

COT 6908-0003 Independent Study
Computational Logic & Stochastic Computing
(3 credits)

Instructor: Dr. Sumit Kumar Jha,
Computer Science Department,
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1 Content

The course provides a self-contained introduction to stochastic computing. We will focus on classical approaches to stochastic computing such as those proposed by Gaines and John von Neumann and its more recent applications to nanoscale computing. The course will enable students to conduct their own research into stochastic computing.

2 Required Background & Suggested Reading

Undergraduate course work in probability and calculus are sufficient preparation for this course. All graduate students in computer science, computer engineering and electrical engineering programs have the required background. Reading materials will be provided to the students using Webcourses.

3 Office Hours and Class Interaction

No office hours.

4 Course Content

Stochastic representations of numbers, Computing under uncertainty, Logical gates as stochastic computing primitives, Computational Logic, Probabilistic automata & their use in stochastic computing, Automata Theory, Practical applications of stochastic computing, Challenges in implementing stochastic computing using nanoscale circuits and proposed solutions.

5 Evaluation

Performance in this course will be evaluated on the basis of in-class presentation (50%), a take-home mid-term (25%) and a take-home final (25%). Not delivering the in-class presentation will lead to a failing grade in the class.

Assessment	Percent of Final Grade
Class Presentations	50%
Mid-term	25%
Final	35%
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100%	

Grading Scale (%)	
90-100	A
80 - 89	A-
70 - 79	B+
60 - 69	B
50 - 59	B-
40 - 50	C+
0 - 40	F