Interdisciplinary Ph. D. Program in Information Security

In addition to the courses listed in the requirement areas, the various departments and programs occasionally offer new courses and courses on specific topics that may meet area requirements, especially when they are taught by CERIAS principals and fellows. These include TECH 621 (when taught by Prof. Dark), CNIT 623 and 499 (Prof. Taylor), CNIT 581, LING 689 (Prof. Raskin), some CS 590 offerings, and others. The INSC program administration will announce such courses when they are available, but students are welcome to ask about any courses that might not be otherwise listed.

Area A. Required courses (8)

Four technical courses:

--- CS 52600 Information Security **or** CNIT 55500 Advanced Network Security
--- CS 55500 Cryptography
--- CS 62600 Advanced Information Assurance
--- CS 65500 Advanced Cryptology—or equivalents

Two philosophical/ethical courses:

--- PHIL 52400 Contemporary Ethical Theory (May substitute PHIL 411 or PHIL 424 if not offered in a year) **and**
--- PHIL 62400† Seminar in Ethics —**or** equivalents; e.g. TECH 62100 Information Assurance Ethics
**PHIL 58000 is no longer available, but if you have already taken PHIL 58000, it will be recognized as meeting your requirements.

Two political/social courses:

--- POL 62000† Proseminar in Public Policy **and**
--- TECH 62100 Technology and Policy

Area B. Recommended courses

Any six courses not taken in Area A:

--- For SFS Students, one of these must be *Applied Research Problems in National Information Security* TECH 58100

AGEC	60800	Benefit-Cost Analysis
	69100†	Research in Agricultural Economics
ASM	59100†	Foundations in Homeland Security
AT	53200	Contemporary Issues in Transportation Sec
CNIT	42100	Small Scale Digital Device Forensics
	45500	Network Security
	45600	Wireless Network Security & Management
	49900†	Topics In Computer And Information Tech
	51100	Foundations in Homeland Security
	51200	Managing Resources and Applications for Homeland Security
	55600	Basic Computer Forensics
	55700	Advanced Cyberforensics
	55800	Bioinformatics Computing And Systems Integration
	58100†	Workshop In Computer Technology
		File Systems Forensics
		Intro Assistive Tech & Robotics
		Mobile & Embedded Device Forensics
		The Internet of Things
		Natural Language Technologies
	62300†	Contemporary Computer Tech Problems
		Topics Cyberphysical Security
	62300	Research Methods for Computing
COM	51200	Theories Of Interpersonal Communication
	51800	Theories Of Persuasion
	55800	Historical Trends in Mass Communication Research
	55900	Current Trends In Mass Communication Research
	57400	Organizational Communication
	59000†	Directed Study of Special Problems
	63200†	Special Topics In Mass Communication
CS	50300	Operating Systems
	52700	Software Security
	52800	Network Security
	53600§	Data Communication and Computer Networks
	56500	Programming Languages
	58000	Algorithm Design, Analysis, and Implementation
	59000†	Independent Study/Variable Topics
		Advanced Machine Learning
		Computer Aided Program Reasoning
		Network & Matrix Computations
		Security Analytics
	62600	Advanced Information Assurance
	63600	Internetworking
	65500	Advanced Cryptology
	69000†	Seminar On Topics In Computer Sciences
CSR	63100	Consumer Behavior Theory
ECE	56500	Computer Architecture
ECET	52500	Applications in Forensic Engineering Technology
ECON	60600	Microeconomic Theory I
	61000	Advanced Game Theory
EDPS	53300	Introduction to Educational Research I:

		Methodology
ENE	69500	Advanced Topics in Engineering Education
ENGL	62800	Natural Language Process
IE	53000	Quality Control
	53200	Reliability
	57700§	Human Factors in Engineering
	65900	Human Aspects of Computing
	67400	Cpt Com Mth Prod Cntrl
IT	53000	Biometric Technology Test Design, Performance and Evaluation
	54000	Biometric Performance and Usability Analysis
	54500	Biometrics Technology And Applications
	58100†	Biometric Data Analysis
LING	50000	Introduction to Linguistics
	52100	Syntax I: Syntactic Analysis
	53100	Semantics I: Lexical and Sentential Semantics
	68900†	Natural Language Process (ECE 66900)
MGMT	54700§	Computer Communication Systems
	59000†	Directed Readings in Management
		Sem Tech Realztn Tpc II
		IT Project Management
	68400	Information Security for Managers
OBHR	68100†	Managing Behavior in Organizations
	68300	Individual Behavior in Organizations
PHIL	52400*	Contemporary Ethical Theory
	58000	Proseminar in Philosophy
	62400†	Seminar in Ethics
POL	62000†	Proseminar Public Policy
PSY	57700§	Human Factors in Engineering
STAT	50200	Experimental Statistics II
	51200	Applied Regression Analysis
	51300	Statistical Quality Control
	51400	Design of Experiments
	51700	Statistical Inference
TECH	58100†	Workshop In Technology
		Applied Research Problems in National Information Security
	62100†	Seminar in Technology

* Unless taken under Area A
§ Note: May take one or the other of the following but not both:

CS 53600 or MGMT 54700
PSY 57700 or IE 57700

Area C. Elective Courses

Any four courses:

CNIT	62300	Research Methods for Computing (replaced TECH 64600 Fall 2013)
**COM	59000†	Directed Study of Special Problems
		Communication Theory
		Communication & Pedagogy
	60000	Foundations Of Human Communication Inquiry I
	60100	Foundations Of Human Communication Inquiry II
	61000†	Seminar: Special Topics in Rhetorical Studies
	63200†	Special Topics In Mass Communication
	67400†	Seminar: Special Topics In Organizational Communication
	67600†	Seminar: Special Topics in Health Communication
CS	50200	Compiling and Programming Systems
	54100	Database Systems
	54200	Distributed Database Systems
	57300	Data Mining
ECE	54400	Digital Communications
	56200	Introduction to Data Management
	56500	Computer Architecture
	57000	Artificial Intelligence
	57300	Compilers And Translator Writing Systems
ECET	58100†	Workshop in Electrical and Computer Engineering Technology
		Selected Topics in Sensors
EDPS	53300	Introduction to Educational Research I: Methodology
ENE	69500	Advanced Topics in Engineering Education
FNR	55800	Digital Remote Sensing and GIS
IT	50700	Measurement and Evaluation in Industry And Technology (taught by S Elliott)
		Possible alternatives requiring approval: STAT 501, 502, 512, 513
LING	50000	Introduction to Linguistics
	53100	Semantics I: Lexical And Sentential Semantics
	53200	Semantics II: Formal and Grammatical Semantics
	68900†	Seminar in Linguistics
MGMT	50500	Management Accounting II
	50600	Auditing
	54400	Database Management Systems
	54500	Systems Development
	56100	Logistics
	59000†	Directed Readings In Management
		Sem Tech Realztn Tpc II
		IT Project Management
	60000	Accounting for Managers
	60100	Managerial Accounting
	63000	Legal and Social Foundations of Management
	68300	Princ of Info Systems
OBHR	64200	Comp And Reward Syst I
	64300	Comp And Reward Sys II
POL	62200	Sem Public Pol & Public Adm
STAT	69500†	Seminar in Mathematical Statistics

Any course from Area B above, not taken to satisfy Area B requirement, can be taken in Area C.

Courses from at least five different graduate programs should be taken among Areas A, B, and C. Five graduate courses must constitute a declared and approved meaningful sub-concentration.

† **When content is appropriate** **If Course Title Relevant**
Note that COM 59000F and 59000G as well as COM 60000 and 60100 are restricted to **only COM Ph.D. students.

Specific departmental requirements

- Students graduating via the Department of Communication must satisfy that department's requirements for the Masters' degree in Information Security, take COM 60000 and COM 60100 and make sure that they earn a minimum of 12 graduate credits in Communication;
- Students graduating via Technology must satisfy that department's requirements for the Masters' degree in Information Security;
- Students graduating via Linguistics must take LING 53100 and LING 68900: Natural Language Processing.