Office of the Registrar
FORM 40 REV. 7/08

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

Print Form

EFD 79-07

DEPARTMENT Electrical and Computer Engineering

EFFECTIVE SESSION Fall 2009

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- [X] 1. New course with supporting documents
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Expiration of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/type
- [ ] 7. Change in course attributes (department head signature only)
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

PROPOSED:		EXISTING:	
Subject Abbreviation	ECE	Subject Abbreviation	
Course Number	40400	Course Number	
Long Title	Introduction to Computer Security		
Short Title	Intro to Computer Security		

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[ ] Summer [ ] Fall [X] Spring

CAMPUS(ES) INVOLVED
[ ] Calumet [ ] N. Central
[ ] Cont Ed [ ] Tech Statewide
[ ] Ft. Wayne [X] W. Lafayette
[ ] Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range: Minimum Cr. Hrs ____ (Check One) To [ ] Or [ ] Maximum Cr. Hrs. ____
3. Equivalent Credit: Yes [ ] No [X]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only [ ]
2. Satisfactory/Unsatisfactory Only [ ]
3. Repeatable [ ] Maximum Repeatable Credit: [ ]
4. Credit by Examination [ ]
5. Special Fees [ ]
6. Registration Approval Type: Department [X] Instructor [ ]
7. Variable Title [ ]
8. Honors [ ]
9. Full Time Privilege [ ]
10. Off Campus Experience [ ]

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture	~~150~~ 50	3	15	100
Recitation				
resentation				
Laboratory				
Lab Prep				
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

Introduction to security issues related to the operation of computers and the workings of computer networks. Topics covered include introduction to cryptography, authentication protocols, digital signature algorithms, internet vulnerabilities, worms and virus propagation, denial of service attacks, etc. The students will also learn how to design firewalls to protect a system against unwanted intrusions.

Prerequisite: ECE 368

Calumet Department Head	Date	Calumet School Dean	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date
North Central Department Head	Date	North Central Chancellor	Date
West Lafayette Department Head	3/3/09 Date	West Lafayette College/School Dean	3/5/09 Date
		West Lafayette Registrar	3/8/09 Date

OFFICE OF THE REGISTRAR

3/6/09

Engineering Faculty Document No. 79-07
April 1, 2008

TO: The Engineering Faculty
FROM: The Faculty of the School of Electrical and Computer Engineering
RE: New Undergraduate Level Course: ECE 404

The faculty of the School of Electrical and Computer Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

ECE 404 **Introduction to Computer Security**
Sem. 2, Class 3, Cr. 3.
Prerequisite: ECE 368.

Introduction to security issues related to the operation of computers and the workings of computer networks. Topics covered include introduction to cryptography, authentication protocols, digital signature algorithms, internet vulnerabilities, worms and virus propagation, denial of service attacks, etc. The students will also learn how to design firewalls to protect a system against unwanted intrusions.

Reason: This course will focus on security issues related to the operation of computers and computer networks. These topics are not covered by other ECE courses. The course will not only provide an overview of current technologies, but also identify security challenges that face computer engineers, software developers, and network designers and therefore prepare the students for both academic research, and careers in the software industry. This course has been taught previously as ECE 495F in Fall 2003, Spring 2005, Spring 2006, & Spring 2007 and is also being offered in Spring 2008.

M. J. T. Smith, Head
School of Electrical and Computer Engineering

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE
ECC Minutes #14
Date 1/21/09
Chairman ECC R. Cipra

ECE 495F Introduction to Computer Security
Lecture Hours: 3. Credits: 3.
This course may be used as a Computer Engineering Elective for the BSCmpE.

Prerequisites: EE 368

Prerequisites by Topic: *Knowledge of data structures and the ability to program in C.*

Catalog Description: Introduction to security issues related to the operation of computers and the workings of computer networks. Topics covered include introduction to cryptography, authentication protocols, digital signature algorithms, internet vulnerabilities, worms and virus propagation, denial of service attacks, etc. The students will also learn how to design firewalls to protect a system against unwanted intrusions.

Required Text(s):
Cryptography and Network Security: Principles and Practice, 4th Edition, William Stallings, Prentice Hall, 2003, ISBN No. 0130914290.

Recommended Reference(s):
1. *Security in Computing*, Third Edition, Charles P. Pfieeger, Prentice Hall, 2002, ISBN No. 0-13-035548-8, 2002.
2. *Network Security: Private Communication in a Public World*, Second Edition, Charlie Kaufman, Radia Penman, Mike Speciner, Prentice Hall, 2002, ISBN No. 0-13-046019-2.
3. *Security Engineering: A Guide to Building Dependable Distributed Systems*, Ross Anderson, Wiley Computer Publishing, 2001, ISBN No. 0-471-38922-6.
4. *Computer Networking: A Top Down Approach Featuring the Internet*, Third Edition, J. Kurose and Keith Ross, Addison-Wesley, 2004, ISBN No. 0-321-22735-2.

Course Outcomes:
A student who successfully fulfills the course requirements will have demonstrated:
i. sufficient understanding of TCP/IP to understand vulnerabilities of and defenses for TCP/IP.
ii. an introductory level of knowledge on secure protocols, their use and their limitations.
iii. knowledge of how to access and understand CERT, IETF and SANS advisories.
iv. an ability to implement and design basic rule-based firewall/intrusion detection systems.

Lecture Outline:

Weeks	Topic
1	Overview of security, history, legal issues
2	Review/introduction to TCP/IP
1	Reconnaissance and scanning
1	Sniffing and spoofing
1	Secure protocols, eg., SSL, IPSec
1	Authentication protocols
1	Brief introduction to cryptography
1	Man-in-the-middle attacks and session hijacking
3	Attacks: buffer overflows, password cracking, race conditions trojans, rootkits, denial of service
1	Firewalls and intrusion detection (signature and anomaly)
1	Viruses and worms
1	DNS vulnerabilities and DNSSec