Cover Sheet: Request 15275

ESI4313 (Operations Research 2)

Info

Process	Course|Modify|Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Serdar Kirli kirli@ise.ufl.edu
Created	9/17/2020 2:36:16 PM
Updated	10/2/2020 9:41:38 PM
Description of request	Credit hours change to 3 (from 4) and Pre-Req Change

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Industrial and Systems Engineering 19060000	David Kaber	Credit hour reduction and identification of new "ISE applications of statistics" as pre-req./DK	9/17/2020
No document changes					
College	Approved	ENG - College of Engineering	Heidi Dublin	Approved by the HWCOE Curriculum Committee	10/2/2020
Operations Research 2 syllabus.docx					9/17/2020
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			10/2/2020
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|Modify for request 15275

Info

Request: ESI4313 (Operations Research 2)
Description of request: Credit hours change to 3 (from 4) and Pre-Req Change
Submitter: Serdar Kirli kirli@ise.ufl.edu
Created: 9/17/2020 5:06:14 PM
Form version: 2

Responses

Current Prefix
Enter the current three letter code (e.g., POS, ATR, ENC).

    Response:
ESI

Course Level
Select the current one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).

    Response:
4

Number
Enter the current three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles.

    Response:
313

Lab Code
Enter the current lab code. This code indicates whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

    Response:
None

Course Title
*Enter the current title of the course as it appears in the Academic Catalog.There is a 100 character limit for course titles. *

    Response:
Operations Research 2

Effective Term
Select the requested term that the course change(s) will first be implemented. Selecting "Earliest" will allow the change to be effective in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's expectations. Courses cannot be changed retroactively, and therefore the actual

effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires at least 6 weeks after approval of the course change at UF.

Response:
Fall

Effective Year
Select the requested year that the course change will first be implemented. See preceding item for further information.

Response:
2021

Requested Action
Indicate whether the change is for termination of the course or any other change. If the latter is selected, all of the following items must be completed for any requested change.

Response:
Other (selecting this option opens additional form fields below)

Change Course Prefix?

Response:
No

Change Course Level?
Note that a change in course level requires submission of a course syllabus.

Response:
No

Change Course Number?

Response:
No

Change Lab Code?
Note that a change in lab code requires submission of a course syllabus.

Response:
No

Change Course Title?

Response:
No

Change Transcript Title?
*If changing the course title a new transcript title is also required. *

Response:
No

Change Credit Hours?
Note that a change in credit hours requires submission of a course syllabus.

Response:
Yes

Current Credit Hours

Response:
4

Proposed Credit Hours

Response:
3

Change Variable Credit?
Note that a change in variable credit status requires submission of a course syllabus.

Response:
No

Change S/U Only?

Response:
Yes

Change Contact Type?

Response:
No

Change Rotating Topic Designation?

Response:
No

Change Repeatable Credit?
Note that a change in repeatable credit status requires submission of a course syllabus.

Response:
No

Change Course Description?
Note that a change in course description requires submission of a course syllabus.

Response:
No

Change Prerequisites?

Response:
Yes

Current Prerequisites

Response:
ESI3327C (C) & STA4321 (C)

Proposed Prerequisites
Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.
Courses level 3000 and above must have a prerequisite.
Please verify that any prerequisite courses listed are active courses.
(There is a limit of 246 characters)
* *

Response:
ESI3327C (C) & ESI3215C (C)

Completing Prerequisites on UCC forms:

• Use "&" and "or" to conjoin multiple requirements; do not used commas, semicolons, etc.
• Use parentheses to specify groupings in multiple requirements.
• Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
• Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
• "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
• If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY_BS, undergraduate Disabilities in Society minor = DIS_UMN)

Example: A grade of C in HSC 3502, passing grades in HSC 3057 or HSC 4558, and undergraduate PBH student should be written as follows: HSC 3502(C) & (HSC 3057 or HSC 4558) & UGPBH

Change Co-requisites?

Response:
No

Rationale
Please explain the rationale for the requested change.

Response:
Credit Change:
This request is in conjunction with a curriculum revision request that has been filed simultaneously. As part of this curriculum re-organization, an ISE core is being defined that contains among other courses Operations Research 1 and Operations Research 2 (this course), both of which are being adjusted down to 3 credits. For students who would like to explore this area in more depth, a third Operations Research course (3 credits) will be available as a restricted elective. Operations Research 1 and Operations Research 2, as ISE Core courses, will focus on core fundamental concepts whereas more advanced topics will be moved into the third course (restricted elective). This move is in line with how a large majority of ISE departments handle their Operations Research course sequence.
Pre-req Change:
As a result of the curriculum revision described above, the current pre-requisite STA4321 will no longer be a required course. Instead, the necessary background in probability theory will be covered in (already approved) ESI3251C (Data Analysis for Industrial Applications) which will also be a part of the required ISE core.

Stochastic Operations Research
ESI4313 - Section 1234
Class Periods: MWF 3rd Period
Location: Classroom location
Academic Term: Fall 2021

Instructor:
Mostafa Gahrooei Reisi, mreisigahrooei@ufl.edu. (352) 294-6896
Office Hours: MW 5th period or by appointment, Weil 401C

Teaching Assistant/Peer Mentor/Supervised Teaching Student:
Please contact through the Canvas website
- Name, email address, office location, office hours

Course Description
Introduces stochastic models and methodologies for analyzing and providing solutions to decision-making problems with uncertainties. (3 Credits).

Course Pre-Requisites / Co-Requisites
ESI3312 (Operations Research 1) and ESI3215C (Engineering Data Analysis for Industrial Applications) with minimum grades of C.

Course Objectives
This course teaches the basic concepts of stochastic modeling in operations research. Students will develop and enhance their ability to address various problems that involve randomness/uncertainty, including Stochastic Modeling, Markov Chains, Queuing Analysis, and Stochastic Decision Making.
By the end of the semester the student should be able to
- Reinforce students understanding of concepts in probability and conditional probability and expectations
- Recognize a random process and how it is different from probability distributions
- Describe Markov chain and formulate and analyze a process as a Markov chain in long and short-term
- Express and demonstrate the Poisson process
- Understand the concepts of continuous-time Markov (CTM) chains and its connections to Poisson process
- Formulate a real-world problem (e.g., a queue or inventory problem) as a CTM
- Evaluate a queue in steady state

Materials and Supply Fees
None

Required Textbook
> Introduction to Probability Models
> Author: Sheldon Ross
> Academic Press; 12th edition, 2019
> ISBN: 978-0128143469

Recommended Textbooks

  Introduction to Probability
  Authors: Dimitri Bertsekas and John Tsitsiklis
  Athena Scientific; 2nd edition, 2008
  ISBN: 978-1886529236

  Operations Research: Applications and Algorithms
  Author: Wayne Winston
  Cengage Learning; 4th edition, 2003
  ISBN: 978-0534380588

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	High
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	
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	
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	
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 covered or assessed in the course.

Attendance Policy and Class Expectations

You are highly encouraged to attend all lectures. Lectures are there to facilitate efficient learning, not chatting with friends, surfing the net, or sleeping. You should be focused on the course material, not on activities that do not involve coursework. Those who behave inappropriately will be asked to leave. If you cannot follow the lecture anymore, you can leave the class quietly; I will not be offended. Please, remember to silence your cell phone as soon as you enter the classroom.

Make-Up Policy

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.

Course Schedule

Week	Lecture Topic for the Week	Assignments
1	Review of probability theory	
2	Review of Random Variables/ distribution/ Limits	
3	Conditional Probability/Expectation	Homework 1 Due
4	Conditional Expectation/ Variance	
5	Conditional Variance/ Markov Chains: Definition	Homework 2 Due
6	Markov Chains Limiting Probabilities	**Exam 1**
7	Markov Chain: Application	
8	Bernoulli Process/ Exponential Distribution	Homework 3 Due
9	Counting Process/ Poisson Process	
10	Continuous-time Markov Chains (CTMC)	Homework 4 Due
11	Birth-Death Process	
12	CTMC: Limiting Probabilities	**Exam 2**
13	CTMC: Introduction to Queuing Theory	Homework 5 Due
14	Queueing Theory	
15	Queueing Theory	Homework 6 Due

Evaluation of Grades

Your grade will be based on three exams and six homework assignments. In each exam, I will include a few challenging tasks, which only the best students will be able to answer. These are the questions that distinguish the A students.

Assignment	Percentage of Final Grade
Exam 1	25%
Exam 2	25%
Final Exam	25%
Homeworks	25%

There may or may not be a curve at the end of the semester. This depends on the overall performance of the class throughout the semester. Please note that this is a required course for ISE students. **This means that you must earn, at a minimum, a C in order to satisfy the requirement.**

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

Grade Scale

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-
Range	93-100	90-92.9	87-89.9	83-86.9	80-82.9	77-79.9	73-76.9	70-72.9	65-69.9	60-64.9	55-59.9
Grade Points	4.00	3.67	3.33	3.00	2.67	2.33	2.00	1.67	1.33	1.00	0.67

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:
Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus: https://care.dso.ufl.edu.

On-Line Students Complaints: http://www.distance.ufl.edu/student-complaint-process.