Doctor of Computer Science (DCS)

The Doctor of Computer Science (DCS) is a doctoral level program in Computer Science which emphasizes the Research and Development in state of the art topics in Computer Science. The DCS Study Program offers concentrations in Information System and Computer Science which is designed to be accomplished with 45 SKS including dissertation in 6 (Six) semesters.

Each student will be fully involved with the draws on the faculty's diverse expertise and varied interests to develop high-quality research uniquely suited to his or her interests. The Study Program encourages students to gain research experience by working closely with faculty member on a variety of industry projects and alignment of research roadmaps.

Vision

Become one of the globally recognized researches and development program in Computer Science.

Mission

The mission of Doctor of Computer Science Program is to contribute to the global community through the provision of world-class education by :

1. Improving the welfare of society through word-class high quality education in Information Technology and Systems Information to produce qualified, professional, and competent graduates according to current and future needs of the nation;
2. Creating outstanding leaders for global community that participate in an important role in computer science and technology development that answer the society needs;
3. Improving the quality of life of Indonesians and the international community through contribution in economic and industrial development with continues innovation and improvement based computer science;
4. Conducting professional services through introduction, diffusion, and dissemination of relevant knowledge with an emphasis on application of knowledge to the society;
5. Recognizing and rewarding the most creative and value-adding talents.

Program Objective

The objectives of the Doctor of Computer Science (DCS) program are:

1. To increase the productivity of graduates in Computer Science with international recognition.
2. To equip students with advanced Computer Science knowledge in order to be global leader in related field.
3. To provide students with teaching and research activity in order to achieve quality indicator and objectives of Doctoral Program of Computer Science.

Student Outcomes

After complete the study, graduate are:

1. Able to develop science, knowledge and information technology using trans and multidisciplinary approach in order to develop an innovative and verified works in computer science that has commercialization potency.
2. Able to manage and lead research in computer science with inter and multidisciplinary approach.
3. Able to contribute in computer science field development through various applied research that has implication to enhancing the quality of life.

4. Able to disseminate study result in computer science field through publication in national or international journal and seminar.
5. Able to develop the theory and method in System Development Life Cycle (SDLC), Management and Governance (MAGO), Enterprise Applications (ENAP), or Emerging Technologies (EMTE) domain.
6. Able to create new framework of IT governance and IT government based on available framework.

Prospective Career of the Graduates

The graduates of DCS could take up one or combination of the following roles:

1. As Professional Researchers and lecturer, actively conducting research and publishing their papers in high impact publication such as international journals and ability to bring their research into teaching class.
2. As ICT Consultants, actively conducting high profile consulting projects with leading companies and producing copyrighted frameworks and or white papers.
3. As Owner of ICT Business Leaders, actively leading research based initiatives and actions in their respective company and becoming an agent of change in the improvement and or innovation of ICT industry best practices.

Curriculum

Programs typically include traditional coursework and research projects, in which students collaborate with professors and fellow students in order to narrow their research interests. Each of the three years of the DCS Study Program is designed to provide candidates with theoretical, research, and application capabilities in the field. The organization of each year is described below.

Year 1: Foundations

Year one focuses on computer science and information systems topics and an orientation to research and to write at the doctoral level. Coursework covers current topics in the disciplines as well as research methods and qualitative/quantitative techniques. The research component results in a broad overview of the student's area of concentration to put the research into context and inform the student's selection of a research topic.

Year 2: Acquisition of Knowledge

Once the foundations are in place, year two is where each student develops an in-depth understanding of the knowledge and research methods in his or her chosen area of study. While most of the effort in year two is on developing a richer understanding of the discipline, the research courses include quantitative and qualitative methods and the dissertation process.

Year 3: Leadership and Professional Advancement

Coursework in the final year of the program includes Research Result and Doctoral Dissertation Exams to complete the research and dissertation.

The program thus includes 45 Credits that can be covered in 3 years.

Students study programming languages, Software Engineering, Artificial Intelligence, Cyber Security, Information System, and Enterprises Architecture. Courses and seminars cover topics like:

1. Artificial Intelligence: computer vision, decision theory/game theory, knowledge representation and reasoning, intelligent user interfaces, machine learning, natural language understanding and generation, robotics and haptics.
2. Computer Graphics: animation, imaging, modeling, rendering, visualisation.

3. Data Management and Mining: business intelligence, data integration, genomic analysis, text mining, web databases.

4. Human Centered Technologies: human computer interaction (HCI), visual, haptic and multimodal interfaces, computer-supported cooperative work (CSCW), visual analytics.

5. Networks, Systems, and Security: high performance computing/parallel processing, networking, operating systems and virtualization, security.

6. Scientific Computing: numerical methods and software, differential equations, linear algebra, optimisation.

7. Software Engineering and Programming Languages: development tools, foundations of computation, middleware, programming languages, software engineering.

8. Theory: algorithmics (including empirical), bioinformatics and data analysis, graph theory, algorithmic game theory.

9. Analytics and decision support : Technology and the Enterprise, Data Mining, Technology and Markets and The Quantitative and Qualitative Methods

10. Information assurance and computer security.

11. Advanced information systems Research : Design of Experiments and Information Systems Research.

Course Structure

The distribution of courses for each semester are presented below.

SEMESTER 1

Course	SCU
RSCH9012 – Research Methodology	3
PHIL9001 – Philosophy of Science	3
Stream : Information Systems & Technology*	
ISYS9019 – Recent Trends in Information Systems	3
ISYS9020 – Advance System & Architecture Enterprise	3
ISYS9021 – Advance Knowledge System	3
Stream : Computer Science*	
COMP9018 – Software Metric and Quality	3
COMP9019 – Knowledge and Information Retrieval	3
COMP9020 – Advanced Computer Security	3

*) Students have to choose one out of two streams. Only two subjects that will be admitted from three subjects that offered.

SEMESTER 2

Course	SCU
RSCH9013 – Proposal Dissertation	5
RSCH9014 – Research Colloquium (Seminar)	5
Stream : Information Systems & Technology*	
COMP9021 – Advanced Information Technology Governance	3
ISYS9022 – e-Business & e-Government	3
Stream : Computer Science*	
COMP9022 – Advanced Softcomputing	3
COMP9023 – Multimedia Computation	3

*) Students will select one out of two subjects

SEMESTER 3

Course	SCU
RSCH9015 – Desertation 1 (Qualification Exam)	2
RSCH9016 – Research Publication 1	2

SEMESTER 4

Course	SCU
RSCH9017 – Desertation 2 (Research Result Examination)	3
RSCH9018 – Research Publication 2	2

SEMESTER 5

Course	SCU
RSCH9019 – Desertation 3 (Closed Exam)	4
RSCH9020 – Research Publication 3	2

SEMESTER 6

Course	SCU
RSCH9021 – Desertation 3 (Open Exam)	5