

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Graduate Programs</b>		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____
	<b>Department</b> CEECS  <b>College</b> Engineering and Computer Science		
<b>Current Course Prefix and Number</b> COT 6446		<b>Current Course Title</b> Randomized Algorithms	
<i>Syllabus must be attached for ANY changes to current course details. See <a href="#">Guidelines</a>. Please consult and list departments that may be affected by the changes; attach documentation.</i>			
<b>Change title to:</b>  <b>Change prefix</b> <b>From:</b> _____ <b>To:</b> _____ <b>Change course number</b> <b>From:</b> _____ <b>To:</b> _____ <b>Change credits*</b> <b>From:</b> _____ <b>To:</b> _____ <b>Change grading</b> <b>From:</b> _____ <b>To:</b> _____ <b>Academic Service Learning (ASL) **</b> <b>Add</b> <input type="checkbox"/> <b>Remove</b> <input type="checkbox"/>		<b>Change description to:</b>  <b>Change prerequisites/minimum grades to:</b> Graduate standing for CEECS students, and instructor's approval for students from other major.  <b>Change corequisites to:</b>  <b>Change registration controls to:</b>  Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade.	
<b>Effective Term/Year for Changes:</b> Spring 2021		<b>Terminate course? Effective Term/Year for Termination:</b>	
<b>Faculty Contact/Email/Phone</b> Hanqi Zhuang/zuang@fau.edu/ 297-3413			
<b>Approved by</b> Hanqi Zhuang Department Chair _____ College Curriculum Chair Francisco Presuel-Moreno College Dean  UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____		Digitally signed by Hanqi Zhuang Date: 2020.10.21 15:48:38 -04'00'  Digitally signed by Francisco Presuel-Moreno DN: cn=Francisco Presuel-Moreno, ou=Florida Atlantic University, ou=Ocean and Mechanical Engineering, email=fpresuel@fau.edu, c=US Date: 2020.10.22 12:00:14 -04'00'  Digitally signed by M. Cardei DN: cn=M. Cardei, ou=Florida Atlantic University, ou, email=mcardei@fau.edu, c=US Date: 2020.10.22 19:07:17 -04'00'	<b>Date</b> _____ _____ 10/25/2020 _____ _____ _____ _____

Email this form and syllabus to [UGPC@fau.edu](mailto:UGPC@fau.edu) 10 days before the UGPC meeting.

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Course Syllabus**

<b>1. Course title/number, number of credit hours</b>	
Randomized Algorithms / COT 6446	# of credit hours = 3
<b>2. Course prerequisites, corequisites, and where the course fits in the program of study</b>	
Prerequisites: Graduate standing for CEECS students, and instructor's approval for students from other major.	
<b>3. Course logistics</b>	
Term: Class location and time	
<b>4. Instructor contact information</b>	
Instructor's name Office address Office Hours Contact telephone number Email address	
<b>5. TA contact information</b>	
TA's name Office address Office Hours Contact telephone number Email address	
<b>6. Course description</b>	
This course introduces several basic techniques in the design and analysis of randomized algorithms and their applications	
<b>7. Course objectives/student learning outcomes/program outcomes</b>	
Course objectives	<b><i>To learn the power of randomness in computer science, and how to design and analyze randomized algorithms.</i></b>
Student learning outcomes & relationship to ABET 1-7 outcomes	<p>1. An ability to identify, formulate, and solve complex computing/engineering problems by applying principles of computing, engineering, science, and mathematics. (Problem solving)</p> <p>2. An ability to apply the computing/engineering design process to produce solutions that meet a given set of computing/engineering requirements with consideration for public health and safety, and global cultural, social, environmental, economic, and other factors as appropriate to the discipline. (Design)</p> <p>7. An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge. (Lifelong Learning)</p>

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<b>8. Course evaluation method</b>		
Homework -	70 %	For the project, students must first identify a related topic, either from the textbook or research papers, and get approved by the instructor. Then they should present the essential/novel ideas and technical contributions. Students should submit a final report for the project.
Final Examination or Project -	30 %	
<b>9. Course grading scale</b>		
Grading Scale: 90 and above: "A", 87-89: "A-", 83-86: "B+", 80-82: "B", 77-79: "B-", 73-76: "C+", 70-72: "C", 67-69: "C-", 63-66: "D+", 60-62: "D", 51-59: "D-", 50 and below: "F."		
<b>10. Policy on makeup tests, late work, and incompletes</b>		
<p>Students are strongly suggested to inform the instructor in advance in the case of emergency (if possible). Makeup exams are given only if there is solid evidence of a medical or otherwise serious emergency that prevents the student of participating in the exam.</p> <p>Students must turn in homework, assignment and projects on time. Students will lose 25% (after 1 day) and 50% of marks (after 2 days) if they turn in late. Submissions are not accepted after 2<sup>nd</sup> day of due date.</p>		
<b>11. Special course requirements</b>		
NA		
<b>12. Classroom etiquette policy</b>		
University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.		
<b>13. Attendance policy statement</b>		
Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.		

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<b>14. Disability policy statement</b>
In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at <a href="http://www.fau.edu/sas/">www.fau.edu/sas/</a>
<b>15. Counseling and Psychological Services (CAPS) Center</b>
Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <a href="http://www.fau.edu/counseling/">http://www.fau.edu/counseling/</a>
<b>16. Code of Academic Integrity Policy Statement</b>
Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see <a href="#">University Regulation 4.001</a> .
<b>17. Required texts/reading</b>
<b>Probability and Computing: Randomization and Probabilistic Techniques in Algorithms and Data Analysis 2nd Edition</b> By Michael Mitzenmacher and Eli Upfal. Cambridge University  (either 1 <sup>st</sup> or 2 <sup>nd</sup> edition)
<b>18. Supplementary/recommended readings</b>
<b>19. Course topical outline, including dates for exams/quizzes, papers, completion of reading</b>

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Weekly Schedule	Topics
Week 01	Introduction: the power of randomness in computer science
Week 02	Background of (discrete) probability: random variables, expectations, applications to Quicksort  HW <sub>1</sub>
Week 03	Applications to Coupon Collection Problems and Stable matching.
Week 04	Chebyshev's Inequality and applications to Find Medium  HW <sub>2</sub>
Week 05	Chernoff Bounds and Applications to Parameter Testing
Week 06	Chernoff Bounds and Applications to Error Reduction
Week 07	Hash Functions, Pairwise Independence, and applications to randomness efficient designs  HW <sub>3</sub>
Week 08	Cryptographic Applications I: semantic security, collision resistance, computational indistinguishability, and pseudorandomness
Week 09	Cryptographic Applications II: interactive proofs, zero-knowledge proofs,  Project Topic Selection
Week 10	Cryptographic Applications III: secure multiparty computation, Ideal-Real paradigm
Week 11	The probabilistic method, an introduction  HW <sub>4</sub>
Week 12	The probabilistic method, applications
Week 13	Random Process, an introduction
Week 14	Random Process, applications  HW <sub>5</sub>
Week 15	Other selected topics  Project presentation and reports submission