CPCS-424 Syllabus

Catalog Description

CPCS-424 Theory Of Computation
Credit: 3 (Theory: 3, Lab: 0, Practical: 0)
Prerequisite: CPCS-222 , CPCS-212
Classification: Elective

The objective of this course is to introduce students, with a background in Sciences, Engineering, or Mathematics, to some of the basic principles pertaining to the modeling and analysis of computational problems and their solutions.

Class Schedule

Meet 50 minutes 3 times/week or 80 minutes 2 times/week

Lab/Tutorial 90 minutes 1 times/week

Textbook

Dexter C. Kozen, , "Theory of Computation", Springer Science & Business Media; 1 edition (2006-05-08)

ISBN-13 9781846282973 **ISBN-10** 1846282977

Grade Distribution

Week	Assessment	Grade %

Topics Coverage Durations

Topics	Weeks
Languages, Grammars	1
Automata (Machines)	1
Turing Machines	2
Variations and Equivalence: Non-Determinism	2
Finite State Machines, Regular Expressions	2
Decision Algorithms for Regular Sets and Undecidability	2
Context-Free Languages	2
Complexity Theory	2

Last Articulated

Relationship to Student Outcomes

a	b	c	d	e	f	g	h	i	j	k
x								x	x	

Course Learning Outcomes (CLO)

By completion of the course the students should be able to

1. Describe languages using Regular Expressions, Finite Automata, Nondeterministic Finite Automata, Mealy Machines, Moore Machines, Context Free Grammars, Pushdown Automata, and Turing Machines ()
2. Relate between Regular Languages, Context Free Languages, Recursive Languages, and Recursive-Enumerable (or Computable) Languages ()
3. Compute Turing Machines to represent computable functions ()
4. Demonstrate a Universal Turing machine to simulate any Turing Machine on any input ()
5. Describe compiler generation tools and the ability to use these to create simple compilation/translation programs ()

Coordinator(s)