

Doctor of Philosophy Program in Computer Science

Consortium English Program

(New Curriculum, 2008)

1. Degree Program

- ภาษาไทย : ปรัชญาดุษฎีบัณฑิต สาขาวิชาวิทยาการคอมพิวเตอร์
ภาษาอังกฤษ : Doctor of Philosophy Program in Computer Science

2. Degree Offered

- ภาษาไทย : ปรัชญาดุษฎีบัณฑิต (วิทยาการคอมพิวเตอร์)
: ปร.ด. (วิทยาการคอมพิวเตอร์)
ภาษาอังกฤษ : Doctor of Philosophy (Computer Science)
: Ph.D. (Computer Science)

3. Objectives

Main objectives of the curriculum are to develop human resources at Ph.D. level for :

- 3.1 high capability on theory and research of innovations on computer science as well as capable of leading the academic and research in the area in the country.
- 3.2 high capability on problem-solving research and development of innovations on computer technology.
- 3.3 high level computer scientists in research and development for delivering new innovations and products development both hardware and software to support the country development.
- 3.4 high international standard of advanced technology in Ph.D. program level in computer science with a cooperation of eleven-universities in the country.
- 3.5 highly respected for moral and professional ethics.

4. Curriculum

The doctorate degree program in Computer Science offers 2 study types.

Type 1 emphasizes research dissertation that will generate new knowledge and has high academic quality in Computer Science.

Type 1.1 Candidates with master degree or equivalent are required to complete a minimum of 48 credits for the dissertation work and take the following non-credit course : 322 991 Doctoral Dissertation Seminar.

Type 2 requires students to take both course work and dissertation research that will generate new knowledge and has high academic quality in Computer Science.

Type 2.2 Candidates with bachelor degree or equivalent are required to complete a minimum of 48 credits for the dissertation and a minimum of 24 credits for course work. In addition, candidates must take the following non-credit course : 322 991 Doctoral Dissertation Seminar.

4.1 Total Credit Hours

| Courses | Credit Number | |
|------------------|---------------|----------|
| | Type 1.1 | Type 2.2 |
| Required Courses | Non-credit | 6 |
| Elective Courses | - | 18 |
| Dissertation | 48 | 48 |
| Total | 48 | 72 |

5. Lists of Courses

5.1 Type 1

(1) **Type 1.1** For candidate with Master Degree or equivalent. The minimum required 48 credits of the program comprise of :

| | |
|--------------------------------------|-------------------|
| A. Required courses | Non-credit |
| 322 991 Doctoral Disseration Seminar | Non-credit |
| B. Dissertation | 48 Credits |
| 322 997 Dissertation | 48 Credits |

5.2 Type 2

(1) **Type 2.2** For candidate with Bachelor degree or equivalent. The minimum required 72 credits of the program comprise of :

| | |
|---|------------------|
| A. Required courses | 6 Credits |
| 322 923 Design and Analysis of Algorithms | 3(3-0-6) |
| 322 941 Computer System Organization | 3(3-0-6) |
| 322 991 Doctoral Dissertation Seminar | Non-credit |

B. Elective courses **18 Credits**

(1) Select one course from the following :

| | | |
|---------|-------------------------------------|----------|
| 322 911 | Programming Language Design | 3(3-0-6) |
| 322 931 | Database System | 3(3-0-6) |
| 322 922 | Automata Theory | 3(3-0-6) |
| 322 924 | Numerical Analysis and Applications | 3(3-0-6) |
| 322 921 | Advanced Discrete Mathematics | 3(3-0-6) |

(2) Select at least three courses from the following :

| | | |
|---------|--|----------|
| 322 932 | Software Methodology | 3(3-0-6) |
| 322 933 | Object-Oriented Design | 3(3-0-6) |
| 322 926 | Theory of Operating Systems | 3(3-0-6) |
| 322 925 | Formal Languages and Computation Complexity | 3(3-0-6) |
| 322 942 | Computer Networks | 3(3-0-6) |
| 322 943 | Design of Fault-Tolerant Digital Systems | 3(3-0-6) |
| 322 951 | Artificial Neural Networks | 3(3-0-6) |
| 322 947 | Theory of High-Speed Parallel Computation | 3(3-0-6) |
| 322 952 | Scientific Visualization | 3(3-0-6) |

(3) Select two courses from the following :

| | | |
|---------|--|----------|
| 322 934 | Large Scale Software Project Management | 3(3-0-6) |
| 322 944 | Computer System Analysis | 3(3-0-6) |
| 322 945 | Distributed Computer Systems | 3(3-0-6) |
| 322 946 | Parallel Numerical Algorithms | 3(3-0-6) |
| 322 912 | Parallel Programming | 3(3-0-6) |
| 322 971 | Special Topics in Computer Science I | 3(3-0-6) |

C. Dissertation **48 Credits**

| | | |
|---------|--------------|------------|
| 322 998 | Dissertation | 48 Credits |
|---------|--------------|------------|

In addition, students can take the courses in level 322 7xx or higher which belong to master's degree program in computer science or the courses in 5.2 which were not selected compulsory elective courses.

6. Class Schedules

Type 1.1 (For candidate with Master degree or equivalent.)

First Year / 1st Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 997 | Dissertation | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

First Year / 2nd Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 997 | Dissertation | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

Second Year / 1st Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 997 | Dissertation | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

Second Year / 2nd Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 997 | Dissertation | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

Third Year / 1st Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 997 | Dissertation | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

Third Year / 2nd Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 997 | Dissertation | 3 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 3 |

Type 2.2 (For candidate with Bachelor degree or equivalent.)

First Year / 1st Semester

| | | Credits |
|---------|---|----------------|
| 322 923 | Design and Analysis of Algorithm | 3 |
| 322 941 | Computer System Organization | 3 |
| 322 xxx | Select one course from the following : | 3 |
| | 322 922 Automata Theory | |
| | 322 924 Numerical Analysis and Applications | |
| | 322 921 Advanced Discrete Mathematics | |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

First Year / 2nd Semester

| | | Credits |
|---------|---|----------------|
| 322 xxx | Compulsory Elective Courses and/or Elective Courses | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

Second Year / 1st Semester

| | | Credits |
|---------|---|----------------|
| 322 xxx | Compulsory Elective Courses and/or Elective Courses | 6 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 6 |

Second Year / 2nd Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 998 | Dissertation | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

Third Year / 1st Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 998 | Dissertation | 12 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 12 |

Third Year / 2nd Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 998 | Dissertation | 12 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 12 |

Fourth Year / 1st Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 998 | Dissertation | 9 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 9 |

Fourth Year / 2nd Semester

| | | Credits |
|---------|-------------------------------|----------------|
| 322 998 | Dissertation | 6 |
| 322 991 | Doctoral Dissertation Seminar | - |
| | Total | 6 |