Doctor of Computer Science by Research

The Doctor of Computer Science by Research Program is a doctoral level program in Computer Science which emphasizes Research and Development in state of the art topics in Computer Science. The DCS Program offers concentrations in the Information System and Computer Science which are designed to be accomplished with 42 Semester Credit Units (SKS) in 6 (Six) semesters, including a dissertation.

Each student will be fully exposed and involved with the draws on the faculty members' 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 members on a variety of industry projects and align with research roadmaps.

Vision

To become one of the globally recognized scientific research and development study programs in the disciplines of information systems and computer science.

Mission

The mission of Computer Science Program are:

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 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 completing the study, graduates are:

1. Able to lead research in the areas of information systems and computer sciences with a multidisciplinary approach in order to develop innovative and verified works;
2. Able to adapt in the disciplines of information systems or computer science field development through various applied research that has implications to enhancing the quality of life;
3. Able to disseminate study results in the disciplines information systems or computer science field through publication in international seminars and journals as well as intellectual property;

4. Able to elaborate the theory and method in order to create an innovative model or framework in the disciplines of information systems or computer science with fostering and empowering the society.

Prospective Career of the Graduates

The graduates of DCS could gain 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 the 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. The 3 year DCS Program is designed to provide students with theoretical, research, and application capabilities in his/ her field of interest. The organization of each year is described as follows,

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. Students are expected to complete their research proposals by end of year 1.

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, publications and the dissertation process.

Year 3: Research Novelty and Professional Advancement

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

The program has 42 Semester Credit Units (SKS) that can be covered in 6 semesters (3 years).

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

1. Artificial Intelligence: computer vision, decision or 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, optimization.
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
RSCH9173046	Research Trends and Methods in Computer Science	3
RSCH9174046	Advanced Scientific Publication Writing and Intellectual Property Creation	2
RSCH9175046	Research Seminar 1: Research Method	2
RSCH9176046	Research Seminar 2: Research Proposal	2
	Total SCU	**9**

SEMESTER 2

Course		SCU
RSCH9178046	Research Progression Seminar	2
RSCH9177046	Dissertation I (Proposal Examination)	4
	Total SCU	**6**

SEMESTER 3

Course		SCU
RSCH9179046	Dissertation II (Qualification Exam)	2
RSCH9180046	Research Publication I	4
	Total SCU	**6**

SEMESTER 4

Course		SCU
RSCH9181046	Dissertation III (Research Result Seminar)	3
RSCH9182046	Research Publication II (Journal Publication)	4
	Total SCU	**7**

SEMESTER 5

Course		SCU
RSCH9183046	Dissertation Forum	3
RSCH9184046	Intellectual Property Right	3
RSCH9185046	Dissertation IV (Closed Exam)	4
	Total SCU	**10**

SEMESTER 6

Course		SCU
RSCH9186046	Dissertation V (Open Exam)	4
	Total SCU	**4**