

AEC 450: Conservation Genetics

In Workflow

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16. lamarcus (lamarcus@ncsu.edu)
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26. PeopleSoft (ldmihalo@ncsu.edu; blpearso@ncsu.edu; Charles_Cliff@ncsu.edu; jmharr19@ncsu.edu; Tracey_Ennis@ncsu.edu)

Approval Path

1. Tue, 08 Dec 2015 17:03:50 GMT
Martha Reiskind (martha_reiskind): Approved for 11AE UG Director of Curriculum
2. Tue, 08 Dec 2015 17:05:40 GMT
Harry Daniels (harry_daniels): Approved for 11AE UnderGrad Head
3. Thu, 07 Jan 2016 18:40:19 GMT
Harry Daniels (harry_daniels): Approved for 11AE Grad Head
4. Thu, 07 Jan 2016 18:43:42 GMT
Robin Clements (renutt): Approved for CALS CC Coordinator UG
5. Thu, 07 Jan 2016 18:45:20 GMT
Robin Clements (renutt): Approved for CALS CC Meeting UG
6. Thu, 07 Jan 2016 20:41:51 GMT
Melissa Merrill (msashwel): Approved for CALS CC Chair UG
7. Thu, 07 Jan 2016 20:43:03 GMT
Robin Clements (renutt): Approved for CALS Final Review UG
8. Thu, 07 Jan 2016 21:59:27 GMT
Samuel Pardue (sam_pardue): Approved for CALS Dean UG
9. Thu, 14 Jan 2016 15:33:18 GMT
Robin Clements (renutt): Approved for CALS CC Coordinator GR
10. Tue, 26 Jan 2016 21:49:21 GMT
Robin Clements (renutt): Approved for CALS CC Meeting GR
11. Thu, 28 Jan 2016 17:07:24 GMT

- David Ritchie (david_ritchie): Rollback to CALS CC Meeting UG for CALS CC Chair GR
12. Thu, 28 Jan 2016 18:03:59 GMT
Robin Clements (renutt): Approved for CALS CC Meeting UG
 13. Fri, 29 Jan 2016 13:17:48 GMT
Melissa Merrill (msashwel): Approved for CALS CC Chair UG
 14. Fri, 29 Jan 2016 15:11:33 GMT
Robin Clements (renutt): Approved for CALS Final Review UG
 15. Fri, 29 Jan 2016 15:16:59 GMT
Samuel Pardue (sam_pardue): Approved for CALS Dean UG
 16. Fri, 29 Jan 2016 15:19:23 GMT
Robin Clements (renutt): Approved for CALS CC Coordinator GR
 17. Fri, 29 Jan 2016 15:22:53 GMT
Robin Clements (renutt): Approved for CALS CC Meeting GR
 18. Fri, 29 Jan 2016 15:31:56 GMT
David Ritchie (david_ritchie): Approved for CALS CC Chair GR
 19. Fri, 29 Jan 2016 15:32:54 GMT
Robin Clements (renutt): Approved for CALS Final Review GR
 20. Fri, 29 Jan 2016 15:34:38 GMT
Samuel Pardue (sam_pardue): Approved for CALS Dean GR
 21. Mon, 01 Feb 2016 16:07:06 GMT
Li Marcus (lamarcus): Approved for OUCC Review
 22. Mon, 01 Feb 2016 16:17:15 GMT
Martha Reiskind (martha_reiskind): Approved for mbreiski
 23. Mon, 01 Feb 2016 19:40:06 GMT
Li Marcus (lamarcus): Approved for lamarcus
 24. Wed, 03 Feb 2016 15:09:08 GMT
Li Marcus (lamarcus): Approved for UCCC Coordinator
 25. Wed, 10 Feb 2016 19:50:40 GMT
Li Marcus (lamarcus): Approved for UCCC Meeting
 26. Wed, 10 Feb 2016 20:06:07 GMT
Jeffrey Despain (despain): Approved for UCCC Chair
 27. Wed, 10 Feb 2016 22:46:30 GMT
Barbara Kirby (barbara_kirby): Approved for OUCC Final Signature
 28. Thu, 11 Feb 2016 16:37:00 GMT
Li Marcus (lamarcus): Approved for OUCC Final Review
 29. Tue, 16 Feb 2016 18:30:51 GMT
Melissa Nosbisch (mInosbis): Approved for ABGS Coordinator
 30. Tue, 08 Mar 2016 21:08:51 GMT
Melissa Nosbisch (mInosbis): Approved for ABGS Meeting

New Course Proposal

Date Submitted: Tue, 08 Dec 2015 17:02:48 GMT

Viewing: AEC 450 : Conservation Genetics

Changes proposed by: mbreiski

Course Prefix

AEC (Applied Ecology)

Course Number

450

Dual-Level Course

Yes

Dual-Level Course Number:

550

Cross-listed Course

No

Title

Conservation Genetics

Abbreviated Title

Conservation Genetics

College

College of Agriculture and Life Sciences

Academic Org Code

Applied Ecology (11AE)

CIP Discipline Specialty Number

03.0104

CIP Discipline Specialty Title

Environmental Science.

Term Offering

Spring Only

Year Offering

Offered Every Year

Effective Date

Fall 2016

Previously taught as Special Topics?

Yes

Number of Offerings within the past 5 years

2

Course Prefix/Number

AEC 495 001 / AEC 592 003

AEC 495 001 / AEC 592 003

Semester/Term Offered

Spring 2015

Spring 2016

Enrollment

10

14

Course Delivery

Face-to-Face (On Campus)

Grading Method

Graded with S/U option

Credit Hours

3

Course Length

16

weeks

**Contact Hours
(Per Week)****Component Type**

Lecture

Contact Hours

3

Course Attribute(s)**Course Is Repeatable for Credit**

No

Instructor Name

Martha Burford Reiskind

Instructor Title

Research Assistant Professor

Grad Faculty Status

Assoc

Anticipated On-Campus Enrollment

Open when course_delivery = campus OR course_delivery = blended OR course_delivery = flip

Enrollment Component	Per Semester	Per Section	Multiple Sections?	Comments
Lecture	15	15	No	N/A

Course Prerequisites, Corequisites, and Restrictive Statement

Prerequisite: GN 311 Principles of Genetics

Is the course required or an elective for a Curriculum?

Yes

Which Curricula are Affected?

SIS Program Code	Program Title	Required or Elective?
17BIOSCBS-17BIOSCEEC	Biological Sciences (BS): Ecology, Evolution & Conservation Biology	Elective
17GNBS	Genetics (BS)	Elective

Catalog Description

The main objective of this course is to expose upper division undergraduate students and graduate students to conservation genetic tools and applications. Students will learn the genetic and genomic theory and methods commonly used in conservation and management of species. In addition, the course will provide hands-on experience working on current conservation projects here at North Carolina State University. Working in groups, the students will collect, run, and analyze those data for a scientific paper. The final project for all students will be a conservation genetic grant proposal.

Justification for new course:

The justification for this course is there is not a similar course taught for undergraduates or graduates that applies population genetics to conservation or management questions.

Does this course have a fee?

No

Is this a GEP Course?

No

Consultation

College(s)

College of Sciences

Contact Name

Dr. Gerald LeBlanc

Statement Summary

Thank you for vetting your AEC 450/550 Course Action through relevant faculty members in Biological Sciences. We recognize that the prerequisite for GN311 may increase enrollment in this class and will be prepared for such an increase.

Instructional Resources Statement

No instructional resources required

Course Objectives/Goals

The main objective of this course is to expose upper division undergraduate students and graduate students to conservation genetic tools and applications

Student Learning Outcomes

-
- **Recognize & Describe** the evolutionary mechanisms that impact the genetics of populations
-
- **Describe & Discuss** the genetic and genomic characteristics of impacted populations of plants & animals
-
- **Practice** measurements related to the genetics of populations
-
- **Apply** genetic and genomic tools to conservation questions
-
- **Analyze** case study populations for potential genetic impacts
-
- **Propose** genetics tools to evaluate the case study populations & **Devise** a plan to implement these tools
-
- **Demonstrate** acquired skills in data analysis, writing & oral presentations
-
- **Learn** how to be an active group member in collaborative group work
-
- **Learning outcome from Graduate Students: Propose & Devise** grant proposal to fund a conservation genetic project as part of or related to their dissertation. **Demonstrate** acquired skills in writing & oral presentations.
-

Student Evaluation Methods

Evaluation Method

Homework

Weighting/Points for Each

14%

Details

Population genetic problem sets. Four problem sets each worth 20 points (Total of 80 points)

Discussion

7%

Students turn in questions prior to the discussion and participation during discussion is also graded (i.e., asking questions during the discussion). Four discussion days each worth 10 points (Total of 40 points)

Short Paper	6%	Minute papers are short papers written at the end of the class period addressing three questions: (1) What was the topic of the day? (2) What was confusing? (3) What would you like to hear more about? There will be six minute papers, each worth 6 points (Total of 36 points)
Midterm	17%	One take home midterm exam covers the first half of the lecture course. Total of 100 points.
Lab Report	4%	Group work on genetic analysis of a species. Each group will work together on one of several analyses and give a final presentation. Points break down to 10 points for the analysis, 5 points for the presentation, and 5 points for group participation based on your review by group members. Total of 20 points.
Written Assignment	43%	The undergraduate independent proposal project is worth a total of 250 points. This includes several steps outlined in the syllabus. Students turn in references, outline, draft, and a final write-up and give an oral presentation. For Graduate Students: Graduate students will prepare a 2-page NSF pre-proposal or proposal specific to their conservation genetic project with the goal of the project being a part of or related to their graduate research. The independent proposal project is worth a total of 250 points. This includes several steps outlined in the syllabus. Students turn in references, outline, draft, and a final write-up and give an oral presentation.
Participation	9%	This part is beyond the class discussion component of the class. This includes regular attendance, paying attention during lecture, participating in group discussions during lecture and at the beginning of lecture follow-up on minute papers. Details of these expectations will be reviewed on the first day of class.

Topical Outline/Course Schedule

Topic	Time Devoted to Each Topic	Activity
Introduction & Genetic Variation	1 day	see syllabus
Probability, genetic variation, and review of Hardy-Weinburg Expectations	1 day	see syllabus
Genetic drift and effective population size	1 day	see syllabus
Natural selection	1 day	see syllabus
Population subdivision and gene flow review	1 day	see syllabus
Multiple loci and quantitative genetics	1 day	see syllabus
Highlights of population genetics and case study of conservation genetics	1 day	see syllabus
Demography and extinction	1 day	see syllabus
Case study of conservation genetics	1 day	see syllabus
Metapopulations and fragmented populations	1 day	see syllabus
Units of conservation	1 day	see syllabus
Hybridization	1 day	see syllabus
Writing an effective scientific proposal	1 day	see syllabus
Exploited species and conservation breeding and restoration	1 day	see syllabus

Climate change and case study of conservation genetics	1 day	see syllabus
Genetic toolkit	1 day	see syllabus
Landscape genetics and case study of conservation genetics	1 day	see syllabus
Genomic toolkit	1 day	see syllabus
Building genomic libraries	1 day	see syllabus
Next generation sequencing bioinformatics	1 day	see syllabus
Data analysis workgroups (running and interpreting analyses)	2 days	see syllabus
Data analysis workgroups presentations	1 day	see syllabus
How to incorporate proposal reviews, writing consultation group work	1 day	see syllabus
How to give an effective presentation	1 day	see syllabus
Proposal presentations	2 days	see syllabus

Syllabus

ConservationGenetics SyllabusREVISED_AEC450_550.pdf

Additional Documentation

Consultation with DrsHaddad&Mills_ConGen.pdf

Consultation with DrNadiaSinghConGen13NOv15.pdf

Additional Comments

I have consulted with Dr. Nadia Singh who is the instructor for GN 703 Population and Quantitative Genetics, Dr. Nick Haddad who is the instructor for Bio 561 Conservation Biology, and Dr. Scott Mills to make sure those graduate courses do not overlap with this one. I have attached those email exchanges.

Ugrd consultation: Hi Martha,

I asked David Aylor and Ted Emigh to look at the class because they teach the GN 423 Population/Quantitative class. David's comments are as follows:

"The first 3-4 weeks of the syllabus overlap with our class. The rest of the schedule seems more applied. The case studies and real data exercises are outside the scope of our class. I think the two classes would complement one another but do not think that the proposed conservation class could substitute for GN423. I think it would be a good elective because we offer relatively little for students with an evolution focus. "

I agree that this looks like a class that our students would enjoy taking. Even though there is some overlap in the early part of the class, I think that most of the course is quite different from our current offerings.

Sincerely,

Betty

mInosbis 2/11/2016: See attached documents for graduate-level consultations that address potential overlap. No further consultation needed.

ABGS Reviewer Comments:

-The logistics portion of the syllabus needs to be clarified. The first two sentences describe different requirements for the graduate students.

-It needs to be clear that the expectations of the graduate students are higher than those of the undergraduate students.

-Has the department given the Department of Biological Sciences a heads-up about the GN 311 prerequisite? The consultation notes do not reference the prerequisite.

ghodge 2/25/2015 Ask for a consultation on GN 311. (Thought this would have been covered by UCCC). From the syllabus the difference in expectation is the written report which is 43% of the grade. This is more than other previously approved courses. We can ask if this is okay at the ABGS meeting. I do not understand what edit they are suggesting to the syllabus.

3/8/2016: Consultation notes from Biological Sciences were added.

Course Reviewer Comments

renutt (Mon, 07 Dec 2015 14:15:21 GMT): Rollback: Need to include differences between UG and Grad levels in learning outcomes and assignments (also on syllabus), include attendance policy link on syllabus, and more details information about participation and point deductions; don't forget to upload revised syllabus. Let me know if you need assistance.

dfrrp (Thu, 28 Jan 2016 17:07:25 GMT): Rollback: Corrections

lamarcus (Mon, 01 Feb 2016 19:40:00 GMT): Contact hours updated with permission of instructor from 2.5 to 3.

Key: 8488