine Numeric Grade (Non-medical students will receive a letter grade)
○ Graduate School Grade Scale

h. * Number of credits: 3

i. * Is this course repeatable for additional credit? ○ Yes ◉ No

If YES: Maximum number of credit hours:

If YES: Will this course allow multiple registrations during the same semester? ○ Yes ○ No

j. * Course Description for Bulletin:

This course in contemporary genetic analysis emphasizes experimental approaches to biological questions in a variety of eukaryotic organisms. The course includes discussion of the application of methodologies spanning a wide range of genetics, including classical, molecular, quantitative and genome-wide approaches. Primary scientific literature is investigated to understand the development and application of these methods. The course is intended to provide a good working understanding of current genetic techniques, how to select appropriate approaches to modern biological problems, and how to interpret results of genetic analyses.

k. Prerequisites, if any:

BIO 304 (Introductory Genetics) or equivalent or consent of the instructor is required. BIO 315 (Cell Biology) or equivalent is recommended, but not required.

l. Supplementary teaching component, if any: ○ Community-Based Experience ○ Service Learning ○ Both

3. * **Will this course be taught off campus?** ○ Yes ◉ No

If YES, enter the off campus address:

4. **Frequency of Course Offering.**

a. * Course will be offered (check all that apply): ☐ Fall ☑ Spring ☐ Summer ☐ Winter

b. * Will the course be offered every year? ◉ Yes ○ No

If No, explain:

5. * **Are facilities and personnel necessary for the proposed new course available?** ◉ Yes ○ No

If No, explain:

6. * **What enrollment (per section per semester) may reasonably be expected?** 10

7. **Anticipated Student Demand.**

a. * Will this course serve students primarily within the degree program? ◉ Yes ○ No

b. * Will it be of interest to a significant number of students outside the degree pgm? ◉ Yes ○ No

If YES, explain:

This course may be of interest to graduate students in life science-related disciplines.

8. * **Check the category most applicable to this course:**

☐ Traditional – Offered in Corresponding Departments at Universities Elsewhere
☑ Relatively New – Now Being Widely Established
☐ Not Yet Found in Many (or Any) Other Universities

9. **Course Relationship to Program(s).**

a. * Is this course part of a proposed new program? ○ Yes ◉ No

If YES, name the proposed new program:

b. * Will this course be a new requirement [5] for ANY program? ○ Yes ◉ No

If YES [5], list affected programs::

10. **Information to be Placed on Syllabus.**

a. * Is the course 400G or 500? ○ Yes ◉ No

If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in **10.b.** You must include: (i) ident additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See SR

b. ☑ * The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if appl **10.a** above) are attached.

[4] Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.
[5] The chair of the cross-listing department must sign off on the Signature Routing Log.

[3] In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. Laboratory meeting, generally, re two hours per week for a semester for one credit hour. (from SR 5.2.1)
[3] You must also submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.
[4] In order to change a program, a program change form must also be submitted.

Rev 8/09

BIO 604- Genetic Analysis- Spring 2016

LECTURE: Tuesdays & Thursdays, 11:00 – 12:15 P.M.
205 T.H. Morgan Bldg.

INSTRUCTOR: Dr. Doug Harrison, 300 T.H. Morgan Bldg.
Tel.: 257-6275 e-mail: dough@email.uky.edu
Office Hours: By appointment

COURSE DESCRIPTION: This course in contemporary genetic analysis emphasizes experimental approaches to biological questions in a variety of eukaryotic organisms. The course includes discussion of the application of methodologies spanning a wide range of genetics, including classical, molecular, quantitative and genome-wide approaches. Primary scientific literature is investigated to understand the development and application of these methods. The course is intended to provide a good working understanding of current genetic techniques, how to select appropriate approaches to modern biological problems, and how to interpret results of genetic analyses.

COURSE GOALS:

- Build an understanding of the application of methodologies spanning a wide range of genetics, including classical, molecular, quantitative and genome-wide approaches.
- Provide a good working understanding of current genetic techniques, how to select appropriate approaches to modern biological problems, and how to interpret results of genetic analyses.
- Investigate primary scientific literature to understand the development and application of these methods.

STUDENT LEARNING OUTCOMES: It is anticipated that at the end of the course, all students will be able to:

1. Describe mutations, mutagenesis, and gene manipulation methodologies and apply these techniques to address specific biological questions
2. Demonstrate an understanding of how genes can interact and ability to recognize specific types of interactions based on genetic behaviors
3. Describe the use of genetic tools used for genome-wide analysis to address specific biological questions
4. Demonstrate an understanding of genetic mapping tools and ability to apply these techniques to address specific biological questions
5. Explain the basic methodologies for quantitative trait analysis and apply these techniques to address specific biological questions
6. Identify a relevant contemporary biological question and design an experimental plan to investigate that question using appropriate genetic analyses.
7. Write a scientific document that is clear, logical, and uses appropriate terminology.

PREREQUISITES: BIO 304 (Introductory Genetics) or equivalent or consent of the instructor is required. BIO 315 (Cell Biology) or equivalent is recommended, but not required.

OFFICE HOURS/CONSULTATION: This course will involve frequent required consultations (for proposal and presentation preparations), as well as meetings for any other matters that students wish to discuss. Rather than formal office hours, students should contact the instructors for appointments.

TEXT/REFERENCE MATERIALS: There is no required textbook, but "Principles of Gene Manipulation and Genomics-7th ed." by Primrose and Twyman is suggested for general reference. Scientific papers and web resources will be extensively used. Reference lists and other materials will be distributed by e-mail and/or posted on the web site; students are expected to read required references in advance of the class meeting so that they may participate fully in the discussion of course material.

WEBSITE: The UK Canvas LMS is used for distributing course materials, including syllabus, reading assignments, and slides, as well as for submission of written assignments.

GRADES:
The final grade will be based on performance in:

First exam	20%
Second exam	20%
Third exam	20%
Paper presentation	15%
Research proposal	20%
Preparation & Participation	5%
Total	100%

The final grade scale will be : A (100-90%), B (89-80%), C (79-70%), E (<70%).

EXAMS will be composed primarily of essay and short-answer questions derived from the class discussions and readings. The three exams will be weighted equally and the last exam will not be cumulative. Students who miss an exam due to an excused absence will take a make-up exam during the week preceeding final exam week. Students who miss the final exam due to an excused absence should discuss scheduling of a make-up exam as soon as possible. Students who miss an exam due to an unexcused absence will receive a 0 for that exam.

PAPER PRESENTATION. Each student will be assigned a journal article and a date during the semester on which to make a presentation to the class on that topic, including leading a discussion of the work. These should be relatively brief presentations (~30-35 minutes). Students must meet with the instructor to discuss the paper at least one week before the presentation date. Students should have already read through the paper several times and prepared a draft of their presentation before that meeting with the instructor. In case of an unforeseen excusable absence on presentation day, a new presentation date (usually the next class period) will be determined in consultation with the instructor.

RESEARCH PROPOSAL. Each student will develop a research proposal in which genetic analysis is applied to a contemporary question in biology. Topics will be selected by the student in consultation with the course instructor. Acceptable topics may include, but are certainly not limited to, those from a current or prior rotation project, but may not include topics that are the

subject of the student's dissertation. Preparation of the proposal will take place throughout the semester (see annotations on the attached class schedule).

PREPARATION AND PARTICIPATION. Each student is expected to participate in classroom discussions on a daily basis. Involvement in discussions will require that students come to class prepared. In particular, students are expected to have read the assigned papers prior to each class. Assigned readings and dates for discussion will be posted on the course website and updated after each class to reflect current progress through the course material. To promote preparation, students are required to write a very brief summary (approximately 100 words) of each paper designated as "required reading" and submit it to the instructor before each class. Reading lists, including links to papers and designations of "required reading", will be posted on the course website, along with date on which summaries will be due. Late summaries will be accepted up to two days after the due date, but with a 50% reduction in grade. Beyond two days late, summaries will not be accepted and a zero will given for the assignment. In the case of late summaries associated with an excused absence, an appropriate alternative deadline will be determined in consultation with the instructor. The grade for this section of the course will be determined both on submitted summaries and in-class involvement in discussions.

ATTENDANCE POLICY: Because class participation is an integral and important part of this course, attendance is mandatory. The instructor should be informed at least one week in advance of a planned excused absence or consulted upon return of an unexpected absence. Absences will be excused only under standard criteria stipulated in University regulation. In addition to potential influences on the class participation grade, each unexcused absence will reduce the course score by 5%.

EXCUSED ABSENCES
Students need to notify the professor of absences prior to class when possible. *Senate Rules 5.2.4.2* defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, http://www.uky.edu/Ombud/ForStudents_ExcusedAbsences.php.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

Per *Senate Rule 5.2.4.2*, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

VERIFICATION OF ABSENCES
Students may be asked to verify their absences in order for them to be considered excused. *Senate Rule 5.2.4.2* states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

POLICY ON ACADEMIC ACCOMMODATIONS: If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at drc@uky.edu. Their web address is http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/.

POLICY ON PLAGIARISM & OTHER FORMS OF CHEATING: It is acceptable to discuss papers, assignments, and course material with other students in the class, but it is expected that all **submitted** work in the class is entirely that of only that student. Academic honesty is required, and cheating and plagiarism will not be tolerated. According to the Encarta Dictionary, plagiarism is "copying what somebody else has written or taking somebody else's idea and trying to pass it off as original". If I had failed to cite the Encarta Dictionary in the previous sentence, that would have been plagiarism. It is not expected that every idea in your proposal will be completely original; you will be reading papers to come up with ideas about what to propose. It is OK to use those ideas if you express them in your own words and you reference the source of your ideas. You are expected to do both in the proposal assignment. There will be no assignments in this course in which it would be acceptable to simply "cut and paste" text or images from another source, whether you cite that source or not. The only exception will be the paper presentations, in which case it will be necessary to display figures from the paper for class discussion purposes.

It is highly recommended that students review the paper "Plagiarism: What is it?" that may be found at the Ombud web site http://www.uky.edu/Ombud/Plagiarism.pdf. The Ombud web site also includes a link to a Prentice Hall Companion Website "Understanding Plagiarism" http://wps.prenhall.com/hss_understand_plagiarism_1/0,6622,427064-,00.html. If you have any questions about what constitutes plagiarism, you should discuss it with Dr. Harrison before turning in an assignment. Ultimately, you are responsible for ensuring that all material you submit is your own and cannot be construed as plagiarism.

The minimum penalty for any form of cheating will be a zero on the assignment, but could be more severe, including an E in the course, suspension, or expulsion.

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense

occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: http://www.uky.edu/Ombud. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Senate Rules 6.3.1 (see http://www.uky.edu/Faculty/Senate/ for the current set of *Senate Rules*) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.
Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

CLASSROOM CIVILITY AND DECORUM: The university, college and department all have a commitment to respect the dignity of all and to value differences among members of our academic community. There exists the role of discussion and debate in academic discovery and the right of all to respectfully disagree from time-to-time. Students clearly have the right to take reasoned exception and to voice opinions contrary to those offered by the instructor and/or other students (S.R. 6.1.2). Equally, a faculty member has the right -- and the responsibility -- to ensure that all academic discourse occurs in a context characterized by respect and civility. Obviously, the accepted level of civility would not include attacks of a personal nature or statements denigrating another on the basis of race, sex, religion, sexual orientation, age, national/regional origin or other such irrelevant factors.

BIO 604 Genetic Analysis

Tentative Schedule

Date		Topic
1/10		Mutation and Variation
1/15		Mutagenesis and Screens
1/17		
1/22		Gene Knock-outs
1/24		
1/29	**	Mosaic/Conditional Mutant Analysis
1/31		
2/5		RNAi and Morpholinos
2/7		
2/12		**First Exam**
2/14		Genetic Interactions
2/19	**	
2/21		Transgenesis
2/26		
2/28		Gene Misexpression
3/5		
3/7		Transcriptome analysis
3/11-3/15		*Spring Break- No class*
3/19	**	
3/21		Proteome analysis
3/26		**Second Exam**
3/28		
4/2		Protein interaction analysis
4/4		
4/9		Markers Mapping and Linkage
4/11		
4/16		Quantitative Traits
4/18	**	
4/23		Genome-wide association studies
4/25		
4/30		**Third Exam at 10:30AM**

FINAL EXAM: TBA

** Proposal deadlines:

- 1/29 Proposal topic must be approved by instructor
- 2/19 Outline due
- 3/19 Initial proposal draft due
- 4/18 Final proposal due