Course Code	CSE5TAC
Course Name	Topics in Adaptive Cybersecurity (TAC)
Credits	4
Course Offered to	UG/PG
Course Description	This course focuses on providing students an interactive discussion based learning platform for exploration of topics in adaptive cyber security. The learning will be through instruction, course project and more importantly through discussions on student(s) presentation of assigned research papers. The instruction part of the course will cover basic contents required to understand the course materials, including topics such as threat intelligence, situational awareness and real-time adaptive security. Through this course, students can learn the state of the art and open problems in adaptive cyber security, thus enhancing their potential to perform research or pursue a career in this emerging area.

Pre-requisites

Pre-requisite (Mandatory)	Pre-requisite (Desirable)	Pre-requisite(other)
CSE345/CSE545 Foundations of Computer Security (or) CSE350/CSE550 Network Security	Students are also expected to have good understanding of basic concepts in machine learning	

*Please insert more rows if required

Post Conditions*(For suggestions on verbs please refer the second sheet)

CO1	CO2	CO3	CO4	CO5
Define and Describe several topics in adaptive cybersecurity.	Deconstruct and Explain effectiveness and limitation of proposed solutions (from litreture) for adaptive cybersecurity	Critique and Conclude effectiveness and limitation of proposed solutions (from litreture) for adaptive cybersecurity	Designing and Developing specific solution(s) to an open problem in adaptive cybersecurity	

Weekly Lecture Plan

Week Number	Lecture Topic	COs Met	Assignment/Labs/Tutorial
Week 1-2	Refresher of basic concepts in Information Security and Machine Learning required for adaptive cybersecurity Introduction to Adaptive Cybersecurity	CO1	
Week 3-4	Dynamic Vulnerability Assessment	CO1, CO2, CO3	
Week 5-6	Advanced Topics in Moving Target Defense	CO1, CO2, CO3	Weekly research Paper presentation by students (rotation) related to lecture topics
Week 7-8	Advanced Topics in Dynamic Intrusion Detection and Prevention	CO1, CO2, CO3	
Week 9-10	Dynamic Threat Assessment/Intelligence with Predictive Analytics	CO1, CO2, CO3	Weekly research paper reading assignments
Week 11-12	Proactive Cybersecurity using User Behavioral Modeling	CO1, CO2, CO3	
Week 13 -	Buffer for additional topics++++++++++	CO1, CO2, CO3	

*Please insert more rows if required

Weekly Lab Plan

Week Number	Laboratory Exercise	COs Met	Platform (Hardware/Software)
Week 10 through 13/14	Course Project: Students are required to write a research paper on selected/listed topic of their interest	CO4	

*Please insert more rows if required

Assessment Plan

Type of Evaluation	% Contribution in Grade
Course Project	25
Paper Presentation	30
Mid-sem	20
End-Sem	25

*Please insert more row for other type of Evaluation

Resource Material

Type	Title
Reference	Specific research papers selected by instructor from top tier symposiums, conferences and journals