

**University Courses & Curricula Committee 2015-2016**

February 10th, 2015  
Talley Student Union 4140  
12:30pm-2:30pm

**Call to Order 12:30pm**

- Welcome and Instructions, Chair Dr. Scott Despain
- Remarks from Associate Vice Provost, Dr. Barbara Kirby
- Approval of UCCC January 27th, 2016 Minutes
- Course and Curricular Business

**New Business**

- Review of the Consent Agenda

Presenter	Action	Type	Notes
Ferguson	<a href="#">MES 401 MES Capstone Design I</a>	Minor Action	Rev: Cat. Descr.
	<a href="#">BAE 474 Principles and Applications of Ecological Engineering</a>	Minor Action	Rev: Pre/Co Reqs
Lindsay	CNR Courses Not Taught in 5 Years	Drop	See attached list
Black	Minor Action for Creating New "BSC" Prefix	Minor Action	"BSC" creates one prefix between depts.
	17BIOBA-- <i>Bachelor of the Arts in Biology</i>	Minor Action	See attached memo
Fath	<a href="#">HESS 271 Varsity Sports Military Conditioning</a>	Drop	

**Division of Academic & Student Affairs**

Presenter	Reviewers	Action	Type
Beller	Nowel, Tarpy, Plummer	<a href="#">EMA 110 Introduction to Arts Entrepreneurship</a>	New Course
	Driscoll, Hessling, Auerbach	<a href="#">HESF 112 Fitness Kickboxing</a>	New Course
Fath	Banks, Black, Trivedi	<a href="#">HESR 255 Pickleball</a>	New Course

**College of Agricultural & Life Sciences**

Presenter	Reviewers	Action	Type
Trivedi	Ozturk, Black, Wu	<a href="#">AEC 450 Conservation Genetics</a>	New Course
	Wu, Fath, Hergeth	<a href="#">BAE 321 Bioprocess Engineering Fundamentals</a>	New Course
	Hessling, Currie, Auerbach	<a href="#">BAE 371 Fundamentals of Hydrology for Engineers</a>	Revision: Title, Abbreviated Title, Pre/Co Reqs
	Beller, Plummer, Rieder	<a href="#">BAE 376 Watershed Assessment and Water Quality Protection</a>	New Course
	Lindsay, Nowel, Driscoll	<a href="#">BAE 478 Agricultural Waste Management</a>	New Course

**College of Natural Resources**

Presenter	Reviewers	Action	Type
Lindsay	Ferguson, Plummer, Tarpy	<a href="#">FOR 150 Critical Thinking &amp; Data Analysis</a>	Revision: Title, Abbreviated Title, Cr/Contact Hours, Restrictive State, Catalog Description

**Poole College of Management**

Presenter	Reviewers	Action	Type
Nowel	Auerbach, Hessling, Beller	Bachelor of Science in Business Administration	Dual Degree with Shanghai University (SHU-SILC)
	Despain, Hergeth, Fath	Bachelor of Science in Business Administration	Dual Degree with Universidad Pontificia Comillas (COMILLAS)

**Notes:**

- All linked course actions are viewable in CIM.
- To view actions, please click on the hyperlink. You may need to use your Unity ID to log in.
- If you experience issues logging in, please go to <https://next-catalog.ncsu.edu/courseadmin/> and type the course prefix and number into the search bar.

**University Courses and Curricula Committee – January 27<sup>th</sup>, 2016**

Talley Student Union 4140

Call to Order: 12:33 PM

**Members Present:** Chair, Scott Despain, Andy Nowel, Catherine Driscoll, Peter Hessling, David Tarpy, Shweta Trivedi, Kethleen Rieder, Maria Oliver-Hoyo, Edwin Lindsay, Debbie Currie, Scott Ferguson, Amanda Beller, Mian Wu, and Jamie Plummer.

**Ex-Officio Members Present:** Rebecca Swanson, Charles Clift, Kevin Burge, Brittany Mastrangelo, Barbara Kirby, Li Marcus, and Sarah Howard

**Guests:** Lindsey Mihalov (R&R), John Harrington (R&R), and Erin Dickson (CODA program)

**Welcome and Introductions**

- **Remarks from Chair Dr. Scott Despain**
- **Remarks from Dr. Barbara Kirby:** Welcome, late on the attendance what do we put on our syllabus with inclement weather, advised faculty to post info online. Pre vet classes made up. Working with Mike Mullen with what our committee suggests.
- **Approval of UCCC January 13th, 2016 Minutes**
  - Approved Unanimously. Members clarified the issues of HI 252 from previous meeting.

**New Business:**

- **Consent Agenda—Approved Unanimously**
- **Course and Curricular Business**
- **13SCIEDBS—13SCIEDES Approved Unanimously**

Discussion: The action was presented and approved without further discussion.
- **13MTHEDBS—13MTHEDMSM, 13MTHEDCPS, 13MTHEDMS, 13MTHEDMA, 13MTHEDSD, 13MTHEDST Approved Unanimously**

Discussion: The action was presented and approved without further discussion.

**PackPlanner Demo**

Brittany Mastrangelo and Charles Clift introduced themselves to the committee and explained their roles on both committee and in their offices, then proceeded with the demo.

Members expressed excitement for the new PackPlanner. Brittany and Charles explained that students could change courses but not concentration; though they can changes the courses that reflect the concentration they wish to take. Users of the PackPlanner may also browse the catalog, move courses to summer session, or add comments as student or advisor. The advisor can also adjust the student's plan.

Brittany and Charles reminded the committee that the system is only as accurate as the catalog itself, so the adjustment of 8-semester displays by the departments and dropping courses that haven't been taught in five years helps.

Also, the PackPlanner may not load as great a plan for a junior as a freshman. The planner will do it's best to project. This is why the comments feature is so important—you can even use it during advising sessions. The wording around it will be heavily set so that it's clear it is a tool not a replacement for the advisor. Brittany and Charles thanked the committee for their time and ended their demo.

Meeting Adjourned at: 1:04 PM

*Respectfully Submitted by Sarah Howard*

# Course Syllabus

## MES 401/402 – MES Capstone Design I & II

### Section 605

Fall MES 401 / Spring MES 402

3 Credit Hour (MES 401) 4 Credit Hour (MES 402)

### Course Description

This course sequence is a two semester senior capstone engineering design and manufacturing experience. This capstone experience is the culmination of the MES student's undergraduate education experience. Working in teams, students perform engineering design to solve a real-world engineering problem supplied by an industry partner. In MES 401 & MES 402, students follow a formal systems engineering approach to manage their design project through the completion of a System Requirements Review, a Conceptual Design Review, a Preliminary Design Review, a Detailed Design Review, and a Critical Design Review. Students develop written and verbal communication skills through reports and presentations. Students also gain insight into engineering design practices through guest lectures from local engineers.

### Learning Outcomes

By the end of this course, students should be able to:

1. Investigate an open-ended "real-world" engineering problem and define goals and objectives for its solution.
2. Create and maintain an engineering journal.
3. Demonstrate independent learning skills by devising and investigating feasible ideas.
4. Demonstrate the ability to work effectively in engineering teams to resolve conflict and meet quantitative engineering objectives established during the project.
5. Effectively communicate technical information through engineering drawings, written reports, and oral presentations (formal & informal).
6. Understand and utilize mechanical engineering design and analysis techniques.
7. Demonstrate proficiency in creating and understanding design drawings.
8. Demonstrate proficiency in using state of the art software and other electronic tools.
9. Create and execute a Systems Engineering Management Plan complete with information such as a project management plan, project budget and life-cycle cost analysis.
10. Clearly request and exchange quantitative information.
11. Analyze and optimize a design in relation to life-cycle parameters such as performance, cost, safety, manufacturability, reliability, and maintainability.

## **Course Structure**

The MES 401/MES 402 capstone sequence is composed of two main focus areas – Design and Manufacturing Experience.

The Design focus is achieved with an industry sponsor providing a real-world problem. The students are split into instructor-assigned design teams and are required to design a product which will solve the sponsor's problem. Students must adapt and follow the formal systems engineering model when creating their design. Specific deliverables are defined with the project sponsor, but most design projects will end with at least a set of production ready drawings.

The Manufacturing Experience focus is achieved by having each student attend sixteen hours of machining training where they will learn the basic operation of machines such as a lathe and milling machine. The students will also learn how engineering design decisions impact the manufacturability of parts.

To facilitate both focus areas of the course, the following components will be present in the course:

### **Weekly Lectures**

Weekly lectures are used to review and discuss applicable subjects such as project requirements, systems engineering design steps, analysis techniques, design for manufacturability, legal/safety/ethical issues in design, and various workplace readiness topics.

### **Technical Reviews**

The course will have an external technical review panel composed of the course instructor, a representative from the project sponsor and at least one other practicing engineer. Students must formally present their team's work to the technical review panel at three formal technical reviews – Systems Requirements Review (SRR), Preliminary Design Review (PDR) and Detailed Design Review (DDR). Entrance and exit criteria for each review will be given to each project team during the weekly lectures. Entrance criteria will include written documentation required for each review and information from each review will be assembled for the final course report.

### **Systems Engineering Status Reviews**

Along with their physical design and related documentation, students will be required to perform various systems engineering management tasks to support their design effort. Four times during the semester, each team will meet with the instructor to review their status on the systems engineering management of the project.

### **Feasible Idea**

After the Systems Requirements Review (SRR), each student must individually develop and present to the class one feasible design idea that will satisfy all requirements presented at the SRR. Each student will be allowed ten minutes and a maximum of 2 PowerPoint slides to clearly present and "sell" their idea to the class. A clear sketch of the idea must be included in the presentation.

### **Design Journals**

Each student will be required to keep a design journal throughout the design experience. The design journal must be a permanently bound notebook. The notebook will serve as an indication of each student's contribution to the project so students should keep dated entries of their notes, sketches, calculations, and other records of their thoughts related to the design experience.

### **Team Meetings**

Each project team must have a formal team meeting every other week. For this meeting

- One day in advance of the meeting, the designated meeting leader must prepare and distribute a printed meeting agenda and the leader's name should be noted on the agenda as the meeting leader.

- The meeting leader must prepare and distribute meeting minutes from the meeting no later than two days after the meeting.
- Meeting minutes should also be produced from any other formal meeting the group has (including review meetings with the sponsor)
- Group should have one notebook with all meeting agenda's and minutes.

### **Fundamentals of Engineering Exam Preparation and Exam**

MES students will be provided with access to the NC State FE Exam Review on-line course and are asked to prepare for, register and take the FE exam during spring semester.

## **Instructors**

**Bill Fortney** (wbfortne) - *Instructor*

**Email:** [wbfortne@ncsu.edu](mailto:wbfortne@ncsu.edu)

**Phone:** 252-514-5956

**Office Location:** Redd Room 108 - NCSU At Havelock

**Office Hours:**

## **Course Meetings**

### **Lecture**

**Days:** T/Th    **Time:** 12:00pm – 1:15pm    **Campus:** Havelock    **Location:** Redd Room 109

*This meeting is required.*

### **Course Materials**

#### **Textbooks**

*No Textbook is required.*

#### **Expenses**

None.

#### **Materials**

None.

## **Requisites and Restrictions**

### **Prerequisites**

**MES 401:** MAE 316, MES 300    **MES 402:** MES 401

### **Co-requisites**

**MES 401:** MAE 415, MAE 310

### **Restrictions**

none

## **General Education Program (GEP) Information**

### **GEP Category**

This course does not fulfill a General Education Program category.

### **GEP Co-requisites**

This course does not fulfill a General Education Program co-requisite.

## **Transportation**

Students will be required to provide their own transportation for this class. Non-scheduled class time for field trips or out-of-class activities is required for this class.

### **Safety & Risk Assumptions**

Safety is everyone's responsibility and no one should work with a piece of equipment on which they are unfamiliar. Each student will be shown proper operation of each piece of equipment before they operate it. Proper personal protection equipment must be used at all times.

## Grading

### Grade Components Each Semester for MES 401 and MES 402

Component	Weight	Details
<b>Individual Grade</b>	<b>15%</b>	Individual grade will be based on lab journal, performance during System Engineering Status Reviews, performance during the Machining Training, and instructor evaluation.
<b>Team Grade</b> <b>Project Plan</b> <b>Systems Requirements Review</b> <b>Concept Review</b> <b>Preliminary Design Review</b> <b>Critical Design Review</b> <b>Final Presentation</b> <b>Final Report</b>	<b>85%</b>	Based on the initial project plan negotiated with the sponsor, students will complete a sub-set of the design tasks in MES 401 and the remaining tasks in MES 402. The team grade each semester is based on performance of the assigned steps for each semester. Each student's grade can be modified based on peer reviews conducted throughout the semester.

### Letter Grades

**This Course uses Standard NCSU Letter Grading:**

97	≤	<b>A+</b>	≤	100
93	≤	<b>A</b>	<	97
90	≤	<b>A-</b>	<	93
87	≤	<b>B+</b>	<	90
83	≤	<b>B</b>	<	87
80	≤	<b>B-</b>	<	83
77	≤	<b>C+</b>	<	80
73	≤	<b>C</b>	<	77
70	≤	<b>C-</b>	<	73
67	≤	<b>D+</b>	<	70
63	≤	<b>D</b>	<	67
60	≤	<b>D-</b>	<	63
0	≤	<b>F</b>	<	60

### Requirements for Credit-Only (S/U) Grading

In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to

[http://www.ncsu.edu/policies/academic\\_affairs/courses\\_undergrad/REG02.20.15.php](http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.15.php).

### Requirements for Auditors (AU)

Information about and requirements for auditing a course can be found at

[http://www.ncsu.edu/policies/academic\\_affairs/pols\\_regs/REG205.00.5.php](http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.5.php).

### Policies on Incomplete Grades

If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which



the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at [http://www.ncsu.edu/policies/academic\\_affairs/grades\\_undergrad/REG02.50.3.php](http://www.ncsu.edu/policies/academic_affairs/grades_undergrad/REG02.50.3.php).

### **Late Assignments**

All assignments are due at the beginning of class on the due date. Ten points will be deducted from the assignment's grade for each day late. A grade of zero will be given if students do not conduct one of the formal reviews on the specified date.

### **Attendance Policy**

#### **Attendance**

Students are expected to attend all class sessions and arrive to class on-time.

#### **Absences**

Students who miss class due to an unexcused absence will not be allowed to make up any work completed during the class period and any work due will be considered late. Students who miss class due to an excused absence should work with their instructor to make up required work. Documented excuses should be presented to the instructor by the next class meeting. Examples of anticipated qualified excused absences are:

- The student is away from campus on official University business, e.g., participating in a professional meeting, as part of a design team or athletic team.
- Required court attendance as certified by the Clerk of Court.
- Religious observances as verified by Parents and Constituent Services (919) 515-2441. For more information regarding religious observances, visit the Diversity calendar.
- Required military duty as certified by the student's commanding officer.

For a full statement on the University attendance policy, see

[http://www.ncsu.edu/policies/academic\\_affairs/courses\\_undergrad/REG02.20.3.php](http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.3.php)

#### **Makeup Work**

Students with a documented excused absence as described above will be given one week to turn in any missed work. After this week, the assignment will be considered late as described in the late assignment policy.

#### **Additional Excused Policy**

None.

### **Academic Integrity**

#### **Academic Integrity**

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at

[http://www.ncsu.edu/policies/student\\_services/student\\_discipline/POL11.35.1.php](http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php)

#### **Academic Honesty**

See [http://www.ncsu.edu/policies/student\\_services/student\\_discipline/POL11.35.1.php](http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php) for a detailed explanation of academic honesty.

#### **Honor Pledge**

Your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment."

### **Electronically-Hosted Course Components**

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**Electronically-hosted Components:** All course material will be delivered to you using the course Moodle site.

## **Accommodations for Disabilities**

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office (<http://www.ncsu.edu/dso>) located at 1900 Student Health Center, Campus Box 7509, (919) 515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at [http://www.ncsu.edu/policies/academic\\_affairs/courses\\_undergrad/REG02.20.1.php](http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.1.php).

## **Non-Discrimination Policy**

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at [http://www.ncsu.edu/policies/campus\\_environ](http://www.ncsu.edu/policies/campus_environ) or [http://www.ncsu.edu/equal\\_op](http://www.ncsu.edu/equal_op). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 515-3148.

# **BAE 474 – Principles and Applications of Ecological Engineering**

**Section 001**

**SPRING 2012**

**3 Credit Hours**

## **Course Description**

Governing principles of ecological engineering and the advanced biological, chemical, and physical conditions that determine the design of biological systems. Emphasis on 1) stream and wetland ecosystem restoration and 2) natural treatment systems for groundwater, stormwater, and wastewater such as riparian buffers, bioretention cells, and stormwater wetlands. A class field trip is required during non-scheduled time.

## **Learning Outcomes**

Students will:

1. Describe the governing principles of the field of ecological engineering and how they apply to biological engineering
2. Apply relationships between advanced biological, chemical, and physical processes occurring in natural ecosystems to engineered ecological systems for restoration and water quality improvement
3. Demonstrate the utilization of soil and water engineering techniques to a.) design stream and wetland restoration projects and b) natural treatment systems for groundwater, stormwater, and wastewater
4. Apply implementation techniques recommended for a variety of ecological engineering projects

## **Course Structure**

Class will include lectures, group projects, and 1 mandatory Saturday field trip to a stream and wetland restoration project in late April.

## **Instructors**

**Michael R. Burchell II** (mrburche) - *Instructor*

**Email:** [mike\\_burchell@ncsu.edu](mailto:mike_burchell@ncsu.edu)

**Web Page:** <http://www.bae.ncsu.edu/people/faculty/mrburche/>

**Phone:** 919-513-7372

**Office Location:** 210 Weaver Administration Building

**Office Hours:** By Appointment

## **Course Meetings**

### **Lecture**

**Days:** TH

**Time:** 1:30pm - 2:45pm

**Campus:** Main

**Location:** DS Weaver 125

*This meeting is required.*

### **Meeting Notes**

One Saturday field trip during the third week on April will be required.

## Course Materials

### Textbooks

**Ecological Engineering and Ecosystem Restoration** - William J. Mitsch and Sven Erik Jorgensen

**Edition:** 1st

**ISBN:** 0-471-33264-X

**Cost:** Approximately \$100

*This textbook is required.*

### Expenses

None.

### Materials

**On-line class notes** - 0\$

*This material is required.*

## Requisites and Restrictions

### Prerequisites

SSC 332 or MB 351, BAE 471

### Transportation

Transportation will be provided by: Department of Biological and Agricultural Engineering - 15 Passenger vans. Non-scheduled class time for field trips is required for this class.

## Safety & Risk Assumptions

A Field trip will be to a stream and wetland site. Students will be briefed about proper field clothing required.

## Grading

### Grade Components

Component	Weight
Test 1	15%
Test 2	15%
Homework	25%
Group projects (3)	20%
Final Exam	25%

## Letter Grades

**This Course uses Standard NCSU Letter Grading:**

97 ≤ **A+** ≤ 100

93 ≤ **A** < 97

90 ≤ **A-** < 93

87 ≤ **B+** < 90

83 ≤ **B** < 87

80	≤	<b>B-</b>	<	83
77	≤	<b>C+</b>	<	80
73	≤	<b>C</b>	<	77
70	≤	<b>C-</b>	<	73
67	≤	<b>D+</b>	<	70
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60	≤	<b>D-</b>	<	63
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## Late Assignments

Late Assignments will be assessed a 10% penalty per 24 hour period. No late assignments will be accepted after 72 hours.

## Attendance Policy

### Attendance

Attendance is required. Two unexcused absences will result in a 5% deduction in final grade. Four unexcused absences will result in a 10% deduction in final grade.

### Absences

Please contact the instructor as soon as possible about an excused absence. University definition of excused absences:

[http://www.ncsu.edu/policies/academic\\_affairs/courses\\_undergrad/REG02.20.3.php](http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.3.php)

### Makeup Work

Makeup work will only be allowed for excused absences.

### Additional Excuses Policy

Missing the required field trip will result in an automatic 5% deduction in final grade.

## Academic Integrity

## Academic Integrity

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## **Course Schedule**

### **Lecture TH 1:30pm - 2:45pm — Week 1 — 01/10/2012 - 01/12/2012**

Class introduction and definitions of Ecological Engineering – Reading: Chapter 1

### **Lecture TH 1:30pm - 2:45pm — Week 2 — 01/17/2012 - 01/19/2012**

Concepts and applications of Ecological Engineering – Reading: Chapter 2

**Lecture TH 1:30pm - 2:45pm — Week 3 — 01/24/2012 - 01/26/2012**

Important molecular-scale biogeochemical concepts – Reading: Chapter 3

**Lecture TH 1:30pm - 2:45pm — Week 4 — 01/31/2012 - 02/02/2012**

Concepts of stream ecology– Reading: Chapters 4 and 5

**Lecture TH 1:30pm - 2:45pm — Week 5 — 02/07/2012 - 02/09/2012**

Stream restoration design– Reading: Chapter 6

**Lecture TH 1:30pm - 2:45pm — Week 6 — 02/14/2012 - 02/16/2012**

TEST 1, Stream restoration design– Reading: Chapter 7

**Lecture TH 1:30pm - 2:45pm — Week 7 — 02/21/2012 - 02/23/2012**

Soil-water relationships and biological conditions in waterlogged soils– Reading: Chapter 8  
Macrophyte adaptations to wet soils

**Lecture TH 1:30pm - 2:45pm — Week 8 — 02/28/2012 - 03/01/2012**

Riparian buffers for surface and groundwater improvement– Reading: Chapter 9

**Lecture TH 1:30pm - 2:45pm — Week 9 — 03/06/2012 - 03/08/2012**

NO CLASS - SPRING BREAK

**Lecture TH 1:30pm - 2:45pm — Week 10 — 03/13/2012 - 03/15/2012**

Stormwater Best Management Practices (BMPs) - Types and underlying design principles– Reading: Chapter 10

**Lecture TH 1:30pm - 2:45pm — Week 11 — 03/20/2012 - 03/22/2012**

Stormwater BMP design

**Lecture TH 1:30pm - 2:45pm — Week 12 — 03/27/2012 - 03/29/2012**

Ecology and hydrology of natural wetland systems– Reading: Chapter 11

**Lecture TH 1:30pm - 2:45pm — Week 13 — 04/03/2012 - 04/05/2012**

Test 2 + no Class Spring Holiday

**Lecture TH 1:30pm - 2:45pm — Week 14 — 04/10/2012 - 04/12/2012**

Demise and restoration of wetland ecosystems– Reading: Chapter 13

**Lecture TH 1:30pm - 2:45pm – Week 15 – 04/17/2012 - 04/19/2012**

Design of wetlands for stormwater and wastewater treatment– Reading: Chapter 14

**Lecture TH 1:30pm - 2:45pm – week 16 – 04/24/2012 - 04/26/2012**

Treatment wetlands continued + Field trip on 4/28

**Lecture TH 1:30pm - 2:45pm – Review and Final Exam – 05/01/2012 - 05/10/2012**

Review and Final Exam





January 26, 2016

MEMORANDUM

To: Dr. Barbara Kirby, Associate Vice Provost  
Division of Academic and Student Affairs

From: Dr. Adrianna Kirkman, Associate Dean for Academic Affairs  
College of Natural Resources

The College of Natural Resources Academic Affairs office requests the following courses be dropped from the university catalog:

Course	Course Title
FOR 291	Independent Study in Forestry
FOR 404	Forest Wildlife Management
FW 430	Fisheries and Wildlife Administration
PRT 320	Convention and Visitor Services
FOR 202	Anatomy and Properties of Renewable Materials
FOR 221	Conservation of Natural Resources
SMT 230	Sustainability, Global Trade and Forest Products
SMT 231	Sustainable Manufacturing

Justification:

These courses have been reviewed by the appropriate departments. There is no plan to teach these courses in the future. This review was done on the request of Dr. Barbara Kirby to review courses not taught in five years.

Proposed Effective Date: January 2016

Approval Signatures:

Carlae Fick  
Chair of the CNR Academic Affairs Committee

1-24-16  
Date

Adrianna G. Kirkman  
Dean of the College of Natural Resources

1/26/16  
Date

\_\_\_\_\_  
Chair, University Courses & Curricula Committee

\_\_\_\_\_  
Date

\_\_\_\_\_  
Dean, Undergraduate Academic Program

\_\_\_\_\_  
Date

**CNR Course Not Taught in Five Years**

GEP Course =

<b>SUBJECT</b>	<b>CAT NBR</b>	<b>CAREER</b>	<b>CRSE ID</b>	<b>LAST OFFERED</b>	<b>GEP</b>	<b>COURSE TITLE</b>	<b>Drop Course by February 1, 2016</b>
FOR	291	UGRD	010246	No offering on file with SIS	N	Independent Study in Forestry	Drop
FOR	404	UGRD	010278	Spring 2003	N	Forest Wildlife Management	Drop
FW	430	UGRD	010802	Spring 2008	N	Fisheries and Wildlife Administration	Drop
PRT	320	UGRD	019319	Fall 2008	N	Convention and Visitor Services	Drop
FOR	202	UGRD	010220	Fall 1970	Y	Anatomy and Properties of Renewable Materials	Drop
FOR	221	UGRD	010229	Spring 2004	Y	Conservation of Natural Resources	Drop
SMT	230	UGRD	031728	No offering on file with SIS	Y	Sustainability, Global Trade and Forest Products	Drop
SMT	231	UGRD	031712	No offering on file with SIS	Y	Sustainable Manufacturing	Drop



**To:** Mike Mullen, Vice Chancellor and Dean for Academic and Student Affairs  
**From:** Jane Lubischer, Assistant Department Head for Undergraduate Programs, Department of Biological Sciences  
**Subject:** Minor Action for creating the BSC prefix for offerings by the Department of Biological Sciences  
**Date:** 1 January 2016

**Proposed effective date:** when approved

**Proposed changes and justification**

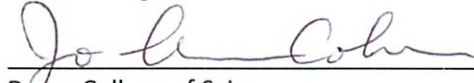
The Department of Biological Sciences currently offers courses on different topics under several disciplinary-specific prefixes (e.g., GPH, GN, MB, TOX). We are beginning, however, to create course offerings that span the disciplines represented within our new department, and would like to create a new prefix – BSC – for such offerings. For example, we are in the process of revising our “learning experience” courses, and would like to offer them under the BSC prefix rather than under the variety of prefixes used previously by our programs.

Previously, we would have submitted the course actions at the same time, but with the new CIM system, we now need to establish the BSC prefix before we can submit any course actions using the BSC prefix.

**SIGNATURES (AS REQUIRED):**

  
\_\_\_\_\_  
Head, Department of Biological Sciences      1/13/16  
Date

  
\_\_\_\_\_  
Chair, College Courses & Curricula Cmte      1/13/16  
Date

  
\_\_\_\_\_  
Dean, College of Sciences      1/13/2016  
Date

\_\_\_\_\_  
Chair, Univ Courses & Curricula Cmte      Date

\_\_\_\_\_  
Dean, Academic and Student Affairs      Date

EFFECTIVE DATE: \_\_\_\_\_



**To:** Mike Mullen, Vice Chancellor and Dean for Academic and Student Affairs  
**From:** Jane Lubischer, Assistant Department Head for Undergraduate Programs, Department of Biological Sciences  
**Subject:** Minor Action for revising the 17BIOBA semester-by-semester display  
**Date:** 19 January 2016

**Proposed effective date:** when approved

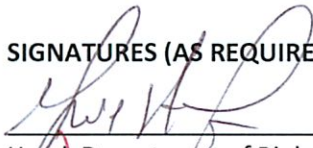
**Proposed changes and justification**

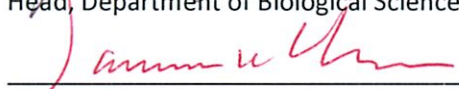
As we begin to roll out the new Bachelor of Arts degree in Biology and have started advising students about creating their Cross Discipline Electives (CDE) list, we would like to encourage them to choose Free Electives and GEP Electives to explore possible CDE topics. Accordingly, we are proposing to move one Free Elective and one GEP Elective from the senior year to the sophomore year (and move two CDEs from the Sophomore year to the Senior year), to explicitly provide more space in the sophomore year for such exploration.


As we make these changes, we are also correcting two other things: in the last 3 semesters, the CDEs were incorrectly described as "(Advanced)" rather than "(Advised)"; and "GEP PE/Healthy Living Requirement" is being changed to "GEP Health and Exercise Studies."

Finally, we are adding to the footnotes a clarification of the policy that students cannot use the same course to meet both a CDE requirement and a GEP requirement (with the exception of Global Knowledge and US Diversity). This clarification takes the form of an addition to the "IMPORTANT NOTES" section of the Footnotes and a re-wording of the last sentence of the Cross Discipline Electives footnote (footnote 8).

**SIGNATURES (AS REQUIRED):**

  
\_\_\_\_\_  
Head, Department of Biological Sciences      Date 1/21/16

  
\_\_\_\_\_  
Chair, College Courses & Curricula Cmte      Date 1/27/16

  
\_\_\_\_\_  
Dean, College of Sciences      Date 1/27/2016

\_\_\_\_\_  
Chair, Univ Courses & Curricula Cmte      Date

\_\_\_\_\_  
Dean, Academic and Student Affairs      Date

EFFECTIVE DATE: \_\_\_\_\_

## FRESHMAN YEAR

<i>Fall Semester</i>	<i>Credits</i>	<i>Spring Semester</i>	<i>Credits</i>
BIO 181 Intro Bio: Ecol, Evol, Biodiv	4	BIO 183 Intro Bio: Cell & Molecular	4
CH 101 Chemistry-A Molecular Sci.	3	<sup>2</sup> Organic Chemistry and Lab	4
CH 102 General Chemistry Lab	1	<sup>4</sup> ENG 101	4
LSC 101 Critical & Creative Life Sci	2	GEP Elective*	3
<sup>1</sup> Calculus	3	<del>GEP PE/Healthy Living Requirement*</del>	
<sup>3</sup> LSC 103 Exploring Life Sci Disciplines	1	GEP Health and Exercise Studies*	1
	<i>Total: 14</i>		<i>Total: 16</i>

## SOPHOMORE YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
<sup>5</sup> Statistics	3	<sup>7</sup> Life Science Elective	3
<sup>6</sup> Advanced Communication Requirement	3	<sup>7</sup> Life Science Elective	4
<sup>7</sup> Life Science	3	<sup>8</sup> Cross Discipline Elective (Advised)	3
<del><sup>8</sup>Cross Discipline Elective (Advised)</del>		<del><sup>8</sup>Cross Discipline Elective (Advised)</del>	
GEP Elective*	3	GEP Elective*	3
<sup>9</sup> Free Elective	3	<sup>9</sup> Free Elective	3
	<i>Total: 15</i>		<i>Total: 16</i>

## JUNIOR YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
<sup>10</sup> PY 131 Conceptual Physics	4	<sup>7</sup> Life Science Elective	3
<sup>11</sup> Experiential Learning Requirement	3	<sup>7</sup> Life Science Elective	3
<sup>8</sup> Cross Discipline Elective (Advised)	3	<sup>8</sup> Cross Discipline Elective (Advised)	3
GEP Elective*	3	<del>Advanced)</del>	
<sup>9</sup> Free Elective	3	<sup>6</sup> Advanced Communication Requirement	3
		GEP Elective*	3
	<i>Total: 16</i>		<i>Total: 15</i>

## SENIOR YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
<sup>7</sup> Life Science Elective	3	<sup>7</sup> Life Science Elective	3
<sup>7</sup> Life Science Elective	3	<sup>8</sup> Cross Discipline Elective (Advised)	3
<sup>8</sup> Cross Discipline Elective (Advised)	3	<del>Advanced)</del>	
<del>Advanced)</del>		<sup>9</sup> Free Elective	3
<sup>8</sup> Cross Discipline Elective (Advised)	3	<sup>8</sup> Cross Discipline Elective (Advised)	3
GEP Elective*	3	<del>GEP Elective*</del>	
<del>Free Elective</del>		<del>GEP PE/Healthy Living Requirement*</del>	
		GEP Health and Exercise Studies*	1
		BIO 481 Senior Capstone Project	1
	<i>Total: 15</i>		<i>Total: 14</i>

Minimum Credit Hours Required for Graduation: 121

**Footnotes**

A grade of C- or better is required in the following courses:

- LSC 101 Critical and Creative Thinking in the Life Sciences
- LSC 103 Exploring Life Science Disciplines
- BIO 181 Introductory Biology: Ecology, Evolution, and Biodiversity
- BIO 183 Introductory Biology: Cell and Molecular Biology
- CH 101 Chemistry – A Molecular Science
- CH 102 General Chemistry Lab
- ENG 101 Academic Writing & Research
- <sup>3</sup>Calculus

**IMPORTANT NOTES:**

- Students should check with their adviser before electing to take any course with S/U grading if it is normally graded A-F. Up to 12 hours of Free Electives can be taken S/U.
- Students cannot use the same course both as a Cross Discipline Elective and to meet a GEP requirement (with the exception of Global Knowledge and US Diversity).
- Student are responsible for determining the pre-requisites for any course they are interested in taking.
- Students interested in graduate school or professional school should check the courses required for admission to the programs to which they plan to apply.
- The B.A. in Biological Sciences cannot be used as a second major for many students already in a degree program in the life sciences – students interested in a second major should first check with the coordinator of their desired second major.

*<sup>1</sup>Calculus alternatives (take one course)*

Students interested in taking more than one semester of calculus should start with either MA 131 or MA 141, because MA 121 does not serve as a pre-requisite for either MA 231 or MA 241. Additional semesters of calculus can be used toward Life Science Electives requirements.

- MA 121 Elements of Calculus
- MA 131 Calculus for Life and Management Sciences A (first of two-semester series)
- MA 141 Calculus I (first of three-semester series)

*<sup>2</sup>Organic chemistry alternatives (take one)*

CH 220 is a single semester organic chemistry course, with lab included. CH 221 is the first of a two semester sequence (with CH 223) in organic chemistry, with CH 222 serving as the lab. Students earning a B.A. in Biological Sciences can take either CH 220 or CH 221 plus CH 222 to meet their organic chemistry requirement. Students who wish to take two semesters of organic chemistry should NOT start with CH 220, but should take CH 221/222 and CH 223/224.

*<sup>3</sup>LSC 103 Exploring Life Science Disciplines*

LSC 103 deals with transition-to-college issues while exploring degree program options within the life sciences. If a student transfers into the B.A. in Biological Sciences after taking a similar course in another program, that course can be substituted for LSC 103 on the degree audit, an action initiated by the academic advisor.

*<sup>4</sup>ENG 101 and the General Education Program (GEP)*

All NC State students take 26 credit hours as part of the General Education Program (GEP). This includes ENG 101, which can be taken either the first or second semester of the first year, and LS 101, which meets 2 credit hours of the Interdisciplinary Perspectives GEP requirement. For their GEP Elective(s) in the first year, students are encouraged to explore the GEP course lists (<http://oucc.ncsu.edu/gep-courses>) for Interdisciplinary Perspectives, Humanities, or Social Sciences and choose a course in which they are interested.

<sup>5</sup>*Statistics alternatives (take one course)*

ST 305  
ST 311  
ST/BUS 350

<sup>6</sup>*Advanced Communication Requirement (take one course from each list, minimum 6 cr hrs)*

Communication courses

COM 110 Public Speaking  
COM 112 Interpersonal Communication  
COM 201 Introduction to Persuasion Theory  
COM 202 Small Group Communication  
COM 203 Theory and Practice of Acting  
COM 211 Argumentation and Advocacy  
COM 213 Oral Interpretation of Literature  
COM 226 Introduction to Public Relations  
COM 240 Communication Inquiry

Advanced Writing courses

ENG 201 Writing Literary Analysis  
ENG 214 Introduction to Editing  
ENG 232 Literature and Medicine  
ENG 287 Explorations in Creative Writing  
ENG 288 Fiction Writing  
ENG 289 Poetry Writing  
ENG 292 Writing About Film  
ENG 316 Principles of News and Article Writing  
ENG 323 Writing in the Rhetorical Tradition  
ENG 331 Communication for Engineering and Technology (Junior standing required)  
ENG 332 Communication for Business and Management (Junior standing required)  
ENG 333 Communication for Science and Research (Junior standing required)  
ENG 381 Creative Nonfiction Writing Workshop  
ENG 422 Writing Theory and the Writing Process

<sup>7</sup>*Life Science Electives (take a total of 25 credit hours)*

A total of 25 credit hours must be taken from the courses listed below. At least 19 of these hours must be at the 300 level or higher. With adviser approval, students can use a total of up to 3 hours of learning experience (e.g., BIO 492, 493) or honors research experience toward Life Science Electives or toward <sup>8</sup>Cross Discipline Electives (Advised) – whichever category the experience appropriately fits. Some experimental courses (295, 495, and 592) and graduate

(500-) level courses may also be used as Life Science Electives, with adviser and departmental approval. Students should check the prerequisites and restrictions on courses in which they are interested.

Microbiology and Biochemistry courses

BCH 220 Role of Biotechnology in Society  
BCH 351 or BCH 451 Biochemistry  
BCH 452 Introductory Biochemistry Lab  
BCH 453 Biochemistry of Gene Expression  
BCH 454 Advanced Biochemistry Laboratory  
BCH 455 Proteins and Molecular Mechanisms  
BIT/MB 210 Phage Hunters  
BIT/MB 211 Phage Genomics  
CH 223 Organic Chemistry II  
CH 224 Organic Chemistry II Lab  
MB 200 Microbiology and World Affairs  
MB 320 Fundamentals of Microbial Cell Culture  
MB 351 General Microbiology  
MB 352 General Microbiology Laboratory  
MB 354 Inquiry-Guided Microbiology Lab  
MB 360 Scientific Inquiry in Microbiology: At the Bench  
MB 405 Food Microbiology  
MB 406 Food Microbiology Lab  
MB 411 Medical Microbiology  
MB 412 Medical Microbiology Laboratory  
MB 414 Microbial Metabolic Regulation  
MB 420 Fundamentals of Microbial Cell Biotransformations  
MB 435 Bacterial Pathogenesis  
MB 451 Microbial Diversity  
MB 452 Microbial Diversity Lab  
MB 455 Microbial Biotechnology  
MB 461 Molecular Virology  
SSC 332 Environmental Soil Microbiology

Molecular, Genetic, Cellular, and Developmental Biology courses

BIO 267 Research in the Life Sciences I: Research Skills  
BIO 269 Research in the Life Sciences II: Guided Research  
BIO 361 Developmental Biology  
BIO 370 Developmental Anatomy of the Vertebrates  
BIO 375 Developmental Anatomy Lab  
BIO 405 Functional Histology  
BIO/PB 414 Cell Biology  
BIT 200 Early Research in Biotechnology  
BIT/MB 210 Phage Hunters  
BIT/MB 211 Phage Genomics  
BIT 410 Manipulation of Recombinant DNA  
BIT 462 Gene Expression Analysis: Microarrays



BIT 464 Protein Purification  
BIT 465 Real-time PCR Techniques  
BIT 466 Animal Cell Culture Techniques  
BIT 467 PCR and DNA Fingerprinting  
BIT 468 Genome Mapping  
BIT 471 RNA Interference and Model Organisms  
BIT 473 Experimental Analysis of Protein-Protein Interactions  
BIT 474 Plant Genetic Engineering  
BIT 476 Applied Bioinformatics  
BIT 481 Plant Tissue Culture and Transformation  
GN 301 Genetics in Human Affairs -or- ANS 215 Basic Agricultural Genetics  
GN 311 Principles of Genetics  
GN 312 Elementary Genetics Lab  
GN 421 Molecular Genetics  
GN 423 Population, Quantitative, and Evolutionary Genetics  
GN 425 Advanced Genetics Laboratory  
GN 427 Introductory Bioinformatics  
GN 434 Genes and Development  
GN 441 Human and Biomedical Genetics  
GN 451 Genome Science  
GN 461 Advanced Bioinformatics  
MB 461 Molecular Virology  
PB 476 Applied Bioinformatics  
PB 480 Introduction to Plant Biotechnology  
PB 481 Plant Tissue Culture and Transformation

Physiology, Neurobiology, and Behavioral Biology courses

AEC 441 Biology of Fishes  
AEC 442 Biology of Fishes Lab  
ANS 205 Physiology of Domestic Animals  
ANS 206 Anatomy of Domestic Animals Lab  
ANS 220 Reproduction and Lactation in Domestic Animals  
ANS 221 Reproduction and Lactation in Domestic Animals Lab  
ANS 225 Principles of Animal Nutrition or ANS 230 Nutrition of Domestic Animals  
ANS 231 Nutrition of Domestic Animals Lab  
ANS 330 Laboratory Animal Science  
ANS/PO/NTR 415 Comparative Nutrition  
BIO 212 (Basic Human Anat & Phys) -or- 250 (Animal Anatomy & Physiology)  
BIO 233 Human-Animal Interactions (IP)  
ENT 201 (Insects and People) -or- 207 (Insects and Human Disease; IP)  
BIO 410 Animal Behavior  
BIO 421 Advanced Human Anatomy and Physiology  
BIO 422 Biological Clocks  
BIO 424 Endocrinology  
BIO 426 Advanced Human Anatomy and Physiology Lab  
BIO 444 The Biology of Love and Sex  
BIO 488 Neurobiology

ENT 305 Introduction to Forensic Entomology  
MB 441 Immunology  
NTR 301 Introduction to Human Nutrition  
NTR 330 Public Health Nutrition  
NTR 401 Advanced Nutrition and Metabolism  
NTR 410 Maternal and Infant Nutrition  
NTR 419 Human Nutrition and Chronic Disease  
NTR 421 Life Cycle Nutrition  
PB 215 Medicinal Plants  
PB 321 Introduction to Whole Plant Physiology  
PB 421 Plant Physiology  
PO 405 Avian Physiology  
PY 212 College Physics II  
TOX 201 Poisons, People and the Environment

Ecology, Evolution, Biodiversity, and Conservation Biology courses

AEC 380 Water Resources (IP)  
AEC 400 Applied Ecology  
AEC 419 Limnology  
AEC 420 Introduction to Fisheries Science  
AEC 423 Introduction to Fisheries Sciences Laboratory  
AEC 460 Field Ecology and Methods  
BIO 315 Parasitology  
BIO 317 Primate Ecology and Evolution  
BIO/PB 330 Evolutionary Biology  
BIO 333 Captive Animal Biology  
BIO 350 Animal Phylogeny and Diversity  
BIO 353 Wildlife Management  
BIO/PB 360 Ecology  
BIO 402 Invertebrate Biology  
BIO 425 General Entomology  
CH/MEA 323 Earth System Chemistry  
COM 436 Environmental Communication  
CS 230 Introduction to Agroecology  
CS 430 Advanced Agroecology  
ENT 212 Basic Entomology  
ENT 305 Introduction to Forensic Entomology  
ENT 402 Forest Entomology  
ENT 425 General Entomology  
ES 200 Climate Change and Sustainability  
ES 300 Energy and Environment  
ES 400 Analysis of Environmental Issues  
FOR 260 Forest Ecology  
FOR 261 Forest Communities  
FW 465 African Ecology and Conservation  
MEA 200 Introduction to Oceanography  
MEA 210 Oceanography Lab

MEA 220 Marine Biology  
 MEA 250 Introduction to Coastal Environments  
 MEA 251 Introduction to Coastal Environments Laboratory  
 MEA 300 Environmental Geology  
 MEA/CH 323 Earth System Chemistry  
 MEA 369 Terrestrial Paleontology  
 MEA 384 Paleoecology  
 MEA/BIO 449 Principles of Biological Oceanography  
 NR 303 Humans and the Environment  
 NR 406 Conservation of Biological Diversity  
 PB 200 (Plant Life) -or- 250 (Plant Biology)  
 PB 213 Plants and Civilization  
 PB 215 Medicinal Plants  
 PB 219 Plants in Folklore, Myth, & Religion  
 PB 220 Local Flora  
 PB 277 Space Biology  
 PB/BIO 360 Ecology  
 PB 403 Systematic Botany  
 PB 405 Wetland Flora  
 PP 315 Principles of Plant Pathology  
 SSC 201 Soil Science Laboratory  
 TOX 201 Poisons, People and the Environment

<sup>8</sup>*Cross Discipline Electives -- Advised (take 21 credit hours)*

Students in the B.A. in Biological Sciences will identify a second discipline of interest in which to also focus their studies. These 21 credit hours will be planned by the student in consultation with their advisor and must be approved by the advisor and by the program. This second disciplinary focal area can be selected from a wide range of fields outside of the life sciences (below). At least 15 of these hours must be at the 300 level or higher and the rest must be at the 200 level or higher. With adviser approval, students can use a total of up to 3 hours of learning experience (e.g., BIO 492, 493) or honors research experience toward <sup>7</sup>Life Science Electives or toward Cross Discipline Electives – whichever category the experience appropriately fits. Some experimental courses (295, 495, and 592) and graduate (500-) level courses may also be used as Cross Discipline Electives, with adviser and program approval. Students should check the prerequisites and restrictions on courses in which they are interested. For example, most ELM courses are restricted to Elementary Education majors and therefore would be appropriate only to those with a second major in Elementary Education. Courses used to meet ~~GEP requirements cannot also be used to meet~~ Cross Discipline Electives requirements ~~cannot also be used to meet GEP requirements (with the exception of Global Knowledge and US Diversity).~~

*NOTE: This list is not to be coded into the degree audit.*

ADN >199 (Art and Design)  
 AES >199 (Agricultural and Environmental Systems)  
 AFS >199 (Africana Studies)  
 ANS >199 (Animal Science)  
 ANT >199 (Anthropology)

ARC	>199	(Architecture)
ARE	>199	(Agricultural and Resource Economics)
ARS	>199	(Arts Studies)
BAE	>199	(Biological & Agricultural Engineering)
BBS	>199	(Bioprocessing)
BEC	>199	(Biomufacturing Training & Education Center)
BIT	>199	(Biotechnology)
BMA	>199	(Biomathematics)
BME	>199	(Biomedical Engineering)
BUS	>199	(Business Management)
CE	>199	(Civil Engineering)
CH	>199	(Chemistry)
CHE	>199	(Chemical Engineering)
CL	>199	(Comparative Literature)
COM	>199	(Communication)
CS	>199	(Crop Science)
CSC	>199	(Computer Science)
DS	>199	(Design Studies)
EAC	>199	(Adult and Higher Education)
EC	>199	(Economics)
ECD	>199	(Counselor Education)
ECE	>199	(Electrical & Computer Engineering)
ECI	>199	(Curriculum, Instruction and Counselor Education)
ED	>199	(Education)
EDP	>199	(Educational Psychology)
EI	>199	(Entrepreneurship Initiative)
ELM	>199	(Elementary Education)
ELP	>199	(Educational Leadership and Policy Studies)
EMS	>199	(Mathematics, Science and Technology Education)
ENG	>199	(English)
ENT	>199	(Entomology)
ET	>199	(Environmental Technology)
FL*	>199	(Foreign Languages and Literatures)
FM	>199	(Feed Mill)
FOR	>199	(Forestry)
FS	>199	(Food Science)
FTD	>199	(Fashion and Textile Design)
FW	>199	(Fisheries and Wildlife Science)
GC	>199	(Graphic Communications)
GD	>199	(Graphic Design)
GEO	>199	(Geography)
GPH	>199	(Global Public Health)
GTI	>199	(Global Training Initiative)
HA	>199	(History of Art)
HI	>199	(History)
HS	>199	(Horticulture Science)
ID	>199	(Industrial Design)

IDS	>199	(Interdisciplinary Studies)
IS	>199	(International Studies)
LAR	>199	(Landscape Architecture)
LOG	>199	(Logic)
LPS	>199	(Leadership in the Public Sector)
MA	>199	(Mathematics)
MAE	>199	(Mechanical & Aerospace Engineering)
MEA	>199	(Marine, Earth, and Atmospheric Sciences)
MIE	>199	(Management, Innovation and Entrepreneurship)
MSE	>199	(Materials Science & Engineering)
MT	>199	(Medical Textiles)
MUS	>199	(Music)
NE	>199	(Nuclear Engineering)
NPS	>199	(Nonprofit Studies)
PA	>199	(Public Administration)
PCC	>199	(Polymer and Color Chemistry)
PHI	>199	(Philosophy)
PO	>199	(Poultry Science)
PP	>199	(Plant Pathology)
PRT	>199	(Parks, Recreation and Tourism Management)
PS	>199	(Political Science)
PSE	>199	(Paper Science Engineering)
PSY	>199	(Psychology)
PY	>199	(Physics)
REL	>199	(Religion)
SMT	>199	(Sustainable Materials Technology)
SOC	>199	(Sociology)
SSC	>199	(Soil Science)
ST	>199	(Statistics)
STS	>199	(Science, Technology, and Society)
SW	>199	(Social Work)
TC	>199	(Textile Chemistry)
TDE	>199	(Tech Engr & Des Educ)
TE	>199	(Textile Engineering)
TED	>199	(Technology Education)
THE	>199	(Theatre)
TMS	>199	(Textile Materials Science)
TOX	>199	(Toxicology)
TT	>199	(Textile Technology)
WGS	>199	(Women's and Gender Studies)
WPS	>199	(Wood and Paper Science)

<sup>9</sup>*Free Electives (take 12 credit hours)*

These electives cannot be remedial nor can they be taken at an elementary level after you have taken comparable coursework at a more advanced level.

<sup>10</sup>*Physics Alternatives*

PY 211 is a suitable substitute for PY 131.

<sup>11</sup>*Experiential Learning Requirement*

Experiential Learning opportunities can take many forms, but should be relevant to a possible career path for the student. The out-of-class experience to be undertaken to meet this requirement must be approved in advance by the adviser and program director. It is the responsibility of the student to identify an opportunity, to make arrangements with a supervisor to pursue that opportunity, and to complete the contract necessary for credit to be awarded for the experience.

**\*General Education Program (GEP) requirements and GEP Footnotes:**

To complete the requirements for graduation and the General Education Program, the following category credit hours and co-requisites must be satisfied. University approved GEP course lists for each of the following categories can be found at <http://www.ncsu.edu/uap/academic-standards/gep/courselists/index.html>.

**Introduction to Writing: ENG 101** (4 credit hours with a C- or better)

*Students must complete ENG 101 during their freshman year.*

**Mathematical Sciences** (6 credit hours – one course with MA or ST prefix)

*In this degree program, this GEP requirement is met through the Major course requirements.*

**Natural Sciences** (7 credit hours – include one laboratory course or course with a lab)

*In this degree program, this GEP requirement is met through the Major course requirements.*

**Humanities** (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Humanities course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.*

**Social Sciences** (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Social Sciences course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.*

**Physical Education/Healthy Living** (2 credit hours – at least one 100-level Fitness and Wellness Course)

*Choose from the University approved GEP Physical Education/Healthy Living course list.*

**Additional Breadth** - (3 credit hours)

*Choose from the University approved GEP Humanities course list or the GEP Social Sciences course list or the GEP Visual & Performing Arts course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.*

**Interdisciplinary Perspectives** (5 credit hours)

*In this degree program, 2 credit hours are met through a Major course requirement. For the remaining 3 credit hours, choose from the University approved GEP Interdisciplinary Perspectives course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.*

The following **Co-Requisites** must be satisfied to complete GEP requirements:

**U.S. Diversity (USD)**

*Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite.*

**Global Knowledge (GK)**

*Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite.*

**Foreign Language proficiency** - Proficiency at the FL\_102 level is required for graduation.

## PROPOSED CURRICULUM REQUIREMENTS

Format B – GEP 2009

<b>Degree Title:</b> Bachelor of Arts in Biological Sciences (17BIOBA)
<b>Current Degree Key:</b> none
<b>Effective Date:</b> Summer 2015

<b>MAJOR FIELD OF STUDY REQUIREMENTS:</b>		
<i>Required Courses/Groups/ Electives:</i>	<b>Credit Hours</b>	GEP category, if applicable
<p style="text-align: center; margin: 0;"><small>Indicate if course or course groupings have a C-wall or MGPA requirement</small></p> <p><b>Required Courses</b></p> <p>†LSC 101 Critical &amp; Creative Thinking in the Life Sciences</p> <p>†LSC 103 Exploring Life Science Disciplines</p> <p>†BIO 181 Introductory Biology I</p> <p>†BIO 183 Introductory Biology II</p> <p>†CH 101 Chemistry – A Molecular Science</p> <p>†CH 102 General Chemistry Lab</p> <p><sup>2</sup>CH 220 Introductory Organic Chemistry and Lab (or CH 221/222)</p> <p>†<sup>1</sup>MA 121 Elements of Calculus (or MA 131 or MA 141)</p> <p><sup>10</sup>PY 131 Conceptual Physics (or PY 133 or PY 211)</p> <p><sup>5</sup>Statistics (ST 305 or ST 311 or ST/BUS 350)</p> <p>†C- or better required in these courses</p> <p><sup>6</sup>Advanced Communication Requirement</p> <p><sup>7</sup>Life Science Electives (at least 19 hours at the 300 level or higher)</p> <p><sup>8</sup>Cross Discipline Electives (Advised) (at least 15 hours at the 300 level or higher)</p> <p><sup>11</sup>Experiential Learning Requirement Senior Capstone Project (BIO 481)</p>	<p>2</p> <p>1</p> <p>4</p> <p>4</p> <p>3</p> <p>1</p> <p>4</p> <p>3</p> <p>4</p> <p>3</p> <p>6</p> <p>25</p> <p>21</p> <p>3</p> <p>1</p>	<p>List GEP category and hours satisfied by a Major requirement</p> <p>Interdisciplinary Perspectives (2 hours)</p> <p>Natural Sciences (4 hours)</p> <p>Natural Sciences (3 hours)</p> <p>Mathematical Sciences (3 hours)</p> <p>Mathematical Sciences (3 hours)</p> <p>Communication in the Major requirement</p>
<b>Free Electives:</b> <sup>9</sup> Free Electives	12	
<b>Total credit hours under Major Field of Study:</b> <i>Minimum 27 hours required in program area.</i>	97 hours	
<b>COLLEGE REQUIREMENTS:</b>		
<b>Orientation Course(s):</b> requirement met by Exploring Life Science Disciplines (above)		
<b>Total credit hours under College Requirements:</b>	0	



NCSU GENERAL EDUCATION PROGRAM REQUIREMENTS		At least one of the following must be listed:
<p><i>Courses in the Major and/or Minor may also fulfill a General Education requirement; however, a GEP category <u>may not be subset</u> to require a specific course from the category list. Required courses must be listed in the Major/College requirements.</i></p> <p><b>Specific courses should not be listed in any of the fields below other than ENG 101.</b></p>		<ol style="list-style-type: none"> <li>1 Choose course(s) from the University Approved GEP course list for this category.</li> <li>2 Minimum requirements are satisfied by Major/College course requirements.</li> <li>3 Major/College course requirement satisfies <b>X</b> credit hrs of this requirement. Remaining hours required must be chosen from the University Approved GEP course list for the category.</li> <li>4 Co-requisite is satisfied by a Major/College course requirement.</li> <li>5 Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual &amp; Performing Arts.</li> <li>6 Choose course(s) from the University Approved GEP course lists for Natural Sciences/Mathematical Sciences.</li> </ol>
General Education Program Requirements: Minimum 39-40 hrs	Credit hours	How will the GEP requirement be met? (Choose applicable statement from 1-6 listed above)
<b>Mathematical Sciences</b> (6 credits) (At least 1 course with MA or ST prefix) <i>Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.</i>	X	<i>Minimum requirements are satisfied by Major course requirements.</i>
<b>Natural Sciences</b> (7 credits) (At least 1 lab course or course with a lab) <i>Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.</i>	X	<i>Minimum requirements are satisfied by Major course requirements.</i>
<b>English 101 (C- or better required)</b> (4 credits)	4	ENG 101
<b>Humanities</b> (6 credits) (Courses from two different disciplines) <i>Course(s) used to satisfy this requirement can also satisfy either the Global Knowledge or U.S. Diversity co-requisites.</i>	6	<i>Choose courses from the University-approved GEP course list for Humanities.</i>
<b>Social Sciences</b> (6 credits) (Courses from two different disciplines) <i>Course(s) used to satisfy this requirement can also satisfy either the Global Knowledge or U.S. Diversity co-requisites.</i>	6	<i>Choose courses from the University-approved GEP course list for Social Sciences.</i>
<b>Additional Breadth (AB)</b> (3 credits) (Choose approach that is different from the approach of the Major) An AB course cannot be double-counted except in satisfying the Global Knowledge or U.S. Diversity co-requisites.	3	<i>Choose course(s) from the University-approved GEP course lists for the Humanities/Soc Sciences/Visual &amp; Performing Arts</i>
<b>Interdisciplinary Perspectives</b> (5 credits) <i>Course(s) used to satisfy this requirement can also satisfy either the Global Knowledge or U.S. Diversity co-requisites.</i>	3	<i>Choose course from the University-approved GEP course list for Interdisciplinary Persp. LSC 101 meets the other 2 credit hours of this requirement.</i>
<b>Physical Education/Healthy Living</b> (2 credits) (Including one Fitness and Wellness course)	2	<i>Choose courses from the University-approved GEP course list for Physical Ed/Healthy Living.</i>
<b>Total credit hours needed to complete GEP that are <u>not</u> satisfied as part of the Major/College requirements.</b>	24 hours	
<b>GEP Co-Requisites:</b>		<i>Courses taken in the Major, GEP, or Minor may double-count to fulfill the co-requisites. Courses that satisfy the U.S. Diversity or Global Knowledge co-requisite are marked on course lists with a "USD" or "GK" indicator.</i>
<b>U.S. Diversity co-requisite (USD)</b>	n/a	<i>Choose course from the University-approved GEP course list for U.S. Diversity.</i>
<b>Global Knowledge co-requisite (GK)</b>	n/a	<i>Choose course from the University-approved GEP course list for Global Knowledge.</i>

<b>Foreign Language Proficiency</b>	n/a	Proficiency at the FL_102 level required.
<b>The following requirements must be satisfied within the College/Program:</b>		Place an X in the credit hour box to indicate below that the requirement is <b>"Satisfied by College/Program Requirements"</b>
<b>Communication in the Major (Advanced Communication)</b>	X	Satisfied by College/Program Requirements
<b>Technology Fluency</b>	X	Satisfied by College/Program Requirements
<b>Total credit hours required to complete Degree: Total must be within 120-128 credit hours.</b>	121 total hours	

# HESS 271: Varsity Sports Military Conditioning

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## In Workflow

1. 24HES UnderGrad Head (tommy\_holden@ncsu.edu)
2. DASA CC Coordinator UG (kkharris@ncsu.edu)
3. DASA CC Meeting UG (kkharris@ncsu.edu)
4. DASA CC Chair UG (sean\_cassidy@ncsu.edu)
5. DASA Final Review UG (kkharris@ncsu.edu)
6. DASA Dean UG (mike.mullen@ncsu.edu)
7. OUCC Review (lamarcus@ncsu.edu)
8. UCCC Coordinator (lamarcus@ncsu.edu)
9. UCCC Meeting (lamarcus@ncsu.edu)
10. UCCC Chair (despain@ncsu.edu)
11. CUE Coordinator (lamarcus@ncsu.edu)
12. CUE Meeting (lamarcus@ncsu.edu)
13. CUE Chair (cmashwel@ncsu.edu)
14. OUCC Final Signature (barbara\_kirby@ncsu.edu)
15. OUCC Final Review (lamarcus@ncsu.edu)
16. PeopleSoft (ldmihalo@ncsu.edu; blpearso@ncsu.edu; Charles\_Cliff@ncsu.edu; jmharr19@ncsu.edu; Tracey\_Ennis@ncsu.edu)

## Approval Path

1. Tue, 01 Dec 2015 19:02:52 GMT  
George Holden (gtholden): Approved for 24HES UnderGrad Head
2. Mon, 14 Dec 2015 14:04:01 GMT  
Kasey Harris (kkharris): Approved for DASA CC Coordinator UG
3. Mon, 11 Jan 2016 19:15:14 GMT  
Kasey Harris (kkharris): Approved for DASA CC Meeting UG
4. Mon, 25 Jan 2016 16:34:43 GMT  
Sean Cassidy (smcassid): Approved for DASA CC Chair UG
5. Mon, 25 Jan 2016 16:58:46 GMT  
Kasey Harris (kkharris): Approved for DASA Final Review UG
6. Wed, 27 Jan 2016 13:05:32 GMT  
Michael Mullen (mdmullen): Approved for DASA Dean UG

## Course Drop Proposal

Date Submitted: Tue, 01 Dec 2015 17:00:35 GMT

## Viewing: HESS 271 : Varsity Sports Military Conditioning

Changes proposed by: kkharris

### Course Prefix

HESS (Health Exercise Studies Specialty)

### Course Number

271

### Cross-listed Course

No

### Title

Varsity Sports Military Conditioning

**Abbreviated Title**

Varsity Sports Military Condit

**College**

Division of Academic and Student Affairs

**Academic Org Code**

Health and Exercise Studies (24HES)

**CIP Discipline Specialty Number**

31.0501

**CIP Discipline Specialty Title**

Health and Physical Education/Fitness, General.

**Term Offering**

Fall and Spring

**Year Offering****Effective Date**

Spring 2016

**Previously taught as Special Topics?**

No

**Course Delivery****Grading Method**

Graded with S/U option

**Credit Hours**

1

**Course Length**

weeks

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

Physical Activity

Lecture

**Contact Hours**

2.0

0.0

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

No

**Instructor Name****Instructor Title****Course Prerequisites, Corequisites, and Restrictive Statement**

Is the course required or an elective for a Curriculum?

No

### Catalog Description

This course is for student athletes on a team sponsored by the NCSU Department of Athletics or currently enrolled ROTC students. Coursework will require a high level of skill acquisition and mastery of the fitness skills required to perform training techniques and safe sport practice. The rules and terminology of each activity will also be addressed. Course not repeatable.

### Justification for each revision:

#### Does this course have a fee?

No

#### Is this a GEP Course?

Yes

### GEP Categories

Health and Exercise Studies

## Health and Exercise Studies

Open when gep\_category = HES

Each course in the Health and Exercise Studies category of the General Education Program will provide instruction and guidance that help students to:

List the Instructor's student learning outcomes that are relevant to the GEP Health Exercise Studies Objective 1:

Obj. 1) Acquire the fundamentals of health-related fitness, encompassing cardio-respiratory and cardiovascular endurance, muscular strength and endurance, muscular flexibility and body composition.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Health Exercise Studies Objective 2:

Obj. 2) Apply knowledge of the fundamentals of health-related fitness toward developing, maintaining, and sustaining an active and healthy lifestyle.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Health Exercise Studies Objective 3:

Obj. 3) Acquire or enhance the basic motor skills and skill-related competencies, concepts, and strategies used in physical activities and sport.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

List the Instructor's student learning outcomes that are relevant to the GEP Health Exercise Studies Objective 4:

Obj. 4) Gain a thorough working knowledge, appreciation, and understanding of the spirit and rules, history, safety, and etiquette of physical activities and sport.

Measure(s) for the above outcome(s): *Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.*

**Attach Additional GEP Information if applicable**

## **Requisites and Scheduling**

**What percentage of the seats offered will be open to all students?**

- a. If seats are restricted, describe the restrictions being applied.
  
- b. Is this restriction listed in the course catalog description for the course?

List all course pre-requisites, co-requisites, and restrictive statements (ex: Jr standing; Chemistry majors only). If none, state none.

List any discipline specific background or skills that a student is expected to have prior to taking this course. If none, state none. (ex: ability to analyze historical text; prepare a lesson plan)

## **Additional Information**

**Complete the following 3 questions or attach a syllabus that includes this information. If a 400-level or dual level course, a syllabus is required.**

Title and author of any required text or publications.

Major topics to be covered and required readings including laboratory and studio topics.

List any required field trips, out of class activities, and/or guest speakers.

**Consultation**

**Instructional Resources Statement**

**Course Objectives/Goals**

**Student Learning Outcomes**

**Student Evaluation Methods**

**Topical Outline/Course Schedule**

**Syllabus**

**Additional Documentation**

**Additional Comments**

**Justification for this request**

The HES department, in consultation with the Department of Athletics, have determined this course is no longer necessary, as students' needs are met through other offerings.

**Course Reviewer Comments**

Key: 4338

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**Fwd: Small request**

1 message

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**Gary Beckman** <gdbeckma@ncsu.edu>

Thu, Jan 21, 2016 at 2:23 PM

To: Tom Koch &lt;tdkoch@ncsu.edu&gt;

Here's the consult for EMA 110

Begin forwarded message:

**From:** Andy Nowel <nowel@ncsu.edu>**Subject: Re: Small request****Date:** January 21, 2016 at 1:25:21 PM EST**To:** Gary Beckman <gdbeckma@ncsu.edu>

Hi Gary,

If there were no modifications to the former EMA 295 syllabus, the previous consult would apply from PCOM for EMA 110. If there were any minor modifications to the syllabus, please let me know and please send that information as we would provide a specific response in regard to EMA 110. Thanks for checking with us.

Andy

On Wed, Jan 20, 2016 at 6:29 PM, Gary Beckman &lt;gdbeckma@ncsu.edu&gt; wrote:

Hi Andy

Hope you're keeping warm.

As you remember, we put forth EMA 295 *Introduction to Arts Entrepreneurship* through the course certification process and your folks were kind enough look through the syllabus and provide a positive consult for the course. We're now moving the exact syllabus though as a permanent course, **EMA 110** *Introduction to Arts Entrepreneurship*. Well, unbeknownst to us as a part of the process, DASA CCC has requested a consult for EMA 110, even though it's the exact same course that received a positive consult as EMA 295 last fall. Would it be too much to ask for a consult for DASA CCC even though it's redundant? Sorry to ask, but we didn't think that another consult was required. Thoughts?

On the other front, still waiting on scheduling on this end for the larger meeting with your folks. As soon as I hear something, you'll be the first to know.

Best and sorry to bother yet again.

Gary



**EMA 110 - INTRODUCTION TO ARTS ENTREPRENEURSHIP**

**FALL 2016**

**NORTH CAROLINA STATE UNIVERSITY**

**SYLLABUS**

**Course Information**

Course Title	Introduction to Arts Entrepreneurship
Credit Hours	3
Class Meeting Time	TBA
Location	TBA
Course Prerequisites	None
General Education Program (GEP) Applicable	Interdisciplinary Perspectives

**Instructor Information**

Instructors	Dr. Gary Beckman
Office Location	TBA
Office Hours	TBA
Telephone	TBA
Email	TBA

**Catalog Description**

EMA 110: Introduction to Arts Entrepreneurship: This course introduces students to the basic components of an entrepreneurial lifestyle in the arts for those interested in starting an arts business. Students explore fundamental issues arts entrepreneurs encounter and how they can be addressed before the startup process reaches the launch cycle. Students are required to provide their own transportation to and cover the admission costs of off-campus events.

**Student Learning Outcomes for this Course**



By the end of the semester, students will be able to:

- Identify the risks and rewards inherent an entrepreneurial lifestyle in the arts provides.
- Articulate how arts cultures and aesthetics effects the development phase of an arts venture
- Describe and discuss fundamental arts venture startup procedures, business models and transitioning strategies
- Identify the value in for-and non-profit arts ventures that center on both the Fine and popular arts.
- Articulate how one's innate creativity, intellect, training, and experience are channeled into an entrepreneurially focused arts (or arts related) career.

### **GEP Objectives (Interdisciplinary Perspectives), Outcomes, and Measures**

1. Distinguish between the distinct approaches of two or more disciplines (arts and business)

**Outcome:** Students will identify fundamental differences between Art and non-art products in both an arts and non-arts market context.

**Measure:** Sample essay question: If aesthetics is the study of beauty and typically restricted to Art objects, why is there no similar philosophical discipline dedicated to the study of non-Art objects? Also, discuss how the concept of “aesthetic meaning” may or may not be applied to non-Art objects in non-Arts market spheres.

2. Identify and apply authentic connections between two or more disciplines (arts and business)

**Outcome:** Students will identify consistencies in arts- and business-based market offerings.

**Measure:** Sample short answer questions:

- Identify the similarities and differences in how a large musical instrument chain retailer and a “big box retailer” present their floor inventory in both a “brick and mortar” and online context.

- Is the “buying experience” the same for Art purchased at an Art gallery as it is at Wal-Mart?

3. Explore and synthesize the approaches or views of the two or more disciplines (arts and business)

**Outcome:** Students will identify how products that may be considered “valuable” (in both aesthetic and business terms) are presented to various markets

**Measure:** Sample take-home essay question: When comparing Apple Computer's website and recent TV commercials with that of Microsoft's, there are clear differences in presentation. Compare four common aspects of each website and two common aspects of the commercials, then discuss how these features contribute to a consumer's belief that one company's product line is more aesthetically or personally valuable than the other. Please identify and describe the aesthetic or personal value you believe is communicated through these media most strongly.

## Course Requirements

- **Attendance:** Attendance will be taken each class session and is worth **10% of the final grade**. If a student is more than 15 minutes late for a class, he/she will be counted as absent for that day. **Three** unexcused absences over the course of the semester **will reduce the final grade by 10%**. **Each additional absence will reduce the final grade by an additional 5%**. If a student needs to miss class for any reason, the instructor must be notified by email ASAP and an evaluation will be made at that time based upon the University Attendance Regulation (REG 02.20.3).<sup>1</sup>

\* **Class Participation:** Students are expected to be attentive during lectures, ask questions, contribute comments to class discussions and should come to each class having read the required assignment and prepared to discuss and comment upon the issues raised by the readings. (The reading schedule appears in the Lecture, Homework and Project Schedule below). Students must come to each class having read the assigned readings and demonstrate their engagement by participating actively and thoughtfully in the in-class discussions.

*Student preparation for and participation in class will be evaluated using the following criteria and is worth 15% of the final grade:*

*A - Student is well prepared and participates actively; student is attentive, responds when called upon and volunteers often with pertinent questions and comments.*

*B - Student is usually prepared and always responds when called upon; student volunteers on occasion.*

*C - Student shows evidence of being unprepared; student has some trouble when called in and does not volunteer often.*

*D - Student is unprepared and/or inattentive; student never volunteers; student comes late to class or leaves early.*

*F - Student exhibits a lack of concern for the class; student sleeps in class; student behavior may have a negative effect on the class.*

- **Required Textbooks:**

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<sup>1</sup> See <http://policies.ncsu.edu/regulation/reg-02-20-3>

*Leadership as a Hero's Journey: The Four Virtues for Transforming Uncertainty and Anxiety into Results* by Eric J. Kaufmann (La Mesa, CA: Ben Adams Press 2013)  
 \$23.85  
 ISBN-13: 978-1939187000

*How to Think Like Leonardo da Vinci* by Michael J. Gelb (New York: Random House, 2004) \$10.99  
 eISBN 978-0-307-57352-0

- Tests: There are 2 tests (worth 20% of the final grade, each) and a final (comprehensive) exam, worth 10% of the final grade. See Incomplete Grades, Late Assignments and Rescheduling Missed Tests, for making up missed tests, below.
- Journal: The Journal is an opportunity for students to reflect, comment upon and integrate course readings with lectures and arts business explorations; entries are checked weekly by the instructor.
- Transportation: This course requires students to travel off campus. Students are responsible for securing transportation to all locations appearing in the Lecture, Readings and Project Schedule. All effort will be made to organize off-campus visits on or near public transportation stations.

### Final Grade Determination

3 Tests (Test 1-20%; Test 2-20%; Test 3-10%)	50%
Class Participation	15%
Attendance	10%
Journal	25%
<b>Total</b>	<b>100%</b>

A+ (97-100), A (93-96.9), A- (90-92.9), B+ (87-89.9), B (83-86.9), B- (80-82.9), C+ (77-79.9), C (73-76.9), C- (69-72.9), D+ (67-69.9), D (63-66.9), D- (60-62.9), F (0-59.9)

### Lecture, Readings & Project Schedule

Week	Topics	Readings
1 - <b>Module I - The Basics</b>	Introduction to Class	
2	T: What IS Arts Entrepreneurship? TH: For-, Non-Profit and Hybrid Arts Business Models	Gelb: 2-19
3 -	T: Examples of Arts Ventures TH: Arts and Geography	Gelb: 20-47
4	T: Success, Failure & Sustainability TH: Why Arts Ventures Succeed or Fail	Gelb: 48-75
5	T: Basic Arts Venture Startup models (For- and Non-Profit)	Gelb: 76-93

	<b>TH: Test 1</b>	
6 - <b>Module II - The Real World</b>	T: Speaker - Guest Business Entrepreneur TH: Speaker - Guest Arts Entrepreneur	Gelb: 94-141
7	T: Incubator Visit TH: Non-Profit Arts Org. Visit	Gelb: 141-163
8	T: For-Profit Arts Business Visit TH: <i>FALL BREAK - OFF</i>	Gelb: 164-191
9	T: Transitioning from Student to Arts Entrepreneur (Pt.1: Being honest about Fear, Anxiety and Pressure) TH: Startup Techniques: Funding, Planning and Execution	Gelb: 192-218
10	T: Transitioning from Student to Arts Entrepreneur (Pt.2: Embracing your Personal Assets, Collective Assets and Finding the Courage to "Leap") TH: <b>Test 2</b>	Gelb: 219-257
11 <b>Module III - Why and How the Arts are Unique</b>	T: Intro to Aesthetics: The Arts Consumer Experience (Pt. 1) TH: Intro to Aesthetics: The Arts Consumer Experience (Pt. 2)	Kauffman: 3-30
12	T: Arts Culture TH: The Economies of Arts Culture	Kauffman: 31-64
13	T: Museum Visit TH: Music Performance Visit	Kauffman: 65-85
14	T: Ballet or Fashion Week Visit TH: Rap/Hip Hop Artist (in class)	Kauffman: 86-126
15	T: Theatre Visit TH: NC State <i>Garage</i> Visit	Kauffman: 127-156
16	T: Intro to Aesthetics: The Arts Consumer Experience (Pt. 3) TH: Arts Culture Lecture (Pt.3)	Kauffman: 157-208
<b>FINALS WEEK - TBA</b>	<b>Journal Due - Final Exam</b>	NA

### Incomplete Grades, Late Assignments and Rescheduling Missed Tests

- An "incomplete" is a temporary grade, given as a result of documented serious event as outlined in REG 2.50.3.<sup>2</sup> An IN is only appropriate when the student's record in the course is such that the successful completion of course expectations missed as a result of a documented serious event would enable that student to pass the course.
- Late assignments will not be accepted.
- If a student is unable to be present for any tests or unable to complete an assignment due to a documented serious event, reasonable accommodations will be made to make up either the test or assignment as outlined in University Attendance Regulation REG 02.20.3.<sup>3</sup>

### Additional Statements

<sup>2</sup> See <http://policies.ncsu.edu/regulation/reg-02-50-3>

<sup>3</sup> See <http://policies.ncsu.edu/regulation/reg-02-20-3>

- Students in this course will not incur additional expenses beyond the cost of all required textbooks.
- This course has no lab. However, students are required travel outside of the classroom.

### **Academic Integrity**

\* The instructor of this course fully expects student (the student) to complete all tests and assignments honestly. Students who violate University rules on academic integrity are subject to disciplinary penalties, including the possibility of failure in the course and /or dismissal from The University. Since such dishonesty harms the individual, all students, and the integrity of The University, policies on academic integrity will be strictly enforced.

- All students should be aware of the University's policy on academic integrity found in the Code of Student Conduct Policy (POL11.35.1).<sup>4</sup>
- The Honor Pledge, "I have neither given nor received unauthorized aid on this test or assignment" will be signed on each test or assignment verifying that student have neither given nor received unauthorized aid.

### **For Students with Disabilities**

• Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.1).<sup>5</sup>

### **Anti-Discrimination Statement**

• NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and

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<sup>4</sup> See <http://policies.ncsu.edu/policy/pol-11-35-1>

<sup>5</sup> See <http://policies.ncsu.edu/regulation/reg-02-20-1>

federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at [http://www.ncsu.edu/policies/campus\\_environ](http://www.ncsu.edu/policies/campus_environ) or [http://www.ncsu.edu/equal\\_op](http://www.ncsu.edu/equal_op). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 515-3148.

## HESF 112 Fitness Kickboxing

- Instructor:** Christopher Ousley  
**Office:** 2025 Carmichael Gym  
**Office Phone:** 515-6912  
**Email:** csousley@ncsu.edu  
**Course Meeting:** 9:35-10:25 am Monday, Wednesday  
**Office hours:** 10:00-11:00 M-Th or by appointment  
**Credit Hours:** One  
**Course Prerequisites, Corequisites:** None  
**Required Text:** *North Carolina State University Physical Education Department; Focus on Fitness*; Latest Edition 2012; Kendall-Hunt Publishers; New \$27.95  
**Required Equipment:** Students will be required to purchase boxing gloves (not MMA gloves). The weight of the gloves should be no lighter than 12 ounces. Boxing gloves range from 12 to 18 ounces. Boxing gloves can be purchased at a variety of sport stores or web sites such as title.com or amazon.com. A \$16.00 pair of gloves will be satisfactory for this course.

**Course Description:** This course is designed to teach and apply the principles of lifetime physical fitness, utilizing the five major components of cardio-respiratory endurance, muscular strength, muscular endurance, flexibility and body composition. A variety of health and wellness issues will be addressed. Fitness kickboxing includes strikes against a heavy bag, focus mitt punching, medicine ball core exercises, running, and jumping rope. The components of fitness will be met through structured fitness kickboxing activities as well as strength and endurance conditioning exercises.

### GEP Objectives for Courses in the Category of Physical Education

Each course in the physical education category of the General Education Program will provide instruction and guidance that help students to:

1. acquire the fundamentals of health-related fitness, encompassing cardio-respiratory and cardiovascular endurance, muscular strength and endurance, muscular flexibility and body composition; and
2. apply knowledge of the fundamentals of health-related fitness toward developing, maintaining, and sustaining an active and healthy lifestyle; and
3. acquire or enhance the basic motor skills and skill-related competencies, concepts, and strategies of physical activities and sport; and
4. gain a thorough working knowledge, appreciation, and understanding of the spirit and rules, history, safety, and etiquette of physical activities and sport.

### GEP Student/Course Learning Outcomes

By the end of this course, students will be able to:

1. Explain and perform the fitness requirements associated with fitness kickboxing including cardio-respiratory and cardiovascular endurance, muscular strength and endurance, muscular flexibility, and body composition.
2. Discuss and explain how adopting healthy lifestyle practices will lead to lifelong wellness.
3. Identify and explain how the body responds during physical activity through cardio-respiratory exercise, muscular strength, and muscular endurance activities.
4. Explain how fitness kickboxing and fitness principles affect the intensity of an individual's workout.
5. Demonstrate a variety of punching and kicking combinations on the heavy bag.
6. Explain and demonstrate the ability to safely and correctly perform cardio-respiratory exercise, muscular strength, and muscular endurance activities.

**Grading:**

• **Written Exams - 40%**

Students will be expected to demonstrate their knowledge of the material covered in class by completing two written exams at 20% each.

• **Physical Fitness Testing 60%**

Standardized testing will be used to assess overall fitness levels. The plank (10%) test will assess muscular strength and endurance. A 1.5 mile run test (20%) and the 2 minute speed strike test (30%) will assess cardio-respiratory endurance.

**Grading Scale:**

Each student has the option of taking the class for a letter grade (+/-), credit only, or audit.

<b>97-100 = A+</b>	<b>93-96.99 =A</b>	<b>90-92.99 =A-</b>
<b>87 – 89.99 =B+</b>	<b>83-86.99 = B</b>	<b>80-82.99 =B-</b>
<b>77-79.99 = C+</b>	<b>73-76.99 = C</b>	<b>70-72.99 = C-</b>
<b>67-69.99 = D+</b>	<b>63-66.99 = D</b>	<b>60-62.99 = D-</b>
<b>0-59.99 = F</b>		

**Attendance:**

Students are expected to attend all classes and to arrive and leave at the scheduled times. The instructor will adhere to the university attendance policy. In case of an excused absence, the student will be allowed to make up any written work missed within one week of returning to class. Students are responsible for submitting such work and for scheduling make-up exams with the instructor.

See <http://policies.ncsu.edu/regulation/reg-02-20-03> for more information.



1. Five (5) absences are permitted without affecting your grade (excused or unexcused).
2. Six (6) or more total absences will result in a failing grade for the course.

**Requirements for Credit Only:** In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to University deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to: [http://www.ncsu.edu/policies/academic\\_affairs/courses\\_undergrad/REG02.20.15.php](http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.15.php)

**NOTE: The student is responsible for requesting credit only grading on My Pack Portal by the University deadline.**

**Requirements for Audit: Students must attend all classes except written exams.** <http://policies.ncsu.edu/regulation/reg-02-20-04>

**Incomplete Grades:** <http://policies.ncsu.edu/regulation/reg-02-50-03>

Incomplete grades will be assigned only if unavoidable and unforeseen events occur, such as a medical emergency, preventing the student from completing a course requirement before the final grades are submitted. Incompletes must be made up before the end of the next regular semester in which the student is enrolled and in no case may be made up more than 12 months after the end of the semester in which the IN is awarded, unless the teacher or department offering the course is not able to provide the student with an opportunity to make up incomplete work, in which case the period can be extended. Make-up work is to be limited to accomplishing the work not completed.

**Electronic Hosted Course Components:** Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**Online class evaluations** will be available for students to complete during the last two weeks of the semester. Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential: instructors will not know how any one student responded to any question, and students will not know the ratings for any instructors.

Evaluation website: <https://classeval.ncsu.edu/>

Student help desk: [classeval@ncsu.edu](mailto:classeval@ncsu.edu)

More information about ClassEval: <http://www.ncsu.edu/UPA/classeval/>

### **General Information:**

1. **Academic Integrity:** For all written assignments, students will be expected to adhere to the **University Honor Code**: "I have neither given nor received unauthorized aid on this test or assignment." It is the understanding and expectation of the instructor that the

student's signature on any test or assignment means that the student neither gave nor received unauthorized aid. Consult the university website:

<http://policies.ncsu.edu/policy/pol-11-35-01>

2. **Students with Disabilities:** Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see <http://policies.ncsu.edu/regulation/reg-02-20-01>
3. **Non-Discrimination Statement:** NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its **commitment** to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or [http://www.ncsu.edu/equal\\_op/](http://www.ncsu.edu/equal_op/). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.
4. Due to the nature of the activities in this class, it may be necessary for safety reasons to have some amount of physical contact occur to assist in acquiring the proper form/technique. The students should inform the instructor if they do not want any physical contact to assist in acquiring the proper form/technique.
5. Every fitness activity has certain inherent risks, and regardless of precautions taken it is impossible to ensure total safety. Adhere to all safety guidelines to reduce your risk of injury.
6. All HES clothing (shorts, t-shirts, and towels) is to be returned by the last day of exams. Students will be charged for clothing not returned. All personal items left in the locker will be disposed of.
7. Pets and visitors are not allowed during class periods. Firearms, weapons, and/or fireworks are prohibited from class.
8. Cell phones and MP3 players are prohibited in class.

## HESF 112 Fitness Kickboxing Course Outline

Date	Topic	Location	Readings
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8/20	Into., Syllabus, Safety Issues	Racquetball Court 1	
8/25	Striking Techniques	Racquetball Court 1	
8/27	Striking Techniques	Racquetball Court 1	
9/1	Cardio-respiratory & Muscular Endurance	Classroom 2036	Ch. 1, 2, 3
9/3	Kicking Techniques	Racquetball Court 1	
9/8	Kicking Techniques/Flexibility	Racquetball Court 1	Ch. 4
9/10	Fitness Kickboxing	Racquetball Court 1	
9/15	Fitness Kickboxing/Body Composition	Racquetball Court 1	Ch. 5
9/17	Fitness Kickboxing	Racquetball Court 1	
9/22	Fitness Kickboxing	Racquetball Court 1	
9/24	Cardiovascular Disease/Nutrition	Classroom 2036	Ch. 6 & 7
9/29	Fitness Kickboxing	Racquetball Court 1	
10/1	Midterm Exam	Classroom 2036	
10/6	Fitness Kickboxing	Racquetball Court 1	
10/13	Fitness Kickboxing	Racquetball Court 1	
10/15	Fitness Kickboxing	Racquetball Court 1	
10/20	Fitness Kickboxing	Racquetball Court 1	
10/22	Fitness Kickboxing	Racquetball Court 1	
10/27	Fitness Kickboxing	Racquetball Court 1	
10/29	Stress Management/Cancer	Classroom 2036	Ch. 8 & 11
11/3	Fitness Kickboxing	Racquetball Court 1	
11/5	Fitness Kickboxing	Racquetball Court 1	
11/10	Fitness Kickboxing	Racquetball Court 1	
11/12	STI's	Classroom 2036	Ch. 12
11/17	Final Written Exam	Classroom 2036	
11/19	Speed Strike Test	Racquetball Court 1	
11/24	Speed Strike Test	Racquetball Court 1	
12/1	Plank Test	Racquetball Court 1	
12/3	1.5 Mile Run Test	Indoor Track	

## Cardio-respiratory Endurance

**1.5 Mile Run (20%)** The 1.5 mile run test should be completed with a continuous run. Any walking would constitute the end of the test.

<b>1.5 Mile Run Scale</b>		
<b>Male Times</b>	<b>Percentage</b>	<b>Female Times</b>
< 8:40	100	< 10:00
8:41 – 9:00	98.3	10:01 – 10:20
9:01 – 9:20	96.7	10:21 – 10:40
9:21 – 9:40	95	10:41 – 11:00
9:41 – 10:00	93.3	11:01 – 11:20
10:01 – 10:20	91.7	11:21 – 11:40
10:21 – 10:40	90	11:41 – 12:00
10:41 – 11:00	88.3	12:01 – 12:20
11:01 – 11:20	86.7	12:21 – 12:40
11:21 – 11:40	85	12:41 – 13:00
11:41 – 12:00	83.3	13:01 – 13:20
12:01 – 12:20	81.7	13:21 – 13:40
12:21 – 12:40	80	13:41 – 14:00
12:41 – 13:00	78.3	14:01 – 14:20
13:01 – 13:20	76.7	14:21 – 14:40
13:21 – 13:40	75	14:41 – 15:00
13:41 – 14:00	73.3	15:01 – 15:20
14:01 – 14:20	71.7	15:21 – 15:40
> 14:21	70	> 15:41
Unable to finish	0	Unable to finish

*\*Source:*

*Physical Education Department; North Carolina State University 2007*

## **Cardio-respiratory Endurance**

### **Speed Strike Test – 2 minutes (30%)**

Students will strike the heavy bag continuously for 2 minutes using a combination of Jab-Cross-Hook-Elbow strike-Roundhouse kick cycles. Students will strike the bag for one minute in the left foot forward stance and then one minute in the right foot forward stance. The Instructor will count the number of cycles completed in two minutes.

<b>Number of combination cycles</b>	<b>Points for # of combination cycles</b>
60+	30
59	29.5
58	29
57	28.5
56	28
55	27.5
54	27
53	26.5
52	26
51	25.5
50	25
49	24.5
48	24
47	23.5
46	23
45	22.5
44	22
43	21.5
42	21
41	20.5
40	20
39	19.5
38	19
37	18.5
36	18
35	17.5
34	17
33	16.5
32	16
31	15.5
30	15
29 & below	0

## **Muscular Strength/Endurance**

### **Forearms Plank Test (10%)**

This is a static hold to test total body endurance. The body is supported by the forearms (elbow down) and toes. The body must be in alignment, with navel to spine and glutes engaged – cervical spine in neutral. The neck/head cannot move up or down, or side to side. The feet cannot be placed against a support wall, etc.

Hold the position as long as possible, maintaining proper alignment.

<b>Points</b>	<b>%</b>	<b>Min:Sec</b>
<b>10.0</b>	<b>100</b>	4:00
<b>9.5</b>	<b>95</b>	3:30
<b>9.0</b>	<b>90</b>	3:00
<b>8.5</b>	<b>85</b>	2:45
<b>8.0</b>	<b>80</b>	2:30
<b>7.5</b>	<b>75</b>	2:15
<b>7.0</b>	<b>70</b>	2:00
<b>6.5</b>	<b>65</b>	1:45
<b>6.0</b>	<b>60</b>	1:30

**Department of Health and Exercise Studies**  
**HESR 255 Pickleball**  
**Fall 2016, August 18-October 4**

**Instructor:** Ed Remen  
**Office:** 2016 F Carmichael Gym  
**Office Hours:** M-TH 12:15-1:15 pm; Friday by appointment  
**Phone:** 919-515-1060  
**E-Mail:** [ed\\_remen@ncsu.edu](mailto:ed_remen@ncsu.edu)  
**Course Meeting:** TH 11:45-1pm, August 18-October 4  
**Credit Hours:** One  
**Course Prerequisites, Corequisites:** None  
**Required Text:** Pickleball Coursepack, \$9.50 (NC State Bookstore)

**Website for Rules:** [www.USAPA.org](http://www.USAPA.org)

**Course Description:** This is a beginning Pickleball course in which students will develop basic knowledge and skills to play the sport of Pickleball. Technical skills include forehand and backhand groundstrokes, volleys, serves, lobs, overheads, dinks, and proper footwork. Students will also learn the fundamental rules, basic strategies, and court positioning for singles and doubles play. Basic fitness and training principles will be discussed as applicable to the sport of Pickleball.

**Health Information Statement:** Physical activities in this class are considered moderate to vigorous and are considered limited contact. The NC State Department of Health and Exercise Studies supports the development and improvement of physical health, while doing so safely. If you have a known medical condition that could be adversely affected by participating in the typical activities of this class, please contact your usual physician for recommendations about how to participate safely or whether it is more appropriate to choose a different Health and Exercise Studies course. If your physician has provided you with recommendations to modify participation in this class, please share those recommendations with the instructor within the first week of class, if possible. If you are not certain whether you have a medical condition that puts you at risk for participation in this class or have a medical condition and cannot access your usual physician in a timely manner for recommendations for safe participation, consider making an appointment at Student Health to discuss your concerns (appointment number is 919.515.7107 or book on-line at [healthweb.ncsu.edu](http://healthweb.ncsu.edu)).

**GEP Objectives for Courses in the Category of Health and Exercise Studies**

Each course in the Health and Exercise Studies category of the General Education Program will provide instruction and guidance that help students to:

1. acquire the fundamentals of health-related fitness, encompassing cardiorespiratory and cardiovascular endurance, muscular strength and endurance, muscular flexibility and body composition; and
2. apply knowledge of the fundamentals of health-related fitness toward developing, maintaining, and sustaining an active and healthy lifestyle; and
3. acquire or enhance the basic motor skills and skill-related competencies, concepts, and strategies used in physical activities and sport; and
4. gain a thorough working knowledge, appreciation, and understanding of the spirit and rules, history, safety, and etiquette of physical activities and sport.

## **GEP/Course and Student Learning Outcomes**

### **By the end of this course students will be able to:**

1. Demonstrate how the fundamentals of health-related fitness apply to the sport of pickleball.
2. Explain how the concepts of health-related fitness apply in the sport of pickleball.
3. Demonstrate the basic skills of forehand and backhand groundstrokes, serves, dinks, overhead and volley shots used in the sport of pickleball.
4. Apply the basic playing strategies in singles and doubles formats in the sport of pickleball.
5. Apply the strategies of pickleball during in-class play.
6. Demonstrate knowledge of the history and rules of pickleball.

### **Evaluation Procedure**

#### **Cognitive 40%**

Midterm Exam	(15%)
Final Exam	(25%)

#### **Physical 60%**

Groundstrokes	(15%)
Serves	(15%)
Competitive Play	(15%)
Wall Sit	(15%)

### **Grading Criteria**

**40% – Exams:** The midterm exam will cover singles rules. The final exam will cover strategy, shot/serve identification, skills technique, terminology, and doubles play.

**60% – Physical:** The skills tests for grade consist of groundstrokes (forehand and backhand) and serves. They are performed on the courts with target markings. Each test is 15% of the course grade. Students will pre-test to practice the tests early in the semester and then be graded at the end of the semester.

#### **Skill Tests:**

1. Serve
2. Groundstroke

#### **Performance Tests:**

1. Wall Sit:
  - measures strength and endurance of lower body
2. Competitive Play



### Wall Sit Test with both legs.

This is a static hold to test lower body endurance and strength. Stand comfortably with feet approximately shoulder width apart, with your back against a smooth vertical wall. Slowly slide your back down the wall to assume a position with both your knees and hips at a 90° angle. The timing is stopped when the subject cannot maintain the position. Hold the position as long as possible, maintaining proper alignment.

Points	%	Min:Sec
10.0	100	3:00
9.5	95	2:45
9.0	90	2:30
8.5	85	2:15
8.0	80	2:00
7.5	75	1:45
7.0	70	1:30
6.5	65	1:00
6.0	60	:45

### Serve Test Protocol

The testing student must stand behind the baseline. The student hits five (5) serves from the right side and then five (5) serves from the left side. The serve must be a legal serve according to the rules of Pickleball. Each serve is scored 1, 3 or 5 points. Three target areas are placed behind the non-volley zone. A five (5) point zone at the back (5 feet), a one (1) point zone in the middle and a three (3) point zone at the front.

Males	Points	Females
Raw Score		Raw Score
> 42	20	> 38
40-42	19	36-38
37-39	18	33-35
34-36	17	31-32
31-33	16	29-30
28-30	15	27-28
25-27	14	25-26
22-24	13	22-24
19-21	12	19-21
16-18	11	16-18
13-15	10	13-15
< 13	9	< 13
Source: NCSU HES DEPT. 2013		

### Competitive Play Grading Criteria (15%)

CRITERIA	POINTS				
Demonstrates proper etiquette during game play	1	2	3	4	5
Executes forehand, backhand, drive serve & lob serve strokes consistently	1	2	3	4	5
Uses appropriate shot selection during game play	1	2	3	4	5
Moves appropriately depending on shot and/or tactics	1	2	3	4	5
Recognizes and applies rules accurately during competition	1	2	3	4	5

1=rarely    2=sometimes    3=often    4=frequently    5=always

### Groundstroke Test Protocol

The test is performed on the Pickleball Courts in Carmichael Gym. The test consists of a student hitting twenty (20) balls, fed by the instructor; ten (10) forehands and ten (10) backhands. Each shot that clears the net and lands inside the courts will be scored. All shots that land between the non-volley line and half-way to the baseline (7.5 feet), will be worth one point while shots landing close to the baseline are worth two points.

Groundstroke Points (raw score)	Grade
> 34	20
32-33	19
30-31	18
27-29	17
25-26	16
22-24	15
20-21	14
18-19	13
15-17	12
13-14	11
11-12	10
< 10	9
Source: NCSU HES DEPT. 2013	

## Grading Scale

Each student has the option of taking the class for a letter grade (+/-), credit only, or audit.

97-100 = A+	93-96.99 =A	90-92.99 =A-
87 – 89.99 =B+	83-86.99 = B	80-82.99 =B-
77-79.99 = C+	73-76.99 = C	70-72.99 = C-
67-69.99 = D+	63-66.99 = D	60-62.99 = D-
	0-59.99 = F	

## Attendance:

Students are expected to attend all classes and to arrive and leave at the scheduled times. The instructor will adhere to the university attendance policy. In the case of an excused absence, the student will provide official documentation and then be allowed to make up any graded work missed within one week of returning to class. Students are responsible for submitting such work and for scheduling make-up exams with the instructor. See [http://www.ncsu.edu/policies/academic\\_affairs/pols\\_regs/REG205.00.4.php](http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.4.php)

Absences	Consequence
1-3	None
4	Failure
2 Tardies	1 Absence

**Proper Attire:** Health and Exercise Studies Gray T-Shirt, Red/Black/Gray Shorts or Athletic or Yoga Pants

1. NC State HES-issue clothing. After every class or workout, you may obtain clean clothing/towel by handing in your sweaty clothes to the checkout counter. All checkout clothing needs to be returned by the last day of classes in the Spring semester. You will be charged for items not returned by this date. If you prefer, you may purchase a Health and Exercise Studies gray t-shirt at the NC State Bookstore (may want to purchase two shirts since attending two classes each week).
2. Students who fail to dress properly for class may not be permitted to participate in class activities and will be counted absent for the class session.
3. Any athletic shoe may be worn as long as the soles do not mark the court floor.

**Equipment:** Pickleball paddles and balls are provided. The equipment may be retrieved from the storage closet at the courts.

**Requirements for Credit Only:** In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- (70%) or better. Conversion from letter grading to credit only (S/U) grading is subject to University deadlines. Refer to the Registration & Records calendar for deadlines related to grading. For more details refer to:

[http://www.ncsu.edu/policies/academic\\_affairs/courses\\_undergrad/REG02.20.15.php](http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.15.php)

**Note:** The student is responsible for requesting credit only grading on MyPack Portal by the University deadline.

**Requirements for Audit:** Students must attend all classes except written exams and will be allowed five absences before NR will be recorded as a final grade. <http://policies.ncsu.edu/regulation/reg-02-20-04>

**Incomplete Grades:** Incomplete grades will be assigned only if unavoidable and unforeseen events occur, such as a medical emergency, preventing the student from completing a course requirement before the final grades are submitted. Incompletes must be made up before the end of the next regular semester in which the student is enrolled and in no case may be made up more than 12 months after the end of the semester in which the IN is awarded, unless the teacher or department offering the course is not able to provide the student with an opportunity to make up incomplete work, in which case the period can be extended. Make-up work is to be limited to accomplishing the work not completed. <http://policies.ncsu.edu/regulation/reg-02-50-03>

**Late Assignments:** Five points will be deducted from the assignment's final grade for first day the assignment is late. An additional two points per day will be deducted off the assignment's final grade for every day thereafter.

**Electronic Hosted Course Components:** Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**Online Class Evaluations:** Online class evaluations will be available for students to complete during the last two weeks of the semester. Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will not know how any one student responded to any question, and students will not know the ratings for any instructors.

Evaluation website: <https://classeval.ncsu.edu/>

Student help desk: [classeval@ncsu.edu](mailto:classeval@ncsu.edu)

More information about ClassEval: <http://www.ncsu.edu/UPA/classeval/>

## General Information

1. **Academic Integrity:** For all written assignments, students will be expected to adhere to the **University Honor Code**: "I have neither given nor received unauthorized aid on this test or assignment." It is the understanding and expectation of the instructor that the student's signature on any test or assignment means that the student neither gave nor received unauthorized aid. Consult the university website: <http://policies.ncsu.edu/policy/pol-11-35-01>
2. **Students with Disabilities:** Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see <http://policies.ncsu.edu/regulation/reg-02-20-01>
3. **Non-Discrimination Statement:** NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination,

harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or [http://www.ncsu.edu/equal\\_op/](http://www.ncsu.edu/equal_op/). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

4. Due to the nature of the activities in this class, it may be necessary for safety reasons to have some amount of physical contact occur to assist in acquiring the proper form/technique. The students should inform the instructor if they do not want any physical contact to assist in acquiring the proper form/technique.
5. Every fitness activity has certain inherent risks, and regardless of precautions taken it is impossible to ensure total safety. Adhere to all safety guidelines to reduce your risk of injury.
6. All HES clothing (shorts, t-shirts, and towels) is to be returned by the last day of exams. Students will be charged for clothing not returned. All personal items left in the locker will be disposed of.
7. Pets and visitors are not allowed during class periods. Firearms, weapons, and/or fireworks are prohibited from class.
8. Cell phones and MP3 players are prohibited in class.

**HESR 255 Pickleball**  
**Fall 8 Week**  
**Class Schedule**

Thursday, Aug.18	Courts	Course Introduction, Syllabus, The Game, Safety, Equipment, History, Rules	Reading/Assignments Rules
Tuesday, Aug. 23	Courts	Ready Position, Grips, Ball Control, Drills Introduction to Forehand/Backhand Mechanics	Stroke Mechanics
Thursday, Aug. 25	Courts	Forehand/Backhand Groundstroke Mechanics Drills, The Dink Shot	
Tuesday, Aug. 30	Courts	Serve/ Return, Philosophy Objectives, Strategies, Footwork, Types of Serves, Rules, Drills	Serve and Return
Thursday, Sept. 1	Courts	Introduce the Volleys, Drop, Control, Swinging & Half volleys, Practice Drills	Volley/Net Play
Tuesday, Sept. 6	Courts	Drop Shot & Practice Drills Pre-Testing Skill Tests Groundstroke & Serving	
Thursday, Sept. 8	<b>Courts</b>	<b>Midterm-Glossary of terms</b> Introduce the lob and overhead smash, Drills	Lob and Overhead
Tuesday, Sept. 13	Courts	Pre-Testing, Shot selection and the mental game	Playing Strategies
Thursday, Sept. 15	Courts	Strategies for Doubles & Singles Officiating Matches	Officiating Rules
Tuesday, Sept. 20	Courts	Doubles Class Tournament Skill Testing	
Thursday, Sept. 22	Courts	Doubles Class Tournament Skill Testing	
Tuesday, Sept. 27	Courts	Doubles Class Tournament, Singles Tournament Skill Testing, Review for Final Exam	
Thursday, Sept. 29	<b>Courts</b>	<b>Final Written Exam</b> Singles Tournament	
Tuesday, Oct. 4	Courts	Review Final Exam, Make up skill tests	

Website for Rules [www.USAPA.org](http://www.USAPA.org)

**NC STATE**

Martha Reiskind &lt;mbreiski@ncsu.edu&gt;

**Conservation Genetics**

3 messages

**Martha Reiskind** <mbreiski@ncsu.edu>  
To: Nadia Singh <ndsingh@ncsu.edu>

Fri, Nov 13, 2015 at 7:17 AM

Hi Nadia.

I'm in the process of making my conservation genetics course permanent. As part of that I wanted to do a consultation with you (see attached syllabus) to make sure you don't feel that my class in any way is a repetition of your class. I don't think it is, but wanted to be formal about it.

As I said before, I discourage students who are doing a genetic project for their dissertation and encourage them to take your class for a deeper background. This is more of an applications course with a pop gen review at the beginning.

Let me know what you think, because I can change things around if you feel it's too much overlap.

Best,  
Martha

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Martha Burford Reiskind, PhD  
Assistant Professor  
Coordinator of Academic Programs in Applied Ecology  
Department of Applied Ecology, Box 7617  
North Carolina State University  
Raleigh, NC 27695

Phone: [919.515.3495](tel:919.515.3495)  
Email: [mbreiski@ncsu.edu](mailto:mbreiski@ncsu.edu) or [martha\\_reiskind@ncsu.edu](mailto:martha_reiskind@ncsu.edu)  
Department website: <http://appliedecology.cals.ncsu.edu/>  
Lab website: <http://burfordreiskind.com/>

**ConservationGenetics Syllabus2014.docx**

57K

**Nadia Singh** <ndsingh@ncsu.edu>  
To: Martha Reiskind <mbreiski@ncsu.edu>

Fri, Nov 13, 2015 at 7:28 AM

Hi Martha,

Thanks for your e-mail. Other than the beginning of the course, there looks like very little overlap in concept. My guess is that the way we cover even the material at the beginning of the class is quite different. I don't think you need to change anything around, but I do appreciate your e-mail. Thank you!

Best,

Nadia

[Quoted text hidden]



Martha Reiskind <mbreiski@ncsu.edu>

Conservation Genetics

3 messages

Martha Reiskind <mbreiski@ncsu.edu> Fri, Nov 13, 2015 at 7:19 AM
To: Nick Haddad <haddad@ncsu.edu>, "L. Scott Mills" <lsfills@ncsu.edu>

Hi Nick and Scott,
Can you send me an email confirming that you do not see any overlap between our courses. I need it for the formal paperwork. I've attached the syllabus so you have it if you want to look it over again.

All my best,
Martha

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Martha Burford Reiskind, PhD
Assistant Professor
Coordinator of Academic Programs in Applied Ecology
Department of Applied Ecology, Box 7617
North Carolina State University
Raleigh, NC 27695

Phone: 919.515.3495
Email: mbreiski<at>ncsu.edu or martha\_reiskind<at>ncsu.edu
Department website: http://appliedecology.cals.ncsu.edu/
Lab website: http://burfordreiskind.com/

ConservationGenetics Syllabus2014.docx
57K

Nick Haddad <haddad@ncsu.edu> Fri, Nov 13, 2015 at 8:03 AM
To: Martha Reiskind <mbreiski@ncsu.edu>, "L. Scott Mills" <lsfills@ncsu.edu>

Martha,

Confirmed,

Nick
[Quoted text hidden]

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\*\*\*\*\*
Nick Haddad
William Neal Reynolds Professor of Applied Ecology
@nickmhaddad
www4.ncsu.edu/~haddad/
www.ConservationCorridor.org
phone: 919-515-4588

Fri, Nov 13, 2015 at 8:22 AM

**L. Scott Mills** <lsmills@ncsu.edu>  
To: Nick Haddad <haddad@ncsu.edu>  
Cc: Martha Reiskind <mbreiski@ncsu.edu>

Hi Martha,  
I see no conflict.  
Scott

Dr. L. Scott Mills, Professor  
Chancellor's Faculty Excellence Program in Global Environmental Change  
Department of Forestry and Environmental Resources  
Program in Fisheries, Wildlife and Conservation Biology  
Box 7617, Room 257 David Clark Labs  
North Carolina State University  
Raleigh, NC 27695-7617  
Phone: (919) 515-4585  
<http://research.cnr.ncsu.edu/sites/millslab/>  
[Quoted text hidden]



**AEC 450/AEC 550 Conservation Genetics**  
Lecture Tuesday & Thursday 11:45 to 1pm, DCL 139

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 in the Burford Reiskind lab. 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.

**Prerequisite:** GN 311 for undergraduates

**Text:** Allendorf, Luikart, & Aitken 2013. *Conservation and the Genetics of Populations*. 2<sup>nd</sup> Edition. Wiley-Blackwell Publication. It is available at the bookstore. Price: \$51.80. ISBN-10: 0470671459.

**Instructor:** Dr. Martha Burford Reiskind. David Clark Labs 126

Email: mbreiski<at>ncsu.edu Website: <http://burfordreiskind.com>

Phone: (919) 515-3495

Office hours: Thurs. 10 am, **office hours are also available by appointment**

**Learning outcomes of the course**

- **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 form 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.

**Grading Conservation Genetics Point Allocations Total points 576:**

**I. Genetic Problem Sets (14% of total):**

Four problem sets each worth 20 points (**Total of 80 pts**)

**II. Class discussions (7% of total):**

Four discussion days, questions & participation per discussion day is worth 10 points (**Total of 40 pts**)

**III. Minute Papers (6% of total):**

Six minute papers, each worth 6 points (**Total of 36 pts**)

#### **IV. Midterm Exam (17% of total):**

Take home midterm covers the first half of the lecture course **(Total of 100 pts)**

#### **V. Genetic Analysis Workgroup (4% of total)**

Group work on genetic analysis of the flounder genomic data **(Total of 20 pts)**

#### **VI. Independent proposal project (43% of total): (Total of 250 pts)**

References	<b>10 pts</b>
Outline	<b>10 pts</b>
Draft	<b>30 pts</b>
Final write-up	<b>150 pts</b>
Final presentation	<b>50 pts</b>

#### **VII. Participation (9% of total): (Total of 50 pts)\***

\* see details in the participation section

#### **The course uses Standard NCSU Letter Grading:**

97 ≤A+ ≤ 100	73 ≤C <77
93 ≤A < 97	70 ≤C- <73
90 ≤A- < 93	67 ≤D+ <70
87 ≤B+ < 90	63 ≤D <67
83 ≤B < 87	60 ≤D- <63
80 ≤B- < 83	0 ≤F <60
77 ≤C+ < 80	

#### **Expectations & Policies**

The student is responsible for being aware of and turning in all assignments on the given dates. Further information on each assignment is found in the syllabus and on the website: <http://burfordreiskind.com/teaching/conservation-genetics/>.

#### *Attendance*

- You are required to be in class and on time. Part of your grade comes from your participation during class, therefore you will lose participation points for frequent absences.
- If you have to be absent on the day of a presentation or handing in an assignment you have to provide appropriate documentation for your absence.
- You will not be able to makeup participation activities we conduct during class. Only activities that become take-home assignments can be made up, if you have appropriate documentation for your absence.
- If you discontinue class attendance without following proper procedures for dropping or withdrawing, you will receive a grade of F in the course and your last date of attendance will be document in your final grade.  
Please read the Attendance Regulations (REG 02.20.03) found at <https://policies.ncsu.edu/regulation/reg-02-20-03>

#### *Assignments*

- You are responsible for obtaining lecture material from the course web site and for reading associated portions of the textbook as listed on the schedule of topics in this syllabus.

- See details on assignments below.

### *Integrity*

- All course work submitted for a grade in both lecture and field part must be your own. University standards of academic integrity forbid either giving or receiving unauthorized help on graded work. Violations of University standards will be prosecuted. You will need to sign the academic integrity statement on each written assignment.  
Please read the **Code of Student Conduct** (POL 11.35.01) found at <http://policies.ncsu.edu/policy/pol-11-35-01> and go to the **Office of Student Conduct** at: <http://studentconduct.ncsu.edu/>
- Be a team player, and be considerate of others in class by following simple rules of politeness.
- Try not to pack up before lecture ends. This is disruptive to others. You will be allowed to leave for your next class or meeting in a timely manner.
- Try your best to leave your sitting area clean and tidy by picking up any trash that's yours.
- Turn off completely all electronic devices (iPods, cell phones, laptops) during lecture, unless you are using them to read lecture notes, or take notes.
- Remember that this course is for you—you will get as much out of it as you're willing to put in.

### *Email Etiquette*

Make sure to include your full name in the body of all emails you send to me. In the subject heading, **please write: Con Gen**. Please only write Con Gen and nothing else. If you are attaching a document, **include your name in the document and use your name and course number for the file name**. Also include your full name in the attached document. If you're replying to an email, please include any previous exchanges in the email reply. All emails should begin with a salutation and close with your name. If you have not received a reply, make sure you have the correct heading, as the filter will only collect those with Con Gen.

*Statement on Disabilities:* If you have a disability that will affect your performance in this course, reasonable accommodations will be made for you. You must provide documentation of your disability from the NCSU Disability Student Services, 2000 Harris Hall, 515-7653. For more information on NC State's policy on working with students with disabilities, please see the **Academic Accommodations for Students with Disabilities Regulation** (REG 02.20.1) at <http://policies.ncsu.edu/regulation/reg-02-20-01> and **Disability Services Office** at <http://www.ncsu.edu/dso/>. Also, please be sure to discuss any issues with me.

*Non-discrimination Policy:* NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law

and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation (POL 04.25.05) may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> and <http://oied.ncsu.edu/oied/policies.php>. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the **Office for Equal Opportunity** (OEO) at 919-515-9617.

Tentative Schedule:

Week	Dates	Activity	Subject	Reading	Assignments	What's due?
1	Th	Classroom	Introduction & Genetic Variation	Chapters 1-4	<b>READ SYLLABUS!!</b>	
2	Tu	Classroom	Probability / Genetic variation / Review of HWE	Chapters 4, 5 Appendix A3-A8		
	Th	Classroom	Genetic Drift / Effective Population Size / <b>minute paper</b>	Chapters 6 & 7	Problem Set 1	
3	Tu	Classroom	Natural Selection	Chapter 8		<b>PS 1 due at class</b>
	Th	Classroom	Population subdivision/ Gene flow/ <b>minute paper</b>	Chapter 9	Problem Set 2	
4	Tu	Classroom	Multiple loci / quantitative genetics	Chapter 10	Problem Set 3 / Questions for Thurs. discussion	<b>PS 2 due at class</b>
	Th	Classroom	Population Genetics highlights / <b>Case Study</b> / *Discussion			<b>Questions due before class</b>
5	Tu	Classroom	Inbreeding depression	Chapter 13		<b>PS 3 due at class</b>
	Th	Classroom	Demography & Extinction / <b>minute paper</b>	Chapter 14	Problem Set 4 / Questions for Tuesday's discussion	
6	Tu	Classroom	Review / <b>Case Study</b> / *Discussion	Posted Reading		<b>Questions due before class / PS 4 due at class</b>
	Th	Classroom	Metapopulations & Fragmented populations	Chapter 15	Take home Midterm	
7	Tu	Classroom	Units of conservation	Chapter 16		<b>Midterm due in class</b>
	Th	Classroom	Hybridization / <b>minute paper</b>	Chapter 17		<b>Synopsis &amp; 5 References of Term project due Friday 5pm</b>
8	Tu	Classroom	Writing an effective scientific proposal	Posted Readings		
	Th	Classroom	Exploited species / Conservation breeding & restoration	Chapters 18 & 19	Questions for Tuesday's discussion	

9	Tu	Classroom	Climate change / <b>Case study</b> / *Discussion	Chapter 21 & Posted Readings		<b>Questions due before class</b>
	Th	Classroom	Genetic Toolkit / <b>minute paper</b>	Posted Readings & Websites		<b>Outline of Term Project due Friday 5 pm</b>
10	Tu	<i>Spring Break</i>				
	Th					
11	Tu	Classroom	Landscape genetics / <b>Case study</b> / *Discussion	Chapter 20 & Posted Readings		<b>Questions due before class</b>
	Th	Classroom	Genomic Toolkit	Posted Readings & Websites		
12	Tu	Classroom	Southern Flounder Project / Building libraries /	Posted Readings & Websites		
	Th	Classroom	Southern Flounder Project / NGS bioinformatics / <b>minute paper</b>	Posted Readings & Websites		
13	Tu	Lab	Southern Flounder Project / Data Analysis Workgroups (running analyses)			<b>Term project for reviewers due Tuesday 5pm</b>
	Th	<i>Spring Recess No class</i>				
14	Tu	Lab	Southern Flounder Project / Data Analysis Workgroups (analysis interpretations)			
	Th	Lab	Flounder analysis group presentations (4)		Proposal reviews returned	
15	Tu	Lab	Working with your reviews & write-up consultation			
	Th	Classroom	How to give an effective presentation			
16	Tu	Classroom	Presentations on term projects			
	Th	Classroom	Presentations on term projects			

- **Final Term project Write-up due the last day of class**

## **Participation**

Objective:

This course has a participation component beyond the part built into the case study discussions. The goal is for all students to be actively engaged in learning during the class period. If you are absent from lecture you will not be able to participate. If you are present, but otherwise engaged with your phone, laptop, or other mobile device, this will also affect your participation points. I will talk in detail, including specific examples, of what goes into this part of your grade on the first day of class so that you know what the expectation is. I will also discuss how to be a good team member before we start the group activity so that you know what that expectation is.

Logistics:

This part of the course is worth 50 points. The points will be assigned in the following manner:

50 points: *Regularly contributes to class discussions by raising thoughtful questions, providing examples from the readings or text, building on others' ideas, expanding the class' perspective, and appropriately challenging others' assumptions and perspectives*

25 points: *Sometimes contributes to class discussions in the aforementioned ways*

0 points: *Never contributes to class discussions in the aforementioned ways*

## **Details on Assignments**

### **Problem Sets:**

Objective:

One of the goals of the problem sets is to confirm and practice understanding of basic population genetic concepts. The application of population genetics in a conservation context is based on a basic understanding of probability and mathematics, and therefore the proper way to learn this field is to practice problems. These problem sets will also solidify the concepts we cover in lecture.

Logistics:

There are four different problem sets each will be provided via the course website by Thursday's lecture and you will hand them in on Tuesday. We will provide a quick turn-around and go over any universal issues in class. Note that there is a challenge question attached to each problem set that is extra credit.

### **Case Study Discussions:**

Objective:

The goal is to expose you to a variety of approaches to genetic research, to the scientists doing the research, and to expand your scientific literacy. To do this we will look at individual case studies either in the textbook or provided reading. You will read the provided material before and prepare questions related to this material before class. Your questions will stimulate the in class discussion. In some cases a visiting researcher who works on this particular subject will provide a short background and help facilitate the discussion

Logistics:

You will be given readings related to case study and you will craft 3, well thought out questions related to this case study. We will talk about examples of questions in class. The grade you earn will consist of the quality of your questions and your participation in the discussion during class. The breakdown is 2 points per question and 4 points for participation for a total of 10 points per discussion day. Your questions have to be thought provoking and specific, not simple questions like, “what is a lemur?” or “was a population genetic approach important?”

### **Minute Papers:**

Objective:

At the end of specific lecture periods I will provide you with an index card or piece of paper and you will answer three questions with one to two sentences related to the lecture and/or demonstration on that day. The goal of this is to get a quick assessment of how well you understood the material, what questions remain and what you would like to hear more about. This way I can follow-up in the next lecture and provide more context if needed.

Logistics:

Here are the three questions you will answer: What was the main thing you learned today? What do you have questions about that we covered today? What would you like to hear more about?

### **Genetic Analysis Workgroup:**

Objective:

The goal of this group project is to give you the opportunity to run genetic tests on real data. Each semester will be a different topic of ongoing research in the Burford Reiskind lab. For example, this Spring Semester we will use genomic data generated from the commercially exploited southern flounder that we generated over winter break. Not only will this give you an opportunity to put genetic analyses in practice but will also provide an opportunity to participate in discovery. We will discover the results together in class.

Logistics:

With two lectures and two days of analysis of genomic data from the southern flounder, we will analyze several important population level measures. These include the level of genetic divergence among populations, degree of gene flow between populations, historic and contemporary effective population sizes, and any evidence of temperature driven outlier loci that would result from local adaptation. Each group will work together on one of these analyses and will give a final presentation. The 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.

### **Details on the Term Project:**

Objective:

The goal of the term project is to provide an opportunity to explore and apply the material from the course to a real-life conservation or management question. You will hand in your proposed research project for a review by several faculty members



including the instructor for the course. This will provide feedback on your proposed research from experts in the field. In addition, you will practice the art of communicating your proposed research project in both an oral presentation and final proposal that incorporates all the comments.

**Logistics:**

Undergraduates will prepare a Graduate Research Fellowship Program proposal and graduate students will prepare either a GRFP or a 2-page NSF pre-proposal, or a proposal specific to their conservation genetic project. 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 dissertation work. For both graduate students and undergraduate students, we will go over the options for the proposal on the first day and closer to the time of the first due date of your synopsis. Note that you will provide 5 references with the synopsis. I will guide you through each step of the process including an outline of your proposal and the proposal for review. A faculty member outside of the course will also provide a review of your proposal. The presentation and final proposal will serve as the final for the course and the final proposal will be handed in on the last day of class. You will pick your subject early in the semester so that you can build the research proposal throughout the course.

NORTH CAROLINA STATE UNIVERSITY  
DEPARTMENT OF BIOLOGICAL AND AGRICULTURAL ENGINEERING

**BAE 321: Bioprocess Engineering Fundamentals—Fall 20xx**  
**MWF 00:00-00:00 AM, xxx D.S. Weaver**  
<http://moodle.wolfware.ncsu.edu>

**Instructor:** Dr. Mari S. Chinn ([mari\\_chinn@ncsu.edu](mailto:mari_chinn@ncsu.edu)), 277 Weaver Labs, (919) 515-6744  
**Office Hours:** Tuesday 0:00 PM-0:00 PM or by appointment.

**Course Text:** *Bioprocess Engineering Principles, second edition by Pauline M.Doran. 2013. Academic Press*

The majority of the lecture materials used in the course will be made available electronically through Moodle at <http://moodle.wolfware.ncsu.edu>. Only students enrolled in the course will have access to the site and your Unity ID will be required for login.

**Reference Books:** n/a

**Course Pre/Co-requisites:**

Pre-requisite: BIO 183 or BIO 181

Co-requisite: MAE 301 Engineering Thermodynamics

**Course Overview:** For engineering and non-engineering students interested in processing, biotechnology and related disciplines, it is important to have an understanding of the basic principles behind process analysis, design and scale up. This course will provide an introduction to the interdisciplinary approach and engineering concepts behind the development of useful food, chemical, energy, nutraceutical and pharmaceutical products through the transformation of biological materials (bioprocessing). Some of the relevant topics covered include the fundamentals behind units, dimensions and engineering properties, stoichiometry, data analysis and statistics, mass and energy balances, rheology, mixing, heat and mass transfer, reaction kinetics and unit operations.

**Course Objectives:** This course is offered at the undergraduate level and is designed to provide a learning environment that is challenging, engaging, and fun to achieve the following:

- Highlight process engineering principles involved in the production and recovery of commercial products
- Foster the development of using a systematic approach to making engineering calculations and analyzing engineering problems
- Development of quantitative, analytical and communications skills in processing and presenting data so it is useful in making decisions
- Encourage critical and analytical thinking through reflective writing
- Create awareness among students about the various opportunities available to add value to biological materials through bioprocessing through case studies and outside speakers

**Learning Outcomes:** By the end of the course students should be able to do the following things

- Apply variables in engineering calculations and manipulate unit conversions
- Process data sets and make recommendations for analysis and presentation
- Define the material and energy balances for a given system
- Describe principles behind heat and mass transfer
- Explain the concepts behind reaction kinetics and apply methods to quantify key parameters

- Describe unit operations involved in transformation of biological materials
- Discuss the opportunities available to them in the field of bioprocess engineering and speak to their personal value

### POLICIES AND PROCEDURES

**Homework.** Submissions must be **legibly** hand-written or typed on **single sided** clean sheets of paper to show all work and any assumptions made (no short cuts). Problems should be completed in a neat, logical manner and final answers boxed (include units) for quantitative problems. If there are multiple pages please staple them and include your name, problem set number and date at the top of the first page.

Submissions can be made until 5PM on the assigned due date to the instructor. *Solutions to homework problems will not be posted.* It is your responsibility to make sure you find out how to solve the problems by getting help before the due date and/or asking about them in class.

**Late homework.** Late homework will **not** be accepted unless the student has a University excused absence for the class period in which homework was scheduled for completion. If any assignments are turned in outside of class you may either hand it directly to the instructor or to an administrative assistant in Weaver Administration, room 100 (requires a time stamp, signature). Do **not** put assignments in the offices, mailboxes, or slide them under the doors of the instructor or teaching assistants. Assignments will **not** be accepted by email.

**Quizzes and Exams.** There will be announced and unannounced quizzes in class over the course of the semester. Scores from these quizzes will count towards the final grade. Attendance is necessary to receive grades for quizzes. The lowest score will be dropped from overall grading.

There will be two 50-minute in-class exams during the semester and a final exam, with questions focusing on the course objectives and learning outcomes of the class. Students are expected to take thorough study notes on the presented class material.

If you miss an exam or quiz without either a certified medical excuse or prior instructor approval, a make-up exam or quiz will not be offered. Tests missed with a certified medical excuse or prior instructor approval will be handled on a case by case basis.

**Attendance.** Regular lecture attendance is expected. It is recommended that a calculator is brought to class for in class assignments and activities. If a lecture absence is unexcused, the student will receive a grade of zero for any in class assignments or quizzes. Students who miss class due to an excused absence should work with the instructor to make up any missed work. Students shall receive excused absences for a reasonable number of anticipated absences as well as for emergencies as specified:

1. Excuses for anticipated absences must be cleared with the instructor before the absence. Examples of anticipated situations where a student would qualify for an excused absence are:
  - The student is away from campus representing an official university function (e.g. participating in a professional meeting, as part of a judging team, or athletic team). These students would typically be accompanied by a University faculty or staff member.
  - Required court attendance as certified by the Clerk of Court
  - Religious observances as verified by Parent & Constituent Services (515-2441).
  - Required military duty as certified by the student's commanding officer

2. Excuses for emergency absences must be reported to the instructor as soon as possible, but not more than one week after the return to class. Examples of emergency absences are:
- Illness or injury when certified by an attending physician. Physicians on the Student Health Service staff do not provide written excuses. Because of student confidentiality, information can only be released directly by the Counseling Center or Student Health Services in case of crisis or with the student's written authorization.
  - Death or serious illnesses in the family when documented appropriately. An attempt to verify deaths or serious illness will be made by Parents & Constituent Services (515-2441) at the request of the instructor.

For a full statement of the university attendance policy, see <http://policies.ncsu.edu/regulation/reg-02-20-03>

**Calculations of course grade.** A weighted average grade will be calculated as follows

<b>BAE 321</b>	
Homework	20%
Quizzes	5%
Reflective Journal Entries	15%
Exams	40 %
Final Exam	20 %

The final course grade will be guaranteed for the stated weighted averages:

A <sup>+</sup> 97-100	B <sup>+</sup> 87-89	C <sup>+</sup> 77-79	D <sup>+</sup> 67-69	F 59 or less
A 93-96	B 83-86	C 73-76	D 63-66	
A <sup>-</sup> 90-92	B <sup>-</sup> 80-82	C <sup>-</sup> 70-72	D <sup>-</sup> 60-62	

If at the end of the semester a student is borderline between two grades, class and group participation and evidence of improvement in exam and homework performance can be used in final grade determination.

Partial credit is available for work completed on homework assignments and exams, and allocation of credit will be left to the discretion of the grader. If a student disagrees with how an assignment or exam has been graded, she or he may request that it be re-graded. All re-grading requests must be filed in writing stating what should be re-graded and why the action is necessary. These statements must be turned into the instructor along with the item to be re-graded within 5 days of the item being returned. After this 5 day period, all grades are final.

**S/U Grading:** In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to <http://policies.ncsu.edu/regulation/reg-02-20-15>.

**Audits:** Information about and requirements for auditing a course can be found at <http://policies.ncsu.edu/regulation/reg-02-20-04>.

**Incomplete Grades:** If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted

course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-3>

**Instructor's commitment.** Students can expect the instructor to be courteous and respectful; be well organized and prepared for lecture and other class activities; be open to questions and to answer them clearly; be available during office hours or note beforehand if she is unable to keep them; and grade uniformly and consistently according to the provided guidelines.

**Statement for students with disabilities.** Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. [http://www.ncsu.edu/provost/offices/affirm\\_action/dss/](http://www.ncsu.edu/provost/offices/affirm_action/dss/). For additional information on NC State's policy on working with students with disabilities, please see the Handbook for Teaching and Advising, <http://www.ncsu.edu/provost/hat/current/index.html>, Appendix K.

**Academic integrity.** Students are expected to be familiar with and honor the NCSU Code of Student Conduct. The honor pledge, which follows, pretty much spells out what is expected of the student – “I have neither given nor received unauthorized aid on this test or assignment”. It is the instructor's understanding and expectation that the student's signature on any test or assignment means that the student neither gave nor received unauthorized aid. While there will be times when students will be encouraged to talk and participate in class discussions, students should refrain from extraneous conversations with each other when the instructors or other students are presenting information. Talking at inappropriate times violates academic integrity since you are interfering with another students' desire to hear and see what is going on in class.

Students should refer to the University policy on academic integrity found in the Code of Student Conduct ([www.ncsu.edu/policies/student\\_services/student\\_discipline/POL11.35.1.php](http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php)). All violations will be handled as specified by University Guidelines. It is the instructor's understanding and expectation that the student's name on any test or assignment means that the student neither gave nor received unauthorized aid.

**Field trips.** A class visit to a relevant bioprocessing facility may be organized if conditions permit. Transportation for field trip(s) during the course will be provided by the university. If students choose to provide their own transportation, they do so at their own risk. Students are encouraged to use the transportation provided by the university.

**Class evaluation.** Online class evaluations will be available for students to complete during the last 2 weeks of fall term. Evaluation website: <https://classeval.ncsu.edu/>  
Student help desk: [classeval@ncsu.edu](mailto:classeval@ncsu.edu)  
More information about ClassEval: <http://www.ncsu.edu/UPA/classeval/>

## Tentative Lecture Schedule

Week	Meeting Dates	Lecture Topic	Reading Assignment
1	W Aug 20	Course Overview and Introduction	Chapter 1
	F Aug 22	Units and Dimensions	Chapter 2
2	M Aug 25	Statistics	Chapter 3
	W Aug 27	Data Presentation	
	F Aug 29	<i>Reflective Journal Exercise</i>	
3	M Sept 01	<b>Holiday—Labor Day</b>	
	W Sept 03	Thermodynamic Basics—Mass Balances	Chapter 4
	F Sept 05	<i>Guest Speaker</i>	
4	M Sept 08	Thermodynamic Basics—Energy Balances (I)	Chapter 5
	W Sept 10	Thermodynamic Basics—Energy Balances (II)	
	F Sept 12	<i>Case Study</i>	
5	M Sept 15	Thermodynamic Basics—Carbon Balances	
	W Sept 17	Reaction Kinetics-Basics	Chapter 12
	F Sept 19	<i>Reflective Journal Exercise</i>	
6	M Sept 22	<b>Exam 1</b>	
	W Sept 24	Reaction Kinetics-Enzymes	
	F Sept 26	<i>Guest Speaker</i>	
7	M Sept 29	Reaction Kinetics-Cell Growth (I)	
	W Oct 01	Reaction Kinetics-Cell Growth (II)	
	F Oct 03	<i>Case Study</i>	
8	M Oct 06	Fermentation	Moodle Document
	W Oct 08	Cell Culture	
	F Oct 10	<b>Fall Break</b>	
9	M Oct 13	Reactors	
	W Oct 15	Rheology and Mixing	Chapter 8
	F Oct 17	<i>Fermenter Exercise-Thomas Hall</i>	
10	M Oct 20	Heat Transfer (I)	Chapter 9
	W Oct 22	Heat Transfer (II)	
	F Oct 24	<i>Reflective Journal Exercise</i>	
11	M Oct 27	<b>Exam 2</b>	
	W Oct 29	Mass Transfer (I)	Chapter 10
	F Oct 31	<i>Case Study</i>	
12	M Nov 03	Mass Transfer (II)	
	W Nov 05	Separations (I)	Chapter 11
	F Nov 07	<i>Botanical Extractions—Guest Speaker</i>	
13	M Nov 10	Separations (II)	
	W Nov 12	Economics	
	F Nov 14	<i>Reflective Journal Exercise</i>	
14	M Nov 17	Process Models (I)	Moodle Document
	W Nov 19	Process Models (II)	
	F Nov 21	<i>Case Study</i>	
15	M Nov 24	Minors, Careers and Opportunities	
	W Nov 26	<b>Thanksgiving</b>	
	F Nov 28		

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	M Dec 01	<i>Reflective Journal Exercise</i>
16	W Dec 03	Review Session
	F Dec 05	Reading Day

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17/18		Final Exam
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# BAE 371 Course Syllabus

## BAE 371 – Fundamentals of Hydrology for Engineers

**Section 001**

**FALL 2015**

**3 Credit Hours**

### Course Description

Hydrology and erosion principles. Designing structures and selecting practices to control runoff, erosion, sediment pollution, and flooding.

### Learning Outcomes

By the end of this course, students will be able to:

- identify major water quality concerns;
- analyze precipitation records and determine probabilistic rainfall amounts;
- calculate potential evapotranspiration and apply adjustments for specific land covers;
- calculate infiltration rates and depths;
- predict runoff volume and peak rate for a given watershed and design storm;
- apply basic open channel hydraulics for design of conveyances;
- estimate erosion rates and select appropriate practices for management;
- design erosion control structures;
- select and design hydraulic control structures;
- analyze hydraulics of impoundments;
- apply flood routing methods for design of flood control structures.

### Course Structure

Classes will begin with overview and Q&A for readings and homeworks. Most of the time will be devoted to examples and in-class exercises. Each student is expected to have the text, a calculator, and a clicker. Students will read the assigned materials and complete online exercises prior to class.

Labs are team exercises related to current course topics.

### Course Policies

Computers and personal communication devices (e.g., phones) may not be used during class except by permission of the instructor.

Chapter Checks and Homework assignment are online and are open for limited times. These will not be extended for any individual unless an excusable absence is involved.

### Instructors

**Rodney L Huffman** (huffman) - *Instructor*

**Email:** [huffman@ncsu.edu](mailto:huffman@ncsu.edu)

**Web Page:** <http://www.bae.ncsu.edu/people/faculty/huffman/>

**Phone:** 919-515-6740

**Office Location:** 151 D S Weaver Labs

**Office Hours:**

See [http://www.bae.ncsu.edu/people/faculty/huffman/schedule\\_fall.htm](http://www.bae.ncsu.edu/people/faculty/huffman/schedule_fall.htm)  
After Fall Break, BAE325 (and its labs) will be open times.

## Course Meetings

### Lecture

**Days:** MW  
**Time:** 9:10am - 10:00am  
**Campus:** Main  
**Location:** DSW 158  
*This meeting is required.*

### Lab

**Days:** T  
**Time:** 10:15am - 12:05pm  
**Campus:** Main  
**Location:** DSW 142  
*This meeting is required.*

### Lab

**Days:** T  
**Time:** 1:30pm - 3:20pm  
**Campus:** Main  
**Location:** DSW 142  
*This meeting is required.*

## Course Materials

### Textbooks

**Soil and Water Conservation Engineering** - Huffman, Fangmeier, Elliot, and Workman  
**Edition:** 7  
**ISBN:** 9781892769862  
**Web Link:** <http://www.asabe.org/publications/publications/book-catalog/textbooks>  
**Cost:** ~\$90  
*This textbook is required.*

**Response Card NXT (or newer)** - Turning Technologies  
**Edition:** N/A  
**ISBN:** 978-1892769862  
**Web Link:** <http://www.turningtechnologies.com/>  
**Cost:** \$50 new; \$34 used  
*This textbook is required.*

### Expenses

None.

### Materials

**Scientific calculator** - (varies)  
*This material is required.*

## Requisites and Restrictions

### Prerequisites

BAE 200 or CSC 112 or CSC 114 or CSC 116  
BAE 202 or 203

### Co-requisites

SSC 200 and either CE 382 or MAE 308

### Restrictions

None.

## General Education Program (GEP) Information

### GEP Category

This course does not fulfill a General Education Program category.

### GEP Co-requisites

This course does not fulfill a General Education Program co-requisite.

## Transportation

This course will not require students to provide their own transportation. Non-scheduled class time for field trips or out-of-class activities is NOT required for this class.

## Safety & Risk Assumptions

Labs may deal with equipment or situations that could pose risk of injury. Students are expected to follow prescribed procedures and exercise due caution at all times.

## Grading

### Grade Components

Component	Weight	Details
Chapter Checks	10	Must be completed prior to the start of the class in which the topic is first discussed. Chapter Checks are administered through Moodle.
Homework	20	All assignments must be completed and submitted in the prescribed formats.
Labs	20	Lab reports must be completed and submitted using the prescribed formats. All team members must participate materially and identify their contributions.
Midterm Exams	20	
Final Exam	20	
In-class work	10	In-class (clicker) responses are tallied. Scores are scaled such that 70% correct receives full credit.

## Letter Grades

### **This Course uses Standard NCSU Letter Grading:**

97	≤	<b>A+</b>	≤	100
93	≤	<b>A</b>	<	97
90	≤	<b>A-</b>	<	93
87	≤	<b>B+</b>	<	90
83	≤	<b>B</b>	<	87
80	≤	<b>B-</b>	<	83
77	≤	<b>C+</b>	<	80
73	≤	<b>C</b>	<	77
70	≤	<b>C-</b>	<	73
67	≤	<b>D+</b>	<	70
63	≤	<b>D</b>	<	67
60	≤	<b>D-</b>	<	63
0	≤	<b>F</b>	<	60

### **Requirements for Credit-Only (S/U) Grading**

In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to <http://policies.ncsu.edu/regulation/reg-02-20-15>.

### **Requirements for Auditors (AU)**

Information about and requirements for auditing a course can be found at <http://policies.ncsu.edu/regulation/reg-02-20-04>.

Auditors must take all examinations with a minimum total score of 70.

### **Policies on Incomplete Grades**

If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-3>.

### **Late Assignments**

Assignments that are submitted late are subject a penalty of 30 percent of the maximum credit. Assignments that are submitted 72 hours late or after the work has been returned to the rest of the class will receive no credit. The clock is continuous through weekends, holidays, etc.

### **Attendance Policy**

For complete attendance and excused absence policies, please see <http://policies.ncsu.edu/regulation/reg-02-20-03>

### **Attendance Policy**

Regular attendance is expected. Notices of expected absences should be given to the instructor at the earliest possible date, either in person or by email.

Attendance is mandatory for labs. Labs will not be accepted as individual submissions and no makeup will be permitted. A student who skips a lab will earn a zero for that assignment.

### **Absences Policy**

The university definition for excused absences will be used for this course.

### **Makeup Work Policy**

If an absence is excused, makeup work will be arranged on an individual basis, depending on the nature and importance of the missed work.

In-class work cannot be made up.

Labs cannot be made up.

### **Additional Excuses Policy**

None.

## **Academic Integrity**

### **Academic Integrity**

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>

All violations of academic integrity will be reported to the Office of Student Conduct and appropriate sanctions will be applied.

Use of a clicker by anyone other than the registered owner will be treated as a violation of the Code of Student Conduct by the owner and any other parties involved.

### **Academic Honesty**

See <http://policies.ncsu.edu/policy/pol-11-35-01> for a detailed explanation of academic honesty.

The collaboration policy for the course is posted on Moodle. It lists types of collaboration permitted on the various types of assignments. Violations will be reported and sanctions applied.

Use of the work of any other person without proper attribution, including former students in this course or students in similar courses at this or any other institution, will be regarded as a violation of academic integrity.

### **Honor Pledge**

Your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment." **Submission of any work in any format and by any means implies the same.**

## **Electronically-Hosted Course Components**

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**Electronically-hosted Components:** Moodle

## **Accommodations for Disabilities**

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office (<http://www.ncsu.edu/dso>), 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at <http://policies.ncsu.edu/regulation/req-02-20-01>.

## **Non-Discrimination Policy**

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or [http://www.ncsu.edu/equal\\_op/](http://www.ncsu.edu/equal_op/). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

## **Course Schedule**

**NOTE:** The course schedule is subject to change.

### **Lecture MW 9:10am - 10:00am — Week 1 — 8/21 - 8/23**

Water Quality

SWCE (Soil & Water Conservation Engineering, 7e) Ch 2

CC (chapter check) 02

HW (homework) 02

### **Lecture MW 9:10am - 10:00am — Week 2 — 8/24 - 8/28**

Water Quality; Precipitation

SWCE Ch 3

CC03

HW03a

### **Lab T 10:15am - 12:05pm — L01 — 8/25 - 8/25**

Excel tools and methods needed for BAE 371

### **Lecture MW 9:10am - 10:00am — Week 3 — 8/31 - 9/4**

Precipitation; Evapotranspiration

SWCE Ch 3, 4

CC04

HW03b

**Lab T 10:15am - 12:05pm — L02 — 9/1 - 9/1**

Synthetic Storms

**Lecture MW 9:10am - 10:00am — Week 4 — 9/7 - 9/11**

Evapotranspiration

SWCE Ch 4

HW04

**Lab T 10:15am - 12:05pm — L03 — 9/8 - 9/8**

Penmen-Monteith Estimation of ET

**Lecture MW 9:10am - 10:00am — Week 5 — 9/14 - 9/18**

Infiltration

SWCE Ch 5

CC05

HW05

Midterm Exam 1: Ch 2-4

**Lab T 10:15am - 12:05pm — L04 — 9/15 - 9/15**

Green-Ampt Infiltration Model

**TBD — Week 6 — 9/21 - 9/25**

Runoff: Peak Rates and Volumes

SWCE Ch 5

**Lab T 10:15am - 12:05pm — L05 — 9/22 - 9/22**

Synthetic Hydrographs

**Lecture MW 9:10am - 10:00am — Week 7 — 9/28 - 10/2**

Open Channel Flow

SWCE Ch 6

CC06

HW06

**Lab T 10:15am - 12:05pm — L06 — 9/29 - 9/29**

Critical flow & Broad-crested weir

**Lecture MW 9:10am - 10:00am — Week 8 — 10/5 - 10/9**

Open Channel Flow; Erosion by Water

SWCE Ch 6 & 7

CC07

HW07

**Lab T 10:15am - 12:05pm — L07 — 10/6 - 10/6**

Crump Weir & Hydraulic Jump

**Lecture MW 9:10am - 10:00am — Week 9 — 10/12 - 10/16**

Erosion by Water

SWCE Ch 7

Midterm Exam 2: Ch 5-6

**Lab T 10:15am - 12:05pm — L08 — 10/13 - 10/13**

Erosion Rate Estimation using WEPP

**Lecture MW 9:10am - 10:00am — Week 10 — 10/19 - 10/23**

Terraces & Vegetated Waterways

SWCE Ch 8

CC08

HW08

**Lab T 10:15am - 12:05pm — L09 — 10/20 - 10/20**

Terrace Design

**Lecture MW 9:10am - 10:00am — Week 11 — 10/26 - 10/30**

Water Control Structures

SWCE Ch 9

CC09a

HW09a

**Lab T 10:15am - 12:05pm — L10 — 10/27 - 10/27**

Vegetated Waterway Design

**Lecture MW 9:10am - 10:00am — Week 12 — 11/2 - 11/6**

Flood Routing

SWCE Ch 9

CC09b

HW09b

**Lab T 10:15am - 12:05pm — L11 — 11/3 - 11/3**

Culvert Analysis

**Lecture MW 9:10am - 10:00am — Week 13 — 11/9 - 11/13**

Sediment Control

SWCE Ch 9



CC09c

HW09c

Midterm Exam 3: Ch 7-9a

**Lab T 10:15am - 12:05pm — L12 — 11/17 - 11/24**

Detention Basin Design, week 1

**Lecture MW 9:10am - 10:00am — Week 14 — 11/16 - 11/20**

Sediment Control; Water Supply

SWCE Ch 9, 11

CC11

HW11

**Lab T 10:15am - 12:05pm — L12, continued — 11/17 - 11/24**

Detention Basin Design, week 2

**Lecture MW 9:10am - 10:00am — Week 15 — 11/23 - 11/24**

Water Supply

SWCE 11

**Lab T 10:15am - 12:05pm — L13 — 11/24 - 12/1**

Detention Basin with Flood Spillway, week 1

**Lecture MW 9:10am - 10:00am — Week 16 — 11/30 - 12/2**

Wetlands; Review

SWCE Ch 12

CC12

HW12

**Lab T 10:15am - 12:05pm — L13, continued — 11/24 - 12/1**

Detention Basin with Flood Spillway, week 2

# BAE 376 Course Syllabus

## BAE 376 – WATERSHED ASSESSMENT AND WATER QUALITY PROTECTION

**Section 001**

**SPRING 2016**

**3 Credit Hours**

### Course Description

Application of methods to describe and protect quality. Identification of water quality problems based on physical, chemical, and biological species and intended use. Water quality sampling equipment, and sample collection strategies and methods. Macroinvertebrate sampling and interpretation. Presentation of water quality data and information. Identification of structural and non-structural best management practices (BMPs) to mitigate degradation of watersheds and ecological systems.

### Learning Outcomes

Upon completing this course, the student will be able to:

- Select and size flow measurement structures
- Identify critical water quality variables depending upon intended use
- Use simple models to describe oxygen transfer and nutrient transformations
- Select appropriate water quality monitoring equipment
- Present and analyze water quality data for changes and trends

### Course Structure

Most of the course will be delivered in standard lecture format. There will be some hands-on computer usage during class time for statistical analysis and data presentation, and some demonstration with a laboratory teaching flume.

### Instructors

**Dr. Garry L Grabow** (glgrabow) - *Instructor*

**Email:** [glgrabow@ncsu.edu](mailto:glgrabow@ncsu.edu)

**Phone:** 919-513-7348

**Office Location:** D. S. Weaver Administration, Rm 200

**Office Hours:** TBD

### Course Meetings

#### Lecture

**Days:** MWF

**Time:** 9:10am - 10:00am

**Campus:** Main

**Location:** TBD

*This meeting is required.*

### Course Materials

#### Textbooks

None.

## Expenses

**WebAssign Access** - 22.95

*This expense is required.*

## Requisites and Restrictions

### Prerequisites

BAE 371

### Co-requisites

ST 370

## Transportation

This course will not require students to provide their own transportation. Non-scheduled class time for field trips or out-of-class activities is NOT required for this class.

## Safety & Risk Assumptions

None.

## Grading

### Grade Components

Component	Weight	Details
Homework	30	Completed individually
Midterm Exams	25	Two midterms in class
Quizzes	25	Out of class administered on WebAssign
Final Exam	20	In class

## Letter Grades

**This Course uses Standard NCSU Letter Grading:**

97 ≤ **A+** ≤ 100

93 ≤ **A** < 97

90 ≤ **A-** < 93

87 ≤ **B+** < 90

83 ≤ **B** < 87

80 ≤ **B-** < 83

77 ≤ **C+** < 80

73 ≤ **C** < 77

70 ≤ **C-** < 73

67 ≤ **D+** < 70

63 ≤ **D** < 67

60 ≤ **D-** < 63

0 ≤ **F** < 60

## Requirements for Credit-Only (S/U) Grading

In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U)

grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to <http://policies.ncsu.edu/regulation/reg-02-20-15>.

### **Requirements for Auditors (AU)**

Information about and requirements for auditing a course can be found at <http://policies.ncsu.edu/regulation/reg-02-20-04>.

To receive credit for audit, students must complete all coursework and exams with an overall grade of C- or better.

### **Policies on Incomplete Grades**

If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-3>.

### **Late Assignments**

10%/day penalty for late homework. Late quizzes and exams not accepted unless previously arranged with instructor. Work submitted after an assignment is returned to the rest of the class will not receive credit.

### **Attendance Policy**

For complete attendance and excused absence policies, please see <http://policies.ncsu.edu/regulation/reg-02-20-03>

### **Attendance Policy**

Attendance is expected.

### **Absences Policy**

The University policy on absences may be found at: <http://policies.ncsu.edu/regulation/reg-02-20-03>.

### **Makeup Work Policy**

Extensions of due dates will include cases covered by University policy (illness, death in family, etc.). Contact the instructor prior to absences if possible. The University policy on absences may be found at: <http://policies.ncsu.edu/regulation/reg-02-20-03>. Work missed due to unexcused absences cannot be made up.

### **Academic Integrity**

### **Academic Integrity**

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>

### **Academic Honesty**

See <http://policies.ncsu.edu/policy/pol-11-35-01> for a detailed explanation of academic honesty.

### **Honor Pledge**

Your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment." Adherence to the honor pledge is implicit in submission of work by electronic means.

## Electronically-Hosted Course Components

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**Electronically-hosted Components:** Moodle is used for course administration and homework submission. WebAssign is used for administration of quizzes.

## Accommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office (<http://www.ncsu.edu/dso>), 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at <http://policies.ncsu.edu/regulation/reg-02-20-01>.

## Non-Discrimination Policy

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or [http://www.ncsu.edu/equal\\_op/](http://www.ncsu.edu/equal_op/). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

## Course Schedule

**NOTE:** The course schedule is subject to change.

### **Lecture MWF 9:10am - 10:00am — Week 1 — 01/06/2016 - 01/08/2016**

Precipitation and runoff patterns

### **Lecture MWF 9:10am - 10:00am — Week 2 — 01/11/2016 - 01/15/2016**

Water Demand and Use by Sector, peak flow estimation

### **Lecture MWF 9:10am - 10:00am — Week 3 — 01/20/2016 - 01/22/2016**

Selection and design of weir and flumes

### **Lecture MWF 9:10am - 10:00am — Week 4 — 01/25/2016 - 01/29/2016**

Current metering and other flow measurement instruments. Rating curves

**Lecture MWF 9:10am - 10:00am — Week 5 — 02/01/2016 - 02/05/2016**

Water quality variables by intended use and landscape/land use setting

**Lecture MWF 9:10am - 10:00am — Week 6 — 02/08/2016 - 02/12/2016**

Water Quality Equilibria, BOD, Oxygen sag curve, re-aeration

**Lecture MWF 9:10am - 10:00am — Week 7 — 02/15/2016 - 02/19/2016**

Groundwater hydraulics, flow nets and flow tubes

**Lecture MWF 9:10am - 10:00am — Week 8 — 02/22/2016 - 02/26/2016**

Subsurface flow to streams, piezometers, monitoring well design and installation

**Lecture MWF 9:10am - 10:00am — Week 9 — 02/29/2016 - 03/04/2016**

Surface water sampling equipment, water quality sampling techniques, sample preservation

**Lecture MWF 9:10am - 10:00am — Week 10 — 03/14/2016 - 03/18/2016**

Biological monitoring and indices

**Lecture MWF 9:10am - 10:00am — Week 11 — 03/21/2016 - 03/25/2016**

Human pathogen monitoring, measurement and interpretation

**Lecture MWF 9:10am - 10:00am — Week 12 — 03/28/2016 - 04/01/2016**

Descriptive statistics, time series data and interpretation

**Lecture MWF 9:10am - 10:00am — Week 13 — 04/04/2016 - 04/08/2016**

Pollutant load estimation and TMDLS

**Lecture MWF 9:10am - 10:00am — Week 14 — 04/11/2016 - 04/15/2016**

Structural and non-structural best management practices for water quality protection

**Lecture MWF 9:10am - 10:00am — Week 15 — 04/18/2016 - 04/22/2016**

BMPS (cont.) and writing monitoring plans

# BAE 478/578 Agricultural Waste Management

## Syllabus

### Instructor:

John J. Classen, Associate Professor, BAE

Office: 179 Weaver Labs

Phone: 515-6800

e-mail: [john\\_classen@ncsu.edu](mailto:john_classen@ncsu.edu)

### Course Description

This course covers principles of managing, handling, treating and applying animal and poultry manures and organic byproducts from an engineering perspective. Topics include waste characterization, descriptions of systems and technology, land application principles, preparation of waste management plans, biochemical/biological processes, and potential impacts to the environment. Assignments include homework, quizzes, projects, and discussions that emphasize teamwork, problem solving, and analysis.

### Required Material

- Most of the required reading material is included in the course web pages, however two additional sources are used.
- The majority of additional material for this course is from the Agricultural Waste Management Field Handbook (AWMFH) which is Part 651 of the National Engineering Handbook published by USDA NRCS. The AWMFH is available through the [NRCS Electronic Directives web page](#).
- Additional material will be from the Livestock and Poultry Environmental Stewardship Curriculum and is available online through the Livestock and Poultry Environmental Learning Center on the [eXtension web site](#).
- Background material is available from the [EPA's Ag 101 web site](#).

### Course Prerequisites

BIO 360, PB 321 OR SSC 332

### Learning Outcomes

Upon completion of the course, students will be able to:

- Analyze and evaluate policies, practices and technologies with respect to the balance between agricultural production and environmental protection that is needed to provide food, fiber and fuel to the world's population in a sustainable manner.
- Compare production practices and management technologies used for different species and in different regions.

- Use appropriate techniques and computer tools to design and analyze systems to manage manure and nutrients from food animal production systems in ways that comply with state and federal requirements.
- Communicate effectively and respectfully with peers and the instructor regarding resource use, food animal production and a sustainable environment.
- (For 578 students only) Demonstrate skills in interpretation and critical analysis of published literature, and constructive criticism of peers' work

## Schedule of Topics

Each week starts on Monday, ends on Sunday		
Week	Topic	Assignment
1	Introduction: course content, mechanics, syllabus; Food animal production systems	Post self-introduction; Quiz: Syllabus and Policies; Privacy Consent; Quiz-Animal Production
2	Environmental impacts by species and region 578 only: library searches and critical literature analysis	Discussion: Alternative production and impacts on emissions and total production 578 only: critical literature analysis assigned
3	Regulations as response to impacts	Discussion: What makes effective regulations
4	Microbiology and impact on nutrient cycles	Quiz: Microbiology & Nutrient Cycles
5	Manure characteristics and production	Quiz: Manure Characteristics and Production Calculations
6	Manure storage and treatment; planning and sizing structures	Quiz: Storage Examples; HW: Storage Design
7	Manure storage and treatment; planning and sizing structures, continued	HW: Storage Design #2
8	Midterm Exam	Released Wednesday; due following Monday
9	Nutrient management plans; land application	Quiz: Nutrient Utilization
10	Nutrient management systems; nutrient utilization;	HW: Nutrient Utilization Systems, CAWMPs
11	Alternative Treatment Technologies	Design project assigned
12	Continue Alternative Treatment Technologies	Quiz: Alternative Treatment Technologies
13	Composting systems, processes and design	
14	Composting systems, processes and design, Thanksgiving Wed-Fri	HW: Composting Systems
15	Reviews, project completion	Design project due
	Final exam during finals period	Date / time to be announced

## Course Structure

This online course will involve various activities for students, some as individual exercises and some as team exercises. Much of the material is presented as readings while many of the topics have an associated video presentation. While field trips are not possible, there are video tours of some animal



production facilities. Homework assignments, quizzes, discussions, group projects and exams are all part of the course.

## Grading Policy

Students are expected to fully participate in the class by completing homeworks and quizzes, participating in discussion forums, and contributing to team projects. The final course grade will be determined from a weighted average of:

- Exams: a midterm exam and a final exam (15%)
- Homework assignments (25%)
- Quizzes (25%)
- Discussion forums (15%)
- Projects (20%)

Grades on exams and homework assignments will not be curved but the lowest homework or quiz grade will be dropped. Plus/minus grading will be used as required by current University policy. The range of final weighted average scores and the corresponding grade are shown below.

Grade	Score	Grade	Score	Grade	Score	Grade	Score
A+	97 – 100	B+	87 – 89.9	C+	77 – 79.9	D+	67 – 69.9
A	93 – 96.9	B	83 – 86.9	C	73 – 76.9	D	63 – 66.9
A-	90 – 92.9	B-	80 – 82.9	C-	70 – 72.9	D-	60 – 62.9

## Assignment Policy

All assignments must be submitted electronically and are due at the time indicated. Generally assignments will be due at noon on the Monday following the week assigned. This is to accommodate students with full time jobs and the Moodle maintenance windows on some Saturday mornings. All submissions must be computer generated and submitted as a Microsoft Word file - in some cases a Google Doc will be the preferred submission - including problems which require calculations. Spreadsheets used for calculations should be submitted as supporting documentation but the Word file will be the primary document reviewed for a grade. Diagrams and figures should be created with appropriate software and inserted into the homework document; no hand drawn materials will be accepted. All students are responsible for the proper use of the Moodle Learning Management System, including document size limitations of the course management software.

Late assignments will be accepted up to two weeks after the due date for maximum credit of 60%. Assignments submitted after two weeks will receive a grade of zero.

## Policies on Incomplete Grades

If an extended deadline is not authorized by the Graduate School, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) by the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The

burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at

[http://www.ncsu.edu/policies/academic\\_affairs/grades\\_undergrad/REG02.50.3.php](http://www.ncsu.edu/policies/academic_affairs/grades_undergrad/REG02.50.3.php). Additional information relative to incomplete grades for graduate students can be found in the Graduate Administrative Handbook in Section 3.18.F at [http://www.fis.ncsu.edu/grad\\_publicns/handbook/](http://www.fis.ncsu.edu/grad_publicns/handbook/).

## **Requirements for Credit Only (S/U) Grading**

For credit only students, a grade of satisfactory will require completion of all homework assignments, quizzes and exams with a grade of C- or better. Credit only students will not participate in team assignments. Credit only grading is not available for graduate courses.

## **Audits**

Information about and requirements for auditing a course can be found at

<http://policies.ncsu.edu/regulation/reg-02-20-04>.

## **Online Discussion Forums**

Effective learning requires students' enthusiastic participation in a variety of activities and the exercises assigned through the semester provide experiences to enhance learning in different ways. One of the most effective means of engaging students in understanding material is through discussions. Online discussion forums can be even more effective than the in-class variety because participants must read comments and respond in writing; these reading and writing activities encourage more thoughtful participation. Forum topics will take the form of questions to be answered or concepts to be analyzed and judged. Ideas for topics may come from specific weekly course material or from web sites, videos or news stories that are related to animal production systems and environmental impacts.

Small teams of students will address these topics in their own discussion space or via email or other format that can include all team members. The goal of these discussions is to come to a consensus statement about the topic or question, which one member from each team will post to a class-wide forum where all of the teams' responses will be open for discussion.

## **Semester Projects**

Students will participate in one (478) or two (578) projects during the semester, including a team design project that integrates the knowledge and understanding gained during the semester. Students will design waste management components or systems for a specific application and write a professional design report.

BAE 578 students will also create a critical literature analysis of a specific article or topic. The project will challenge the student's ability to understand the scientific literature about a topic, analyze the claims made by the authors as well as the arguments against the authors' interpretation, draw your own conclusions and present the topic to the class. The topic will be presented in the form of a web site (Google Site) that will include text, photos, diagrams and any other content that will help explain the topic.

## **Computer and Software Requirements**

This course requires access to the internet to view and submit assignments, to interact with class members and the instructor, to access library resources and to participate in many different ways. A modern computer with sufficient performance to handle current versions of internet browsers and email programs is required. Common productivity software such as Microsoft Word, Excel, and Powerpoint is all that is generally needed although some materials will be accessible only with specific software for viewing these formats, including Adobe Acrobat Reader, and Macromedia Flash Player. If you do not already have these free programs, you can download them from the publishers' web sites.

## **Electronically-Hosted Course Components**

This course may involve electronic sharing or posting of personally identifiable student work or other information with persons not taking or administering the course. Students will be asked to sign a consent allowing disclosure of their personally identifiable work. No student is required to sign the consent as a condition of taking the course. If a student does not want to sign the consent, he or she has the right to ask the instructor for an alternative, private means of completing the coursework. Some project work may be visible to individuals outside of the NCSU system. However, no evaluation of this work, including comments or grades, is available to unauthorized persons.

## **Academic Integrity**

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at [http://www.ncsu.edu/policies/student\\_services/student\\_discipline/POL11.35.1.php](http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php). Cheating and plagiarism will not be tolerated. If any student admits to a violation of the Code of Student Conduct or is found guilty of such a violation by the Integrity Review Board, I will ask the Board to dismiss the student from class and assign a grade of F for the course. Please refer to the University's policy for details.

## **Communications Policy**

Electronic communication is a fact of life and is available to all NCSU students. There will be times when email is the best communication tool available. All students are responsible for email communications from the instructor within 24 hours of posting. Likewise, the instructor will respond to email questions and comments promptly.

## **Students with Disabilities**

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office (<http://www.ncsu.edu/dso>) located at 1900 Student Health Center, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at [http://www.ncsu.edu/policies/academic\\_affairs/courses\\_undergrad/REG02.20.1.php](http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.1.php).

## FOR 150 Course Syllabus

### FOR 150 - Critical Thinking and Data Analysis

**Section 001**  
**SPRING 2016**  
**2 Credit Hours**

#### Special Notes

This is a revision of the existing FOR 150 course

#### Course Description

This course will be a combination of discussion and active engagement with data sets and problem solving. Students will be working alone and in teams on questions posed by readings and case studies from real research and inventory situations. Each student will develop an individual project, exploring a topic of interest and bringing to bear the critical and creative thinking criteria identified in the Quality Enhancement Program.

#### Learning Outcomes

Students will explain the standards for information gathering and use.

Students will evaluate their own work and the work of others using intellectual standards for critical thinking (clarity, accuracy, precision, relevance, depth, breadth, logic, fairness, and significance).

Students will apply critical thinking skills and intellectual standards in the process of addressing problems.

Students will reflect on their thinking behavior and the thinking of others.

#### Course Structure

Some weeks either lecture or discussion will introduce a problem or exercise based on reading or case studies. Some weeks problems will be posed for teams or individuals to tackle in an extended work session. Collectively the class will explore characteristics of the problems and data and decisions that are raised, posed, and addressed by the material shared through reading and discussion.

#### Course Policies

Attendance is crucially important, which is why significant grading emphasis is so placed.

Work missed during absences must be made up within the following week before the next class.

#### Instructors

**Gary B. Blank** (00001928) - *Instructor*  
Email: [gblank@ncsu.edu](mailto:gblank@ncsu.edu)

**Phone:** 919-515-7566

**Office Location:** 5229 Jordan Hall

**Office Hours:** Monday and Wednesday 1400 - 1530 Tuesday 1330 - 1530 Thursday 1030 - 1200 Friday 1030 - 1200

## Course Meetings

None.

## Course Materials

### Textbooks

**Innumeracy: mathematical literacy and its consequences** - John Allen Paulos

**Edition:** 1st

**ISBN:** 1429934387, 9781429934381

**Web Link:**

[https://books.google.com/books/about/Innumeracy.html?id=KDqD95Lsp3UC&source=kp\\_cover&hl=en](https://books.google.com/books/about/Innumeracy.html?id=KDqD95Lsp3UC&source=kp_cover&hl=en)

**Cost:** ebook \$4.99

*This textbook is required.*

**How to Lie with Statistics** - Darrell Huff

**Edition:** 1st

**ISBN:** 13978-0393310726

**Cost:** \$10.26

*This textbook is required.*

### Expenses

None.

### Materials

None.

## Requisites and Restrictions

### Prerequisites

None.

### Co-requisites

None.

### Restrictions

None.

## General Education Program (GEP) Information

### GEP Category

**This course does not fulfill a General Education Program category.**

### GEP Co-requisites

**This course does not fulfill a General Education Program co-requisite.**

## Transportation

This course will not require students to provide their own transportation. Non-scheduled class time for field trips or out-of-class activities is NOT required for this class.

## Safety & Risk Assumptions

None.

## Grading

**Grade Components**

Component	Weight	Details
Written Assignments	30	Three reflections on readings or problems addressed in discussions
Attendance	28	Class meets once per week for two hours. Being there is the most important part of the experience because team effort, student-student interaction, and concept application to specific examples, case studies and data sets will be the activity of import.
Project	42	Parceled out in pieces (5) building in stages to a completed delivered project, this will include literature review and hypothesis-driven series of drafts and revisions culminating in a final submission.

**Letter Grades****This Course uses Standard NCSU Letter Grading Scale**

97	≤	A+	≤	100
93	≤	A	<	97
90	≤	A-	<	93
87	≤	B+	<	90
83	≤	B	<	87
80	≤	B-	<	83
77	≤	C+	<	80
73	≤	C	<	77
70	≤	C-	<	73
67	≤	D	<	70
63	≤	D	<	67
60	≤	D-	<	63
0	≤	F	<	60

**Requirements for Credit-Only (S/U) Grading**

In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to <http://policies.ncsu.edu/regulation/reg-02-20-15>.

**Requirements for Auditors (AU)**

Information about and requirements for auditing a course can be found at <http://policies.ncsu.edu/regulation/reg-02-20-04>.

**Policies on Incomplete Grades**

If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-3>.

**Late Assignments**

Assignment deadlines missed will require the assignment to be submitted within the next week, before the next class meeting. Deducting 10 percent of the item's point value will be automatic unless otherwise specified when instructor is informed of the assignment's lateness.

### Attendance Policy

For complete attendance and excused absence policies, please see <http://policies.ncsu.edu/regulation/reg-02-20-03>

### Attendance Policy

As the course meets once per week, no number of absences are excused without prior notification to instructor.

### Absences Policy

Absences will result in loss of the day's attendance points (2/day). Impact on the course grade will be a direct matter of course grade computation. Excuses for university sanctioned absences must be provided in writing from faculty advisers of extracurricular entities or other course instructors, as appropriate.

### Makeup Work Policy

Possibility of making up one (of 2) attendance point will exist with prior notification of the absence and later (within week) submission of any session-generated deliverable material.

### Additional Excuses Policy

None.

### Academic Integrity

#### Academic Integrity

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>

#### Academic Honesty

See <http://policies.ncsu.edu/policy/pol-11-35-01> for a detailed explanation of academic honesty.

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Your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment."

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NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or [http://www.ncsu.edu/equal\\_op/](http://www.ncsu.edu/equal_op/). Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

## Course Schedule

**NOTE:** The course schedule is subject to change.

### Week 1 — 01/08/2016 - 01/08/2016

Introductions and Scope of Work

Standards for Critical Thinking (QEP TH!NK)

Critical Thinking Status Quo--Anne Stomp

Curiosity and Its Encouragement

### Week 2 — 01/15/2016 - 01/15/2016

Critical Thinking Value Rubric [value@aacu.org](mailto:value@aacu.org)

Critical Thinking About Natural Resources

Planning an invasive species assessment at Hymettus Woods and Jaycee Park

What kind of data?

How could you generate the data?

**Read:** Huff, D. *How to Lie With Statistics* Chapters 1, 2, 3, and 4: "The Sample with the Built-in Bias," "The Well-Chosen Average," "The Little Figures That Are Not There," and "Much Ado About Practically Nothing."

### Week 3 — 01/22/2016 - 01/22/2016

"Fixation of Belief" C.S.Pierce

Phenomema - Response - Thought - Belief - Action

What are good questions? What are bad questions?

What standards should be applied to sources?

**Read:** Huff, D. *How to Lie With Statistics* Chapters 5, 6 and 7: "The Gee-Whiz Graph," "The One-Dimensional Picture" and "The Semiattached Figure"

### Week 4 — 01/29/2016 - 01/29/2016

Project topic field and possible questions due (2 points)

Peer review of questions, analysis of topics



Written Reflection #1 due

Read: Huff, D. *How to Lie With Statistics* Chapters 8, 9 and 10: "Post Hoc Rides Again," "How to Statisticulate" and "How to Talk Back to a Statistic"

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**Week 5 — 02/05/2016 - 02/05/2016****Chip Mills**

**Read:** sections 1-3 of "The Ecological Role of Coarse Woody Debris"

**Read:** "Public Interest in Private Property: conflict over wood chip mills in North Carolina. *Southern Rural Sociology* 19(2): 114-131.

Beginning the search for sources

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**Week 6 — 02/12/2016 - 02/12/2016****Chip Mills**

Pivot Tables

Project topic proposal with potential source review due (4 points)

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**Week 7 — 02/19/2016 - 02/19/2016****Chip Mills**

**Read:** Hess, G.R. and Zimmerman. "Woody Debris Volume on Clearcuts with and Without Satellite Chip Mills." *Southern Journal of Applied Forestry* 25(4): 173-177.

Data Site 04

Data Site 08

Written Reflection #2 due

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**Week 8 — 02/26/2016 - 02/26/2016**

**Read:** *Innumeracy* Chapter 1: Examples and Principles

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**Week 9 — 03/04/2016 - 03/04/2016**

**Read:** *Innumeracy* Chapter 2: Probability and Coincidence

Project precis with issues described due (6 points)

**Week 10 — 03/18/2016 - 03/18/2016**

**Read:** *Innumeracy* Chapter 3: Pseudoscience

Written Reflection #3 due

**No Meeting — 03/25/2016 - 03/25/2016**

No meeting because of Spring Holiday

**Week 11 — 04/01/2016 - 04/01/2016**

**Read:** *Innumeracy* Chapter 4: Whence Innumeracy?

Pro and con arguments due (8 points)

**Week 12 — 04/08/2016 - 04/08/2016**

**Read:** *Innumeracy* Chapter 5: Statistics, Trade-Offs, and Society

**Week 13 — 04/15/2016 - 04/15/2016**

**Read:** Lukanoff, G. and J. Haidt, 2015. "The Coddling of the American Mind" *The Atlantic* (September): 42-52.

Paper review draft due (10 points)

Peer reviews and giving useful feedback

**Week 14 — 04/22/2016 - 04/22/2016**

**Read:** Rawlings, H. "College is not a Commodity: stop treating it like one." *The Washington Post* June 9, 2015

Refining the final draft

Final submission due 26 April (12 points)

## AGREEMENT

By and Between

**Shanghai University - Sydney Institute of  
Language and Culture**

Wende Building, 20  
Chengzhong Road  
JiaDing District,  
Shanghai, 201800  
CHINA

(hereinafter referred to as "SHU-SILC")

Represented Sally Gong and legal representative

and

**North Carolina State University**

27606 Raleigh, North Carolina,  
UNITED STATES OF AMERICA

(hereinafter referred to as "NC STATE")

Represented by Dr. Warwick Arden, Provost and Executive Vice Chancellor

## WHEREAS

Pursuant to the Memorandum of Understanding dated 22, June 2011 between, Shanghai University - Sydney Institute of Language and Culture (SHU-SILC) and North Carolina State University (NC STATE) (collectively referred to as the "Institutions") the Institutions desire to establish a dual-degree program in international business and management studies.

The Program will enable students from SHU-SILC to pursue a course of study to qualify for the Bachelor of Science in Business Administration degree from NC STATE and students from NC STATE to pursue a course of study to qualify for the Bachelor in International Business from SHU-SILC.

The Institutions will attempt to provide the necessary funds for putting this Agreement into effect, insofar as the regulations of their respective Institutions and governments permit,

## THE DUAL DEGREE PROGRAM

### Art. 1

1. Each Institution will nominate their students who wish to enroll in the Program on the basis of the student's academic standing and potential for success in the Program. However, the host Institution reserves the right to review each applicant's record prior to acceptance into the Program. The host Institution reserves the right not to accept any particular student nominated.

## Art. 2

- 2.1 This agreement for the dual degree program is inclusive of eight semesters that encompasses studying and internships experiences at both Institutions.
- 2.2 SHU-SILC students who are admitted to NC STATE and NC STATE students admitted at SHU-SILC are permitted to take courses included in the present agreement during the regular semesters provided by NC STATE and SHU-SILC.
- 2.3 Dual degree students will pay tuition and obligatory fees to their home Institution for the duration of eight semesters of their enrollment in the dual degree program.
- 2.4 The entire cost of room and board at each institution will be borne by the student.
- 2.5 If a student in the Program does not complete the degree requirements at either Institution at the end of the eight semesters included in this Agreement, students can continue in the program at the tuition and obligatory fees cost of the host institution. This provision would only occur if a student must repeat a class/classes and cannot do so in the two years included in this agreement. Students could elect to return to the home institution, but would not be eligible for the second degree of the partner university (host institution).

## Art. 3

- 3.1 SHU-SILC students who willingly elect to take extra courses at NC STATE over the summer term(s) will pay out- of-state tuition to NC STATE.
- 3.2 NC STATE students who willingly elect to take extra summer program courses at SHU-SILC will pay tuition due for the mentioned programs to SHU-SILC.

## Art.4

- 4.1 Each Institution will provide publicity for this Program similar to that which it arranges for its other education programs.

## Art.5

- 5.1 The intention of the exchange is to enable a target of 5 students per year from each Institution to study and work abroad each year. Although a one-for-one exchange is desirable it will not be considered a breach of this Agreement if, in a given year, either Institution is unable to send an equal number of students, provided that, over a period of the Agreement (5 years), there is a balance in the number of students who participate in the Program from both Institutions.
- 5.2 The exchange students must be enrolled in either the undergraduate business administration program in the Poole College of Management at NC STATE or the undergraduate or master programs of SHU-SILC Business School Piacenza Campus.

5.3 Dual Degree students will be permitted to enroll at the host Institution in any course for which they are qualified, subject to admissions requirements, and timetable and capacity constraints of the host Institution. Students will be required to participate in all courses for which they are enrolled as defined by the host institution.

Art. 6

6. Dual Degree students will be required to provide evidence of language competence in the language of the host institution.

SHU-SILC students will be required to take the IBT TOEFL exam and have their test results sent directly to NC STATE. NC STATE students will be required to demonstrate a intermediate level of mandarin language fluency prior to moving to Shanhgia for the degree program courses at SHU-SILC. NC STATE students may be required to complete an intensive Mandarin language course prior to enrolling or during the degree program courses at SHU-SILC. NC STATE students must pay all cost for the language intensive course directly to SHU-SILC.

Art.7

7. The Institutions will require dual degree students to maintain in full effect, health insurance with coverage acceptable to the host Institution and applicable to government requirements. NC STATE will make its student health insurance available for an additional fee to the students from SHU-SILC. At the discretion of each institution, students may be required to purchase additional health insurance in the host country.

Art. 8

8. Each student is responsible for all other expenses associated with the dual degree program, including but not limited to: personal expenses; transportation to and from the host institution; textbooks and other course materials, and any required educational taxes.

Art. 9

9. Dual degree students will enjoy the privileges of and be subject to all regulations of the host Institution. Dual degree students can be terminated from the Program and host institution if student's violation(s) of the host Institution's regulations merit suspension or dismissal.

Art. 10

10. Receipt of the degree offered by either Institution is contingent upon the student completing all degree requirements of said Institution, including successful course completion, GPA requirements, thesis, internships, etc.

Art. 11

11. Each institution shall remain responsible for the acts and omissions of their respective officers, agents, and

employees.

Art. 12

12. It is understood and agreed that courses and other related activities offered through the host Institution are the primary and ultimate responsibility of the host institution, which will make all arrangements necessary for the satisfactory functioning of programs.

Art. 13

13. Each Institution will at its own expense, compensate instructors whom it employs for its courses and assumes no responsibility for the compensation of the home Institution's instructors.

Art. 14

14. Each Institution will inform the other as to the courses planned at least three months prior to the start of those courses.

Art. 15

15. It is agreed that the host Institution has the primary and ultimate responsibility for obtaining from the instructors and transmitting to the home Institution in a timely fashion assessments for all participating students. The host Institution will assume full liability for grievances or other actions arising from such assessments. Assessments will be transmitted to the home Institution as soon as possible after the examination period.

**B. GENERAL PROVISIONS**

Art. 1

1. Each university will appoint a Dual Degree Program Coordinator (DDPC) to work with the dual degree students to ensure that the program of study is consistent with the dual degree curriculum requirements. The minimum and maximum course load in any given semester will be governed by the regulations of the host Institution.

Art. 2

2. The Institutions agree that every person connected with the Program in relation to the mutual undertakings with each other shall abide by, conform to, and comply with all of the laws of the United States, and China or other relevant jurisdictions as well as the policies, rules, regulations, and disciplinary rules promulgated by each Institution. Each Institution shall provide Program participants with a copy of its statutes, regulations, and disciplinary rules promulgated thereby.

Art. 3

3. In the event that any casualty or unforeseen occurrence shall render the fulfillment of the Agreement impossible, neither party shall in any case be held responsible to the other party for any damage caused thereby.

Art. 4

4. This Agreement represents the complete understanding of the parties with respect to the subject matter hereto and may be amended or modified only by a writing signed by the parties.

Art. 5

5. The Agreement will be effective upon execution for five (5) years, unless terminated earlier as provided for herein. Thereafter it may be renewed for successive periods of three years unless or until either institution terminates this Agreement. This Agreement may be amended at any time by mutual consent or may be terminated by either institution for any cause or no cause by six months written advance notice to the President of the rescinding institution.

Any termination or alterations will be made without prejudice to any participants whose agreed Program extends beyond the termination dates.

Art. 6

6. NC State is accredited by the Southern Association of Colleges and Schools' Commission on Colleges to award Bachelor's, Master's and PhD degrees. SHU-SILC is not accredited by the Commission on Colleges and the accreditation of NC State does not extend to or include SHU-SILC or its students. Although NC State accepts certain course work in transfer toward a credential from SHU-SILC in force of this Agreement, or collaborates in other ways for generation of course credits or program credentials, other colleges and universities may or may not accept this work in transfer, even if it appears on a transcript from NC State. Each college or university will take the decision regarding the work of transfer in complete autonomy. Both institutions will make their personnel, records, and facilities available to accreditors and other official reviewers.

Art. 7

7. Neither Member nor Partner institutions may use the SACSCOC logo. Its use is reserved exclusively for the Southern Association of Colleges and Schools Commission on Colleges.

Art. 8

8. Force Majeure - In the event that the performance of the obligations under this Agreement is prevented by reason of Force Majeure, the parties are released from their obligations and neither party shall be responsible for any damages sustained and have no further recourse against the other party. Force Majeure shall mean fire, earthquake, hurricane, flood, act of God or other natural disasters, epidemics or pandemics, nuclear explosions, strikes, work stoppages, or other labor disturbances, riots or civil commotions, war or other act of any foreign nation, terrorism, power of government, or governmental agency or authority, or any other cause like or unlike

any cause mentioned which is beyond the control of the parties.

Art. 9

9. Disclosure - The parties agree that personally identifiable information and education records of the students shall be maintained in a confidential manner and shall not be released except to school officials with a legitimate educational interest or as allowable by applicable Federal and State law.

Art. 10

10. Equal Opportunity - Both universities subscribe to a policy of equal opportunity and will not discriminate against any participating student on the basis of race, gender, age, marital status, ethnicity, religion, national origin, sexual orientation, handicap or any other basis prohibited by the laws of that university's home country.

<b>North Carolina State University</b>		<b>Shanghai University - Sydney Institute of Language and Culture</b>	
Provost and Vice Chancellor	Date	President	Date
SACS Liaison/SCRT	Date		
Dean of Graduate School or Division of Academic & Student Affairs	Date		
Administrative Board of the Graduate School or University Courses & Curricula Committee	Date		
College Dean	Date		
Department Head	Date		



## Appendix 1

### The framework of the integrated Dual degree study Program

#### American students

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
<b>Semester 1</b>	Study in NC STATE	Study in NC STATE	Study in SHU-SILC	Study in SHU-SILC
<b>Semester 2</b>	Study in NC STATE	Study in NC STATE	Study in SHU-SILC	China: Second Internship Placement
<b>Semester 3 Summer 1<sup>st</sup> half</b>	Vacation or Classes in NC STATE	First Internship Placement	Vacation	
<b>Semester 3 Summer 2<sup>nd</sup> half</b>	Vacation	Language Immersion in SHU-SILC <i>(Optional)</i>	Vacation	

#### Chinese students

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
<b>Semester 1</b>	Study in SHU-SILC	Study in SHU-SILC	Study at NC STATE	Second co-op placement or Study at NC STATE
<b>Semester 2</b>	Study in SHU-SILC	Study in SHU-SILC	Study at NC STATE	Study at NC STATE
<b>Semester 3 Summer 1<sup>st</sup> half</b>	Vacation	First co-op placement in China	Second co-op placement or Vacation	
<b>Semester 3 Summer 2<sup>nd</sup> half</b>	Vacation	First co-op placement in China	Second co-op placement or Vacation	

# MEMORANDUM OF AGREEMENT FOR DUAL DEGREE PARTNERSHIP

## Collaborative Academic Agreement

***Establishment of a dual degree with N.C. State University requires completion of this MOA and signatory approval by the Provost. In addition, SACSCOC must be notified 6 months prior to implementation of this agreement.***

**Complete the following:**

### **I. N.C. State Participation:**

**Level of Degree:** Bachelor **College Participating:** Poole College of Management

**Other Participating College(s):** None

**Full Title of Degree Conferred (Include concentration title if applicable.):** Bachelor of Science In Business Administration

**Name and contact information for the primary developer of Agreement:** Robert Sandruck, Director of International Programs, Poole College of Management, email: Rlsandru@ncsu.edu, tel: 919.515.2215

### **II. Participating Partner Institution: *If multiple partners, complete separate form for each.***

**Name of Partner Institution:** Shanghai University/SILC School of Business

**Location of Institution:** Shanghai, China

**Name and contact information for the primary developer of this Agreement (include address, phone, email, etc.)**

Xiao (Hilary) Han, Associate Dean SILC, email: xhhu@mail.shu.edu.cn & Xh (Catherin) Xu, email: xhxu@staff.shu.edu.cn

**Level of Degree:** Bachelor

**Full Title of Degree Conferred (Include concentration title if applicable):**

Bachelor of International Business Management

**Partner Institution Accreditation Status:** Accredited the Shanghai Municipal Commission of Education and was the first institution to receive Sino-foreign cooperative business school to receive the accreditation by state.

**Other Accreditation, Licensure or Approving Body Information (Ex: ABET, EQUIS/EFMD, AACSB):**

SHU/SILC is actively pursuing accreditation by AACSB and EQUIS (both are recognized as the leading accreditation bodies for business schools around the world).

**Duration of Agreement:** *(Minimum 5 years. Unless otherwise specified – prior to end of 5<sup>th</sup> year, agreement must be approved for extension.)*

Five years, with review for renewal in the fourth year

### **III. Timeline:**

**Proposed Start Date of Agreement:** March 2016

**Expected Date for recruitment and advertising:** Fall 2015 – pending university and sacs approval

**Expected Date of student matriculation/enrollment in dual degree program:** August 2016

**IV. Attachments:**

**In addition to this MOA, attach other applicable documentation and list each attachment/appendices below:**

*(ex: Memorandum of Understanding (broad agreement of partnership), prospectus (if substantive change))*

Proposed Exchange Agreement

Memorandum of Understanding (Program Agreement)

Curriculum Matching Document

## **V. Collaborative Objectives:**

### **1. What is the purpose and benefits of the dual degree partnership?**

To offer NC State student the opportunity to become fluent in Mandarin, the live, study, and work in china over a two-year period, and to bring high quality students from china to come to NC State and study in the Poole college of management while gaining the similar experience American students have in china.

### **2. What evidence of institutional/program comparability exists (rankings, joint faculty research, publications, etc.)?**

From an undergraduate program perspective, both institutions provide high quality general education and business programs. The curricula from both institutions overlap in many areas, which can facilitate a dual degree program. At the same time, both institutions have some unique strengths that students will be able to obtain from both schools because of this program. For instance at NC State, the BSBA is develop a strong emphasis on data analytics and is strong in several concentration areas. Likewise, SHU/SILC offers great courses in decision models, international business, and strategy.

Furthermore, there is great potential for joint faculty research and publications. Both faculty are research oriented and have many overlapping research interests.

### **3. What are the areas of mutual interest? Past partnerships?**

For the past three years, SHU/SILC has hosted the Poole College's summer program at Shanghai University. In addition, for the past two years, Poole has hosted a group of students and faculty. This current partnership is the outgrowth of these original programs and offers both institutions the possibility for a long-term relationship.

### **4. What are the partner institutional priorities?**

SILC's major priority is to provide the highest qualified international business education. In doing so, it seeks to establish partnership with leading business schools including NC State. Assuming this partnership for the dual degree successful, SILC is interested in joining the International Partnership of Business Schools (IPBS), which is the consortium NC State, is a member of and which created the dual degree structure.

### **5. How does this agreement fit with NC State Institutional Mission?**

As indicated in NC State's mission statement, the University "promotes an integrated approach to problem solving that transforms lives and provides leadership for social, economic, and technological development across North Carolina and around the world." This section of the mission statement is at the heart of this program. Through this program, NC State/Poole College of Management and SHU/SILC will have a significant impact towards NC State achieving its mission. As we prepare for this program, it is worth noting that in the current strategic plan "the pathways to the future: NC State's 2011-2020 strategic plan", the board of trustees outlines two specific initiatives that are relevant to this program. Goal 1 states that NC State shall enhance the success of our students through educational innovation. This program is an innovative approach to business education and recognizes the need to be "globally engaged." Students will take classes on two different campuses in two different locations in the world. In doing so, students will be engaged in an innovative learning environment where they will obtain a diverse array of knowledge. The strategies outlined in this goal, address the interest of increasing the percentage of incoming external undergraduate transfer students and increasing the geographic diversity of the undergraduate class by enrolling more international students. Students participating in this program will be from outside the United States and will apply as international transfer students thus contributing to both of these strategies. The fifth goal of the strategic plan is to "enhance local and global engagement through focused strategic partnerships." this goal is further outlined with three strategies including: "support and provide opportunities for increasing students' civic and global knowledge, experience, and perspectives; support and provide incentives for faculty and staff to engage in collaborative global scholarship; and enhance active and sustainable partnerships, locally, regionally, and

globally." This program is clearly in line with this goal and supporting strategies. We will increase students' civic and global knowledge, provide opportunities for collaborative faculty teaching and research between the two schools, and enhance a strong partnership between SHU/SILC and NC State University.

## **6. How does this agreement fit with NC State College's Mission?**

The Poole College's mission begins with the "effort to educate tomorrow's business leaders." These leaders of tomorrow will come from around the world and will work across borders to meet the demands and challenges of the global economy. To achieve our mission, the College further outlines the significance of international initiatives in its vision statement. "We will be a leader in management education through strong business partnerships, focusing on technology and innovation, promoting entrepreneurial programs, and developing international initiatives and alliances." The partnership between the Poole College of Management and SHU/SILC is a strategic effort to achieve our mission

## **VI. Administration:**

### **1. How was the proposed dual degree developed? *Describe the process by which NC State faculty worked with the partner faculty to plan program content, select courses, and choose mode of delivery.***

The initial development of this dual degree program grew out of an existing partnership with Shanghai University. As mentioned earlier, SHU/SILC has hosted Poole's summer program for the last three years. In exchange, Poole has hosted a similar summer program at NC State for the past two years. As Poole was searching for a dual degree partner in China, our existing partnership with SHU/SILC was a natural link to further develop.

The actual structure of the dual degree program is built on the framework used by all IPBS schools (see attachment). This framework outlines the courses that students take in the first two years at the "home" institution. This two-year block includes numerous business and economics classes as well as a regional basket, which includes all the "other" non-business courses the institution requires. For NC State, this regional basket includes the general education curriculum that all NC State students are required to complete. In the second two-year block, students take additional business courses as well as the "host" institution's regional basket courses. During the program, students complete a 10+ week internship in the first block and a 22+ week internship in the second block (which can be split into two summer experiences). This formal framework allows any two IPBS schools to offer a dual degree program while ensuring each school is concurrently able to meet its own degree requirements. The Poole College has three existing dual degree arrangements with other IPBS schools. Shanghai University is not currently a member of the IPBS consortium. Based on how this agreement is implemented, other IPBS schools are interested in collaborating with SHU/SILC.

During the development process for each of these programs, the appropriate department heads and academic dean collaborated on the structure and alignment with the BSBA curriculum. The proposed agreement is an extension of this work and is supported by the college undergraduate curriculum committee.

### **2. How will the proposed program be administered? *Include detail regarding each partner responsibilities related to administration, academic policy enforcement, logistics, and student recruitment, registration, admissions. Attach organizational chart if applicable.***

Administration of this program is shared between the Poole College of Management and SHU/SILC. The Poole College, in cooperation with various university offices, will be responsible for recruiting students in the United States to participate in the program. We will also manage their orientation and class scheduling. Given the framework described above, students' course loads are predetermined based on their language placement and advanced placement credits. NC State will also be responsible for managing the onboarding of SHU/SILC students who are in this dual degree program. This includes working through the admissions process with University Admissions as well as collaborating with Housing, Health Records, Office of International Services, etc. With appropriate faculty review,

we will also manage transfer credits from SHU/SILC. We will also provide support for the internship search process through Poole’s Career Development staff. On SHU/SILC side, they will manage the recruitment of Chinese students and their successful completion of the first two years. They will manage the onboarding of NC State students who enter SHU/SILC in their third year, arrange for transfer course credit and provide support for housing, internship search, and other student support services.

**3. How will tuition and fees be coordinated?**

This dual degree agreement is based on an exchange model. Students pay tuition and fees at their home institutions for the four years of the program. While studying at the partner school, the students are responsible for housing, meals, books, insurance, and other incidental expenses. The study abroad office at NC State monitors the exchange balance to ensure the program stays within an acceptable level of balance.

**4. Proposed NC State SIS code for designated students participating in dual degree. (max 10 char)**

20bUSAIPBS (existing subplan to track incoming dual degree students)

**VII. NC State Policy Disclaimer for this agreement:**

*“Students participating in this coordinated dual degree program will be subject to all applicable N.C. State University policies and regulations.”*

**VIII. Expected Annual Faculty/Student Participation:**

N.C. State	Year 1	Year 2	Year 3	Year 4	Year 5
Students	3	5	5	5	5
Faculty Exchange	0	0	0	1	1

Partner Institution	Year 1	Year 2	Year 3	Year 4	Year 5
Students	5	5	5	5	5
Faculty Exchange	0	0	1	1	1

## **IX. CURRICULUM DESIGN:**

### **1. Provide an overview of how the degree requirements for each Institution will be completed as part of this dual arrangement.**

As you can see from the curriculum-matching document, Poole and SHU/SILC have completed a course-by-course alignment. For students starting in Raleigh, they will spend their first two years at NC State completing all of the general education courses as well as business courses in accounting, economics, finance, marketing, organizational behavior, international studies, and quantitative methods. These students will also take the general education classes required for the NC State degree. For the students starting in Shanghai, they will also take the same subject matter courses mentioned above along with any class SHU/SILC requires for their degree. As you can see first and second year students at both campuses take the same business courses. In years 3 and 4, students take classes in operations management, human resource management, strategy, information technology and any regional basket course required by the host school. Both NC State and SHU/SILC requires the same basic core business courses, which makes the program possible. The courses taken in China match our courses and will count towards the NC State degree. Likewise, courses taken at NC State will match with the degree requirement from SHU/SILC.

### **2. Provide list of NC State course requirements for degree and equivalency to related courses at Partner Institution. (Attach as semester-by-semester display of course requirements and provide a list of course requirements and equivalencies for the dual degree program):**

See attached

### **2. Provide list of Partner Institution's course requirements, analysis of course content, and equivalency to related courses at NC State.**

See attached

### **3. Describe how and when transfer courses will be evaluated.**

Courses have been evaluated on a course-by-course basis. In each case, the partner school's courses have been matched to a degree requirement at the primary school. If a course is taken at a partner school and does not meet a specific degree requirement at the home institution, it is counted as free elective or simply does not count towards that degree.

Students will take the exact same courses as outlined in the curriculum outline, which is attached. If either university changes their respective curricula or the content of a specific class changes, the courses will be re-evaluated and any needed adjustments will be made to the curriculum outline.

### **4. If Thesis requirement, provide details (supervision/credit).**

SHU/SILC requires a thesis for their degree. The students spend the final trimester of their fourth year work on the thesis under the supervision of a faculty member. NC State will accept as transfer credit the course equivalent to the thesis.

### **5. What is the total percentage of courses taken at Partner Institution? Approximately 45%**

**6. What is the total percentage of courses taken at NC State? (For graduate programs at least 50% of hours and for undergraduate programs at least 25% must be taken at NC State) Approximately 55%**



**7. To be eligible for a bachelor’s degree, a student must have earned at least 30 of the last 45 hours of credit through NC State courses. If this requirement will not be met, please explain.**

For students starting at NC State, they will not meet the residency requirement, as they are required to spend the final two years completing the coursework and doing an internship in China. Therefore, they simply won’t be able to be at NC State per the design of the dual degree program.

**8. Transfer hours allowed by NC State.** Yes, students will transfer the credit hours from SHU/SILC towards the NC State degree.

**9. Transfer hours allowed by Partner.** Yes, SHU/SILC will accept transfer credit from NC State towards their degree.

**10. Will course credit from Partner Institution count toward NC State GPA calculation? (If yes, explain)** No

**11. Describe other requirements. (residence, comprehensive exams, internships, language, etc)**

Students are required to do two internships. The first is in their home country and must last 10-12 weeks. Likewise, students must complete a second internship ranging from 12-22 weeks. Both of these internships are required and carry academic credit. Dr. Janet Rakes, who works in Poole’s Career Center will supervise all internships in the United States.

**12. Provide list of courses that will be offered totally online and in hybrid format. Indicate the applicable format next to each course.** No classes will be offered online or in a hybrid format. All courses will be delivered in a standard classroom, both in the United States and China.

**13. Will NC State courses be offered at an off-campus site either through DE or face-to-face? If so, has the site been approved by SACS?** No NC State classes will be offered in an off-campus site either in a distance learning or face-to-face format.

#### **X. ASSESSMENT/MEASURABLE OUTCOMES:**

**What are the measurable student learning outcomes for this academic arrangement and how will they be assessed?**

*Note: Outcomes for the existing degree must be met in the dual degree arrangement. Provide any additional outcomes related to the academic collaborate arrangement*

1. Outcome 1: NC State students will demonstrate language fluency (oral and written) proficiency in the language of the partner institution.
2. Outcome 2: Partner institution students will demonstrate English language fluency and written communication proficiency
3. Outcome 3: Compare and contrast cultural differences between the U.S. and partner institution country
4. Outcome 4: Describe how business operations vary between the U.S. and partner institution country.

#### **XI. FACULTY CREDENTIALS FROM THE PARTNER INSTITUTION:**

**Provide a list of the faculty directly involved in teaching courses as part of this program of study. ~~Attach the CV for each.~~**

Please see attached

## **XII. INSTITUTIONAL COMMITMENT AND RESOURCES:**

### **NC State University:**

#### **1. Provide description of NC State's commitment to this academic arrangement.**

The Poole College of Management will burden most of the commitment for this dual degree track. In doing so, Poole will provide "onboarding" counseling to the perspective students who are identified from SHU/SILC. Poole's international office will take the lead and will advise perspective students on the admissions process, housing, visa (in support of OIS), and Orientation (in addition to the University's Orientation effort). Once admitted and enrolled, the students will receive the same advising and career support offered to all Poole students.

Other NC State offices will be key partners with Poole in seeing the program operate. This includes the university admissions office, the study abroad office, the Cashiers office, and university housing. Poole's international office will interface with all of these offices as the students go through the admissions process and arrive at NC State.

#### **2. Provide detail regarding the funding for this arrangement (amount,source,duration).**

The international business dual degree program (IBDD) is based on an exchange model. Students from NC State who participate and go abroad for their 3<sup>rd</sup> and 4<sup>th</sup> years will pay NC State tuition and fees. Students starting at shu/silc will pay tuition and fees at their home institution for their four years in the program.

While at NC State, students are enrolled in existing classes. The only exception is two sections of ENG 332 and a section of mie 335 (offered every other year) that we offer additional sections of classes. In these cases, any extra seats are offered to any other student who is eligible to enroll.

The administrative management is coordinated by the director of international programs in the Poole College of Management. This position is already funded and is maintained by the college. The only other expense is participation in the bi-annual IPBS meetings, which occur each semester. The dean and the director attend these meetings with an annual cost of \$4,250.

#### **3. Provide detail regarding facilities and space (amount,source,duration).**

No new or additional space or facility is used. In regards to facilities, Poole requires the incoming students to live in wolf village for their first year providing additional revenue for the university.

At SHU/SILC, students will study at the central campus of SHU located in shanghai. This is a new, large campus offering world class facilities and special western style residence halls for dual degree and other international students.

#### **4. Provide detail regarding library resources (amount,source,duration).**

NC State has world-class library resources including two major facilities, the Hill Library located on main campus and the Hunt Library located on Centennial campus. Both facilities offer students access to data and information needed for their academic studies.

#### **5. Provide detail regarding equipment required for this arrangement.**

There is no special equipment needed for this program.

#### **6. Other:**

Poole has successfully created three other tracks in German, french, and Italian. The addition of a partner in China

and Spain (see other moa) we will complete the language tracks we intend to offer. Poole has had great success in bringing European students to NC State for their final two years of study and is recruiting more and more students to attend NC State to do this program. In fact, this program is attracting highly talented students who otherwise would not have considered attending NC State. This program has the potential to become a marquee program that highlights the importance of international engagement at a deep and challenging level.

**Partner Institution:**

**1. Provide description of Partner's commitment to this academic arrangement.**

SHU/SILC is very committed to this program and the academic agreement. As mentioned earlier, they have been great partners with Poole in our respective summer programs. This dual degree agreement is an outgrowth of this partnership, which guarantees a strong partnership.

Silc has had a long-standing dual degree program with the Sydney Institute in Australia. Knowing they were already familiar with running a dual degree program, SHU/SILC was a natural partner. They were very interested in our offer and have worked hard to prepare for the approval process.

They are appropriately staff to manage the administrative demands of this program. Their International Office will manage the program and has three full time staff members to manage the program.

**2. Provide detail regarding the funding for this arrangement (amount,source,duration).**

Like the Poole College of Management, SHU/SILC is appropriately staffed to manage the program. The director of the international office is managing the administration of the program in conjunction with their associate dean of academic affairs. In addition they have two full time staff members who will assist in managing the day-to-day operations of the program.

**3. Provide detail regarding facilities and space (amount,source,duration).**

At SHU/SILC, students will study at the central campus of SHU located in shanghai. This is a new, large campus offering world-class facilities and special western style residence halls for dual degree and other international students.

**3. Provide detail regarding library resources (amount,source,duration).**

The library resources at SHU/SILC are of equal caliber as NC State. The new centennial campus includes a state of the art library with ample resources to support students in the program.

**5. Provide detail regarding equipment required for this arrangement.**

There is no special equipment needed for this program.

**7. Provide detail regarding any institutional policy or practice that would prohibit student participation based on race, gender, ethnicity, or religion.**

SHU/SILC does not discriminate on race, gender, ethnicity or religion. That being said, American students will be in china, which is a communist country. Freedom of speech can be suppressed. We don't anticipate this will be an issue and will advise American students going to shanghai to be mindful of the social and political environment they will study, live, and work within.

**7. Other:** none

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### **XIII. REVIEW SCHEDULE FOR AGREEMENT:**

All agreements will be for a period of five years, unless otherwise specified. Prior to the end of the fifth year the agreement must be reviewed and re-approved if requesting an extension. Upon the scheduled review date, responses to review criteria will be required to be completed and provided to the university review committee. If the agreement will be discontinued, a teach-out plan will be required for those students remaining in the program.

#### **As part of this agreement, specify the following:**

##### **What criteria will be used by the participating NC State College to determine whether the program should continue?**

The Poole College Of Management will first look at recruitment of students (in both directions) as one of the first indicators of the success of the program. Mandarin is the fourth most common language taught in North Carolina high Schools. Furthermore, Wake County, Mecklenburg counties are developing intensive immersion programs where students start taking Mandarin in elementary school and continue through high schools. We see these programs as potential feeder programs to recruit students.

The second indicated we will use to evaluate the success of this program is academic performance of the students. Will the American students do well at SHU/SILC and likewise will the Chinese students succeed in the classroom at NC state. Academic achievement is key to the overall success of the program.

Finally, after we have students complete the program and enter the job market, another success indicator will be the employability and career success alumni are able to achieve. This indicator is a long-term measurement which will take at least 5 year to begin to measure.

##### **In what year will this agreement be evaluated?**

Assuming this program is approved to start with students enrolling in fall 2016, the program will be evaluated in spring 2020 which will be the fourth year and the first year we will graduate students from the program.

### **XIV. SACSCOC disclaimer to be followed as part of this Agreement:**

For agreements with Partner institutions that are not accredited by SACSCOC, the following disclaimer must be included in the Memorandum of Agreement and in any advertised postings by the Partner institution in compliance with SACSCOC procedures related to collaborative academic agreements. The NC State program coordinator for this agreement must monitor the Partner institution's statements of relationship to ensure conformance with this disclaimer. In addition, neither Member nor Partner institutions may use the SACSCOC logo. Its use is reserved exclusively for the Southern Association of Colleges and Schools Commission on Colleges.

#### **Disclaimer Statement:**

*"North Carolina State University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award [state degree levels]. [Name of Partner institution] is not accredited by the Commission on Colleges and the accreditation of North Carolina State University does not extend to or include [name of Partner institution] or its students. Further, although North Carolina State University agrees to accept certain course-work from [Name of Partner institution] to be applied toward an award from North Carolina State University, that course-work may not be accepted by other colleges or universities in transfer, even if it appears on a transcript from North Carolina State University. The decision to accept course-work in transfer from any institution is made by the institution considering the acceptance of credits and course-work."*

**XV. This agreement must follow the stipulations listed below to be in compliance with N.C. State and SACS policies:**

- The SACSCOC disclaimer is included in this agreement and will be included in any marketing for this dual degree arrangement.
- This agreement requires at least 25% of the credits for an Undergraduate program and 50% for a Graduate program be awarded by N.C. State.
- The SACSCOC logo does not appear on this agreement and will not be used by the N.C. State or the Partner institution.
- The Partner institution will provide timely access to their materials, physical site(s), and personnel in conjunction with accreditation reviews, if requested.
- This agreement will be reviewed in 5 years from the date of final signature.

**The signing of this agreement and any supporting documentation assures compliance with the requirements of this Memorandum of Agreement. Any changes will require approval by the signatories and other approval bodies as applicable.**

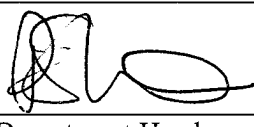

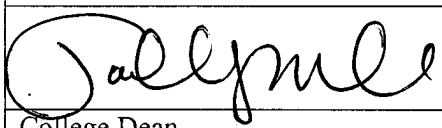
**Signatures – Memorandum of Agreement**

IN WITNESS WHEREOF, the authorized representatives of the parties have executed this agreement on the date(s) indicated below:

For, and on behalf of,  
 North Carolina State University,  
 Raleigh, NC - USA

For, and on behalf of,  
 \_\_\_\_\_  
 (Insert Partner Institution Name/Location)

**The signing of this agreement and any supporting documentation assures compliance with the requirements of this Memorandum of Agreement. Any changes will require approval by the signatories and other approval bodies as applicable.**

<u>NC State Signatures:</u>		<u>Partner Institution Signatures</u> <i>(insert name/title of each signatory)</i>	
 2/3/16	Date		Date
Department Head			
 1/20/16	Date		Date
College Course & Curriculum Committee			
 2/3/16	Date		Date
College Dean			
Administrative Board of the Graduate School or University Course & Curricula Committee	Date		
Dean of Graduate School or Dean of DASA	Date		
SACS Liaison/SCRT	Date		
Provost, N.C. State University	Date		

**Course Equivalencies: NC State to SHU/SILC – International Business Dual Degree Program**

NCSU COURSE	NCSU COURSE TITLE	CREDITS		SHU/SILC COURSE EQUIVALENT	SHU Credits
<b>YEAR 1 (NC STATE)</b>					
		<b>NC State Credit</b>	<b>Non NC State Credit</b>		
<b>SEMESTER 1 (FALL)</b>		<b>18</b>			<b>39</b>
M 100	Professional Development, Diversity, and Academic Success <sup>1</sup> (Regional Basket)	1		Discipline Introduction & Academic Frontiers	2
ENG 101	Academic Writing & Research	4		General English I	18
MA 121	Elements of Calculus	3		Advanced Math I	5
XXX XXX	Natural Science	4		Elective Credit	5
EC 201	Principles of Microeconomics	3		Economics I	4
FLC 201	Intermediate Chinese I	3		Elective Credit or DNC	5
<b>SEMESTER 2 (SPRING)</b>		<b>19</b>			<b>34</b>
MA 114	Finite Math	3		Advanced Math II	5
MIE 201	Introduction to Business Processes	3		Intergrating Business Perspectives	5
EC 202	Macroeconomics	3		Economics II	4
ACC 200	Intro. to Managerial Accounting	3		Accounting for Business Decisions	5
PSY 200	Introduction to Psychology	3		Managerial Psychology	4
HESF XXX	PE – Fitness & Wellness	1		Physical Education I, II, III	6
FLC 203	Intermediate Chinese I Conversation	3		Elective Credit or Cross Cultural Management	5
<b>SUMMER YEAR 1</b>		<b>10</b>			<b>21</b>
HES XXX	PE – Fitness Elective	1		Physical Education IV, V, VI	6
XXX XXX	Natural Science	3		Elective Credit	5
PHI	Business Ethics	3		Elective Credit	5
ACC 210	Concepts of Financial Accounting	3		Accounting for Business	5
<b>YEAR 2 (NC STATE)</b>					
<b>SEMESTER 3 (FALL)</b>		<b>18</b>			<b>30</b>
BUS 350	Economic & Business Statistics	3		Business Statistics	5
BUS 360	Marketing Methods	3		Principles of Marketing	5
IS 200	Intro to Int'l Studies (AB)	3		Elective Credit or Cross Cultural Management	5
BUS 305	Legal and Regulatory Environment	3		Elective Credits	5
BUS 320	Financial Management	3		Financial Management	5
FLC 203	Intermediate Chinese I - Conversation (FE)	3		Elective Credit	5
<b>SEMESTER 4 (SPRING)</b>		<b>18</b>			<b>42</b>
ENG 332	Advanced Writing	3		English III & Academic and Business Communication	13
MIE 335	Organizational Behavior (FE)	3		Management and Organizations	5
COM 110	Communication/Speech	3		General English II	10
FLC 204	Intermediation Chinese Conversation II (FE)	3		Free Elective	5
BUS 426	International Finance (FE or Fin. Conc.)	3		International Finance	4
BUS 464	International Marketing (FE or Mkt Conc.)	3		International Marketing Analysis and Strategy	5
<b>SUMMER YEAR 2</b>		<b>3</b>			<b>5</b>
M 399	US Internship (10 weeks) (FE)	3		Free Elective or does not count	5



NC STATE COURSE EQUIVALENT		NC State Credit	Non NC State Credit	SHU/SILC COURSE TITLE	SHU Credits
<b>YEAR 3 (SHU/SILC)</b>					
<b>SEMESTER 5 ( FALL)</b>		<b>9</b>	<b>8</b>	<b>SEMESTER 5 ( FALL)</b>	<b>26</b>
*** **	Free Elective		2	Fundamental of Information Technology	4
BUS ***	Free Elective		3	International Business <sup>IPBS Requirement</sup>	5
BUS 370	Operations Management	3		Logistics Management	4
BUS 340	Information Systems Management	3		Computerized Business Application	5
BUS ***	Interdisciplinary Perspectives		3	Management Decisions <sup>Regional Basket</sup>	4
BUS ***	Free Elective or Supply Chain Conc.	3		Modern Management Science and Operations Research <sup>Regional Basket</sup>	4
<b>SEMESTER 6 (WINTER)</b>		<b>12</b>	<b>0</b>	<b>SEMESTER 6 (WINTER)</b>	<b>19</b>
MIE 330	Human Resource Management	3		Human Resource Management	4
MIE 4**	Additional Breath	3		Global Context of Management <sup>Regional Basket</sup>	5
MIE 435	Management and Leadership (HR Conc)	3		Management Skills <sup>Regional Basket</sup>	5
MIE 310	Introduction to Entrpreneurship	3		Innovation & Entrepreneurship <sup>Regional Basket</sup>	5
<b>SEMESTER 7 (SPRING)</b>		<b>6</b>	<b>6</b>	<b>SEMESTER 7 (SPRING)</b>	<b>17</b>
BUS 4**	Finance Concentration Course or Free Elective	3		Financial Cost Management <sup>Regional Basket</sup>	5
MIE 43*	Free Elective		3	Knowledge Management <sup>Regional Basket</sup>	4
BUS 474	Logistics Management (FE or Supply Chain Conc.)	3		Global Operations & Supply Chain Management <sup>Regional Basket</sup>	4
MIE ***	Free Elective		3	Project Management <sup>Regional Basket</sup>	4
<b>SUMMER YEAR 3</b>		<b>0</b>	<b>3</b>	<b>SUMMER YEAR 3</b>	<b>5</b>
M 399	Free Elective		3	CHINA Internship (12 weeks) (FE)	5
<b>YEAR 4 (SHU/SILC)</b>					
<b>SEMESTER 8 (FALL)</b>		<b>0</b>	<b>9</b>	<b>SEMESTER 8 (FALL)</b>	<b>19</b>
M ***	Free Elective or Conc Class (if releveant)		3	Graduate Thesis	10
MIE ***	Free Elective		3	Sustainable Enterprise	5
MIE ***	Free Elective		3	Management Consulting	4
<b>SEMESTER 9 (WINTER)</b>		<b>9</b>	<b>3</b>	<b>SEMESTER 9 (WINTER)</b>	<b>10</b>
BUS 480	Business Policy and Strategy	3		Management Capstone	5
BUS 48*	Free Elective		3	Global Strategic Management <sup>Regional Basket</sup>	5
BUS 4**	Concentration Class	3		Elective	5
BUS 4**	Concentration Class	3		Elective	5
<b>SEMESTER 10 (SPRING)</b>		<b>3</b>	<b>0</b>	<b>SEMESTER 10 (SPRING)</b>	<b>20</b>
BUS 4**	Free Elective	3		Thesis	20
<b>SUMMER YEAR 3</b>		<b>0</b>	<b>3</b>		<b>5</b>
M 399	Free Elective		3	CHINA Internship (12 weeks) (FE)	5
<b>TOTAL CREDIT HOURS APPLIED TO NCSU DEGREE</b>		<b>125</b>			
<b>TOTAL CREDITS TAKEN AT SHU NOT APPLIED TO NC STATE DEGREE</b>			<b>32</b>	<b>TOTAL CREDITS APPLIED TO SHU DEGREE</b>	<b>275</b>

**Course Equivalencies: SHU/SILC to NC State – International Business Dual Degree Program**

NCSU COURSE	NCSU COURSE TITLE EQUIVILENT	NC State Credit	Non NC State Credit	SHU/SILC COURSE	SHU Credits
<b>YEAR 1 (SHU)</b>					
<b>SEMESTER 1 (FALL)</b>		<b>7.5</b>	<b>2.333</b>		<b>18.666</b>
ENG 101	Academic Writing & Research	4		General English I	9
*** **	Free Elective or DNC		2	Computer Culture Fundamental	4
MA 121	Elements of Calculus	3		Advanced Math I	4
*** **	Free Elective ior DNC		0.333	Discipline Introduction	0.666
HESF ***	HSEF	0.5		Physical Education #1	1
<b>SEMESTER 2 (WINTER)</b>		<b>6.5</b>	<b>2.333</b>		<b>18.666</b>
COM 110	Public Speaking	<b>3</b>		General English II	9
*** **	Free Elective or DNC		2	Information Processing & Application	4
MA 114	Finite Math	3		Advanced Math II	4
*** **	Free Elective		0.333	Discipline Introduction	0.666
HESF ***	HSEF	0.5		Physical Education #2	1
<b>SEMESTER 3 (SPRING)</b>		<b>4.5</b>	<b>3.333</b>		<b>16.666</b>
FLE 3**	English, Foreign Language	4		General English III	9
*** **	Free Elective or DNC		1	Contemporary Searching Technology	2
*** **	Free Elective		2	Modern Management Science and Operations Research	4
*** **	Free Elective		0.333	Discipline Introduction	0.666
HESF ***	HSEF	0.5		Physical Education #3	1
<b>YEAR 2 (SHU)</b>					
<b>SEMESTER 4 (FALL)</b>		<b>15.5</b>	<b>3</b>		<b>30</b>
ACC 210	Concepts of Financial Accounting	3		Accounting for Business	5
PSY 200	Introduction to Psychology	3		Managerial Psychology	4
MIE 335	Organizational Behavior		3	Management and Organization	5
BUS 360	Marketing Methods	3		Introduction to Marketing	5
MIE ***	Additional Breadth	3		Cross Cultural Management	5
MIE 201	Intro to Business Processes	3		Intergrating Business Perspectives	5
HESF ***	HSEF	0.5		Physical Education #4	1
<b>SEMESTER 5 (WINTER)</b>		<b>12.5</b>	<b>3</b>		<b>25</b>
ACC 200	Managerial Accounting	3		Accounting for Business Decisions	5
EC 201	Principles of Microeconomics	3		Economics I	5
BUS 350	Economic & Business Statistics	3		Business Statistics	5
BUS 443	Business Analytics		3	Management Decisions	4
BUS 320	Financial Management	3		Introduction to Financial Management	5
HESF ***	HSEF	0.5		Physical Education #5	1
<b>SEMESTER 6 (SPRING)</b>		<b>9.5</b>	<b>2</b>		<b>20</b>
BUS 42*	Free Elective or Finance Conc.	3		Financial Cost Management	5
BUS 464	International Marketing - Free Elective or Marketing Conc.	3		International Marketing Analysis and Strategy	5
FLE 4**	English, Foreign Language		2	Academic and Business Communication	4
EC 202	Principles of Macroeconomics	3		Economics II	5
HESF ***	HSEF	0.5		Physical Education #6	1
<b>SUMMER YEAR 2</b>		<b>0</b>	<b>3</b>		<b>3</b>
M 399	US Internship (10 weeks) (FE)		3	CHINA Internship (12 weeks) (FE)	3

YEAR 3 (SHU/SILC) <sup>2</sup>					
NCSU COURSE	NCSU COURSE TITLE	NC State Credit	Non NC State Credit	SHU/SILC COURSE EQUIVALENT	SHU Credits
<b>SEMESTER 5 ( FALL)</b>		<b>13</b>		<b>SEMESTER 5 ( FALL)</b>	<b>22</b>
ENG 332	Advanced Writing	3		Free Electives	5
BUS 340	Information Systems Management	3		Computerized Business Application	5
BUS 370	Operations Management	3		Logistics Management	5
MIE 330	Human Resource Management	3		Human Resource Management	5
M 100	Prof, Div, and Academic Success	1		Free Electives	2
<b>SEMESTER 6 (SPRING)</b>		<b>13</b>		<b>SEMESTER 6 (SPRING)</b>	<b>21</b>
XXX XXX	Natural Science with Lab	4		Liberal Studies #1	6
MIE 310	Introduction to Entrepreneurship	3		Innovation and Entrpreneurship	5
BUS 474	Logistics Management	3		Global Operations and Supply Chain Management	5
MIE 435	Management and Leadership (Free Elective or HR Conc.)	3		Management Skills	5
<b>SUMMER YEAR 3</b>		<b>3</b>			<b>3</b>
M 399	US Internship (12 weeks) (FE)	3		US Internship (12 weeks) (FE)	3
<b>YEAR 4 (NC STATE)</b>					
<b>SEMESTER 7 (FALL)</b>		<b>18</b>		<b>SEMESTER 7 (FALL)</b>	<b>30</b>
BUS 426	International Finance (Free Elective or Finance Conc.)	3		International Finance	5
BUS ***	Free Elective or Concentration Class	3		Business Elective Course	5
BUS ***	Free Elective or Concentration Class	3		Business Elective Course	5
BUS 468	Marketing Strategy	3		Global Strategic Management	5
XXX XXX	Natural Science	3		Liberal Studies #2	5
PHI 214	Business Ethics	3		Sustainable Enterprises	5
<b>SEMESTER 8 (SPRING)</b>		<b>18</b>		<b>SEMESTER 8 (SPRING)</b>	<b>31</b>
BUS 480	Business Policy and Strategy	3		Management Capstone	5
BUS 305	Legal and Regulatory Environment	3		Business Elective Course	3
EC 333	International Economics <sup>(IPBS Requirement)</sup>	3		Business Elective Course	3
BUS ***	Graduate Thesis	3		Graduate Thesis	10
BUS ***	Free Elective or Concentration Class	3		Business Elective Course	5
BUS ***	Free Elective or Concentration Class	3		Global Context of Management	5
<b>SUMMER YEAR 4</b>		<b>3</b>			<b>5</b>
M 399	US Internship (10 weeks) (FE)	3		US Internship (10 weeks) (FE)	5
<b>TOTAL CREDIT HOURS APPLIED TO NCSU DEGREE</b>		<b>124</b>			

AGREEMENT

By and Between

**Universidad Pontificia Comillas ICAI-ICADE**

C. Alberto  
Aguilera 23  
Madrid  
28015  
SPAIN

(hereinafter referred to as “Comillas”)

Represented by **??????**

and

**North Carolina State University**

2801 Founders Drive,  
Raleigh, North Carolina  
27695

UNITED STATES OF  
AMERICA

(hereinafter referred to as “NC STATE”)

Represented by Dr. Warwick Arden, Provost and Executive Vice Chancellor

WHEREAS

Herein, Universidad Pontificia Comillas ICAI-ICADE (COMILLAS) and North Carolina State University (NC STATE) (collectively referred to as the “Institutions”) desire to establish a dual-degree program in international business and management studies.

The Program will enable students from COMILLAS to pursue a course of study to qualify for the Bachelor of Science in Business Administration degree from NC STATE and students from NC STATE to pursue a course of study to qualify for the Bachelor in International Business Management from COMILLAS.

The Institutions will attempt to provide the necessary funds for putting this Agreement into effect, insofar as the regulations of their respective Institutions and governments permit,

THE DUAL DEGREE PROGRAM

Art. 1

1. Each Institution will nominate their students who wish to enroll in the Program on the basis of the student’s academic standing and potential for success in the Program. However, the host

Institution reserves the right to review each applicant's record prior to acceptance into the Program. The host Institution reserves the right not to accept any particular student nominated.

#### Art. 2

- 2.1 This agreement for the dual degree program is inclusive of eight semesters that encompasses studying and internships experiences at both Institutions.
- 2.2 COMILLAS students who are admitted to NC STATE and NC STATE students admitted at COMILLAS are permitted to take courses included in the present Agreement during the regular semesters provided by NC STATE and COMILLAS.
- 2.3 Dual degree students will pay tuition and obligatory fees to their home Institution for the duration of eight semesters of their enrollment in the dual degree program.
- 2.4 The entire cost of room and board at each institution will be borne by the student.
- 2.5 If a student in the Program does not complete the degree requirements at either Institution at the end of the eight semesters included in this Agreement, students can continue in the program at the tuition and obligatory fees cost of the host institution. This provision would only occur if a student must repeat a class/classes and cannot do so in the two years included in this agreement. Students could elect to return to the home institution, but would not be eligible for the second degree of the partner university (host institution).

#### Art. 3

- 3.1 COMILLAS students who elect to take extra courses at NC STATE over the summer term(s) will pay out- of-state tuition to NC STATE.
- 3.2 NC STATE students who elect to take extra summer program courses at COMILLAS will pay tuition due for the mentioned programs to COMILLAS.

#### Art.4

- 4.1 Each Institution will provide publicity for this Program similar to that which it arranges for its other education programs.

#### Art.5

- 5.1 The intention of the exchange is to enable a target of 5 students per year from each Institution to study and work abroad each year. Although a one-for-one exchange is desirable it will not be considered a breach of this Agreement if, in a given year, either Institution is unable to send an equal number of students, provided that, over a period of the Agreement (5 years), there is a balance in the number of students who participate in the Program from both Institutions.
- 5.2 The exchange students must be enrolled in either the undergraduate business administration

program in the Poole College of Management at NC STATE or the undergraduate of COMILLAS ICADE Business School Madrid Campus.

- 5.3 Dual Degree students will be permitted to enroll at the host Institution in any course for which they are qualified, subject to admissions requirements, and timetable and capacity constraints of the host Institution. Students will be required to participate in all courses for which they are enrolled as defined by the host institution.

Art. 6

6. Dual Degree students will be required to provide evidence of language competence in the language of the host institution.

COMILLAS students will be required to take the TOEFL IBT exam and have their test results sent directly to NC STATE. NC STATE students will be required to demonstrate Spanish language fluency prior to enrolling in degree program courses at COMILLAS.

Art.7

7. The Institutions will require dual degree students to maintain in full effect, health insurance with coverage acceptable to the host Institution and applicable to government requirements. NC STATE will make its student health insurance available for an additional fee to the students from COMILLAS. At the discretion of each institution, students may be required to purchase additional health insurance in the host country.

Art. 8

8. Each student is responsible for all other expenses associated with the dual degree program, including but not limited to: personal expenses; transportation to and from the host institution; textbooks and other course materials, and any required educational taxes.

Art. 9

9. Dual degree students will enjoy the privileges of and be subject to all regulations of the host Institution. Dual degree students can be terminated from the Program and host institution if student's violation(s) of the host Institution's regulations merit suspension or dismissal.

Art. 10

10. Receipt of the degree offered by either Institution is contingent upon the student completing all degree requirements of said Institution, including successful course completion, GPA requirements, thesis, internships, etc.

Art. 11

11. Each institution shall remain responsible for the acts and omissions of their respective officers,

agents, and employees.

Art. 12

12. It is understood and agreed that courses and other related activities offered through the host Institution are the primary and ultimate responsibility of the host institution, which will make all arrangements necessary for the satisfactory functioning of programs.

Art. 13

13. Each Institution will at its own expense, compensate instructors whom it employs for its courses and assumes no responsibility for the compensation of the home Institution's instructors.

Art. 14

14. Each Institution will inform the other as to the courses planned at least three months prior to the start of those courses.

Art. 15

15. It is agreed that the host Institution has the primary and ultimate responsibility for obtaining from the instructors and transmitting to the home Institution in a timely fashion assessments for all participating students. The host Institution will assume full liability for grievances or other actions arising from such assessments. Assessments will be transmitted to the home Institution as soon as possible after the examination period.

**B. GENERAL PROVISIONS**

Art. 1

1. Each university will appoint a Dual Degree Program Coordinator (EPC) to work with the dual degree students to ensure that the program of study is consistent with the dual degree curriculum requirements. The minimum and maximum course load in any given semester will be governed by the regulations of the host Institution.

Art. 2

2. The Institutions agree that every person connected with the Program in relation to the mutual undertakings with each other shall abide by, conform to, and comply with all of the laws of the United States, and Spain or other relevant jurisdictions as well as the policies, rules, regulations, and disciplinary rules promulgated by each Institution. Each Institution shall provide Program participants with a copy of its statutes, regulations, and disciplinary rules promulgated thereby.

Art. 3

3. In the event that any casualty or unforeseen occurrence shall render the fulfillment of the Agreement impossible, neither party shall in any case be held responsible to the other party for any damage caused thereby.

Art. 4

4. This Agreement represents the complete understanding of the parties with respect to the subject matter hereto and may be amended or modified only by a writing signed by the parties.

Art. 5

5. The Agreement will be effective upon execution for five (5) years, unless terminated earlier as provided for herein. Thereafter it may be renewed for successive periods of five (5) years unless or until either institution terminates this Agreement. This Agreement may be amended at any time by mutual consent or may be terminated by either institution for any cause or no cause by six months written advance notice to the President of the rescinding institution. Any termination or alterations will be made without prejudice to any participants whose agreed Program extends beyond the termination dates.

Art. 6

6. NC State is accredited by the Southern Association of Colleges and Schools' Commission on Colleges to award Bachelor's, Master's and PhD degrees. COMILLAS is not accredited by the Commission on Colleges and the accreditation of NC State does not extend to or include COMILLAS or its students. Although NC State accepts certain course work in transfer toward a credential from COMILLAS in force of this Agreement, or collaborates in other ways for generation of course credits or program credentials, other colleges and universities may or may not accept this work in transfer, even if it appears on a transcript from NC State. Each college or university will take the decision regarding the work of transfer in complete autonomy. Both institutions will make their personnel, records, and facilities available to accreditors and other official reviewers.

Art. 7

7. Neither Member nor Partner institutions may use the SACSCOC logo. Its use is reserved exclusively for the Southern Association of Colleges and Schools Commission on Colleges.

Art. 8

8. Force Majeure - In the event that the performance of the obligations under this Agreement is prevented by reason of Force Majeure, the parties are released from their obligations and neither party shall be responsible for any damages sustained and have no further recourse against the other party. Force Majeure shall mean fire, earthquake, hurricane, flood, act of God or other natural disasters, epidemics or pandemics, nuclear explosions, strikes, work stoppages, or other



labor disturbances, riots or civil commotions, war or other act of any foreign nation, terrorism, power of government, or governmental agency or authority, or any other cause like or unlike any cause mentioned which is beyond the control of the parties.

Art. 9

9. Disclosure - The parties agree that personally identifiable information and education records of the students shall be maintained in a confidential manner and shall not be released except to school officials with a legitimate educational interest or as allowable by applicable Federal and State law.

Art. 10

10. Equal Opportunity - Both universities subscribe to a policy of equal opportunity and will not discriminate against any participating student on the basis of race, gender, age, marital status, ethnicity, religion, national origin, sexual orientation, handicap or any other basis prohibited by the laws of that university's home country.

<b>North Carolina State University</b>	<b>Universidad Pontificia Comillas ICAI-ICADE</b>
<b>Provost and Vice Chancellor      Date</b>	<b>Rector      Date</b>
<b>SACS Liaison/SCRT      Date</b>	
<b>Dean of Academic &amp; Student Affairs      Date</b>	
<b>University Courses &amp; Curricula Committee Chair      Date</b>	
<b>College Dean      Date</b>	
<b>College Curriculum Committee Chair      Date</b>	

## Appendix 1

The framework of the integrated Dual degree study Programme

### American students

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
<b>Semester 1</b>	Study in NC STATE	Study in NC STATE	Study in COMILLAS	Study in COMILLAS
<b>Semester 2</b>	Study in NC STATE	Study in NC STATE	Study in COMILLAS	Second co-op placement
<b>Semester 3 Summer 1<sup>st</sup> Half</b>	Study at NC STATE	Internship in the United States	Vacation	
<b>Semester 3 Summer 2<sup>nd</sup> half</b>	Study at NC STATE		Vacation	

### Spanish students

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
<b>Semester 1</b>	Study in COMILLAS	Study in COMILLAS	Study at NC STATE	Study at NC STATE
<b>Semester 2</b>	Study in COMILLAS	First internship in Spain	Study at NC STATE	Study at NC STATE
<b>Semester 3 Summer 1<sup>st</sup> half</b>	Vacation	Vacation	Internship In the United States	
<b>Semester 3 Summer 2<sup>nd</sup> half</b>	Vacation	Vacation		

# MEMORANDUM OF AGREEMENT FOR DUAL DEGREE PARTNERSHIP

## Collaborative Academic Agreement

***Establishment of a dual degree with N.C. State University requires completion of this MOA and signatory approval by the Provost. In addition, SACSCOC must be notified 6 months prior to implementation of this agreement.***

***Complete the following:***

### **I. N.C. State Participation:**

**Level of Degree:** Bachelor **College Participating:** Poole College of Management

**Other Participating College(s):** None

**Full Title of Degree Conferred (Include concentration title if applicable.):** Bachelor of Science In Business Administration

**Name and contact information for the primary developer of Agreement:** Robert Sandruck, Director of International Programs, Poole College of Management, email: Rlsandru@ncsu.edu, tel: 919.515.2215

### **II. Participating Partner Institution: *If multiple partners, complete separate form for each.***

**Name of Partner Institution:** Universidad Pontificia Comillas (COMILLAS)

**Location of Institution:** Madrid, Spain

**Name and contact information for the primary developer of this Agreement (include address, phone, email, etc.)**

Marta Ramos Aguilar, Director International Business Degrees, email: martaram@icade.comillas.edu & Robert Roberts, Associate Dean, email: robrob@comillas.edu

**Level of Degree:** Bachelor

**Full Title of Degree Conferred (Include concentration title if applicable):**

Bachelor of Business Administration and Management

**Partner Institution Accreditation Status:** Universidad Pontificia Comillas is accredited by National Agency for Quality Assessment and Accreditation of Spain, (ANECA).

**Other Accreditation, Licensure or Approving Body Information (Ex: ABET, EQUIS/EFMD, AACSB):**

ICADE, the Business School at pursuing accreditation by AACSB.

**Duration of Agreement:** *(Minimum 5 years. Unless otherwise specified – prior to end of 5<sup>th</sup> year, agreement must be approved for extension.)*

Five years, with review for renewal in the fourth year

### **III. Timeline:**

**Proposed Start Date of Agreement:** March 2016

**Expected Date for recruitment and advertising:** Fall 2015 – pending university and sacs approval

**Expected Date of student matriculation/enrollment in dual degree program:** August 2016

**IV. Attachments:**

**In addition to this MOA, attach other applicable documentation and list each attachment/appendices below:**

*(ex: Memorandum of Understanding (broad agreement of partnership), prospectus (if substantive change))*

Proposed Exchange Agreement

Memorandum of Understanding (Program Agreement)

Curriculum Matching Document

## **V. Collaborative Objectives:**

### **1. What is the purpose and benefits of the dual degree partnership?**

To offer NC State student the opportunity to become fluent in Spanish, to live, study, and work in Spain over a two-year period, and to bring high quality students from Spain to NC State and study in the Poole College of Management while gaining the similar experience American students have in Spain.

### **2. What evidence of institutional/program comparability exists (rankings, joint faculty research, publications, etc.)?**

Both institutions provide high quality general education and business programs. The curricula from both institutions overlap in many areas, which can facilitate a dual degree program. At the same time, both institutions have some unique strengths that students will be able to obtain from both schools because of this program. For instance, at NC State, the BSBA is develop a strong emphasis on data analytics, applied skills, and is strong in several concentration areas. Likewise, COMILLAS offers great courses in business, especially marketing and finance. They have a very intense business program which will challenge students in the program.

### **3. What are the areas of mutual interest? Past partnerships?**

COMILLAS and the Poole College of Management have been strong partners for several years. Like Poole, they are member of the International Partnership of Business Schools (IPBS). In fact. they are a founding member of the organization.

Since partnering with Poole, COMILLAS has been our number 1 desired study abroad exchange program. Each semester/year, we have 5-8 students who want to study abroad at COMILLAS. Likewise, we have received many students from COMILLAS who spend a semester or year with us.

In IPBS, COMILLAS has worked with Northeastern University (another IPBS member) for over 20 years with its dual degree program. COMILLAS offers four sections of its business administration program. One has always been linked to Northeastern where they have exchanges 20+ student in each direction. Recently COMILLAS opened a another section to the dual degree program allowing NC State to develop a Spanish track with our IPBS partner.

Given Spanish is the most frequently taught language at NC State and in high schools throughout the North Carolina, we expect the Spanish track to be in great demand. We plan to start small, accepting 5 students in each of the first few years. Once established, we anticipate growing the partnership with COMILLAS.

### **4. What are the partner institutional priorities?**

COMILLAS has a well-developed strategic plan that outlines it priorities. This is available at [http://www.upcomillas.es/Documentos/Plan\\_Estrategico\\_2014\\_2018.pdf](http://www.upcomillas.es/Documentos/Plan_Estrategico_2014_2018.pdf). In reviewing this document, you will see their priorities including developing a better, more academic strong and well-rounded students, enhancing the research output of the faculty, and developing strong international engagement.

For ICADE, the business school, they recently redesigned their curriculum and opened more a new section of their BSBA program for the dual degree program. Their dual degree program has always been very selective considered one of the very best undergraduate programs in Spain. Their priorities includes expanding the program while maintaining the level of selectivity.

### **5. How does this agreement fit with NC State Institutional Mission?**

As indicated in NC State's mission statement, the University "promotes an integrated approach to problem solving that transforms lives and provides leadership for social, economic, and technological development across North Carolina and around the world." This section of the mission statement is at the heart of this program. Through this

program, NC State/Poole College of Management and COMILLAS will have a significant impact towards NC State achieving its mission. As we prepare for this program, it is worth noting that in the current strategic plan "the pathways to the future: NC State's 2011-2020 strategic plan", the board of trustees outlines two specific initiatives that are relevant to this program. Goal 1 states that NC State shall enhance the success of our students through educational innovation. This program is an innovative approach to business education and recognizes the need to be "globally engaged." Students will take classes on two different campuses in two different locations in the world. In doing so, students will be engaged in an innovative learning environment where they will obtain a diverse array of knowledge. The strategies outlined in this goal address the interest of increasing the percentage of incoming external undergraduate transfer students and increasing the geographic diversity of the undergraduate class by enrolling more international students. Students participating in this program will be from outside the United States and will apply as international transfer students thus contributing to both of these strategies. The fifth goal of the strategic plan is to "enhance local and global engagement through focused strategic partnerships." this goal is further outlined with three strategies including: "support and provide opportunities for increasing students' civic and global knowledge, experience, and perspectives; support and provide incentives for faculty and staff to engage in collaborative global scholarship; and enhance active and sustainable partnerships, locally, regionally, and globally." This program is clearly in line with this goal and supporting strategies. We will increase students' civic and global knowledge, provide opportunities for collaborative faculty teaching and research between the two schools, and enhance a strong partnership between COMILLAS and NC State University.

## **6. How does this agreement fit with NC State College's Mission?**

The Poole College's mission begins with the "effort to educate tomorrow's business leaders." These leaders of tomorrow will come from around the world and will work across borders to meet the demands and challenges of the global economy. To achieve our mission, the College further outlines the significance of international initiatives in its vision statement. "We will be a leader in management education through strong business partnerships, focusing on technology and innovation, promoting entrepreneurial programs, and developing international initiatives and alliances." The partnership between the Poole College of Management and COMILLAS is a strategic effort to achieve our mission

## **VI. Administration:**

### **1. How was the proposed dual degree developed? *Describe the process by which NC State faculty worked with the partner faculty to plan program content, select courses, and choose mode of delivery.***

The initial development of this dual degree program grew out of an existing partnership with Universidad Pontificia Comillas. As mentioned earlier, COMILLAS has hosted numerous Poole students for semester or yearlong exchange programs. Likewise, Poole has hosted students from COMILLAS for either a semester or academic year. This exchange program has been very successful which is why we are confident that the dual degree program will succeed.

The actual structure of the dual degree program is built on of the framework used by all IPBS school (see attachment). This framework outlines the courses that students take in the first two years at the "home" institution. This two-year block includes numerous business and economics classes as well as a regional basket, which includes all the "other" non-business courses the institution requires. For NC State, this regional basket includes the general education curriculum that all NC State students are required to complete. In the second two-year block, students take additional business courses as well at the "host" institution's regional basket courses. During the program, students complete a 10+ week internship in the first block and a 22+ week internship in the second block (which can be split into two summer experiences). This formal framework allows any two IPBS schools to offer a dual degree program while ensuring each school is concurrently able to meet its own degree requirements. The Poole College has three existing dual degree arrangements with other IPBS schools.

During the development process for each of these programs, the appropriate department heads and academic dean collaborated on the structure and alignment with the BSBA curriculum. The proposed agreement is an extension of

this work and is supported by the college undergraduate curriculum committee.

**2. How will the proposed program be administered?** *Include detail regarding each partner responsibilities related to administration, academic policy enforcement, logistics, and student recruitment, registration, admissions. Attach organizational chart if applicable.*

Administration of this program is shared between the Poole College of Management and COMILLAS. The Poole College, in cooperation with various university offices, will be responsible for recruiting students in the United States to participate in the program. We will also manage their orientation and class scheduling. Given the framework described above, students’ course loads are predetermined based on their language placement and advance placement credits. NC State will also be responsible for managing the onboarding of COMILLAS students who are in this dual degree program. This includes working through the admissions process with University Admissions as well as collaborating with Housing, Health Records, Office of International Services, etc. With appropriate faculty review, we will also manage transfer credits from COMILLAS . We will also provide support for the internship search process through Poole’s Career Development staff. On COMILLAS’ side, they will manage the recruitment of Spanish students and their successful completion of the first two years. They will manage the onboarding of NC State students who enter COMILLAS in their third year, arrange for transfer course credit and provide support for housing, internship search, and other student support services.

**3. How will tuition and fees be coordinated?**

This dual degree agreement is based on an exchange model. Students pay tuition and fees at their home institutions for the four years of the program. While studying at the partner school, the students are responsible for housing, meals, books, insurance, and other incidental expenses. The Study Abroad Office at NC State monitors the exchange balance to ensure the program stays within an acceptable level of balance.

**4. Proposed NC State SIS code for designated students participating in dual degree.** (max 10 char)

20bUSAIPBS (existing subplan to track incoming dual degree students)

**VII. NC State Policy Disclaimer for this agreement:**

*“Students participating in this coordinated dual degree program will be subject to all applicable N.C. State University policies and regulations.”*

**VIII. Expected Annual Faculty/Student Participation:**

N.C. State	Year 1	Year 2	Year 3	Year 4	Year 5
Students	5	5	5	5	5
Faculty Exchange	0	0	0	1	1

Partner Institution	Year 1	Year 2	Year 3	Year 4	Year 5
Students	5	5	5	5	5
Faculty Exchange	0	0	0	1	1



## **IX. CURRICULUM DESIGN:**

### **1. Provide an overview of how the degree requirements for each Institution will be completed as part of this dual arrangement.**

As you can see from the curriculum-matching document, Poole and COMILLAS have completed a course-by-course alignment. For students starting in Raleigh, they will spend their first two years at NC State completing all of the general education courses as well as business courses in accounting, economics, finance, marketing, organizational behavior, international studies, and quantitative methods. These students will also take the general education classes required for the NC State degree. For the students starting in Spain, they will also take the same subject matter courses mentioned above along with any class COMILLAS requires for their degree. As you can see, first and second year students at both campuses take the same business courses. In years 3 and 4, students take classes in operations management, human resource management, strategy, information technology and any regional basket course required by the host school. Both NC State and COMILLAS requires the same basic core business courses, which makes the program possible. The courses taken in Spain match our courses and will count towards the NC State degree. Likewise, courses taken at NC State will match with the degree requirement from COMILLAS .

### **2. Provide list of NC State course requirements for degree and equivalency to related courses at Partner Institution. (Attach as semester-by-semester display of course requirements and provide a list of course requirements and equivalencies for the dual degree program):**

See attached

### **2. Provide list of Partner Institution's course requirements, analysis of course content, and equivalency to related courses at NC State.**

See attached

### **3. Describe how and when transfer courses will be evaluated.**

Courses have been evaluated on a course-by-course basis. In each case, the partner school's courses have been matched to a degree requirement at the primary school. If a course is taken at a partner school and does not meet a specific degree requirement at the home institution, it is counted as free elective or simply does not count towards that degree.

Students will take the exact same courses as outlined in the curriculum outline, which is attached. If either university changes their respective curricula or the content of a specific class changes, the courses will be re-evaluated and any needed adjustments will be made to the curriculum outline.

### **4. If Thesis requirement, provide details (supervision/credit).**

COMILLAS requires a thesis for their degree. The students spend the final semester of their fourth year work on the thesis under the supervision of a faculty member. NC State will accept as transfer credit the course equivalent to the thesis.

### **5. What is the total percentage of courses taken at Partner Institution? Approximately 45%**

6. **What is the total percentage of courses taken at NC State? (For graduate programs at least 50% of hours and for undergraduate programs at least 25% must be taken at NC State)** Approximately 55%
7. **To be eligible for a bachelor's degree, a student must have earned at least 30 of the last 45 hours of credit through NC State courses. If this requirement will not be met, please explain.**

For students starting at NC State, they will not meet the residency requirement, as they are required to spend the final two years completing the coursework and doing an internship in China. Therefore, they simply won't be able to be at NC State per the design of the dual degree program. Provost Warrick has approved the waiver for the residency requirement.

8. **Transfer hours allowed by NC State.** Yes, students will transfer the credit hours from COMILLAS towards the NC State degree.
9. **Transfer hours allowed by Partner.** Yes, COMILLAS will accept transfer credit from NC State towards their degree.
10. **Will course credit from Partner Institution count toward NC State GPA calculation? (If yes, explain)** No
11. **Describe other requirements. (residence, comprehensive exams, internships, language, etc)**

Students are required to do two internships. The first is in their home country and must last 10-12 weeks. Likewise, students must complete a second internship ranging from 12-22 weeks. Both of these internships are required and carry academic credit. Dr. Janet Rakes, who works in Poole's Career Center will supervise all internships in the United States.

Furthermore, all classes taken at COMILLAS will be taken in Spanish.

12. **Provide list of courses that will be offered totally online and in hybrid format. Indicate the applicable format next to each course.** No classes will be offered online or in a hybrid format. All courses will be delivered in a standard classroom, both in the United States and Spain.
13. **Will NC State courses be offered at an off-campus site either through DE or face-to-face? If so, has the site been approved by SACS?** No NC State classes will be offered in an off-campus site either in a distance learning or face-to-face format.

#### **X. ASSESSMENT/MEASURABLE OUTCOMES:**

**What are the measurable student learning outcomes for this academic arrangement and how will they be assessed?**

*Note: Outcomes for the existing degree must be met in the dual degree arrangement. Provide any additional outcomes related to the academic collaborate arrangement*

1. Outcome 1: NC State students will demonstrate language fluency (oral and written) proficiency in the language of the partner institution.
2. Outcome 2: Partner institution students will demonstrate English language fluency and written communication proficiency
3. Outcome 3: Compare and contrast cultural differences between the U.S. and partner institution country
4. Outcome 4: Describe how business operations vary between the U.S. and partner institution country.

## **XI. FACULTY CREDENTIALS FROM THE PARTNER INSTITUTION:**

Provide a list of the faculty directly involved in teaching courses as part of this program of study. ~~Attach the CV for each.~~

Please see attached

## **XII. INSTITUTIONAL COMMITMENT AND RESOURCES:**

### **NC State University:**

#### **1. Provide description of NC State's commitment to this academic arrangement.**

The Poole College of Management will burden most of the commitment for this dual degree track. In doing so, Poole will provide "onboarding" counseling to the perspective students who are identified from COMILLAS. Poole's international office will take the lead and will advise perspective students on the admissions process, housing, visa (in support of OIS), and Orientation (in addition to the University's Orientation effort). Once admitted and enrolled, the students will receive the same advising and career support offered to all Poole students.

Other NC State offices will be key partners with Poole in seeing the program operate. This includes the university admissions office, the study abroad office, the Cashiers office, and university housing. Poole's international office will interface with all of these offices as the students go through the admissions process and arrive at NC State.

#### **2. Provide detail regarding the funding for this arrangement (amount,source,duration).**

The international business dual degree program (IBDD) is based on an exchange model. Students from NC State who participate and go abroad for their 3<sup>rd</sup> and 4<sup>th</sup> years will pay NC State tuition and fees. Students starting at COMILLAS will pay tuition and fees at their home institution for their four years in the program.

While at NC State, students are enrolled in existing classes. The only exception is two sections of ENG 332 and a section of MIE 335 (offered every other year) that we offer additional sections of classes. In these cases, any extra seats are offered to any student who is eligible to enroll.

The administrative management is coordinated by the Director of International Programs in the Poole College of Management. This position is already funded and is maintained by the College. The only other expense is participation in the bi-annual IPBS meetings, which occur each semester. The dean and the director attend these meetings with an annual cost of \$4,250.

#### **3. Provide detail regarding facilities and space (amount,source,duration).**

No new or additional space or facility is used. In regards to facilities, Poole requires the incoming students to live in Wolf Village for their first year providing additional revenue for the university. At COMILLAS, students will study at the central campus located in Madrid.

#### **4. Provide detail regarding library resources (amount,source,duration).**

NC State has world-class library resources including two major facilities, the Hill Library located on main campus and the Hunt Library located on Centennial campus. Both facilities offer students access to data and information needed for their academic studies.

#### **5. Provide detail regarding equipment required for this arrangement.**

There is no special equipment needed for this program.

## **6. Other:**

Poole has successfully created three other tracks in German, French, and Italian. The addition of a partner in Spain and Spain (see other moa) we will complete the language tracks we intend to offer. Poole has had great success in bringing European students to NC State for their final two years of study and is recruiting more and more students to attend NC State to do this program. In fact, this program is attracting highly talented students who otherwise would not have considered attending NC State. This program has the potential to become a marquee program that highlights the importance of international engagement at a deep and challenging level.

**Partner Institution:**

**1. Provide description of Partner's commitment to this academic arrangement.**

COMILLAS is very committed to this program and the academic agreement. As mentioned earlier, they have been great partners with Poole in our respective exchange programs. This dual degree agreement is an outgrowth of this partnership, which guarantees a strong partnership.

COMILLAS has had a long-standing dual degree program with Northeastern University. Knowing they were already familiar with running a dual degree program, COMILLAS is a natural partner. They were very interested in our partnership and have worked hard to prepare for the approval process.

They are appropriately staff to manage the administrative demands of this program. Their International Office will manage the program and has several full time staff members to manage the program.

**2. Provide detail regarding the funding for this arrangement (amount,source,duration).**

The funding for this program is not significant. It draws on existing resources and academic programs. This dual degree program is integrated into the BSBA program at NC State and the similar program at COMILLAS. With the exception of a few sections of ENG 332 and one section of MIE 335 as well as some travel cost incurred to attend meetings, this program will not add significant financial demands on NC State

**3. Provide detail regarding facilities and space (amount,source,duration).**

At COMILLAS , students will study at the central campus of COMILLAS located in Madrid. I visited the location in June 2015 and found the classroom space equal to the quality of space in Nelson Hall.

**3. Provide detail regarding library resources (amount,source,duration).**

The library resources at COMILLAS are similar, but smaller than the resources available at NC State.

**5. Provide detail regarding equipment required for this arrangement.**

There is no special equipment needed for this program.

**7. Provide detail regarding any institutional policy or practice that would prohibit student participation based on race, gender, ethnicity, or religion.**

COMILLAS does not discriminate on race, gender, ethnicity or religion. They are a Catholic University, but do not require students to practice this form of Christianity or any form of religion.

**7. Other:** none

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### **XIII. REVIEW SCHEDULE FOR AGREEMENT:**

All agreements will be for a period of five years, unless otherwise specified. Prior to the end of the fifth year the agreement must be reviewed and re-approved if requesting an extension. Upon the scheduled review date, responses to review criteria will be required to be completed and provided to the university review committee. If the agreement will be discontinued, a teach-out plan will be required for those students remaining in the program.

#### **As part of this agreement, specify the following:**

##### **What criteria will be used by the participating NC State College to determine whether the program should continue?**

The Poole College of Management will first look at recruitment of students (in both directions) as one of the first indicators of the success of the program. Spanish is the language most frequently taught in North Carolina high schools. Furthermore, Wake County, Mecklenburg counties are developing intensive immersion programs where students start taking Spanish in elementary school and continue through high schools. We see these programs as potential feeder programs to recruit students.

The second indicated we will use to evaluate the success of this program is academic performance of the students. Will the American students do well at COMILLAS and likewise will the Spanish students succeed in the classroom at NC state. Academic achievement is key to the overall success of the program.

Finally, after we have students complete the program and enter the job market, another success indicator will be the employability and career success alumni are able to achieve. This indicator is a long-term measurement which will take at least 5-8 year to begin to measure.

##### **In what year will this agreement be evaluated?**

Assuming this program is approved to start with students enrolling in Fall 2016, the program will be evaluated in Spring 2020 which will be the fourth year and the first year we will graduate students from the program.

### **XIV. SACSCOC disclaimer to be followed as part of this Agreement:**

For agreements with Partner institutions that are not accredited by SACSCOC, the following disclaimer must be included in the Memorandum of Agreement and in any advertised postings by the Partner institution in compliance with SACSCOC procedures related to collaborative academic agreements. The NC State program coordinator for this agreement must monitor the Partner institution's statements of relationship to ensure conformance with this disclaimer. In addition, neither Member nor Partner institutions may use the SACSCOC logo. Its use is reserved exclusively for the Southern Association of Colleges and Schools Commission on Colleges.

#### **Disclaimer Statement:**

*"North Carolina State University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award [state degree levels]. [Name of Partner institution] is not accredited by the Commission on Colleges and the accreditation of North Carolina State University does not extend to or include [name of Partner institution] or its students. Further, although North Carolina State University agrees to accept certain course-work from [Name of Partner institution] to be applied toward an award from North Carolina State University, that course-work may not be accepted by other colleges or universities in transfer, even if it appears on a transcript from North Carolina State University. The decision to accept course-work in transfer from any institution is made by the institution considering the acceptance of credits and course-work."*

**XV. This agreement must follow the stipulations listed below to be in compliance with N.C. State and SACS policies:**

- The SACSCOC disclaimer is included in this agreement and will be included in any marketing for this dual degree arrangement.
- This agreement requires at least 25% of the credits for an Undergraduate program and 50% for a Graduate program be awarded by N.C. State.
- The SACSCOC logo does not appear on this agreement and will not be used by the N.C. State or the Partner institution.
- The Partner institution will provide timely access to their materials, physical site(s), and personnel in conjunction with accreditation reviews, if requested.
- This agreement will be reviewed in 5 years from the date of final signature.

**The signing of this agreement and any supporting documentation assures compliance with the requirements of this Memorandum of Agreement. Any changes will require approval by the signatories and other approval bodies as applicable.**

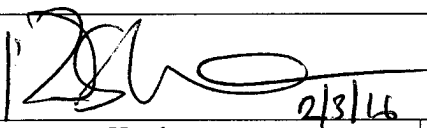
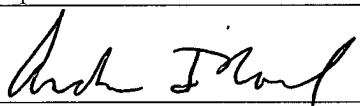
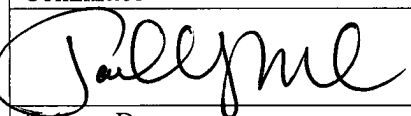
**Signatures – Memorandum of Agreement**

IN WITNESS WHEREOF, the authorized representatives of the parties have executed this agreement on the date(s) indicated below:

For, and on behalf of,  
 North Carolina State University,  
 Raleigh, NC - USA

For, and on behalf of,  
 \_\_\_\_\_  
 (Insert Partner Institution Name/Location)

The signing of this agreement and any supporting documentation assures compliance with the requirements of this Memorandum of Agreement. Any changes will require approval by the signatories and other approval bodies as applicable.

<u>NC State Signatures:</u>		<u>Partner Institution Signatures</u> <i>(insert name/title of each signatory)</i>	
			
Department Head	2/3/16 Date		Date
			
College Course & Curriculum Committee	2/16/16 Date		Date
			
College Dean	2/3/16 Date		Date
Administrative Board of the Graduate School or University Course & Curricula Committee		Date	
Dean of Graduate School or Dean of DASA		Date	
SACS Liaison/SCRT		Date	
Provost, N.C. State University		Date	



**Course Equivalencies: NC State to ICADE – International Dual Degree Program - 2016, January**

<b>YEAR 1 (NC STATE)</b>					
<b>NCSU COURSE</b>	<b>NCSU COURSE TITLE</b>	<b>NC STATE CREDITS</b>	<b>NON NC STATE CREDITS</b>	<b>ICADE COURSE TITLE</b>	<b>ECTS CR.</b>
<b>SEMESTER 1 (FALL)</b>		<b>18</b>	<b>0</b>		<b>36</b>
M 100	Prof, Div, and Academic Success	1			
ENG 101	Academic Writing & Research	4			
MA 121	Elements of Calculus	3			
XXX XXX	Natural Science	4			
EC 201	Principles of Microeconomics	3			
FLS 201	Intermediate Spanish	3			
<b>SEMESTER 2 (SPRING)</b>		<b>19</b>	<b>0</b>		<b>38</b>
MA 114	Finite Math	3			
MIE 201	Intro to Business Processes	3			
EC 202	Macroeconomics	3			
FLS 202	Intermediate Spanish II (FE)	3			
ACC 200	Intro. to Managerial Accounting	3			
PSY 200	Introduction to Psychology	3			
HES XXX	PE – Fitness & Wellness	1			
<b>SUMMER YEAR 1</b>		<b>5</b>	<b>0</b>		<b>10</b>
HES XXX	PE – Fitness Elective	1			
ACC 210	Concepts of Financial Accounting	3			
MIE 305	Legal and Regulatory Environment	1			
<b>YEAR 2 (NC STATE)</b>					
<b>SEMESTER 3( FALL)</b>		<b>18</b>	<b>0</b>		<b>30</b>
XXX XXX	Natural Science	3			
FLS 3**	Advanced Spanish (HUM)	3			
BUS 350	Economic & Business Statistics	3			
BUS 360	Marketing Methods	3			
IS 200	Intro to Int'l Studies (AB)	3			
BUS 320	Financial Management	3			
<b>SEMESTER 4 (SPRING)</b>		<b>18</b>	<b>0</b>		<b>30</b>
ENG 332	Advanced Writing	3			
MIE 335	Organizational Behavior (IP)	3			
COM 110	Communication/Speech	3			
FLS 3**	Advanced Spanish (FE)	3			
BUS 426	International Finance (FE or Conc.)	3			
BUS 464	International Marketing (FE or Conc.)	3			
<b>SUMMER YEAR 2</b>		<b>3</b>	<b>0</b>		<b>5</b>
M 399	US Internship (10 weeks) (FE)	3			
<b>YEAR 3 (ICADE)</b>					
<b>NCSU COURSE</b>	<b>NCSU COURSE TITLE EQUIVILENCY</b>	<b>NC STATE CREDITS</b>	<b>NON NC STATE CREDITS</b>	<b>ICADE COURSE TITLE</b>	<b>ECTS CR.</b>
<b>SEMESTER 5 ( FALL)</b>		<b>12</b>	<b>3</b>		<b>30</b>
BUS 420	Financial Management of Corporations (FE or Conc.)	3		Corporate Finance	6
BUS 462	Marketing Research (FE or Conc.)	3		Market Research	6
EC 348	International Economics (FE )	0	3	International Macroeconomics (Theory of International Economics)	6
BUS 48*	Free Elective	3		Strategic Analysis	6
BUS 340	Information Systems Mgt.	3		Management of Information Systems	6
<b>SEMESTER 6 (SPRING)</b>		<b>15</b>	<b>0</b>		<b>30</b>
EC 404	Finance Concentration or Free Elective	3		Financial Markets	6
BUS 468	Marketing Strategy (FE or Conc.)	3		Marketing Management (Marketing Planning and Management)	6
BUS 480	Business Policy and Strategy	3		Business Strategies	6
MIE 330	Human Resource Management	3		Human Resources Management (Human Resources)	6
BUS 370	Operations and Supply Chain Management	3		Operations Management	6
<b>YEAR 4 (UCSC)</b>					
<b>SEMESTER 7 (FALL)</b>		<b>0</b>	<b>6</b>		<b>18</b>
M 399	Internship (FE)		6	Internships	18
<b>SEMESTER 8 (SPRING)</b>		<b>12</b>	<b>3</b>		<b>30</b>
PHI 214	Business Ethics	3		Ethics, Social Responsibility (and the Company)	6
EC ***	Free Elective		3	International Political Economy	6
BUS 4**	Concentration Class	3		Elective I	6
BUS 4**	Concentration Class	3		Elective II	6
BUS 4**	Free Elective or Conc. Course	3		Final Project	6
<b>TOTAL CREDIT HOURS APPLIED TO NCSU DEGREE</b>		<b>120</b>			<b>108</b>
<b>TOTAL CREDITS TAKEN AT ICADE NOT APPLIED TO NC STATE DEGREE</b>			<b>12</b>	<b>TOTAL CREDITS FOR ICADE DEGREE</b>	<b>252</b>

**Course Equivalencies: Comillas-ICADE to NC State – International Business Dual Degree Program - 2016, January**

<b>YEAR 1 (ICADE)</b>				
<b>NCSU COURSE</b>	<b>NCSU COURSE TITLE EQUIVILENCY</b>	<b>NC STATE CREDITS</b>	<b>NON NC STATE CREDITS</b>	<b>ICADE COURSE TITLE</b>
<b>SEMESTER 1 (FALL)</b>		<b>13</b>	<b>3</b>	<b>YEAR 1 SEMESTER 1</b>
MIE 201	Introduction to Business Processes	3		Introduction to Business
MIE ***	Free Elective	3		Business Law
TR ***	Free Elective		1.5	Professional Skills
TR ***	Interdisciplinary Perspective		1.5	Chistianism & Social Ethics
MA 114	Finite Math	3		Business Math I (Math for Business I)
ENG 101	Academic Writing & Research	4		Languages I (English for Business Students I)
<b>SEMESTER 2 (SPRING)</b>		<b>12</b>	<b>3</b>	<b>YEAR 1 SEMESTER 2</b>
EC 201	Principles of Microeconomics	3		Microeconomics
ACC 210	Concepts of Financial Accounting	3		Introduction to Accounting
TR ***	Free Elective		1.5	Professional Skills
TR ***	Interdisciplinary Perspective		1.5	Chistianism & Social Ethics
MA 121	Elements of Calculus	3		Business Math II (Math for Business II)
COM 110	Communication/Speech ???	3		Languages II (English for Business Students II)
<b>YEAR 2 (ICADE)</b>				
<b>SEMESTER 3 (FALL)</b>		<b>15</b>	<b>0</b>	<b>YEAR 2 SEMESTER 1</b>
BUS 360	Marketing Methods	3		Introduction to Marketing
MA ***	Free Elective (FE)	3		Financial Mathematics
ACC 310	Intermediate Financial Accounting I (FE)	3		Financial Accounting
ST ***	Economic & Business Statistics	3		Business Statistics Statistics for Business Administration I)
EC 202	Macroeconomics	3		Macroeconomics
<b>SEMESTER 4 (SPRING)</b>		<b>15</b>	<b>0</b>	<b>YEAR 2 SEMESTER 2</b>
BUS 350	Introduction to Statistics II	3		Quantitative Methods for Economic and Business Purposes (Statistics for Business Administration II)
BUS 320	Financial Management	3		Introduction to Finance (Introduction to Corporate Finance)
ACC 200	Intro. to Managerial Accounting	3		Managerial Accounting
MIE 335	Organizational Behavior (AB)	3		Organizational Behavior
M 399	Internship (FE)	3		Elective Internship
<b>YEAR 3 (NC STATE)</b>				
<b>NCSU COURSE</b>	<b>NCSU COURSE TITLE</b>	<b>NC STATE CREDITS</b>	<b>NON NC STATE CREDITS</b>	<b>ICADE COURSE EQUIVILENCY</b>
<b>SEMESTER 5 ( FALL)</b>		<b>16</b>	<b>0</b>	<b>YEAR 3 SEMESTER 1</b>
M 100	Prof, Div, and Academic Success	1		NC State Regional Basket
PHI 214	Business Ethics	3		Ethics and Social Responsibility
MIE 330	Human Resource Management	3		Human Resource Management
BUS 370	Supply Chain Management	3		Operations management (Elective)
PSY 200	Introduction to Psychology	3		Consumer Behavior (Elective)
ENG 332	Advanced Writing	3		NC State Regional Basket
<b>SEMESTER 6 (SPRING)</b>		<b>17</b>	<b>0</b>	<b>YEAR 3 SEMESTER 2</b>
XXX XXX	Natural Science	4		NC State Regional Basket
BUS 340	Information Systems Management	3		Management Information Systems (Elective)
HSEF ***	Fitness and Wellness	1		NC State Regional Basket
BUS 422	Investment and Portfolio Management (Finance Conc)	3		Financial Markets
EC 348	Introduction to International Economics (FE)	3		International Macroeconomics
BUS 464	Marketing Research (Marketing Conc)	3		Marketing Research
<b>SUMMER YEAR 3</b>		<b>3</b>	<b>0</b>	<b>YEAR 3 SUMMER</b>
M 399	Internship (FE)	3		Internship ( Elective )
<b>YEAR 4 (NC STATE)</b>				
<b>SEMESTER 7 (FALL)</b>		<b>15</b>	<b>0</b>	<b>YEAR 4 SEMESTER 1</b>
BUS 420	Financial Management of Corporations (Finance Conc.)	3		Corporate Finance
*** ***	Natural Science	3		NC State Regional Basket
BUS 468	Marketing Strategy (Marketing Conc)	3		Strategic Analysis
BUS 46*	Concentration Course (Finance or Marketing)	3		Elective 1 (Itinerary Marketing or Finance)
MIE 305	Legal & Regulatory Environment	3		Labor relations and Social Security (Elective)
<b>SEMESTER 8 (SPRING)</b>		<b>16</b>	<b>0</b>	<b>YEAR 4 SEMESTER 2</b>
HSE ***	Fitness Elective	1		NC State Regional Basket
MIE 480	Business Policy & Strategy	3		Business Strategies
BUS 46*	Marketing Class (students can pick from the list to the right)	3		Marketing Management (BUS 461 - Services Marketing; BUS 464 - International Marketing; BUS 465 Integrated Marketing Communication Management; BUS 466 Personal Selling; BUS 467 - Product and Brand Management)
EC 377	The Political Economy of the Market Process	3		International Political Economy
BUS 4**	Concentration Course (Finance or Marketing)	3		Elective 2 (from previous Itinerary Marketing or Finance)
M 298	Free Elective - topic related to concentration counts towards concentration?	3		Final Project (Done at ICADE and directed by an ICADE Professor)