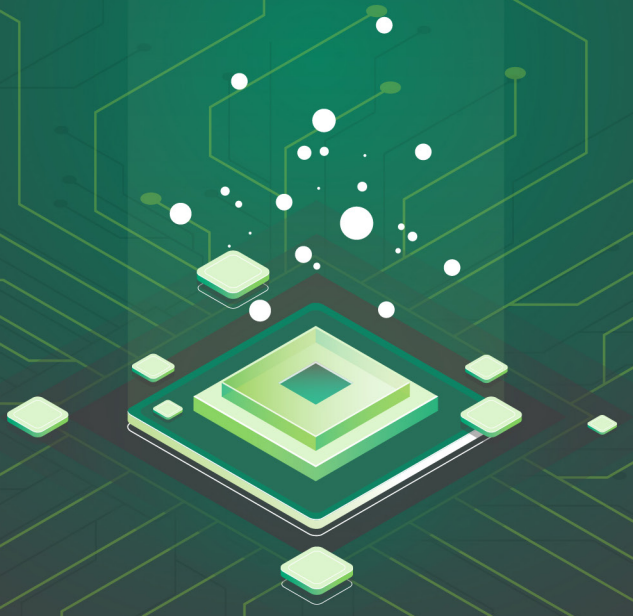
DE LA SALLE UNIVERSITY

GRADUATE PROGRAMS IN COMPUTER STUDIES



DE LA SALLE UNIVERSITY

COLLEGE OF COMPUTER STUDIES

Developing experts in computer science, computer engineering, information technology, and information security.

Equipping tomorrow's leaders in industry, academe, and government.

COLLEGE FACTS & FIGURES

- Achieved Level IV PAASCU accreditation for its Computer Science undergraduate curriculum
- Alumni hold key positions in local and international IT corporations
- All 55 full-time faculty members in the College have master's degrees, and 20 of them have doctoral degrees. 15 faculty members graduated from foreign universities.
- 287 Scopus-indexed papers with 784 citations in Scopus-indexed publications as of February 2022
- With advanced computing and laboratory facilities for various research laboratories under the Advanced Research Institute for Informatics, Computing and Networking (AdRIC)

GRADUATE DEGREE PROGRAMS

- Doctor of Philosophy in Computer Science (PhDCS)
- Master of Science in Computer Science (MSCS)
- Doctor in Information Technology (DIT)
- Master in Information Technology (MSIT)
- Master in Information Security (MIS)
- Master of Science in Information Technology (MINFSEC)

Doctor of Philosophy in Computer Science

The **Doctor of Philosophy in Computer Science (PhDCS)** program is designed to develop scientists capable of conducting independent research in Computer Science. Courses are organized depending on the research interest of each candidate for a deeper knowledge of Computer Science as well as ample preparation for scientific research in a chosen field of specialization. As part of a sandwich program, a PhD candidate is encouraged to spend three to 12 months of dissertation research at a host university in a foreign country for opportunities to discuss research work with international experts.

Admission Requirements

The program accepts applicants who have an MS in Computer Science degree with research-based thesis and at least one research-based paper published in a national or international refereed CS conference.

Master's degrees from the following fields may be considered for entry into the program (others may be considered on a case-to-case basis) upon completion of the required remedial coursework/s:

1. MS in Computer Science (MSCS) without a research-based thesis
2. Master in Computer Science (MCS)
3. MS in Information Technology (MSIT)
4. BSCS with an MS degree in another field
5. BS and MS degree in another field but with IT experience

Note:
- For (1) and (2), applicants must undergo 6 units remedial coursework and 3 units Methods of Research.
- For (3), (4), and (5), applicants must undergo 15 units remedial coursework and 3 units Methods of Research. In addition, the applicant should have a GPA of at least 80% or its equivalent in their MS degree. For foreign applicants from non-English speaking countries, a TOEFL score of at least 550 is required.

Degree Requirements

The PhD in Computer Science degree is obtained primarily through supervised research. It is awarded upon fulfillment of the following requirements:

- completion of all academic courses
- pass the Oral Comprehensive examination
- submission of a doctoral dissertation based on an independent, original research
- successful defense of the doctoral dissertation
- publication of a full paper on the dissertation research in a reputable refereed international scientific journal or from a tier 1/2 ISI/Scopus-indexed CS conference with the PhD candidate as first author

• fulfillment of the residency and other University requirements

Academic Program Components

For applicants with a degree of Master of Science in Computer Science with a research-based thesis, or those with other degrees and already completed required remedial courses:

Specialized courses	**24 units**
Doctoral dissertation	**12 units**
Total	**36 units**

For applicants with a degree in Master of Science in Computer Science or Master in Computer Science without a research-based thesis, the following are the remedial academic requirements before entering into the PhD program proper:

Remedial courses	**6 units**
Methods of Research	**3 units**

Plus a research-based paper published in a national or international refereed CS conference.

For applicants with a degree in Master of Science in Information Technology, or BSCS with a non-MSCS degree, or non-BSCS and non-MSCS degree but with IT experience, the following are the remedial academic requirements before entering into the PhD program proper:

Remedial courses	**15 units**
Methods of Research	**3 units**

Plus a research-based paper published in a national or international refereed CS conference.

Note:
Remedial courses can be MSCS Foundation courses or electives as defined by the Graduate Program Coordinator on a case-to-case basis.

Master of Science in Computer Science

The **Master of Science in Computer Science (MSCS)** program is a two-year post-graduate course designed to train students in undertaking high-level research in the advanced field of computing. In the course of the program, students develop a rigorous and deeper understanding of the theoretical and underlying principles of computation in the areas of programming languages, computer architecture, operating systems, algorithms and complexity, automata, and intelligent systems. By engaging students to work in research laboratories, they are further equipped with technical project management skills to lead in the advancement of computer science research.

The program makes extensive use of published research papers and journals to encourage students to develop new or adapt existing algorithms, and to explore their innovative applications in various domains. These heavily rely upon independent research by students, and provide opportunities to integrate theories and disseminate research results to local and international audiences.

Students coming from non-CS and non-IT academic backgrounds who wish to take the program are prepared through a series of remedial courses. Candidates' understanding of the theories in computing, and their proficiency and style in written and oral communication are primarily attested to by the successful completion and defense of a master's thesis.

The program is an appropriate preparation for those aspiring to discover new approaches to solving a computing problem, and to make an existing technology adapt to new application for those seeking a career in the dynamic field of computing; and for those intending to develop their skills in conducting research and further studies at the doctoral level.

Admission Requirements

The program accepts applicants who have a Bachelor's degree in Computer Science or ITE allied fields (e.g. sciences, math, and engineering). Other Bachelor's degrees may be considered on a case-to-case basis.

Note:
- Applicants may be required to take remedial courses depending on their degree or courses they have taken up during their Bachelor's degree.
- Since the program will be administered in English, students are expected to demonstrate a strong grasp of the language.

Degree Requirements

The Master of Science in Computer Science degree is obtained primarily through supervised research. It is awarded upon fulfillment of the following requirements:

- completion of all academic courses
- pass the Oral Comprehensive Examination
- submission of a master's thesis based on an independent, original research
- successful defense of the master's thesis
- publication in a reputable refereed international scientific journal or from an ISI/Scopus-indexed CS conference
- fulfillment of the residency and other University requirements

Academic Program Components

The program is composed of **18 units of foundation courses, 12 units of elective courses, and 6 units of thesis.**

Foundation Courses (18 units)
- Advanced Operating Systems
- Advanced Computer Architecture
- Advanced Automata and Complexity
- Theories of Programming Languages
- Design and Analysis of Algorithms
- Methods of Research for Computer Science

Elective Courses (12 units)
- Artificial Intelligence and Machine Learning
- Neural Networks
- Natural Language Processing
- Data Science
- Empathic Computing
- User Modeling
- Human-Computer Interaction
- Bioinformatics
- Augmented and Virtual Reality
- Complex Systems
- Digital Signal Processing
- Computer Vision and Pattern Recognition
- Internet-of-things
- Cybersecurity

Thesis (6 units)

Doctor in Information Technology

The **Doctor in Information Technology (DIT)** program is designed to equip candidates with knowledge and skills needed to become agents for societal and organizational change through the planning, management, and implementation of IT in a theoretically grounded, relevant, innovative, critical, and ethical manner. The course seeks to bridge practice and theory and develop professionals who can link social and organizational knowledge, technical expertise, and ethics. Emphasis is placed on preparing students to understand, plan, and manage IT interventions in business, educational, and government settings. Successful candidates can become policy makers, chief information officers, expert lecturers or researchers, and heads of organizations.

Admission Requirements

The program accepts applicants who have a relevant Master's degree and two years of relevant work experience. Master's degrees from the following fields are considered ideal (others may be considered on a case-to-case basis):

- MSIT/MSCS/MCS/MIT graduates
- MBA/Master in Public Administration/Master in Education
- Master of Science in Engineering, Math, Science, and Statistics

Note:
- All applicants must have middle level management, teaching, or research experience.
- For those with non-CS or non-IT master degrees, applicants must have some background in IT specifically in information systems development and information systems planning.
- Since the program will be administered in English, students are expected to demonstrate a strong grasp of the language. Applicants may be required to submit their TOEFL results.

Degree Requirements

The Doctor in Information Technology (DIT) degree is obtained primarily through supervised research. it is awarded upon fulfillment of the following requirements:

- completion of all academic courses
- pass the Oral Comprehensive Examination
- submission of a doctoral dissertation based on an independent, original research
- successful defense of the doctoral dissertation
- one (1) local and one (1) international publication, or two (2) published and presented papers related to the dissertation topic before final defense
- fulfillment of residency and other University requirements

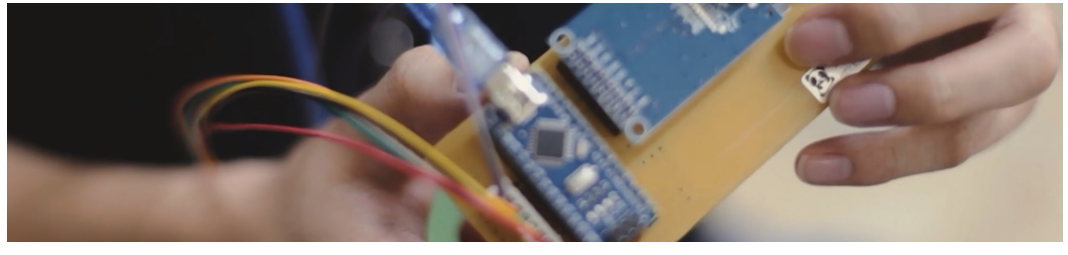
Academic Program Components

Foundation Courses (12 units)
- An Overview of IT in Society
- Social/Organizational Theory
- Theoretical Approaches to IT
- Ethical Theories and Applications

Specialized/Required Courses (6 units)
- Internet and Information Infrastructure
- Information Systems Planning, Design, Analysis and Databases

Elective Course in line with track selected (3 units)
- Interdisciplinary Science Studies for Innovation Leadership
- Qualitative and Quantitative Research Methods
- Special Topics in Game Development
- Special Topics in Disaster Management
- Special Topics in Business Process Innovation
- Health Informatics
- Other doctoral level specialized subject

Case study and Immersion	**3 units**
Methods of Research	**3 units**
Dissertation Writing	**12 units**
Total	**39 units**



Master of Science in Information Technology

The **Master of Science in Information Technology (MSIT)** program is designed to equip professionals with knowledge and skills needed to become organizational and societal leaders who will act as agents of change through the planning, development, and implementation of technology-based solutions.

In the course of the program, students develop a rigorous understanding of organizational (business, government, as well as other organizational forms) along with deep technical skills. In this way, they are trained to be leaders who can harness ICT's transformational role and bridge issues in the domains of both organizations and technology. The final thesis requirement allows students to demonstrate mastery of both a specific topic and the relation of this topic to a broader area of inquiry or interest. This requirement serves as a summative expression of what the graduate student has learned in the program.

Admission Requirements

The program accepts applicants who have a Bachelor's degree in Computer Science or ITE allied fields and one year of IT-related work experience. Other Bachelor's degrees may be considered on a case-to-case basis.

Note:
- Applicants may be required to take remedial courses depending on their degree or courses they have taken up during their Bachelor's degree.
- Since the program will be administered in English, students are expected to demonstrate a strong grasp of the language. Applicants may be required to submit their TOEFL results.

Degree Requirements

The Master of Science in Information Technology degree is obtained primarily through supervised research. It is awarded upon fulfillment of the following requirements:

- completion of all academic courses
- pass the Oral Comprehensive Examination
- submission of a thesis based on an independent, original research
- successful defense of the thesis
- publication in a reputable refereed scientific journal or Scopus-indexed CS conference
- fullfillment of residency and other University requirements

Academic Program Components

Remedial Courses (18 units)
- Project Management and IS Development
- IT Resource Management
- Basics of Databases
- Basic Programming
- Advanced Programming
- Introduction to Software Engineering

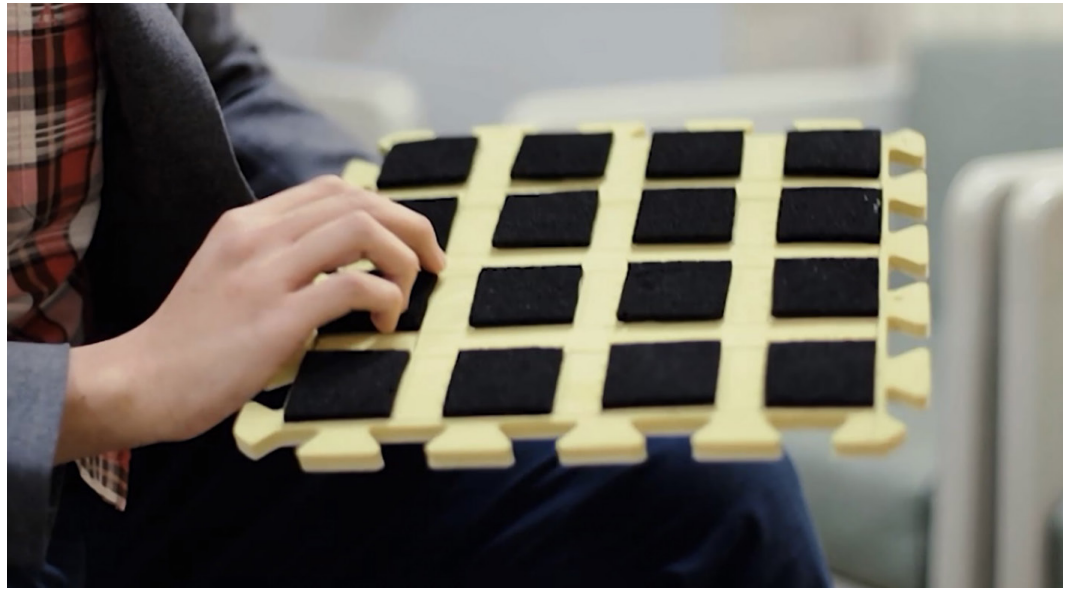
Note:
- Remedial courses will be taken based on the applicant's Bachelor's degree or courses taken, as well as work experience.

Foundation Courses (18 units)
- Programming Languages
- Advanced Databases
- Network and Data Communication
- Computer Architecture
- Economics of Technology Management
- IS Theory and Practice

Specialization Courses (18 units)
- Organizational Innovation and Change Management
- Methods of Research
- IT Ethics and Leadership

The other 9 units may comprise of the following, coming from elective courses:
- Development Informatics
- Development Economics and ICT Policies
- Introduction to E-Government
- Innovations and Technology Management
- Work Transformation and Organizational Productivity
- Trends in ICT and Business-Organizational Productivity
- Client Relationship Management
- Introduction to Enterprise Architecture
- Knowledge and Information Management
- IT Service Management
- Supply Chain and the Role of ICT
- Business Process Outsourcing
- Business Intelligence

Thesis (6 units)
This requirement allows students to demonstrate mastery of both a specific topic and the relation of this topic to a broader area of inquiry or interest. This requirement serves as a summative expression of what the graduate student has learned.



Master in Information Technology

The **Master in Information Technology (MIT)** program combines knowledge in organizational systems, information security and management, and service management. Based on a multidisciplinary curriculum, the program shall equip professionals with the tools, knowledge, skills, and understanding of the latest technologies that are used in today's business organizational environment. The program also addresses behavioral, managerial and technical aspects of ICT in organizational systems.

The MIT program responds to the demand for professionals versed in information technology and security, risk management, and service management by offering courses that allow candidates to make immediate contributions to the workplace.

Admission Requirements

The program accepts applicants who have a Bachelor's degree in Computer Science or ITE allied fields and one year of IT-related work experience. Other Bachelor's degrees may be considered on a case-to-case basis.

- Applicants may be required to take remedial courses depending on their degree or courses they have taken up during their Bachelor's degree.
- Since the program will be administered in English, students are expected to demonstrate a strong grasp of the language. Applicants may be required to submit their TOEFL results.

Degree Requirements

The Master in Information Technology degree is obtained primarily through supervised research. It is awarded upon fulfillment of the following requirements:

- completion of all academic courses
- pass the Oral Comprehensive Examination
- submission of a capstone project
- successful defense of the capstone project
- fullfillment of residency and other University requirements

Academic Program Components

Remedial Courses (18 units)
- Project Management and IS Development
- IT Resource Management
- Basics of Databases
- Basic Programming
- Advanced Programming
- Introduction to Software Engineering

Foundation Courses (15 units)
- Advanced OS and Networking
- Advanced Systems Design and Implementation
- Technology and Project Management
- IS Architecture
- IT Service Management

Specialization/Elective Courses (15 units)
Enterprise Agility
- Risk Management and Business Continuity Planning
- Information Security and Regulatory Compliance
- Business Intelligence Analysis
- Enterprise Architectures
- Emerging Trends in Computing

Capstone Project (6 units)
This requirement allows students to demonstrate mastery of a specific topic and serves as a summative expression of what was learned in the program.

Master in Information Security

The **Master in Information Security** program aims to prepare learners to be professionals that are knowledgeable in designing, implementing, assessing, and managing the security of IT systems through sufficient coverage of both theory and application in the different domains of information security.

Admission Requirements

The program accepts applicants who have a Bachelor's degree in Computer Science or ITE allied fields and one year of IT-related work experience or two years relevant work experience. Other Bachelor's degrees may be considered on a case-to-case basis.

- Applicants may be required to take remedial courses depending on their degree or courses they have taken up during their Bachelor's degree.
- Since the program will be administered in English, students are expected to demonstrate a strong grasp of the language. Applicants may be required to submit their TOEFL results.

Degree Requirements

The Master in Information Security degree is awarded upon fulfillment of the following requirements:

- completion of all academic courses
- pass the Oral Comprehensive Examination
- completion of two (2) major integrative projects
- successful defense of the capstone project
- fullfillment of residency and other University requirements

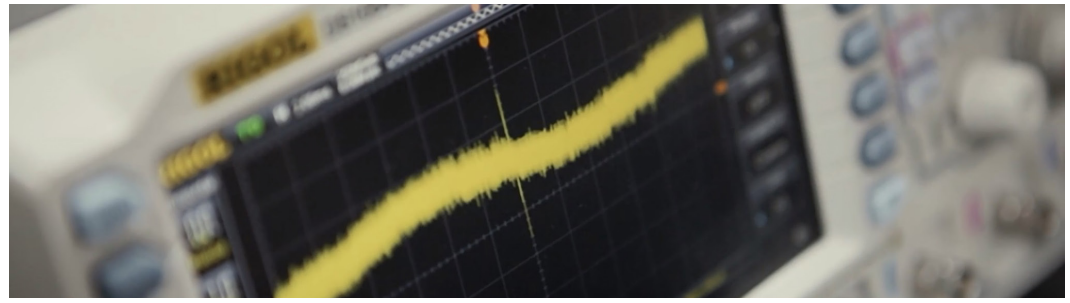
Academic Program Components

Foundation Courses (8 units)
- IT Foundations (Networks, Databases, System Administration)
- Introduction to Information Security
- Technical Writing for IT

Secure Provisioning and Operation (8 units)
- Application and Data Security
- Network Security
- IT Security Project 1

Threat Defense and Analysis (6 units)
- Vulnerability Assessment and Management
- Cybersecurity Operations

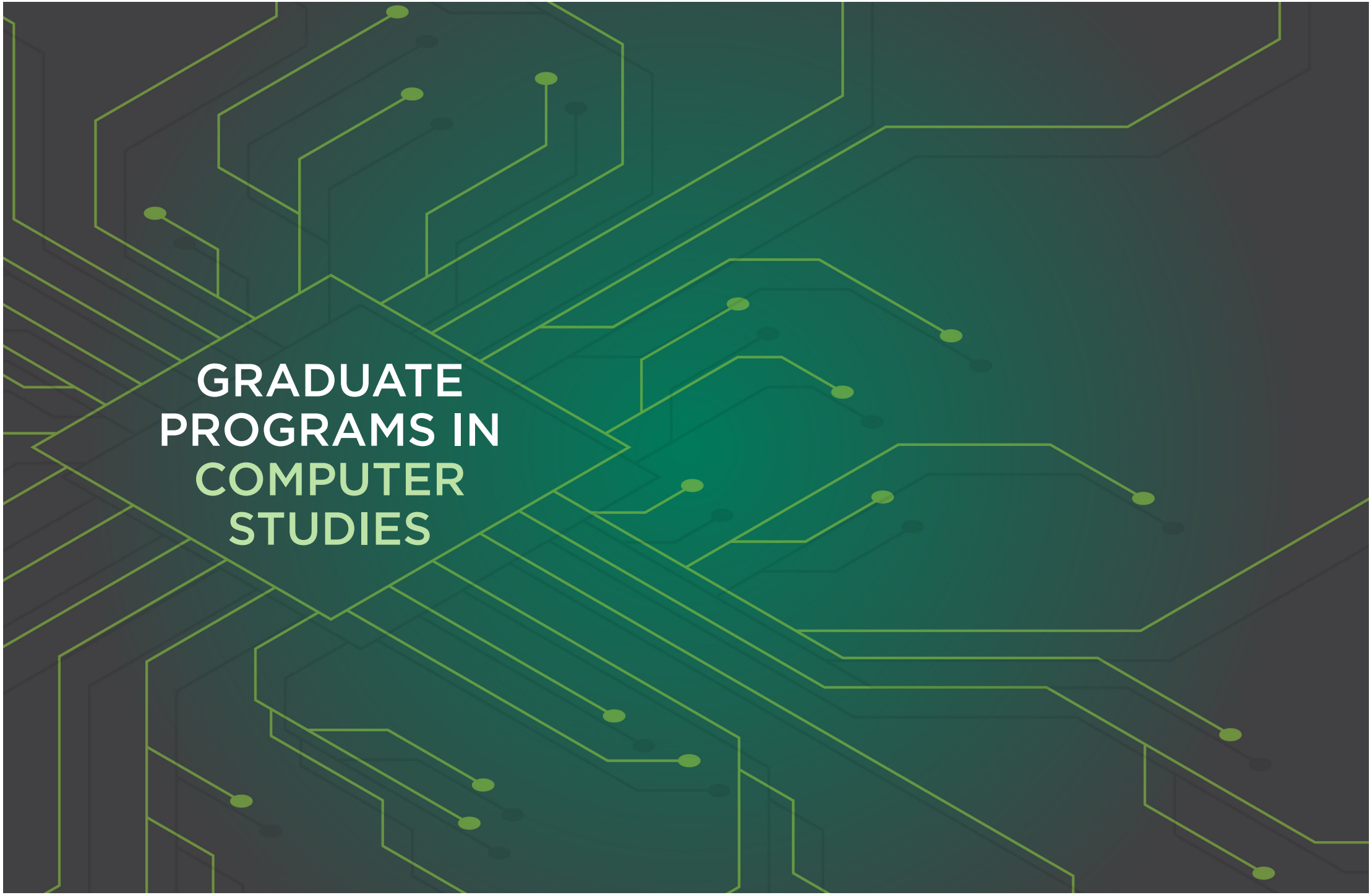
Security Management (8 units)
- System Continuity and Disaster Recovery
- Governance, Risk Management, and Compliance
- IT Security Project 2



AdRIC Research Laboratories

AdRIC is composed of various research laboratories that work on state-of-the-art computing research that is consistent with the thrust and priorities of the University.

Research Laboratories	Research Areas
Center for Automation Research (CAR)	Robotics, Signal and Image Processing
Center for Language Technologies (CELT)	Natural Language Processing, Storytelling, Chatbots
Center for Complexity and Emerging Technologies (COMET)	Complex Systems, Human-Computer Interaction, Applied Data Science, Civic Media
Center for ICT For Development (CITE4D)	Information Systems
Center for Human-Centric Innovations (CeHCI)	Affective Computing, Social Signal Processing
Center for Networking and Information Security (CNIS)	Networking, Wireless Technology, Interoperability, Cloud
Graphics, Animation, Multimedia, and Entertainment Laboratory (GAME Lab)	Games Development, Augmented and Virtual Reality
Technology, Education, Entertainment, Empathy, Design (TE3D) House	Emerging Technologies, Smart City, Telemedicine
Bioinformatics Lab	Bioinformatics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