LAU
School of **Arts and Sciences**

Department of Computer Science & Mathematics

Course Code & Name	**MTH 307: Discrete Structures II**
Class Time and Location	M 16:00 – 18:29, AKSOB 1210
INSTRUCTOR	Faisal N. Abu-Khzam
Credits Hours	3
Semester	Spring 2020

INSTRUCTOR
Email: faisal.abukhzam@lau.edu.lb
web page: http://www.csm.lau.edu.lb/fabukhzam
Office: OG411
Office Hours: MWF 12:00-13:00 and 14:00-15:00 (or by appointment)

CURRENT CATALOG DESCRIPTION
This course covers computational complexity and order analysis, recurrence relations and their solutions, graphs and trees, elementary computability, classes P and NP problems, NP-completeness (Cook's theorem), NP-complete problems, reduction techniques, automata theory including deterministic and nondeterministic finite automata, equivalence of DFAs and NFAs, regular expressions, the pumping lemma for regular expressions, context-free grammars, Turing machines, nondeterministic Turing machines, sets and languages, uncomputable functions, the halting problem, implications of uncomputability, Chomsky hierarchy, and the Church-Turing thesis.

PRE- OR CO-REQUISITE
MTH 207 – Discrete Structures I; MTH 201 – Calculus III

COURSE TYPE
Required	☒	Major's **E**lective	☐	General Elective	☐

COURSE LEARNING OUTCOMES
- Formal languages and the notion of language recognition;
- Finite Automata and Context-Free Grammars;
- Computability and the halting problem;
- Computational Complexity and NP-Completeness;

TEXTBOOK
J. Hopcroft, R. Motwani & J. Ullman, Introduction to Automata Theory, Languages, and Computation, 3rd edition, Addison Wesley 2007.

TOPICS COVERED IN THE COURSE
1. Countable vs. uncountable sets (review)
2. Languages and Finite Automata
3. Regular expressions and languages
4. Context-free grammars and languages
5. Pushdown automata and properties of CFLs
6. Turing Machines
7. Undecidability
8. Intractable problems (including a review of some NP- hard Graph-Theoretic problems)

TEACHING/LEARNING METHOD
- Lectures
- HW
- *Students will be asked to write lecture summaries or short quizzes at the end of some lectures*
- Exams

COURSE GRADING AND PERFORMANCE CRITERIA (TENTATIVE)

HW & Participation   05%
Short Quizzes: 20%
Midterm: 35%
Final Exam: 40%

STUDENT CODE OF CONDUCT – ACADEMIC VIOLATIONS

The following table defines the sanction(s) associated with each violation. In some cases and when the violation is too general, a range of sanctions is set for the pertinent committee to choose from depending on the specifics of each case. As for the second offense, the set sanctions apply regardless whether the violation has taken place in the same course or a different one, within the same semester or not.

Code #	Violation	First Offense	Second Offense
Cheating			
2.2.1	Using material or equipment (including mobile phones, electronic tablets, i-pads, calculators, and other devices) that is not authorized by the instructor in an examination, project, or graded assignment	zero on the deliverable with a warning	F on the course with a warning
2.2.2	Cheating, copying, collaborating with or aiding another Student in a manner not permitted by the instructor on an examination, project, or other graded assignment	zero on the deliverable with a warning	suspension
2.2.3	Distributing or aiding in the distribution of previous exams without authorization of the instructor	double warning – suspension	suspension – expulsion
2.2.4	Stealing, reproducing, or circulating an examination or other graded assignment before it has been administered	suspension	expulsion
2.2.5	Impersonating another Student or allowing another Student to impersonate one's self during an examination, presentation, or other graded assignment	suspension for both	expulsion
2.2.6	Impersonating an assistant, staff member, or faculty member for the purpose of (a) proctoring examinations without authorization or permission or (b) obtaining confidential information regarding coursework or examinations	suspension – expulsion	expulsion
2.2.7	Receiving, purchasing or selling a project, paper, or any academic document and presenting it as work other than that of the author	suspension – expulsion	expulsion
2.2.8	Submitting identical papers or coursework for credit in more than one class without the permission of the instructor	zero on the deliverable with a warning	F on the course with a warning
Plagiarism and Copyright Violations			
2.2.9	Failing to attribute language or ideas to their original source by not crediting the original author with an appropriate acknowledgement or citation	zero on the deliverable with a warning	F on the course with a warning
2.2.10	Using photocopied or electronic copies of textbooks, compact disks, films, music, online course materials, and other content beyond the fair use policy within University Premises	warning	double warning
2.2.11	Using copyrighted materials, including in written research reports and papers, without obtaining required permission, if any, from the rights holder	warning	double warning
Unauthorized Sale, Distribution, or Use of Course Materials			
2.2.12	Recording any lecture or presentation for personal use or public distribution without the prior consent of the course instructor. This applies to the unauthorized use of any medium including but not limited to mobile phones, electronic tablets, i-pads recorders, films, and other	warning	double warning

Code #	Violation	First Offense	Second Offense
	devices		
2.2.13	Selling academic materials by any Student, club, or group. This includes but is not limited to lectures, course recordings, class notes, and previous exams	warning	double warning

UNIVERSITY ATTENDANCE POLICY

1. Students are expected to attend all classes.
2. For valid reasons, students may miss classes for a maximum that is equivalent to two regular weeks.
3. When exceeding the maximum number of absences, it is the instructor's prerogative to ask the concerned student to stop attending and drop the course. In this case, it is the student's responsibility to drop the course, otherwise a grade of "F" or "NP" will be given.
4. In exceptional justified cases (long illness, etc…), where absences exceed the maximum, the student has to petition to the department Chair to be allowed to stay in the course.
5. Students are held responsible for all the material presented in the classroom, even during their absence.

WITHDRAWAL POLICY

WI is equivalent to Early Withdrawal

WP is equivalent to Withdrawal/Pass

WF is equivalent to Withdrawal/Fail

1. A student who withdraws after the Drop/Add period and by the end of the 5th week of classes (10th day of classes for Summer Modules) will obtain a "WI" on that particular course.

The student may process such request directly through the Registrar's Office.

2. A student who withdraws from a course between the 6th week and the end of the 10th week of classes (18th day of classes for Summer Modules) will receive either a "WP" or a "WF". "WP" or "WF" will be determined by the instructor based on the achieved academic performance in that course till the time of withdrawal.

3. The "WI" and the "WP" will not count as a Repeat; whereas the "WF" will count as a Repeat.

4. "WI", "WP" and "WF" will not count towards the GPA calculation.

Deadline for the "WP" and "WF" withdrawal from courses: check university calendar (It is the student's responsibility to drop the course)

COURSE ONLINE EVALUATIONS

In order to improve the effectiveness of the educational process, all students are expected to submit their course evaluations by the last day of classes.
Students who fail to complete the evaluation of ALL registered courses by the set deadline:
1. will not be able to access their course grades from Banner or Portal until two weeks after the end of the final exams period; and
2. will not be able to request transcripts.
The anonymity of the process and the students will be maintained at all times.

TIPS FOR SUCCESS

- Study daily and come to class prepared.
- Consistent attentive attendance is key to success in this course.