

Course #:	CSCI-C 490
Course Title:	Introduction to Computer Security
Course Type:	Upper level elective
Prerequisites:	C243 Data Structures, C151 Multiuser Operating Systems
Credits:	3
Text Book:	<i>Introduction to Computer Security</i> , Matt Bishop, Addison Wesley
References:	Publications and Handouts
Current Catalog Description:	This course provides an introduction to topics in computer security and explores the problems and challenges faced. It covers fundamental issues and principles, security policies, models and mechanisms related to confidentiality, integrity and availability triad. Basics of cryptography and its role in computer security and in particular, authentication will be covered. It will provide real-world examples of how to apply the principles discussed.
Course Goals	The student who completes this course: <ol style="list-style-type: none"> 1. Will be introduced to basic concepts of computer security. 2. Will understand the five pillars of information assurance, namely, confidentiality, integrity, availability, authentication and access control. 3. Will learn about how to make computers secure from both offline and online attacks and insider and outsider attacks. 4. Will understand and appreciate the basic legal and ethical issues including privacy, surrounding computer usage.
Major Topics Covered in the Course	<ol style="list-style-type: none"> 1. Overview of Computer Security 2. Authorization and Access control 3. Security, Confidentiality, Integrity and Hybrid Policies and Mechanisms 4. Cryptography & Authentication 5. Cryptography Key Management 6. Malicious Logic and Vulnerability 7. Real-life Case Studies 8. Audit and Intrusion Detection 9. User Security 10. Security evaluations, Risk management, and Ethical and legal issues 11. Current Research Topics in Security
Laboratory projects (specify number of weeks on each)	One exhaustive lab with Linux and Windows Operating Systems Security.

Estimate Curriculum Category Content (Semester hours)	<table border="1"> <thead> <tr> <th>Area</th> <th>Core</th> <th>Advanced</th> </tr> </thead> <tbody> <tr> <td>Algorithms</td> <td>10</td> <td>20</td> </tr> <tr> <td>Software Design</td> <td></td> <td>10</td> </tr> <tr> <td>Comp. Arch.</td> <td></td> <td></td> </tr> <tr> <td>Data Structures</td> <td></td> <td>8</td> </tr> <tr> <td>Prog. Languages</td> <td></td> <td></td> </tr> </tbody> </table>	Area	Core	Advanced	Algorithms	10	20	Software Design		10	Comp. Arch.			Data Structures		8	Prog. Languages		
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Additional hours may be dedicated to curriculum categories not listed above. For example explanation of concepts and theories. Discussion of social and ethical issues, discussion of inter personal relationships and working within groups.																			
Oral and Written Communications	<ul style="list-style-type: none"> • Presentation of a real-life case study dealing with security violations, vulnerabilities, or malicious logic, typically for 20 minutes. Typically, students have to do a literature survey for the presentation. • Presentation of a major project dealing with security. This can also include a demo of the project developed. • Complete documentation/report and user manual for the major project dealing with security. 																		
Social and Ethical Issues	<ul style="list-style-type: none"> • Ethics and legal issues with respect to computer usage, security and privacy. 																		
Theoretical Content	<ul style="list-style-type: none"> • Access control matrix models. • Security policies and lattices. • Cryptographic techniques. 																		
Problem Analysis	<ul style="list-style-type: none"> • Several home works that deal with security analysis are assigned over the entire course. • A major project involving security topics and principles is designed, developed, implemented and tested. 																		
Solution Design	<ul style="list-style-type: none"> • Home works that deal with security algorithms and principles are assigned over the entire course, for which the students are required to design, develop and implement computer programs. • A major project involving security topics and principles is designed, developed, implemented and tested. 																		
Prepared By	Adaikkalavan																		
Last Updated	Dec 4, 2006																		