FLORIDA ATLANTIC UNIVERSITY

# COURSE CHANGE REQUEST
## Undergraduate Programs

**Department** Electrical Engineering and Comp Science

**College** Engineering and Computer Science

UUPC Approval 10-11-21
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

| ***Current* Course Prefix and Number** | COT 4420 | ***Current* Course Title** | Formal Languages and Automata Theory |
|---|---|---|---|

*Syllabus must be attached for **ANY** changes to current course details. See Checklist. Please consult and list departments that may be affected by the changes; attach documentation.*

**Change title to:**
Theory of Computation

**Change prefix**
**From:** **To:**

**Change course number**
**From:** **To:**

**Change credits***
**From:** **To:**

**Change grading**
**From:** **To:**

**Change WAC/Gordon Rule status****
**Add** ☐ **Remove** ☐

**Change General Education Requirements*****
**Add** ☐ **Remove** ☐

*Review Provost Memorandum
**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.
***General Education criteria must be indicated in syllabus and approval attached to this form. See GE Guidelines.

**Change description to:**
See attached syllabus for new course description.

**Change prerequisites/minimum grades to:**
COP 3530 or COP 3410 with "C" or better

**Change corequisites to:**

**Change registration controls to:**

Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).

| **Effective Term/Year for Changes:** | Spring 2022 | **Terminate course? Effective Term/Year for Termination:** | |
|---|---|---|---|

**Faculty Contact/Email/Phone** Hanqi Zhuang, zhuang@fau.edu, 561-297-3413

| ***Approved by*** | | ***Date*** |
|---|---|---|
| Department Chair | [signature] | 9/23/2021 |
| College Curriculum Chair | Dan Meeroff | 10-4-21 |
| College Dean | Fred Bloetscher | 10-4-21 |
| UUPC Chair | Dan Meeroff | 10-11-21 |
| Undergraduate Studies Dean | Edward Pratt | 10-11-21 |
| UFS President | | |
| Provost | | |

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

**Department of Electrical Engineering and Computer Science**
**Florida Atlantic University**
**Course Syllabus**

| **1. Course title/number, number of credit hours** | |
|---|---|
| Theory of Computation- COT 4420 | 3 credit hours |
| **2. Course prerequisites, corequisites, and where the course fits in the program of study** | |
| Prerequisite: COP 3530 or COP 3410 with "C" or better | |
| **3. Course logistics** | |
| *Term*: TBD<br>*Class location and time:* | |
| **4. Instructor contact information** | |
| *Instructor's name*<br>*Office address*<br>*Office Hours*<br>*Contact telephone number*<br>*Email address* | TBD |
| **5. TA contact information** | |
| *TA's name*<br>*Office address*<br>*Office Hours*<br>*Contact telephone number*<br>*Email address* | TBD |
| **6. Course description** | |
| Formal models of computation, including finite state automata, pushdown automata, and Turing machines; applications to deciding (parsing) formal languages, including regular, linear and context-free languages; non-determinism; the Church-Turing thesis. | |
| **7. Course objectives/student learning outcomes/program outcomes** | |
| *Course objectives* | 1. Understand and apply mathematical and algorithmic models to the theory of formal languages and automata.<br>2. Define and use relationships among languages, grammars, and model computational devices.<br>3. Express regular languages using finite automata, regular expressions, and regular grammars.<br>4. Express context-free languages using pushdown automata and context-free grammars.<br>5. Design Turing machines that accept a given language or compute a given function.<br>6. Identify and characterize languages in the Chomsky Hierarchy and associate them with the corresponding automata. |

| | |
|---|---|
| | Identify applications and uses of the theory of formal languages, grammars, and automata. |
| *Student learning outcomes & relationship to ABET 1-7 outcomes* | **ABET Outcome**<br>An ability to identify, formulate, and solve complex computing/engineering problems by applying principles of computing, engineering, science, and mathematics. (Problem solving) |

**8. Course evaluation method**

| | |
|---|---|
| HWs | 30% |
| Midterm Exam | 30% |
| Final Exam | 40 % |

**9. Course grading scale**

Grading Scale:
[90, 100] A, [85, 90) A –, [80, 85) B +, [75, 80) B, [70, 75) B –, [67, 70) C +, [63, 67) C, [60, 63) C –, [57, 60) D +, [53, 57) D, [50, 53) D –, [0 – 50) F.

**10. Policy on makeup tests, late work, and incompletes**

Late Assignments Policy –

Make-up Policy for Tests: Makeup tests are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student from participating in the exam.

Incomplete Grade Policy Incomplete grades are against the policy of the department. Unless there is solid evidence of a medical or otherwise serious emergency situation and the student is currently passing the class, incomplete grades will not be given.

**11. Special course requirements**

TBD

**12. Classroom etiquette policy**

To enhance and maintain a productive atmosphere for learning, personal communication devices such as cell phones are to be disabled during class sessions.

Due to the casual communication common in the online environment, students are sometimes tempted to relax their grammar, spelling, and/or professionalism; however, remember you are adult students and professionals—your communication should be appropriate. You are expected to use correct spelling and grammar and write in complete sentences. Also, please note that in the online environment you do not have the advantage of voice inflection or gestures. As a result, sarcasm can come across very negatively, so this form of communication should be avoided. When responding to classmates' posts, remember that you are responding to the ideas of the writer: keep your communication professional and on-topic.

**13. Attendance policy statement**

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.

**14. Disability policy statement**

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 www.fau.edu/sas/

**15. Counseling and Psychological Services (CAPS) Center**

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 http://www.fau.edu/counseling/.

**16. Code of Academic Integrity policy statement**

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 University Regulation 4.001, www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

**17. Required texts/reading**

To reduce costs for our students, we strongly encourage you to explore the adoption of open educational resources (OER), textbooks and other materials that are freely accessible. We also encourage you to clearly state in the syllabus if course materials are available on reserve in the Library.

Textbook: Peter Linz "An Introduction to Formal Languages and Automata", Sixth Edition, Jones and Bartlett, 2016, ISBN-13: 9781284077247

**18. Supplementary/recommended readings**

TBD

**19. Course topical outline, including dates for exams/quizzes, papers, completion of reading**

- Mathematical Preliminaries: Sets, Graphs, Trees, Grammars
- Deterministic and Non-deterministic Finite Accepters/Automata
- Regular Languages, Regular Expressions and Regular Grammars
- Linear Languages
- Context-Free Languages and Pushdown Automata
- Simplifications of Context-Free Grammars and Normal Forms; three Pumping Lemmas
- Closure Properties of Languages
- Turing Machines
- Hierarchy of Formal Languages and Automata
- The Church-Turing Thesis
- P-NP Classes