The Norwich MSIA After Six Years: A Guided Tour

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Topics

- Introduction
  - Mission
  - History
  - Admission
  - Student Profiles
  - Our Faculty
- Curriculum
- Grading
- Enrollment Statistics
- Change of Textbook
- MSIA 2.0
- Accreditation

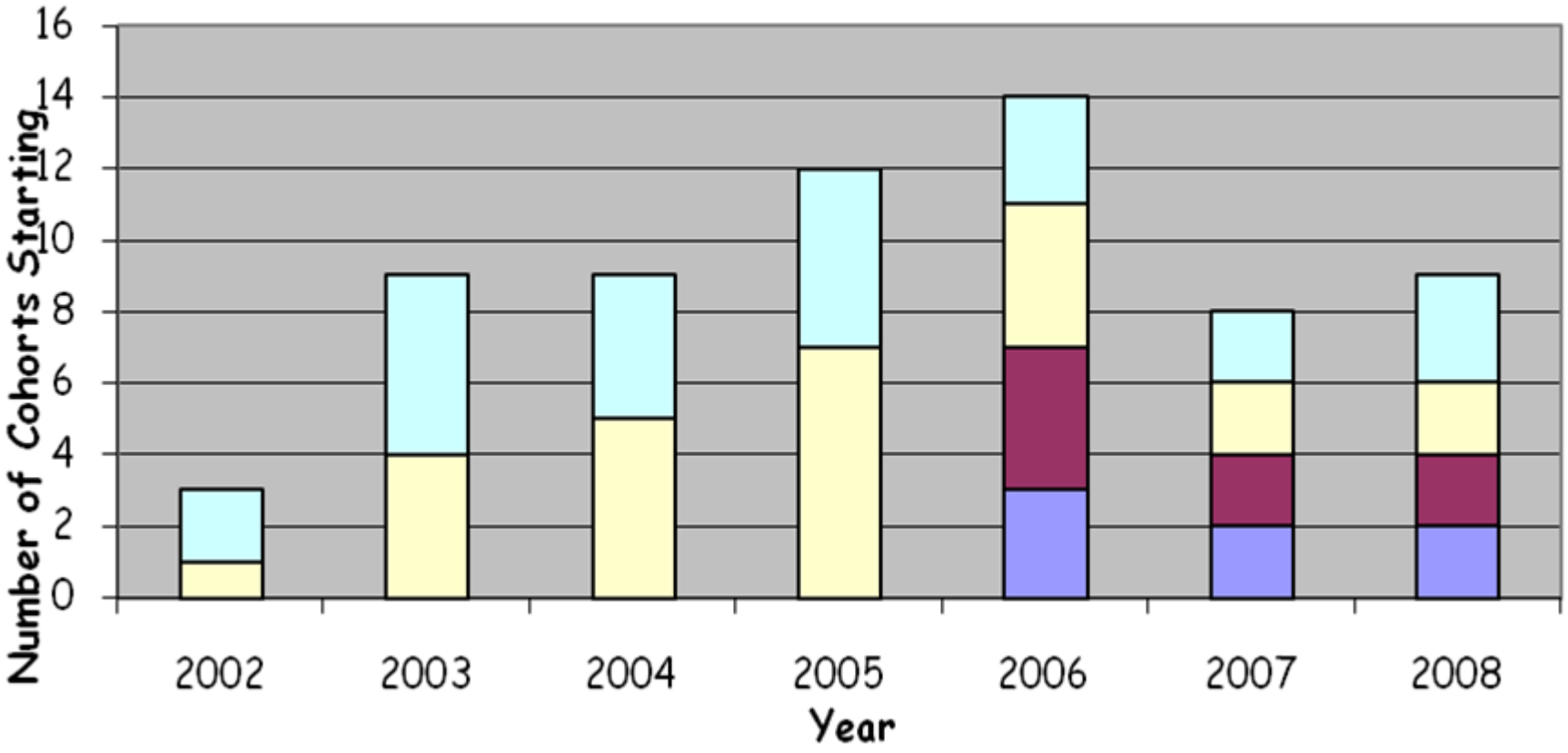
Mission of the MSIA

- Deliver *state-of-the-art, high-quality, convenient* and *reasonably-priced* MSIA degree
- Appeal especially to people who are
  - Security administrators
  - Network administrators
  - Information technology specialists who are becoming interested in IA
  - Military personnel with interest in INFOSEC, INTEL, COINTEL, SIGINT, OPSEC and INFOWAR
  - Norwich University Alumni (receive discount)
- *And to those who want to become*
  - Chief Information Security Officers
  - Chief Information Officers
  - Chief Technology Officers

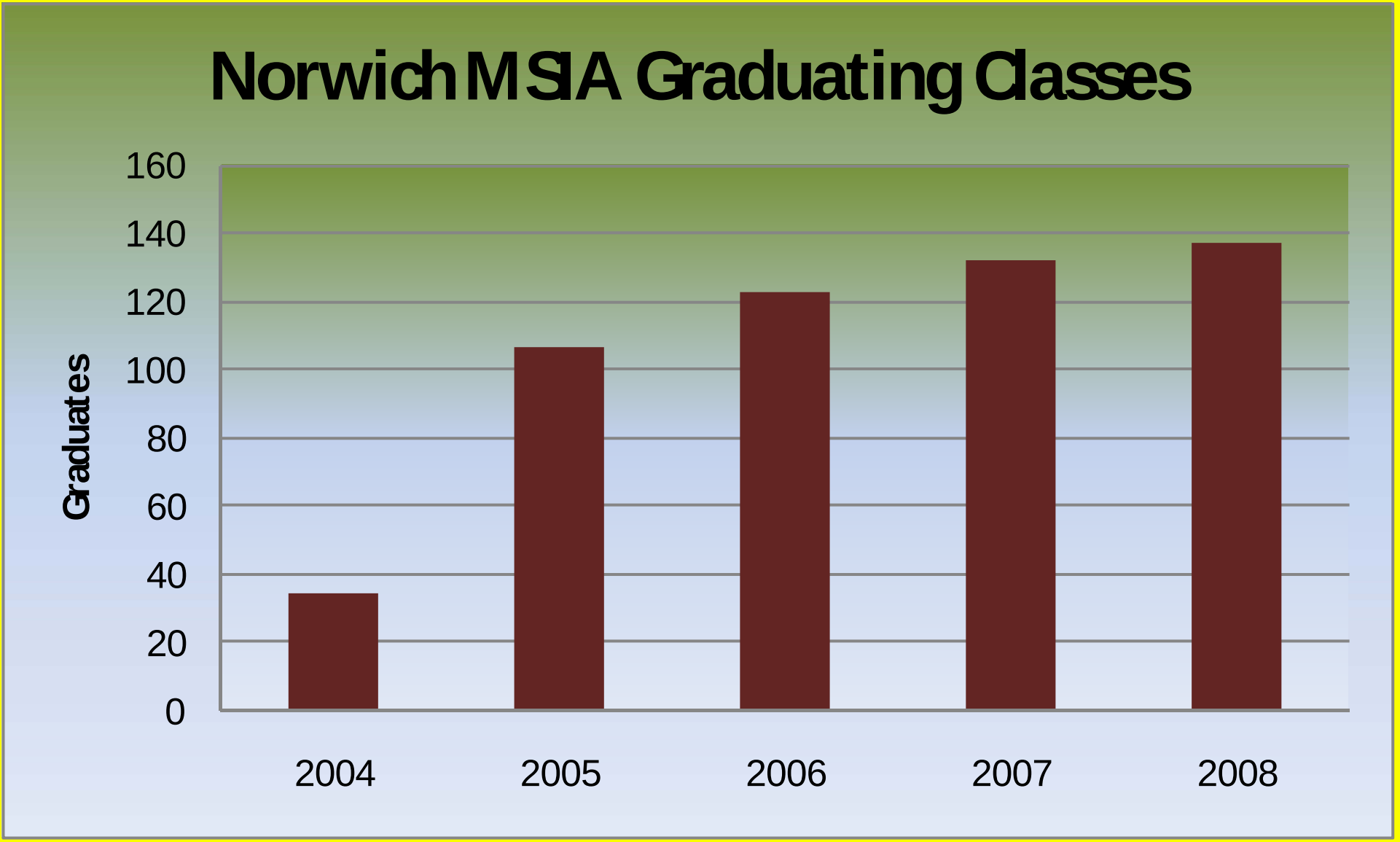
History

- Mich hired at Norwich July 1, 2001
- Asked in November 2001 to become Program Director of projected MSIA in "Online Graduate Programs" (OGP) project
- Was 2nd program – MBA had started classes in September 2001
- Completed curriculum design by March 2002
- First Administrative Director was Dr John Orlando
- Spend $0 on marketing – just wrote article in Network World and announced on education lists
- Hired colleagues as instructors using "old boys and girls network"
- Got 15 students for September 2002

Growth in Enrollment



Number of Graduates



Admission Requirements

- Bachelor's degree (arts, engineering, science) or higher (e.g., master's degree, doctorate) with a grade-point average of 2.75 or higher from a regionally accredited institution;
- For students with lower GPAs who graduated five years or less before the present, we may ask for Graduate Record Exams (GRE);
- Formal education in the prerequisite areas listed in the section below (*Familiarity…*) or proof of significant professional competence and experience in those areas;

Admission (cont'd)

- Test of English as a Foreign Language (TOEFL) scores for students whose native language is not English
- References from professional supervisors or colleagues who know applicant's work
- Essay of Intent (more in next slide)
- Citizenship in a country permitting visa for admission to the United States to attend on-campus final seminar.

Admission Letter of Application

1. Why the candidate seeks a graduate degree in information assurance
2. Why the candidate wants to enter the MSIA program at Norwich University
3. Why the candidate believes that a management-focused program is more beneficial to him/her than a technically-focused one
4. Personal strengths and weaknesses affecting the likelihood of success
5. Evidence of time-management skills allowing an average of 15 hours per week to be devoted to the MSIA
6. Analysis of support and barriers to success in the MSIA in the candidate's current workplace.
7. Affirmation that the candidate wrote the essay of intent without external help of any kind.

Admission: Choice of Case Study

- Organization-based case study (see next slides)
  - Letter of permission from case-study supervisor
  - Agreement to allow research
  - Commitment to read reports
- Industry-specific case study
  - Answer additional questions
  - Demonstrate initial awareness/research about information sources

Organization-Based Case Study

- Critically important and unique
- Study details of topics within case-study
- Apply theory to real-world situation
  - Norwich founder Alden Partridge based curriculum on *experiential learning*
  - *Informal MSIA motto: Reality Trumps Theory*
- Write analysis and recommendations at end of each seminar
  - Professional-quality management reports given to specific top managers
  - Practical and useful for organization
  - Valued by recipients and students

Industry-Specific Case Study

- Apply studies every week to specific industry
- Suitable for students who
  - Cannot obtain employer permission
  - Lose support partway through program
  - Change jobs partway through program
  - Want to change industry after graduation
- Learn to navigate sources
  - Scholarly journals, industry journals
  - Blogs, discussion groups
  - LinkedIn, alumni network
  - Forge links to industry experts
- Write White Paper at end of each seminar for potential publication

Questions about the ISCS in Application

1. Why are you choosing the industry-specific case study? *And what factors motivated you to reject the organization-based case study?*
2. Define the particular industry upon which your work will be focused. *Why have you selected that particular industry?*
3. What do you expect to be able to accomplish with 18 months of study and writing about information assurance in this particular industry? *How will an industry focus help you reach personal and professional goals?*

Questions about ISCS (cont'd)

4. **What do you expect readers to be able to do when they read your end-of-seminar reports? *What new attitudes, knowledge, or skills might a reader take away?***
5. **What information resources have already helped you determine the suitability of this industry for your case study? *List at least three (3) specific resources including at least one source of contacts with industry experts that you are confident will be useful to you during your 18 months of research.* (E.g., personal contacts with industry experts, journals, trade publications, Web sites, organizations, blogs). *Note: Wikipedia may not appear as a resource in this proposal.***

Our Students

Proportion	*Characteristic*
86%	male
36 years	average age
89%	hold a B.S. degree
63%	majored in Computer Science or Information Technology
3.1	average GPA
11 years	average IT/IS experience
7 years	average on the technical side
4 years	average in management
80%	hold at least one form of IT certification
40%	have CISSP certification

Our Faculty

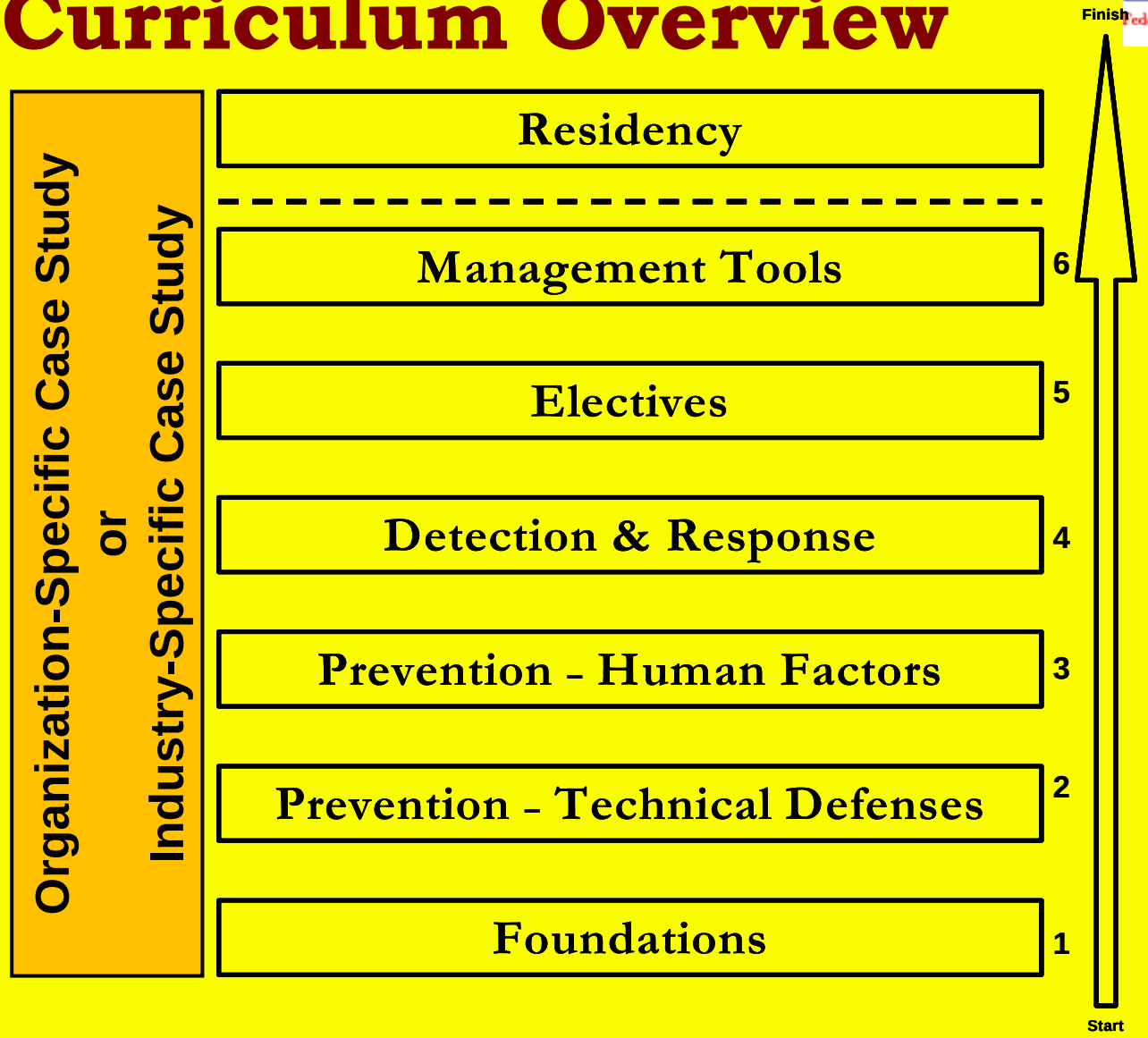
- Currently 43 active faculty members
- Extraordinary quality of instructors
  - Industry experience
  - Industry awards (2 ISSA Hall of Fame nominees, trade journal recognitions)
  - Authors and editors (columns, texts)
  - MSc or higher (10 hold PhD)
  - Certifications
    - ✓23 hold CISSP
    - ✓4 hold CISA
    - ✓8 hold CISM

Our Faculty (cont'd)

Some particularly well-known names

- **Paul Brusil, PhD – medical informatics security**
- **Stephen Cobb, CISSP – prolific writer & consultant**
- **Rebecca Herold, CISSP, CISM, CISA, FLMI**
- **Don Holden, CISSP-ISSMP – standards organizations**
- **Jim Maloney, CISSP, CISM, GCIH – former CISO, Amazon**
- **Tom Peltier, CISM, CISSP – noted author & consultant**
- **Sanford Sherizen, PhD, CISSP – author, ISSA Hall of Fame**
- **Peter Stephenson, PhD, CISSP, CISM, FICAF – author and lecturer**

Curriculum Overview



Norwich University
M.Sc. In Information Assurance

1 Foundations

Week	Topic
1	Introduction to information systems security assurance
2	Computer crime classification & surveys
3	Information warfare
4	Psychology of computer criminals
5	Penetrating computer systems & networks
6	Malicious code, mobile code & denial-of-service attacks
7	Cyberspace law & computer forensics
8	Protecting intellectual property & cyberspace law
9	Fundamentals of cryptography
10	Public Key Infrastructure
11	Preparation of student reports

2 Prevention: Technical Defenses

Week	Topic
1	Physical threats to the information infrastructure
2	Protecting the information infrastructure; monitoring, control & honeypots
3	Identification & authentication
4	Operating system fundamentals & security
5	Network management, LAN security & wireless networks
6	Firewalls, proxy servers, & intrusion detection systems
7	Anti-malware & anti-spam measures
8	E-commerce security
9	Software development & quality assurance; DRM
10	Security standards for products
11	Preparation of student reports

3 Prevention: Human Factors

Week	Topic
1	Security policy guidelines
2	Security awareness
3	Ethical decision-making & high technology
4	Employment practices & policies
5	Operations security & production controls
6	E-mail and Internet-use policies
7	Working with law enforcement
8	Using social psychology to implement security policies
9	Auditing & assessing computer systems – part 1 of 2
10	Auditing & assessing computer systems – part 2 of 2
11	Preparation of student reports

4 Detection, Response & Hot Topics

Week	Topic
1	Threat & vulnerability analysis
2	Risk assessment & risk management
3	Business continuity planning & backups
4	Disaster recovery planning
5	Computer emergency quick-response teams
6	Cyber-forensic investigations & incident postmortem
7	Censorship, privacy & anonymity
8	Standards & laws: ISO 17799, GLB, SOx & HIPAA
9	The future of information assurance
10	Professional development in IA
11	Preparation of student reports

5 Electives

- March 2006
  - Emergency Management
- Sept 2006
  - Cyber-forensic Investigations
- March 2007
  - Computer Security Incident Response Team Management
  - Security Auditing
- *Under development*
  - *Business Continuity Management*
  - *Cyber Conflict*
  - *Hands-on virtual computer security lab*

6 CISO Toolkit

Week	Topic
1	Environment-Internal: Management principles
2	Environment-External: Vendors & contracts
3	Environment-Strategy: Knowledge creation & value chain
4	Metrics: Accounting
5	Metrics: Finance
6	Metrics: Quality & statistical control
7	Decision-making & leadership
8	Project management & PM tools
9	Leadership & management skills
10	Solving problems & working with Technical Support
11	Preparation of student reports

Residency Week (Mon)

- Graduate IA Conference Plenary Session
  - Distinguished Guest Lecturer(s)
    - ✓2004: Stephen & Chey Cobb
    - ✓2005: Peter Neumann
    - ✓2006: Mark Pollitt
    - ✓2007: Karen Worstell
    - ✓2008: Gene Spafford
  - Best student paper(s)
  - Valedictorian receives award, speaks
  - Program Director & Associate Program Director address students
  - Distinguished Faculty Lecturer Award

Residency Week (Tue – Wed – Thu – Fri)

- Tue & Wed: Conference Workshops; e.g.,
  - Prof Rebecca Herold on Privacy
  - Prof Don Holden on IA Metrics
  - Prof Mich Kabay on Human Factors in IA
  - Prof Jim Maloney on CISO perspectives
  - Prof Peter Stephenson on Cyber Forensics
  - Prof Tom Peltier on Risk Management
- Thu events
  - (ISC)2 examinations (CISSP, ISSxP, SSCP)
  - War Games
  - Visit Mich's home (40-acres)
  - Hooding ceremony
- Fri – Focus groups, graduation ceremony

Grading

- Principles
- Weekly Discussions
- Weekly Essays
- Exams
- End-of-Seminar Reports

WEIGHTS	Minimum to pass**			Required for maximum				
	#	Each	Subtotal	#	Each	Subtotal	Max	%
Essays	6	10	60	3	9	30	90	22.5%
Discussions	5	10	50	5	10	50	100	25%
Exams	2	40	80				80	20%
Term paper	1	130	130				130	32.5%
Totals			320			80	400	100%

Principles of Grading

- Rapid response
- Feedback through written or verbal comments (sound annotations)
- Linked to real-world standards
  - Professionalism at all times
- Grading rubrics
- Generally <80% = 0 credit for assignment
- Plagiarism spot-checking (new)
- Quality control by Assistant Directors
  - Response time
  - Quality of feedback
  - Monitor grade inflation

Weekly Discussions

- Questions every week for asynchronous discussion
  - 2 questions included from curriculum developers
  - 1 question added by instructor
- Grading
  - 4 or more substantive postings – maximum points = 10
  - 3 substantive postings – maximum points = 9
  - 2 substantive postings – maximum points = 8
  - Fewer than 2 substantive postings – points = 0

Weekly Essays

- One essay each week for Weeks 1 through 9
- Two weeks deadline for each essay
- Grading based on rubric
  - Target audience, insights, issue identification
  - Analysis, integration of course materials, organization
  - Effective use of language and grammar
  - Citations and sources

The Essay Rubric

RUBRIC for the WRITTEN ASSIGNMENT (10 points)				
	90 - 100%	**80 - 89%**	**70 - 79%**	**0 - 69%**
Target Audience, Insights and Issue identification Weight .35	Excellent grasp of all the major issues and clear focus on the audience; solid understanding of the purpose of the exercise.	Good grasp of the major issues; good focus on the audience and a clear understanding of the exercise.	Not quite on target in terms of the purpose of the exercise, the audience or the issues that needed to be addressed.	Missed most of the essential points and issues. Poor grasp of the overall purpose of the exercise.
Analysis, Integration of Course Materials and Organization Weight .35	Excellent use of principles and materials; creative or superior analysis and organization.	Reasonably good effort in integrating course materials and principles; some work needed on analysis and organization.	Missed some opportunities in integrating applicable principles from course materials; overall organization needs work.	Simplistic analysis and a cursory effort in terms of integration; very poor organization.
Effective Use of Language and Grammar Weight .20	Strong sentence and paragraph development; very few errors or just minor errors in terms of grammar and spelling.	Reasonably good sentence and paragraph development; some errors in terms of grammar and spelling.	Good faith attempt at sentence and paragraph development, but more work needed on the major rules of grammar and spelling.	Poor overall writing skills; obvious lack of editing or non-use of spell check feature.
Citations and Sources Weight .10	Virtually error-free or just a few minor errors.	Some errors in use of the selected style.	Numerous minor errors in compliance with the selected style	Not a good faith effort in complying with select style requirements.

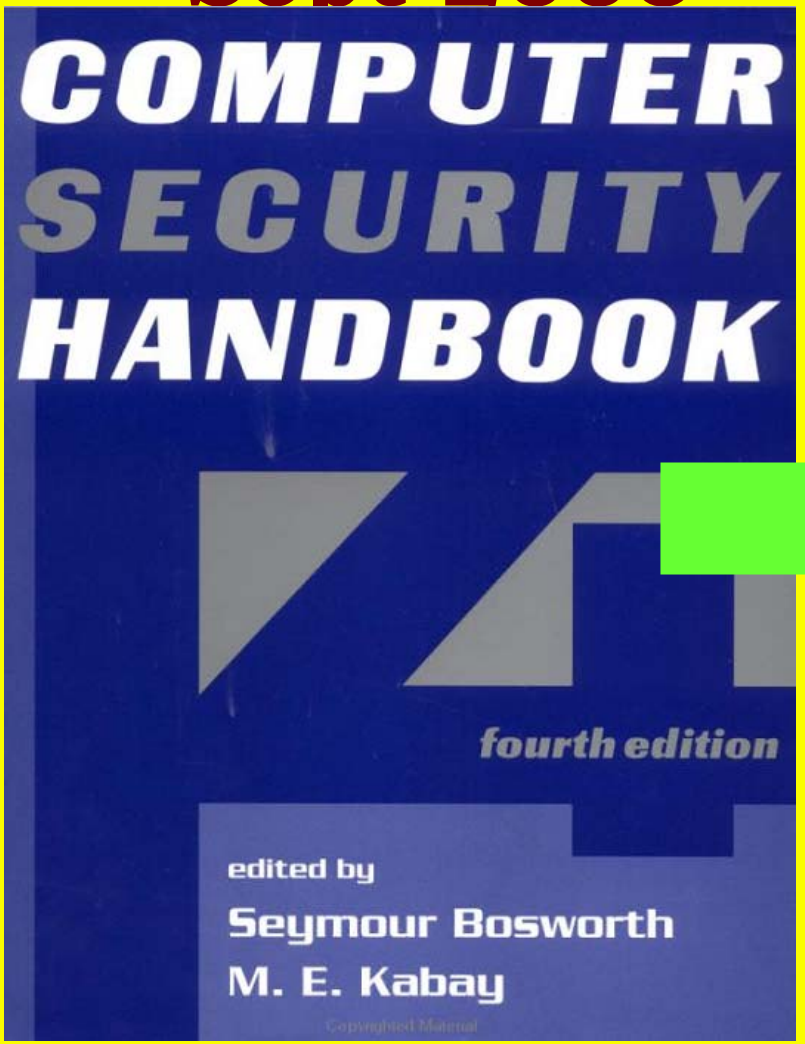
Exams

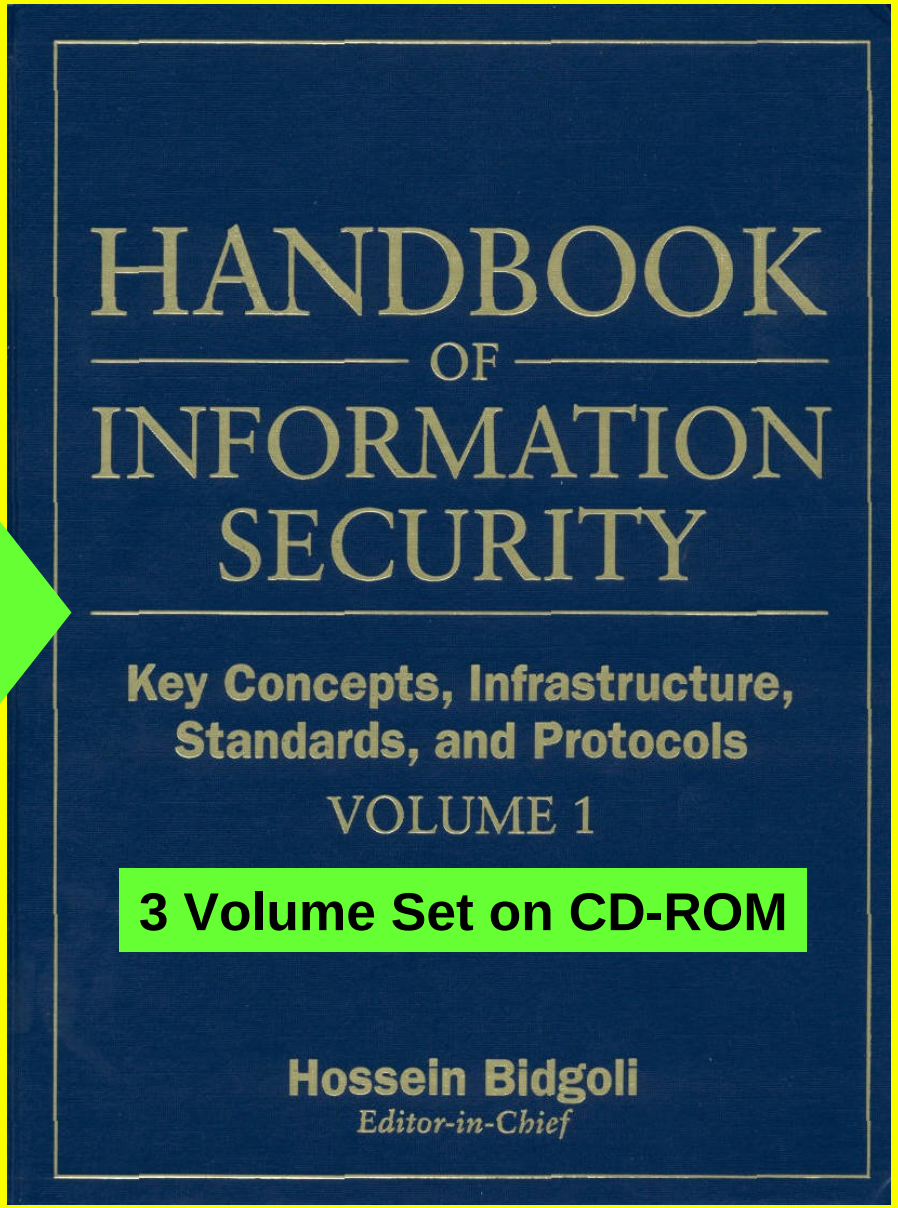
- Two exams per seminar
  - Week 5
  - Week 9
- Four questions supposedly from colleagues to a CISO
  - Wide range of issues and communications styles
  - Some humor included
- Responses
  - 400-500 words
  - Professional and to the point

End-of-Seminar Reports

- 8000±2000 words
- Analysis and recommendations based on research in weekly essays + additional readings and thought
- NOT a cut-and-paste of weekly essays
- Strict standards for citations
- Graded using same rubric as weekly essays

Change of Main Textbook Sept 2006





MSIA 2.0

- Autumn 2007: decision & plan for complete rewrite
  - Ground up (no assumptions about holdovers)
- Directors swapped roles (increase resilience)
  - Peter Stephenson took on curriculum
  - Mich Kabay took on faculty management
- Obtained academic approval for change late 2007
- Planning for start of new program March 2008

NSA/DHS Accreditation

http://www.nsa.gov/ia/academia/caeiae.cfm

- **Norwich University was accredited by the NSA in 2001 as the 26th National Center of Academic Excellence in Information Assurance Education**
- **We were recertified in 2004 and in 2007**

Professional Certifications

- All but one of the MSIA graduates (about 200) who have taken the examination for the Certified Information Systems Security Professional certification have passed it on their first try.
- The normal pass rate is estimated to be around 50-70%.
- Could this 99.5% success rate be chance alone?
  - H_0: parametric rate really 70% pass
  - Comparison-of-sample-and-population test gives 95% lower confidence limit of estimated parametric pass rate as 97.7%
  - Probability that MSIA rate > 70% is > 99.9%.

FOR MORE INFORMATION

http://www.graduate.norwich.edu/infoassurance/

NORWICH UNIVERSITY

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Federal Information Systems Security Educators' Association
AWARENESS • TRAINING • EDUCATION

DISCUSSION