Cover Sheet: Request 14102

ENV 4XXX Core 4: Environmental Engineering Applications

Info

Process	Course|New|Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Elliot Douglas elliot.douglas@essie.ufl.edu
Created	8/5/2019 2:09:48 PM
Updated	10/7/2019 3:16:29 PM
Description of request	This is a request for a new course as part of a major curriculum change, request number 14095.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Environmental Engineering Sciences 011910000	Chang-Yu Wu		8/5/2019
No document changes					
College	Approved	ENG - College of Engineering	Heidi Dublin	Approved by HWCOE Curriculum Committee and Faculty Council	9/23/2019
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			9/23/2019
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Course|New for request 14102

Info

Request: ENV 4XXX Core 4: Environmental Engineering Applications
Description of request: This is a request for a new course as part of a major curriculum change, request number 14095.
Submitter: Elliot Douglas elliot.douglas@essie.ufl.edu
Created: 10/7/2019 10:02:44 AM
Form version: 4

Responses

Recommended Prefix ENV
Course Level 4
Number XXX
Category of Instruction Advanced
Lab Code None
Course Title Core 4: Environmental Engineering Applications
Transcript Title Core 4: Env Eng App
Degree Type Baccalaureate

Delivery Method(s) On-Campus
Co-Listing No

Effective Term Earliest Available
Effective Year Earliest Available
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 4

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 4
Course Description Application of fundamental concepts and laws to design, assess, and predict outcomes in environmental engineering systems handling water, air, materials and ecosystems. Throughout the course, students will build knowledge base and relevant skills in topics that bridge disciplines, including statistics, thermodynamics, microbiology, and organic chemistry.
Prerequisites ENV4XXX, Core 3: Processes in Environmental Engineering
Co-requisites None
Rationale and Placement in Curriculum This is the fourth course in a new five course sequence as part of a major curriculum change. It integrates topics from environmental engineering that were previously taught across different courses.
Course Objectives At the end of this course students will be able to:
1.   Assess the output of an environmental system.
2.   Design processes for treatment of air, water, and solids.

Course Textbook(s) and/or Other Assigned Reading   AIR: Air Pollution Control: A Design Approach. C. David Cooper and F. C. Alley, 4th Edition, 2011, ISBN 1-57766-678-X.
          WATER: Water and Wastewater Treatment. Joanne E. Drinan, Frank L. Davis, Taylor and Francis, 2nd ed., 2012, 978-1-4398-5400-6
          ECO: Readings from the literature and management agencies will be provided as PDFs.
          SMM: SMM: Notes will be provided as PDFs; Compendium of Regulatory Thresholds (Target Copy); US EPA Waste Reduction Model. https://www.epa.gov/warm

Weekly Schedule of Topics Week   Core Module
1   Intro to microbiology of wastewater, wastewater characteristics and regulations. Primary treatment.
2   Biological reactors and hydraulic characteristics

3	Activated Sludge and wastewater treatment (microbial degradation of organics)
4	Biofilms (membrane reactors, trickling filters, rotating contactors), and stabilization ponds
5	Lake and river ecosystems
6	Wetland ecosystems
7	Estuarine and marine ecosystems
8	Forest ecosystems and global environmental change
9	Adsorption
10	Absorption; SO2 and CO2 emission control
11	Electrostatic precipitation
12	Particulate Filtration
13	Sustainability and materials management; Application of LCA tools
14	Materials processing and recycling
15	Biological treatment of waste

Grading Scheme Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets (8)	10 each	20%
Midterm Exam (3)	100 each	60%
Team Project	100	20%
	100%	

Instructor(s) Andreia F. Faria
David Kaplan
Timothy G Townsend
Chang-Yu Wu
Attendance & Make-up Yes
Accomodations Yes
UF Grading Policies for assigning Grade Points Yes
Course Evaluation Policy Yes

Core 4: Environmental Engineering Applications
ENV 4XXX   Section XXXX
Class Periods: TBD
Location: TBD
Academic Term: Fall 2023

Instructors:
Andreia F. Faria
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352-392-9537
Office Hours: TBD

David Kaplan
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352-392-8439
Office Hours: TBD

Timothy G Townsend
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352 392 0846
Office Hours: TBD

Chang-Yu Wu
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352-392-0845
Office Hours: TBD

Teaching Assistants:
Please contact through the Canvas website
- TBD

Course Description
4 credits. Application of fundamental concepts and laws to design, assess, and predict outcomes in environmental engineering systems handling water, air, materials and ecosystems. Throughout the course, students will build knowledge base and relevant skills in topics that bridge disciplines, including statistics, thermodynamics, microbiology, and organic chemistry.

Course Pre-Requisites / Co-Requisites
ENV4XXX, Core 3: Processes in Environmental Engineering

Course Objectives
At the end of this course students will be able to:
1. Assess the output of an environmental system.
2. Design processes for treatment of air, water, and solids.

Materials and Supply Fees
None

Professional Component (ABET):
This course provides 4 credits of engineering topics and includes a design component.

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Medium
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	High
3. An ability to communicate effectively with a range of audiences	Medium
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Low
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Low
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Medium

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not part of the course.

Required Textbooks and Software

- AIR: Air Pollution Control: A Design Approach. C. David Cooper and F. C. Alley, 4th Edition, 2011, ISBN 1-57766-678-X.
- WATER: Water and Wastewater Treatment. Joanne E. Drinan, Frank L. Davis, Taylor and Francis, 2nd ed., 2012, 978-1-4398-5400-6
- ECO: Readings from the literature and management agencies will be provided as PDFs.
- SMM: SMM: Notes will be provided as PDFs; Compendium of Regulatory Thresholds (Target Copy); US EPA Waste Reduction Model. https://www.epa.gov/warm

Course Schedule

Week	Core Module
1	Intro to microbiology of wastewater, wastewater characteristics and regulations. Primary treatment.
2	Biological reactors and hydraulic characteristics; HW 1 due
3	Activated Sludge and wastewater treatment (microbial degradation of organics); HW 2 due
4	Biofilms (membrane reactors, trickling filters, rotating contactors), and stabilization ponds; Exam 1
5	Lake and river ecosystems
6	Wetland ecosystems; HW 3 due
7	Estuarine and marine ecosystems; HW 4 due
8	Forest ecosystems and global environmental change; Exam 2
9	Adsorption
10	Absorption; SO_2 and CO_2 emission control; HW 5 due
11	Electrostatic precipitation; HW 6 due
12	Particulate Filtration

13	Sustainability and materials management; Application of LCA tools; HW 7 due
14	Materials processing and recycling; Team Project due
15	Biological treatment of waste; HW 8 due
Final Exam Week	Exam 3

Attendance Policy, Class Expectations, and Make-Up Policy

Although attendance will not be taken, attendance in class is expected, as class time may include discussion or group work. Late and homework and makeup exams will only be allowed with prior approval of the instructor in the case of non-emergencies. For emergencies or illness prior approval is not needed, but appropriate documentation is required. Excused absences must be consistent with university policies in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets (8)	10 each	20%
Exams (3)	100 each	60%
Team Project	100	20%
		100%

Homeworks: Due on Fridays at 5 PM in the weeks shown in the course schedule above.

Exams: Held on Thursdays in the weeks shown in the course schedule above, except for the last exam which will be during the assigned final exam period.

Team Project: Teams will be assigned an environmental system. Based on the provided technical requirements your team will conduct the calculations needed to specify the process parameters. The final deliverable is a technical engineering report. Grades will be based on accuracy in calculations, clarity and organization of the report, and peer assessment of each team member's contribution. The report is due at 5 PM on Friday of the week shown in the schedule above.

Grading Policy

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
• Your academic advisor or Graduate Program Coordinator
• Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
• Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
• Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources: