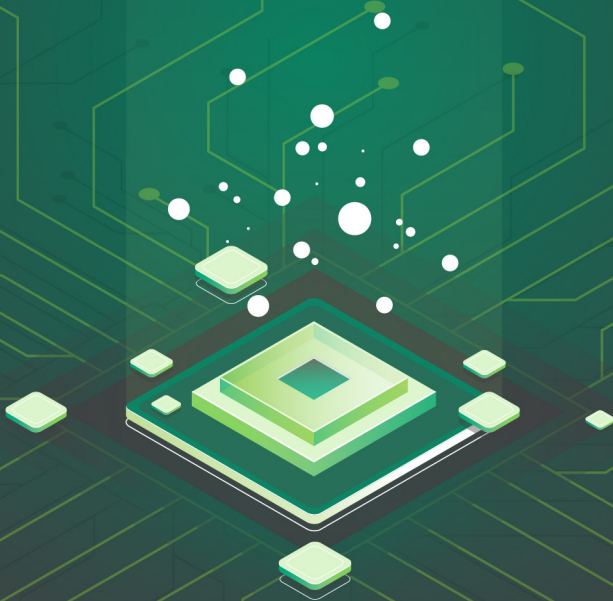DE LA SALLE UNIVERSITY

GRADUATE PROGRAMS IN COMPUTER STUDIES

DE LA SALLE UNIVERSITY

COLLEGE OF COMPUTER STUDIES

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

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

COLLEGE FACTS & FIGURES

- Achieved Level IV PAASCU accreditation for its Computer Science curriculum

- Alumni hold key positions in local and international IT corporations

- All 55 faculty members in the College have master's degrees. 17 have doctoral degrees and 12 graduated from foreign universities.

- 223 Scopus-indexed papers and 314 citations in Scopus-indexed publications as of July 2020

- With advanced computing and laboratory facilities for eight research labs 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 of Science in Information Technology **(MSIT)**

- Master in Information Technology **(MIT)**

- Master in Information Security **(MIS)**

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 degree in Computer Science 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:

- MS in Computer Science (MSCS) without a research-based thesis
- Master in Computer Science (MCS)
- MS in Information Technology (MSIT)
- BSCS with an MS degree in another field
- 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 equivalent in the MS course. For foreign applicants from non-English speaking countries, a TOEFL score of at least 550 is required.

Degree Requirements

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

- completion of all academic courses
- 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 with the PhD candidate as first author
- fulfillment of 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:

Specialization courses	**18 units**
Doctoral dissertation	**12 units**
Total	**30 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.
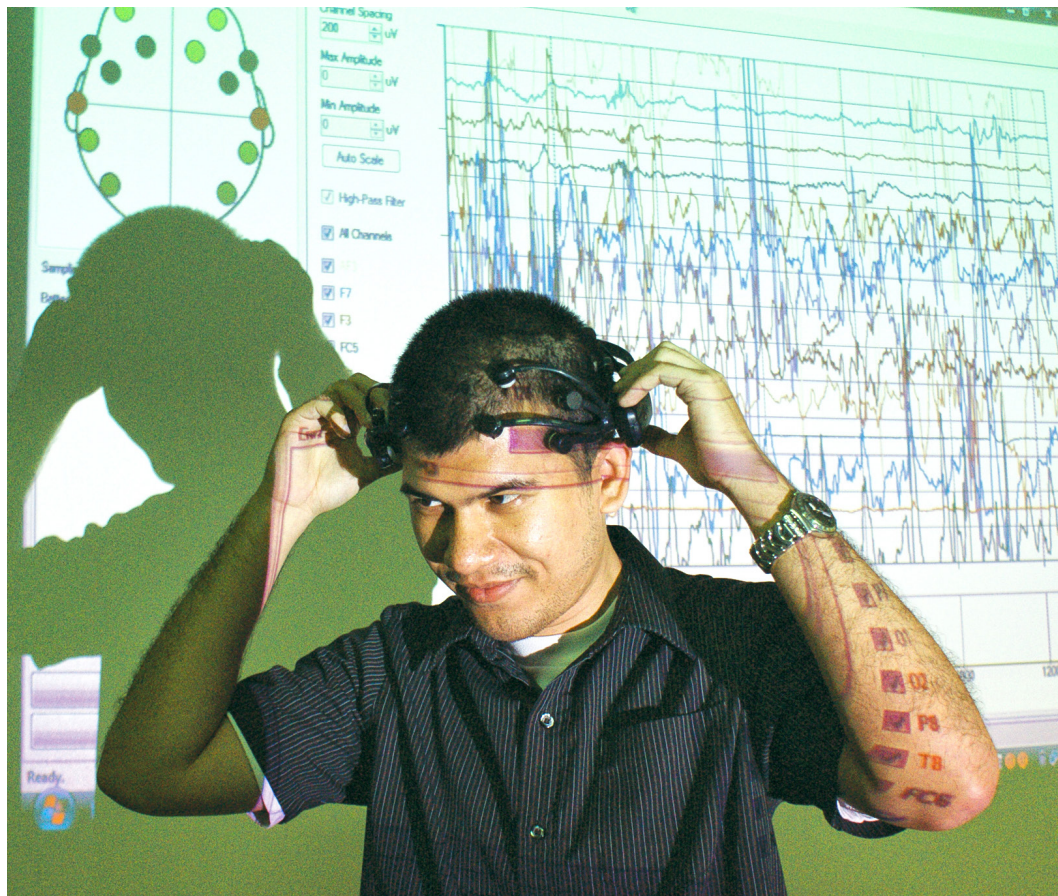
Master of Science in Computer Science

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 must have middle level management, teaching, or research experience.
* In addition, applicants in this category 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.

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
• Automata, Computability, and Formal Languages
• Theory of Programming Languages
• Methods of Research for Computer Science
• Human-Centric Computing
• Empathic Computing
• Natural Language Processing

- Neural Networks
- User Modelling
- Man-Machine Interaction
- Machine Learning
- Digital Signal Processing
- Image Processing
- Wireless Sensors
- Security

Thesis (6 units)
The final thesis provides a venue for the students to demonstrate mastery and application of learning. This requirement serves as a summative expression of what the student has learned in the program.

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. Successfulcandidates can become policy makers, chief information officers, expert lecturers orresearchers, 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 must have middle level management, teaching, or research experience
- MBA/Masters in Public Administration/ Masters in Education (see note)
- Masters of Science in Engineering, Math, Science, and Statistics (see note)

Note:
• Applicants may be required to take remedial courses depending on their degree or courses 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 Doctor in Information Technology (DIT) is obtained primarily through supervised research. It is awarded upon fulfillment of the following requirements:

- completion of all academic courses
- 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 with the DIT candidate as first author
- fulfillment of residency and other university requirements

Academic Program Components

Foundation Courses (12 units)

- An Overview of IT in Society
- Foundations of Social Theory
- Foundations of IT
- Ethical Theories and Applications

Specialized courses (9 units)

- Internet and Information Infrastructure
- Information systems planning; design; analysis and databases

Specialized course in line with track selected (3 units)

- Case study (solving an organizational IT problem in a real-life organizational context)

Research Methods	3 units
Dissertation	12 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 Master of Science in Information Technology is obtained primarily through supervised research. It is awarded upon fulfillment of the following requirements:

• completion of all academic courses
• submission of a thesis based on an independent, original research
• successful defense of the thesis

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 (12 units)
• Programming Languages
• Advanced Databases
• Network and Data Communication
• Computer Architecture
• Economics of Technology Management
• IS Theory and Practice

Specialization Course (18 units)
• Introductory Courses: Organizational Improvement and Change Management
• Methods of Research ICT4D/e-Governance Specialization: Development Informatics
• Development Economics and ICT Policies
• Introduction to e-Government
• IT Ethics and Leadership Business Innovation and Organizational Productivity: Innovations and Technology Development
• IT Ethics and Leadership
• Work Transformation and Organizational Productivity
• Trends in ICT and Business-Organizational Productivity

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

Thesis
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 relevant bachelor's degree (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.

Note:
• Applicants must have middle level management, teaching, or research experience. In addition, applicants in this category 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.

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 Analytics
- 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

Information Security is the protection of the confidentiality, integrity and availability of both physical and electronic data through the implementation of controls without hampering the productivity of an organization.

The program aims to prepare learners to be professionals that are be 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.

Learners begin with an overview of information security and its fundamental principles and would later progress to applying secure design principles to critical IT infrastructure, assessing the security posture of IT infrastructure, responding to and analyzing security breaches, and finally performing security risk assessment and applying security controls in accordance with information security program policies and governing laws.

Admission Requirements

- With relevant bachelor's degree (CS 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

Academic Program Components

Foundation Courses (8 units)
- IT Foundations (Networks, Database, 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 Labs

The various research laboratories of AdRIC provide spaces that are designed to foster collaboration and encourage research activities consistent with the thrust and priorities of the University.

Research Labs	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
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

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