

# Master of Information Systems Security Management

- Highest Academic ISS Credential
- Comprehensive Design
- Cryptography
- Firewalls
- Forensics
- Ethics & Cyberlaw
- International research faculty
- Professional advisory committee

**Jennifer Ng**

*Graduate, Information Systems Security Program*



**CONCORDIA**  
University College of Alberta

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# Careers

Globalization and world wide technology transfer have accelerated the demand for secure information systems. In order to compete effectively in the new economy that demands a 24/7 response capability, organizations require continuous access to technological expertise that can ensure the integrity of their systems and availability of their data and information. Concordia's Master of Information Systems Security



**Candace Kryg**

Graduate, Information System Security Program  
Ernst & Young LLP Calgary  
Technology and Security Risk Services

Management (MISSM) was designed with this goal in mind.

With the assistance of industry focus groups, Concordia developed a quality international curriculum that enables graduates to address the complex challenges posed by a technologically dependent and knowledge based society. Data provided by leading research authorities such as the Alberta Learning Information Service (ALIS), Conference Board of Canada, Fraser Institute, the Government of Canada, and other independent sources indicate that career opportunities in the information technology field, including

security will increase exponentially in the next decade and beyond.

Many career paths open up to those who complete the Master of Information Systems Security Management program. Our graduates are currently working in the fields of IT security auditing, IT technical security, risk management, privacy compliance, and in management capacities with government, post secondary education, accounting, consulting and financial services organizations.

IT security auditing involves conducting audits in key areas where organizations are at risk to loss of information. IT security administration addresses design architecture choices based on ISO, disaster recovery and project management best practices. With the proliferation of privacy legislation, many graduates work in the privacy compliance field to develop and implement a variety of administrative, policy and technical security changes. Twenty-one percent (21%) of past graduates are now in management positions, managing network security, architecture or the IT function.



**Don Rhodes, CISA**

Graduate, Information Systems Security Program  
IT Audit Manager, ATB Internal Audit

# Program Overview:



**Ron Ruhl, MBA**  
Assistant Professor and Director  
Information Systems Security Department

## Fall Term (September to December)

- Systems Development & Project Management
- Introduction to Information Systems Security
- TCP/IP Architecture
- Financial Management & Analysis
- Risk Management and Analysis

## Winter Term (January to April)

- Firewall Fundamentals
- Research Methods I
- Securing an E-Commerce Infrastructure
- Organizational Behavior
- Cryptography & Secure Network Communications

## Spring Term (May to July)

- Forensics
- Security Policies, Standards, and Management
- Advanced Network Security Information
- Technology Security Laws and Ethics
- Research Methods 2
- Disaster Recovery Planning

## Research Project (August to December)

- wide range of topics available
- all projects advisor-supported

## Course Descriptions

### ISSM 507 Organizational Behavior

Organizational behavior integrates content from several fields including psychology, sociology, economics, organization theory and statistics to explain the motivations of people and how the potential of the human side of business is best harnessed.

### ISSM 511 Introduction to Information Systems Security

This introductory course covers issues, policies, practices and procedures applicable to securing servers to make them resistant to penetration.

### ISSM 521 TCP/IP Architecture

Full, in-depth coverage of the current TCP/IP protocol (32 bit IPv4) including packet analysis. In addition, this course also includes an overview of the new 128 bit version of TCP/IP. Students will install servers and simulate a network environment that has the capacity to accommodate thousands of users (through the use of typical networks, servers, routers and network configuration).

### ISSM 525 Securing an E-Commerce Infrastructure

This course focuses on securing the e-commerce infrastructure, taking into account data architecture management and advanced network protocols. In the e-commerce environment, both information security needs of organizations and privacy needs of customers and clients are examined.

### ISSM 531 Advanced Network Security

This course reviews the network environment and any enterprise resource considerations for planning network connectivity and security. Students secure web and ftp servers in a lab environment and apply appropriate fixes and patches to ensure the servers are protected to the desired standards. Prerequisites: ISSM 511, 521 and 525.

### ISSM 533 Cryptography and Secure Network Communications

This course in cryptography focuses on securing data through authentication, cryptographic algorithms, access control, public key encryption and public key distribution using best practices for secure communications. Prerequisites: ISSM 511, 521 and 525.

### ISSM 535 Firewall Fundamentals

Covers both the theory behind firewall technology and the practical implementation in routed IPv4 based TCP/IP based networks. Prerequisites: ISSM 511, 521 and 525.



### **ISSM 536 Forensics**

An in-depth analysis of incidence response and forensic sciences that can be applied to computer media in order to determine losses and compromises to the security of information. The techniques used in the course cover a wide variety of operating and file systems; however, the lab work in the course will deal with the most commonly used computer and file operating systems.

### **ISSM 538 Research Methods I**

This course is lecture based and focuses on formulating a research question or research problem, determining research design, assessing data collection methods, determining a sampling framework, types of data analyses and interpreting data.

### **ISSM 539 Research Methods II**

The students work to determine specific areas of interest and to develop a research plan and research proposal which will later be used (if approved) as the basis to register in either ISSM 570 or ISSM 571. Prerequisites: ISSM 538 and/or consent of the department.

### **ISSM 541 Financial Management and Analysis**

The course focuses on financial management theory and financial statement analysis. Students use rate-of-return, break-even, scenario analysis and other methods to evaluate projects and organizational performance.

### **ISSM 543 Systems Development and Project Management**

In-depth study of the concepts and techniques for designing, developing and/or revising projects and software development using a planned approach.

### **ISSM 545 Security Policies, Standards and Management**

Topics include: security management principles, defining security requirements, planning and documenting security policies, asset identification and control, system access control and Internet security. Students also learn how to formulate, administer, manage and evaluate network security policies and standards based on best standards for security (ISO 17799), best practices for security auditing (COBIT) and the protection of private information required by Canadian laws.



**Dale Lindskog, Ph.D.**  
Adjunct Professor and graduate ISS

### **ISSM 551 Disaster Recovery and Planning**

An in-depth coverage of disaster recovery planning including, techniques to prevent, detect and recover from loss of information availability. Prerequisites: ISSM 511, 521, and 525.

### **ISSM 553 Risk Management and Analysis**

Topics covered include how to conduct vulnerability assessments, the use of risk assessment tools and how to establish a cost benefit analysis for specific safeguards to ensure that information is confidential, available and has integrity.

### **ISSM 561 Information Technology Law and Ethics**

This course provides an overview of International and Canadian laws, legislation and legal issues relevant to the information systems security profession.

### **ISSM 570: Practicum Based Research Project**

Each student will conduct his or her research in a professional work environment with the approval and under the supervision of (a) a work-experience supervisor in the sponsoring institution and (b) Concordia's Information Systems Security Management director or a designate. Prerequisites: Successful completion of all core ISSM courses and a minimum grade point average of 3.0.

### **ISSM 571: Research Project in Subject Area**

Each student will conduct his or her research with the approval and under the direction of Concordia's Information Systems Security Management director or a designate. Prerequisites: Successful completion of all core ISSM courses and a minimum grade point average of 3.0.

# Highlights

A key aspect of the MISSM program is the research component. Its purpose is to deepen a student's understanding of a specific aspect of information systems security management. Concordia provides a positive research environment and experiential opportunity to all students by focusing on practical security problems. The program has been designed to accommodate a broad range of interest in the field of ISS security including e-commerce, forensic analysis techniques, security management, software and hardware security, privacy and security

of sensitive systems, steganography and security of distributed information systems.

The research component of the MISSM program seeks to involve students in both practical aspects of information security management as well as original research projects supervised by its internationally renowned academic faculty. This provides students with an opportunity to carry out research with experienced practitioners and, in the process, to develop advanced research skills.

Dr. Zavorsky is an internationally recognized and award winning scholar and researcher. He is an expert in database management systems, information systems, e-commerce, project management, computer networks and web-enabled technologies. He has lectured in Canada, the United States, Australia, United Kingdom, Japan, Italy, India, Thailand, Hong

Kong, Croatia, Czech Republic, Slovakia and Brazil and continues to actively collaborate on international research projects funded by UNESCO and other funding agencies in his various fields of expertise. He was formerly an Associate Professor in the Department of Management and Information Sciences at Nagaoka University of Technology in Japan.



**Pavol Zavorsky, Ph.D.**  
Associate Professor & Director of Research



**Martin Kratz,**  
Adjunct Professor, Technology Law

Martin Kratz is a nationally recognized expert in the field of technology law. He has over a hundred publications with a focus on e-commerce, internet, electronics, software, and telecommunication.



## Who needs IT Security expertise?

- **Government**
- **Financial Services Firms**
- **Technology Development Firms**
- **Companies or Persons who wants to use the internet to provide service or exchange information**

Students who graduated from the After-Degree Diploma in Information Systems Security (ADDISS) Program may apply and request advanced standing in the courses they took in the program provided they have a 3.0 average or better in the ADDISS program with no mark less than 2.3.

## Admission Requirements:

Please visit our website for complete details on admission requirements ([www.infosec@concordia.ab.ca](mailto:infosec@concordia.ab.ca)). Abbreviated requirements include:

1. a) Four-year Bachelor's degree from a recognized educational institution (preferably in business, engineering or computing science).  
or  
b) Applied Bachelors degree with 3 years work experience.
2. A minimum admission grade point average (AGPA) of 3.0.
3. A security clearance.
4. Demonstrated fulfilment of Concordia's English Language Requirement, section 5.1.5.
5. A GPA of at least 3.0 on a general Network Technology course and 3.0 on an Operating Systems course or equivalent knowledge.
6. An interview.

Note: Courses required for admission in network technology & operating systems are available at Concordia. Ask us about scheduling these pre-requisite courses at 780-413-7822.

## Typical Admission Schedule

- |                               |                           |
|-------------------------------|---------------------------|
| • Application Form            | May 1st (or until filled) |
| • Transcripts & documentation | May 1                     |
| • Official transcripts        | June 15th                 |



## Bonus Enrollment Package

- Free laptop computer
- Preparation course for CISSP exam
- Career Counselling Services

\* Contact program director for details



Email or contact us @:

### Master of Information Systems Security Management

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