

Graduate Council Curriculum Committee
October 7, 2015
3:00 p.m., 146 Colbourn Hall

Agenda

1. Welcome and call to order
2. Approval of the minutes from the last meeting
3. Revisions to the Structure and Geotech. Engr. track in the MS Civil Engineering program, CECS
4. Program Recommendation Forms – add a signature line for the Graduate Faculty Program Director. Discussion item
5. Lab fees with no details – discussion item
6. Course continuation for courses that have not been taught for 5 or more years - discussion item
7. Courses and special topics
8. Adjournment

Members of the Graduate Council Curriculum Committee

Deborah Breiter, Chair, RCHM
Charles Kelliher, CBA
Claire Knox, COHPA
Elsie Olan, CEHP
Wanda Raimundi-Ortiz, CAH
Jennifer Sandoval, COS
Art Weeks, CECS
Diane Andrews, CON
Steven Ebert, COM
Shuo “Sean” Pang, COP
Terrie Sypolt, LIB
Andrea Pulido, GSA
John Weishampel, CGS Liaison



Program Recommendation Form - REVISIONS ONLY

This form is to be used to **REVISE** degree programs, tracks, or certificate programs. If there are changes to a program and the changes will also affect the program tracks, one form may be used for both the program and the track(s).

Please refer to the Graduate Council Curriculum Meeting Schedule for submission deadlines.

Checklist of items to be attached with completed form:

- Complete and current Graduate Catalog copy (www.graduatecatalog.ucf.edu), including description, curriculum, contact information, application requirements, and application deadlines. Use Track Changes in Word to show revisions.
- A list of faculty who will participate in the program, track or certificate and their credentials.
- All course action requests that will be needed to implement the curriculum changes.
- If applicable, a written agreement from all involved units that they are in support of the revisions.

College/Unit(s) Submitting Proposal: _____

Proposed Effective Term/Year: _____

Unit(s) Housing Program: _____

Name of program, track and/or certificate: _____

Please check all that apply: This action affects a: Program Track Certificate

If the revision applies to multiple tracks, please list them here:

Brief description of **program and rationale** of the revision: **Do not add complete catalog copy here.**

Briefly list curriculum changes in bullet format. If there are changes to the credit hours of the program, required courses or other requirements, please state those changes. **Remember to attach the catalog copy showing changes, using Track Changes in Word.**

Name Change

Are you changing the name of an existing program, track, or certificate? Yes No

If yes, provide the new name of the program, track, or certificate: _____

A proposed name change will apply to the record of all students who are currently enrolled, readmitted or newly admitted into this program as of the effective date of this change.

Impact on Current Students

Will students be moved from an existing program, track, or certificate into this new program, track, or certificate? Yes No

If yes, state the name of the program or track where students are currently enrolled and attach a list of students if possible:

Will students have the option to stay in their existing program, track, or certificate? Yes No

If yes, how will current students be impacted by this change?

If there are substantial revisions, please complete the following table on financial support: (Specify all forms of support – assistantships, fellowships, and tuition remission.)

	Number of assistantship students	Source of funds	Number of fellowship students (specify fellowship)	Number of tuition remissions	Source of funds
Year 1					
Year 2					
Year 3					

Signature Page

Recommend Approval (all approval levels must be signed)

Department Chair (Print) _____ (Signature) _____ Date _____
/Director

College Academic (Print) _____ (Signature) _____ Date _____
Standards

College Dean (Print) _____ (Signature) _____ Date _____

Graduate Council (Print) _____ (Signature) _____ Date _____

Graduate Dean (Print) _____ (Signature) _____ Date _____

Approval

Provost and Executive Vice President: _____ Date _____

Distribution: After approval is received from the Provost, distribution will be to:

Department(s); College; Registrar; Associate Registrar; Institutional Knowledge Management; Academic Services; College of Graduate Studies

Prepared by: Andrew A Randall

Date: 7/15/2015

Here are the proposed changes to the catalog should the changes to the MSCE Structures and Geotechnical Track be accepted:

CURRICULUM

The department offers a Structural and Geotechnical Engineering track in the Civil Engineering MS program to students with appropriate science or engineering baccalaureate backgrounds. Both a thesis option and a nonthesis option are available with each requiring 30 credit hours. The thesis option requires 12 credit hours of required courses, 12 credit hours of elective graduate course work (exclusive of thesis and research), and 6 credit hours of thesis. The nonthesis option requires 12 credit hours of required courses and 18 credit hours of elective graduate course work. The nonthesis option also requires a comprehensive final examination. The student must develop an individual program of study with a faculty adviser and must have background or articulation course work as described below. At least one-half of the required credits must be taken at the 6000 level.

Total Credit Hours Required:

30 Credit Hours Minimum beyond the Bachelor's Degree

Research studies or projects are required in one or more courses. The research study or project will focus on reviewing and analyzing contemporary research or engineering issues in a student's particular specialization within the profession in order to help students acquire knowledge and skills pertaining to research-based best practices in that specialization area.

Prerequisites (Articulation)

- EGN 3310 Engineering Analysis—Statics (3 credit hours)
- EGN 3321 Engineering Analysis—Dynamics (3 credit hours)
- EGN 3331 Mechanics of Materials (3 credit hours)
- CEG 4011C Geotechnical Engineering I (4 credit hours)
- CES 4100 Structural Analysis (4 credit hours)
- CES 4605 Steel Structures (3 credit hours) OR CES 4702 Reinforced Concrete Structures (3 credit hours)

Required Courses—12 Credit Hours

Both thesis and nonthesis students must choose two courses from each of the two following groups. Courses with asterisks represent those with specific independent learning experiences and all nonthesis students must choose at least one of the courses with an asterisk.

Geotechnical Engineering

- CEG 5700 Geo-Environmental Engineering* (3 credit hours)
- CEG 6065 Soil Dynamics (3 credit hours)
- CEG 6115 Foundation Engineering* (3 credit hours)
- CEG 6317 Advanced Geotechnical Engineering (3 credit hours)
- CES 6170 Boundary Element Methods in Civil Engineering* (3 credit hours)
- ~~TTE 5835 Pavement Engineering Design (3 credit hours)~~
- CGN 5506C Asphalt Concrete Materials (3 credit hours)

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Structural Engineering

- CES 5144 Matrix Methods for Structural Analysis (3 credit hours)
- CES 5325 Bridge Engineering (3 credit hours)
- CES 5606 Advanced Steel Structures* (3 credit hours)
- CES 5706 Advanced Reinforced Concrete* (3 credit hours)
- CES 5821 Masonry and Timber Design (3 credit hours)
- CES 6010 Structural Reliability (3 credit hours)
- CES 6116 Finite Element Structural Analysis (3 credit hours)
- CES 6209 Dynamics of Structures (3 credit hours)
- CES 6220 Wind and Earthquake Engineering (3 credit hours)
- CES 6230 Advanced Structural Mechanics (3 credit hours)
- CES 6527 Nonlinear Structural Analysis (3 credit hours)
- CES 6715 Prestressed Concrete Structures* (3 credit hours)
- CES 6840 Composite Steel Concrete Structures* (3 credit hours)
- CES 6910 Research in Structural Engineering (3 credit hours)

Elective Courses—12 Credit Hours

All students, both thesis and nonthesis, must complete at least 12 credit hours of approved electives (primarily from the above two groups but also from the list below or other courses as approved by the student's adviser; ~~CGN 5506C, Asphalt Concrete Mix Design, is also suggested~~). Please note that Directed Research (XXX 6918) is not permitted in the MS program of study.

Construction Engineering and Management

- CCE 5205 Decision Support for Infrastructure Projects (3 credit hours)
- CCE 5006 Infrastructure Systems Management (3 credit hours)
- CCE 5220 Green Design and Construction (3 credit hours)
- CCE 5937 Construction Contracts (3 credit hours)
- CCE 6036 Advanced Construction Planning and Control* (3 credit hours)
- CCE 6211 Design and Monitoring of Construction Processes (3 credit hours)
- CCE 6045 Cost Analysis of Sustainable Infrastructure Systems (3 credit hours)



Course Action Request Form

Course Addition
 Course Revision
 Course Deletion

Forward to your college office

Course Information NOTE: *Course additions and course revisions must be accompanied by a course syllabus and rationale. Note: Departments must also submit an electronic syllabus to the college curriculum person.*

College: CECS Department: CECE
 Department Chair: Mohamed Abdel-Aty Phone: 3-1374
 Academic Affairs Approved Instructor: Kelly Kibler

Course Prefix	Number	Title	Credit Hours Ex: 3(3.0)
CWR	6xxx	Ecohydraulics	3
New or Proposed Revision			

30 Char. Abbreviation: Ecohydraulics

Course Description (25 word limit):

To support sustainable and multi-objective management of rivers, shorelines and aquatic resources, this course investigates fundamental linkages between physical processes and ecological responses in engineered and natural systems.

Will lab fees be charged? Yes No

Repeat for credit? Yes No If yes, indicate the total times this course may be used in the degree program. _____

Repeat within same semester? Yes No

NOTE: For a repeatable course, indicate in the syllabus what will remain the same and what will change when the course is repeated. Also indicate who approves content before a course is repeated.

Prerequisite(s) and/or Corequisite(s): CWR 5834 OR Admission to the M.S. in Biology, Ph.D. in Conservation Biology, or Certificate in Conservation Biology OR C.I. _____ Graded S/U? Yes No

Split-Level Class: Yes No

If offering a split-level class, complete this section even if it had been approved earlier for individual delivery.

List undergraduate split-level course: _____

NOTE: *Both the graduate and the undergraduate split-level syllabi must be approved through the established university process for approving courses so that there are two separate and complete syllabi for each course. The graduate syllabus should clearly demonstrate more advanced subject matter, expectations, and rigor. Attach both undergraduate and graduate syllabi to this form.*

Term of Offering

When will course be offered?

- Odd Fall
 Odd Spring
 Odd Summer
 Every Semester
 Even Fall
 Even Spring
 Even Summer
 Occasional

Intended Utilization of Course

The course will be used primarily as:

- Required Courses
 Elective Courses

Justification for Course Addition or Course Revision

What is the rationale for adding/changing this course?

Coupled physical-ecological processes operating at multiple scales influence the engineering of water resources. Sustainable engineering design pertaining to water must therefore account for the interaction of physical and biological variables. There currently is no course offered, within CECE or at the University, that integrates content from river or coastal engineering with biological sciences.

What majors require or recommend this course for graduation? CECE, BIOL

If not a major requirement, what will be the source of students? water resources and biology graduate students

What is the estimated annual enrollment? 10-15 students every other year. Based on interest of faculty who will suggest this course to students, I estimate 8-10 students from CECE and 3-5 from Biology.

Possible duplications and conflicts with other departments or colleges should be discussed with appropriate parties. Please detail discussion you have had.

I have discussed this prospective course and its content with the Chair and faculty of the Biology department, as well as Water Resources faculty in CECE in order to detect possible duplication of content with existing courses. The content of the proposed course is not covered in any other course currently taught at UCF.

Justification for Course Deletion

Is this course a required course for graduation in a major or prerequisite? Yes No

If yes, have the involved major departments been informed, in writing, of proposed deletion? Yes No

If not, explain: Course Description (25 word limit):

[Empty box for course description]

Notes:

[Empty box for notes]

Approval Signatures

Department Chair *Andrew A. Karsch* Date 9/17/18

College Academic Standards *M. Bar* Date 9/21/15

College Dean *Charles H. Jolly* Date 9/21/18

Graduate Council _____ Date _____

Graduate Dean _____ Date _____

ECOHYDRAULICS (CWR 6xxx)

Spring 2016

COURSE INFORMATION

Lecture: MW 13:30 – 14:45, BA 216A; 3 credit hours

Instructor: Dr. Kelly Kibler

office: Engr II, 442H | phone: (407) 823-4150 | email: kelly.kibler@ucf.edu

Office Hours: TBD

Prerequisites: CWR 5634 or Admission to the M.S. in Biology, Ph.D. in Conservation Biology, or Certificate in Conservation Biology or consent of the instructor

DEFINITION:

Ecohydraulics is the interdisciplinary study of coupled physical and ecological processes in aquatic ecosystems. To support sustainable and multi-objective management of rivers and aquatic resources, this course investigates fundamental linkages between physical processes and ecological responses in engineered and natural systems.

OBJECTIVE:

The objective of this course is to introduce theory and applications of integrated physical and biological variables in aquatic systems, including rivers, estuaries, wetlands, and the nearshore.

COURSE MATERIALS:

Readings consist of primary peer-reviewed literature, which should be read in advance of literature discussions.

1. Grant, G. E., Schmidt, J. C., & Lewis, S. L. (2003). A geological framework for interpreting downstream effects of dams on rivers. *Water Science and Application*, 7, 209-225.
2. Hart, D. D., & Finelli, C. M. (1999). Physical-biological coupling in streams: the pervasive effects of flow on benthic organisms. *Annual Review of Ecology and Systematics*, 363-395.
3. Kondolf, G. M., Boulton, A. J., O'Daniel, S., Poole, G. C., Rahel, F. J., Stanley, E. H., Wohl, E., Bång, A., Carlstrom, J., Cristoni, C., Huber, H., Koljonen, S., Louhi, P. & Nakamura, K. (2006). Process-based ecological river restoration: visualizing three-dimensional connectivity and dynamic vectors to recover lost linkages. *Ecology and Society*, 11(2), 5.
4. Lake, P. S. (2000). Disturbance, patchiness, and diversity in streams. *Journal of the North American Benthological Society*, 19(4), 573-592.
5. Lorang, M. S., & Hauer, F. R. (2003). Flow competence and streambed stability: an evaluation of technique and application. *Journal of the North American Benthological Society*, 22(4), 475-491.
6. Montgomery, D. R., & Buffington, J. M. (1997). Channel-reach morphology in mountain drainage basins. *Geological Society of America Bulletin*, 109(5), 596-611.
7. Nakano, S., & Murakami, M. (2001). Reciprocal subsidies: dynamic interdependence between terrestrial and aquatic food webs. *Proceedings of the National Academy of Sciences*, 98(1), 166-170.
8. Palmer, M. A. (2010). Water resources: beyond infrastructure. *Nature*, 467(7315), 534-535.
9. Poff, N. L., Allan, J. D., Bain, M. B., Karr, J. R., Prestegard, K. L., Richter, B. D., ... & Stromberg, J. C. (1997). The natural flow regime. *BioScience*, 769-784.

10. Richter, B. D., Baumgartner, J. V., Wigington, R., & Braun, D. P. (1997). How much water does a river need? *Freshwater biology*, 37(1), 231-249.
11. Schmidt, J. C., & Wilcock, P. R. (2008). Metrics for assessing the downstream effects of dams. *Water Resources Research*, 44(4).
12. Townsend, C. R., Scarsbrook, M. R., & Dolédec, S. (1997). The intermediate disturbance hypothesis, refugia, and biodiversity in streams. *Limnology and oceanography*, 42(5), 938-949.
13. Vörösmarty, C. J., McIntyre, P. B., Gessner, M. O., Dudgeon, D., Prusevich, A., Green, P., Glidden, S., Bunn, S.E., Sullivan, C.A., Reidy Liermann, C., & Davies, P. M. (2010). Global threats to human water security and river biodiversity. *Nature*, 467(7315), 555-561.
14. Wolman, M. G., & Miller, J. P. (1960). Magnitude and frequency of forces in geomorphic processes. *The Journal of Geology*, 54-74.

Supplemental texts:

- Ecohydraulics: an integrated approach*. Maddock, I., Harby, A., Kemp, P., & Wood, P. J. (2013). John Wiley & Sons.
- Stream ecology: structure and function of running waters*. Allan, J. D., & Castillo, M. M. (2007). Springer Science & Business Media.
- Life in moving fluids: the physical biology of flow*. Vogel, S. (1996). Princeton University Press.

PROCEDURE

Readings consist of primary literature, which should be read in advance of class. We will discuss assigned readings, with one student assigned to lead each literature discussion. Material covered in lecture is not necessarily restricted to that presented in the readings. Rather, the readings are selected to provide depth to subjects covered in lecture.

Cheating, plagiarism, copying, or assisting another student in these activities is not tolerated and will result in disciplinary action, as per the UCF student Catalog and the Golden Rule Handbook.

EVALUATION

Problem sets and term paper	30%
Literature discussions and participation	25%
Final exam	45%
Total:	100%

SCHEDULE (tentative)

Week	Date	Content	Reading
1	Jan 12	Introduction to Ecohydraulics	Palmer 2010; Vörösmarty et al. 2010
	Jan 14	Dynamic equilibrium of rivers	Leopold, Wolman, Miller, 1995
2	Jan 21	Effective discharges for geomorphic work	Wolman and Miller, 1960 (in particular pages 54-60, 65-67 and 70-73)
3	Jan 26	Physical aquatic habitat of lotic ecosystems	Montgomery and Buffington, 1997
	Jan 28	Physical habitat of lentic ecosystems	Wetzel, 2001
4	Feb 2	Aquatic organisms and hydraulic habitat	Hart and Finelli, 1999
	Feb 4	Specialized use of hydraulic habitats by aquatic organisms	
5	Feb 9	Natural flow regimes	Poff et al., 1997
	Feb 11	Hydrologic alteration	Postel and Richter, 2003
6	Feb 16	Flow restoration and environmental flows	Richter et al. 1997
	Feb 18	Analysis of flow alteration with IHA	IHA manual
7	Feb 23	Aquatic-terrestrial ecosystem linkages	Nakano and Murakami, 2001
	Feb 25	Aquatic-terrestrial ecosystem linkages	film RiverWebs
8	Mar 2	Hydrologic processes and ecosystem disturbance	Lake, 2000
	Mar 4	Ecosystem disturbance	Townsend et al, 1997
9	Spring break		
10	Mar 16	Flow competence vs. transport capacity	Lorang and Hauer, 1999
	Mar 18	Hydrogeomorphic interaction	Grant et al., 2003
11	Mar 23	Response to coupled flow and sediment alteration	Schmidt and Wilcock, 2005
	Mar 25	Reservoir sediment management	Sumi et al., 2013
12	Mar 30	Hydraulics of fish passage	
	Apr 1	Estuaries, salt marsh, deltas and hydrogeomorphic alteration	
13	Apr 6	Ecosystem services of aquatic ecosystems	Millenium Ecosystem Assessment
	Apr 8	River and wetland restoration	Palmer et al., 2013; Kondolf et al. 2006
14	Apr 13	Restoring longitudinal connectivity	Elwha studies
	Apr 15	Water resources development and ecological alteration	Gleick, 2003
15	Apr 20	Project Presentations	
	Apr 22	Project Presentations	
16	Apr 27	Review	
17	TBD		Final exam

Holidays: Martin Luther King Day January 19; Spring Break March 9-13

Paul Edlen

From: Kelly Kibler
Sent: Thursday, September 17, 2015 3:54 PM
To: Paul Edlen
Cc: Andrew Randall
Subject: FW: proposed new course for CECE- Ecohydraulics

Dear Paul,

I am sending correspondence from the Chair of Biology regarding the proposed Ecohydraulics course.

I hope this is helpful to the curriculum committee.

Thank you,
Kelly Kibler

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Kelly Kibler
Assistant Professor
Water Resources Engineering

University of Central Florida
Department of Civil, Env. & Const. Engineering
office: Engineering II, 442H
Tel: +1 (407) 823-4150 | Fax: +1 (407) 823-3315
kelly.kibler@ucf.edu

From: Graham Worthy
Sent: Thursday, September 17, 2015 3:51 PM
To: Kelly Kibler <Kelly.Kibler@ucf.edu>
Subject: Re: proposed new course for CECE- Ecohydraulics

Hi Kelly

I don't see any issues with course content and possible duplication of content with current Biology courses. I also feel that as we continue to expand our capacity in riverine and coastal systems there will eventually be a contingent of biology graduate students who would take this class.

I look forward to seeing it approved.

Cheers, Graham

Graham A.J. Worthy, Ph.D.

Department Chair, Provost's Distinguished Research Professor of Biology,
Hubbs-Sea World Endowed Professor of Marine Mammalogy, and
Director, Physiological Ecology and Bioenergetics Lab

Department of Biology, University of Central Florida,
4110 Libra Dr., Room BIO302A
Orlando FL 32816-2368

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<http://worthy.cos.ucf.edu/PEBL/>

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407-823-5769 fax
skype: graham.worthy

"Wise men talk because they have something to say; fools, because they have to say something" Plato

On 9/16/2015 9:08 AM, Kelly Kibler wrote:

Dear Graham,

Last spring I mentioned to you that I was proposing to develop a new course that I thought may be of interest to some Biology students. At that time, you and I discussed potential areas of overlap between the proposed course (Ecohydraulics) and courses covering freshwater ecology in Biology. If I remember correctly, our conclusion was that there would be little redundancy. I remember you mentioned that the BIO stream ecology course on the books has not been taught since you have been at UCF, 15 years or so?

I am now preparing to teach Ecohydraulics this Spring as a Special Topics, if the course is approved. For the graduate committee, I was hoping you might be able to comment on 1) the potential for this course to be redundant with content offered in Biology courses, and 2) to what extent you believe graduate students in Biology would be interested to participate. I have attached a tentative syllabus for your information.

Thank you!

Kelly

--

Kelly Kibler
Assistant Professor
Water Resources Engineering

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University of Central Florida
Department of Mechanical & Aerospace Engineering
EAS/EML 5xxx – Smart & Adaptive Structures
Term

Instructor

Prof. Jeffrey L. Kauffman
ENG1 313 | JLKauffman@ucf.edu | 407.823.0370 | OH:

Lecture

Kauffman Day / Time / Room / Course Code

Course Description

Modeling and design of smart and adaptive structures via integration of active materials: piezoelectric ceramics and polymers, shape memory alloys and polymers, magneto- / electro-rheological fluids, magneto- / electro-strictive materials. Inherently multi-stable structures. 3(3,0)

Course Objectives

Upon successful completion of this course, students will understand the fundamental coupled behavior inherent to a variety of active materials and be prepared for further study and research incorporating those materials into functional structures. Students will be able to design adaptive structures for mechanical and aerospace engineering applications that exploit these coupled behaviors. Students will also use theoretical and phenomenological models to simulate, predict, and analyze the resulting coupled response. Finally, students will complete a more in-depth project on an appropriate topic related to their direct interest and present their results to the class.

Prerequisites

- 1) EGN 3365 (Structure and Properties of Materials) or EMA 3706 (Structure and Properties of Aerospace Materials)
 - 2) EML 4225 (Introduction to Vibrations & Controls)
 - 3) EAS 4200 (Analysis & Design of Aerospace Structures) or EML 3500 (Machine Design)
- Or Consent of the Instructor

Required Text

Leo DJ (2007) *Engineering Analysis of Smart Material Systems*, Wiley. ISBN 9780471684770

Suggested Texts

Watanabe K, Ziegler F (2003) *Dynamics of Advanced Materials and Smart Structures*, Springer Netherlands. ISBN 9781402010613

Janocha H (2007) *Adaptronics and Smart Structures*, Springer-Verlag. ISBN 9783540719656

Irschik H, Krommer M, Watanabe K, Furukawa T (2010) *Mechanics and Model-Based Control of Smart Materials and Structures*, Springer-Verlag. ISBN 9783211994832

Srinivasan AV, McFarland DM (2000) *Smart Structures: Analysis and Design*, Cambridge University Press. ISBN 9780201612943

Computer Use

Students should check webcourses regularly and use it for messaging in lieu of Knights email. Homework, projects, and exams will require use of a computer; access to and familiarity with mathematics software will be particularly beneficial. In those cases, sample Matlab code and limited instruction will be provided.

Grading

Grades will be updated and available online. Weighting: 25% homework, 25% midterm exam, 25% final exam, 15% project / paper, and 10% article reviews.

Standard Exam Info, Grade Scale, Accessibility, etc. language

Tentative Schedule

Week	Topic
1	Overview of Adaptive Structures, Materials
2	Piezoelectric Materials, Equations
3	Piezo: Integration & Modeling
4	Piezo: Shunt Circuitry & Actuation
5	Piezo: Electromechanical Finite Element
6	Shape Memory Alloys, Phase Changes
7	SMA's: Integration & Modeling
8	Shape Memory Polymers
9	Magneto / Electrorheological Fluids
10	Magneto- / Electro-strictive Materials
11	Electro-active Polymers, Dielectric Elastomers
12	Bio-Inspired Systems Intro
13	Multi-stable Systems
14	Individual / Group Topic Presentations

This syllabus is subject to change; all modifications will be announced in class and reflected on the syllabus posted on the course website.

in operations research for a variety of applications such as scheduling, resource allocation, planning of facilities etc. In this course we will demonstrate another use of optimization, that of analyzing data. Basic optimization theory and popular data analysis algorithms from an optimization point of view. *Occasional*.

Abbrev: (23 of 30 chars) DM Apps of Optimization

Discussion with others: Comments were requested from Computer Science ("CS has no objections to this course" email from Dr. Gary Leavens, 3/30/2015 8:47 am) and Statistics.

EML 5937 **ECS-MECH/AERO** **3(3,0)**
Smart and Adaptive Structures: PR: (EAS 4200 or EML 3500) and EML 4225 and (EGN 3365 or EMA 3706) or C.I. Modeling and design of structures with integrated active materials: piezoelectric ceramics and polymers, shape memory alloys and polymer, magneto- / electro-rheological fluids, magneto- / electro-strictives. Multi-stable structures. *Occasional*.
Abbrev: (29 of 30 chars) Smart and Adaptive Structures
Discussion with others: Discussed with Materials Science with no objections indicated.

3. Course Revisions

College of Engineering and Computer Science Course Revisions

CGN 5506C **Asphalt Concrete Mix Design** **3(2,2)**
Advanced Pavement and Civil Engineering Materials **3(3,0)**
CGN 5506

PR: CGN 3501C, CEG 4011C.

Properties Pavement and civil engineering materials such as aggregate, Portland cement, and concrete. In addition, mechanics, modeling, analysis, and design of asphalt, aggregate and asphalt mixtures, Marshall mix design, Hveem mix design, pavement rehabilitation. those materials will be included.

Abbrev (27 of 30): ~~Asphalt Concrete Mix Design Adv Pavement & CE Materials~~

Discussion with others: No other departments currently offer graduate courses related to pavement and civil engineering materials. This course is unique at UCF. Thus, no duplication and no conflict are expected

Rationale: The current course name only describes the mixing procedure of asphalt concrete. However, understanding of aggregate and asphalt binder materials are prerequisite. The mixing design only takes 1/3 semester. Furthermore, asphalt concrete mixing is too specific and its benefit is limited to highway agency employees and related engineers. Understanding of mechanics, characterization, and modeling of other pavement/civil eng. materials is much beneficial to graduate students and critical to their success after graduation. Most graduate students in CECE dept may take this course.

TTE 5835 **Pavement Design** **3(3,0)**
Pavement Engineering

PR: EGN 3331, CGN 3501C, CEG 4011C.

Pavement types, wheel loads, stresses in pavement components; design factors such as traffic configurations, environment, materials, analysis, evaluation, and economy. management will be included to the current material. Thus, "Pavement Engineering" would be a proper course name.

Term Offered: ~~Occasional~~ Odd Fall

Discussion with others: No other departments currently offer pavement related course. This course is unique at UCF. Thus, no duplications and conflicts are expected.

Rationale: Pavement design is a small portion of pavement engineering. Also, in order to do pavement design, understanding of materials, analysis, evaluation, rehab, management, etc. is essential. More than half semester, this course teaches those prerequisite background.

Therefore, the course name should be broader and "Pavement Engineering" is more appropriate.

Majors taking course: Structural and Geotech, Transportation

College of Graduate Studies Course Revisions

IDS 6308 **Ways of Knowing** **3(3,0)**

PR: Admission to the ~~Master's program in Liberal Studies~~. M.A./M.S. Interdisciplinary Studies programs.

Theoretical models of knowledge as exemplified by various disciplines and interdisciplinary activity. Focus on epistemological issues raised in ~~part~~ past and present works.

Term Offered: ~~Fall~~ Even Spring

Discussion with others: None.

Rationale: The prerequisite is moving from Admission to Liberal Studies to Admission to Interdisciplinary Studies as the Liberal Studies program no longer exists. Course is not being restricted to IDS students only. Many students could benefit from this course so it will be left as open enrollment.

Majors taking course: Interdisciplinary Studies M.A./M.S. programs

College of Sciences Course Revisions

BSC 5824 **Biogeography** **4(4,0)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I. Study of geographic variation in nature, ranging from past to present and from genes to ecosystems.

Term Offered: ~~Occasional~~ Odd Spring

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology. This will allow students in the program to be able to enroll in the courses required for their degree.

ENY 5006C **Entomology** **4(2,6)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I.

Morphology, physiology, ontogeny, behavior, ecology and population biology of insects.

Term Offered: ~~Occasional~~ Even Fall

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology. This will allow students in the program to be able to enroll in the courses required for their degree.

PAZ 5235 **Zoo and Aquarium Biology Management** **3(3,0)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I.

Conservation, propagation and exhibition of wild animals in captivity.

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology.

Discussion with others: No conflicts- existing course.

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology. This will allow students in the program to be able to enroll in the courses required for their degree.

PCB 6675C **Evolutionary Biology** **4(3,2)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I. Review of modern concepts and theories in evolutionary biology with emphasis on readings in the primary literature.

Term Offered: ~~Occasional~~ Odd Fall

Discussion with others: No conflicts- existing course.

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology. This will allow students in the program to be able to enroll in the courses required for their degree.

PCB 6677 **Molecular Evolution & Phylogenetics** **3(3,0)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I.

Advanced understanding of evolution at the molecular level based on phylogenetic analysis of changes in DNA, RNA and protein.

Term Offered: ~~Occasional~~ Even Fall

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology. This will allow students in the program to be able to enroll in the courses required for their degree.

ZOO 5456C **Ichthyology** **4(2,6)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I.

Introduction to the biology of the fishes, their classification, evolution, and life histories.

Term Offered: ~~Occasional~~ Odd Fall

Discussion with others: No conflicts- existing course.

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology. This will allow students in the program to be able to enroll in the courses required for their degree.

ZOO 5463C **Herpetology** **4(2,4)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I.

Introduction to the biology of the amphibians and reptiles, their classification, evolution, and life histories.

Discussion with others: No conflicts- existing course.

Rationale: Changing the prerequisites to include admission to the PSM in Conservation Biology. This will allow students in the program to be able to enroll in the courses required for their degree.

ZOO 5475L **Field Ornithology** **3(0,6)**

PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, ~~or~~ Certificate in Conservation Biology, PSM in Conservation Biology, or C.I.

Introduction to the identification, taxonomy, natural history, and biology of birds, with emphasis on survey techniques and systematics.

Term Offered: ~~Occasional~~ Even Fall

Discussion with others: No conflicts- existing course.

adaptations of animal organ systems. Emphasis upon maximization of fitness under given environmental conditions.

Rationale: Will offer in coming semesters with recent new faculty hires.

ZOO 5486 **COS-BIOL** **4(4,0)**

Mammalogy PR: Admission to the M.S. in Biology, Ph.D. in Conservation Biology, or Certificate in Conservation Biology, or C.I. Study of the diversity and biology of mammals from an evolutionary perspective.

Rationale: will offer in coming semesters with recent new faculty hires.

CLP 5187 **COS-PSYCH** **3(3,0) Mental**

Health and Aging PR: Graduate status or senior standing or C.I. Introduction to assessment and intervention issues, practice and research related to problems with cognitive and emotional functioning among older adults. May be repeated for credit.

Rationale: Department planning on offering course as part of cluster hires.

SYD 5517 **COS-SOC** **3(3,0)**

Environment and Society PR: Graduate standing or C.I. The application of sociological theory and methods to the relationships between communities, societies, and the environment

Rationale: Continue - possible environment concentration addition in the future.