

REVISED POLICIES, STANDARDS AND GUIDELINES FOR GRADUATE PROGRAM INFORMATION TECHNOLOGY EDUCATION (ITE)

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SUBJECT :

REVISED POLICIES, STANDARDS AND GUIDELINES FOR GRADUATE PROGRAM INFORMATION TECHNOLOGY EDUCATION (ITE)

In accordance with the pertinent provisions of Republic Act (RA) No. 7722, otherwise known as the "Higher Education Act of 1994," and in view of CEB Resolution 265-2009 for the purpose of rationalizing Information Technology (IT) education in the country with the end in view of keeping at pace with the demands of global competitiveness, the following policies, standards, (PS) for Graduate Information Technology Education (ITE) are hereby adopted and promulgated by the Commission, thus:

ARTICLE

INTRODUCTION

SECTION 1. Rationale

The Policies, Standards and Guidelines (PSG) for the Graduate Programs in Information Technology Education (ITE) prescribes the minimum requirements for Higher Education Institutions with or intending to offer ITE graduate programs.

Human resource with knowledge in the field of IT is one of the more important assets of the country. Enhancing the capability of the human capital through the offering of graduate programs is one of the more effective ways of doing it. It is also an avenue to develop both professional and research capability of the human capital.

The two (2) categories of graduate programs are professional and research programs. The industry professional programs to develop and enhance the competencies of IT professionals. These programs shall focus on relevant knowledge and skills in the practice of IT. IT professionals will be prepared for practical work in business and industry. The research programs aim to develop the research skills of the IT professionals. These programs will focus on the underlying theories and foundations of computer science and its application to the field of IT. The essence of the research is to contribute new concepts and knowledge to the field of IT.

The PSG for ITE graduate education identifies two (2) doctorate programs and three (3) master's degree programs namely Doctor of Philosophy in Computer Science (PhD CS). Doctorate in Information Technology (DIT), Master of Science in Computer Science (MSCS). Master in Information Technology (MIT), and Master in Information Systems (MIS). All ITE program offerings must maintain the standard of quality while remaining relevant and responsive to the trends and technologies of the IT industry.

ARTICLE II

AUTHORITY TO OPERATE

SEC. 2. Authority to Operate

All Private Higher Education Institutions (PHEIs) intending to offer graduate degree programs in Computer Science, Information Technology, and Information Systems must first secure proper authority from the Commission in accordance with the existing rules and regulations. HEIs with an existing CHED recognized Level III accredited Bachelor's program may apply to the corresponding Master's. However, in the absence of a Level III accredited Bachelor's program a strong industry linkage is required for offering professional programs and a strong research organization is required for offering research programs. Likewise, HEIs with recognized Master's program with a successful offering of at least five (5) years may apply to offer a Doctorate degree. The authorization, if granted, is only for the individual location of the school that applies. State Universities and Colleges (SUCs) and Local Colleges and Universities (LUCs) must likewise, strictly adhere to the provisions of these policies and standards.

ARTICLE III

PROGRAM SPECIFICATIONS

SEC. 3. Degree Programs

The degree programs will be in two (2) categories. Professional Programs and the Research Programs. The allied ITE disciplines identified in CMO 53. s. 2006 shall be adopted in the entire policies and standards for the graduate programs in information technology. Likewise ITE corresponding respectively to these specific areas are the following:

Section 3.1 Professional Programs

Professional Programs are defined to be graduate level programs that shall require student completion of graduate level courses and immersion and/or involvement in a project relevant to industry including business, education and government.

3.1.1.

Master in Information Technology (MIT) - emphasizes the acquisition of concepts and technologies preparing and enabling the student for the industrial practice of systems integration, systems administration, systems planning systems implementation and other activities that maintain the integrity and proper functionality of a system and its components.

3.1.2

Master in Information Systems (MIS) - prepares the students for industrial practice in project management, information systems planning, design, development and the management of technical personnel.

3.1.3

Doctor in Information Technology (DTI) - focuses on industry research with a combination of Doctoral level course work. The principal orientation of this degree is the contribution of new knowledge towards the improvement of industry practice of Information Technology.

Section 3.2. Research Programs

Research programs are defined to be graduate level programs that shall require student completion graduate level courses for breadth in the Master's level and depth in the Doctorate level. The emphasis is on research expressed in the form acceptance of refereed scientific publication.

3.2.1.

Master of Science in Computer Science (MSCS) - emphasizes comprehension and understanding of the principles and concepts needed for designing and formulating new tools for applications development as well as generating new knowledge in the field.

Students entering the degree program must have completed undergraduate courses . that provide the mathematical foundations for mathematical logic, calculus, discrete mathematics data structures, computer programming and data organizations.

3.2.2

Doctor of Philosophy in Computer Science (PhD CS) - emphasizes focused study and depth of specific areas in computer science. The program is completed primarily through a supervised research that contributes to new knowledge, theory or technology.

Section 3.3 ITE Centers of Excellence or Development may offer more specialized masters' programs provided that they have the resources and faculty expertise.

SEC. 4. Program Description

The objectives of the graduate ITE aim to equip students with one or more of the following to wit:

Section 4.1 Professional Programs

4.1.1.

The Master in Information Technology (MIT) program aims to develop among its students the knowledge of information technology (IT) concepts, techniques and principles, and skills in using IT to provide solutions to problems of organizations and society.

4.1.2.

The Master in Information Systems (MIS) program aims to develop among its students the effective use of information technology (IT), to help solve problems, and improve or reengineer processes of organizations. It provides students with theoretical and practical knowledge on various aspects of information systems planning, systems implementation, system integration and project management;

4.1.3.

The Doctor in Information Technology (DIT) program aims to develop the needs of professionals who occupy or shall occupy positions of influence in the Information Technology community to perform research and development with professional significance.

Section 4.2. Research Programs

4.2.1.

The Master of Science in Computer Science (MSCS) program aims to provide both breadth and in-depth knowledge in the concepts and techniques related to the design, implementation and application of computer systems.

4.2.2.

The Doctor of Philosophy in Computer Science (PhD CS) program aims to develop among its students the skills to perform research on original work, to initiate ideas, designs and concepts or to develop advanced implementations on matters relating to the field of Computer Science.

SEC. 5. Admission Requirements

Admission to any of the ITE graduate programs shall be subject to the following minimum requirements. HEIs may adopt additional requirements.

Section 5.1. Professional Programs

Students entering the MIT/MIS degree programs must have an undergraduate or industry preparation that would have exposed the student to programming concepts and skills as well as the design and operation of IT infrastructure and its components. Students in this program must have undergraduate preparation in any of the following fields: communications, management, business, accounting, science, engineering, IT and related fields.

5.1.1.

Master in Information Technology (MIT)

5.1.1.1.

Applicants must demonstrate proficiency in at least one (1) high level programming language.

5.1.1.2.

Applicants must have a general knowledge in Information Technology equivalent to the following:

- Computer Organization
- Network Design and Management
- Applied Operating Systems
- Programming Languages

- Database Management Systems
- Software Engineering

5.1.1.3.

Unsatisfactory background in any of these courses is considered a deficiency. Conditional admission may be granted to applicants who did not meet the above criteria by taking appropriate courses over and above to what is required by the program.

5.1.2.

Master in Information Systems (MIS)

5.1.2.1.

Applicants must demonstrate proficiency in at least one (1) high-level programming language.

5.1.2.2.

Applicants must have a general knowledge in Information Systems equivalent to the following:

- Business Process and Analysis of Business Performance
- Network and Internet Technology
- Accounting and Financial Systems
- Systems Analysis and Design
- IT Project Management and Quality Assessment
- Applications Development

5.1.2.3.

Unsatisfactory background in any of these courses is considered a deficiency. Conditional admission may be granted to applicants who did not meet the above criteria by taking appropriate courses over and above to what is required by the program.

5.1.3.

Doctor in Information Technology (DIT)

5.1.3.1.

Applicants must have earned a masters degree in ITE or allied fields with a substantial research and development component as demonstrated by a presentation of the output in a refereed national or international conference.

5.1.3.2.

Applicants must have relevant professional experience in the field of information Technology within the last three (3) years.

Section 5.2. Research Programs

5.2.1.

Master of Science in Computer Science (MSCS)

5.2.1.1.

Applicants must have a Bachelor's degree in any of the ITE programs or in its allied discipline, which provides a substantial background in computing.

5.2.1.2.

Applicants must demonstrate proficiency in at least one (1) high level programming language.

5.2.1.3.

Applicants must have a general knowledge in Computer Science equivalent to the following.

- Discrete Mathematics
- Algorithm Design and Analysis
- Operating Systems
- Programming Languages
- Database Systems
- Software Engineering

5.2.1.4.

Unsatisfactory background in any of these courses is considered a deficiency. Conditional admission may be granted to applicants who did not meet the above criteria by taking appropriate courses over and above to what is required by the program.

5.2.2.

Doctor of Philosophy in Computer Science (PhD CS)

5.2.2.1

Applicants must have earned a Masters degree in ITE or allied fields with a substantial research component as demonstrated by a presentation of the research output in the referred national or international conference.

5.2.2.2

Applicants must have relevant research experience in the field of Computer Science within the last three (3) years.

ARTICLE IV

CURRICULUM

Section 6. Curriculum Description

ITE shall be built upon a core of courses focusing on breadth and a series of major courses focusing on depth leading to a masters program. Furthermore, the ITE Masters and Doctorate programs are built upon depth and guided research with emphasis on publication of research and development outputs. Areas of specialization must be based on current trends in IT. HEIs may refer to the priority areas being funded by national or international funding research agencies.

Section 7. Curriculum Outline

The curriculum outline is divided into three (3) components for the Masters programs namely: ITE Core Courses, ITE Major Courses and Capstone Project/Thesis with a minimum requirement of 36 units. There are two (2) components for the Doctorate programs namely: ITE Major Courses and Dissertation with a minimum requirement of 30. The outline is as follows:

Section 7.1 Professional Programs

7.1.1 Master in Information Technology (MIT)

Curriculum

Units

Total Units

a) IT CORE COURSES: A minimum of 12 units of core courses are required in the following areas:

Advanced Operating System and Networking
Advanced Database Systems
Advanced Systems Design and Implementation
Technology and Project Management

12

b) IT SPECIALIZATION COURSES: Specialization courses shall be directed towards the following areas:

Systems Development (e.g. e-commerce solutions,
e-learning solutions, multimedia solutions)
Information Management (e.g. model, design,
implement, configure and administer database)

18

c) CAPSTONE PROJECT (Presented in a national or international public forum)

6

TOTAL UNITS

36

7.1.2 Master in Information Systems (MIS)

Curriculum

Units

Total Units

a) IT CORE COURSES: A minimum of 12 units of core courses are required in the following areas:

Organization, Management, and Administration of Information
Systems

IT Project and Change Management

Advanced Accounting/Finance/Economics/Business Systems

IS Policy and Strategy

12

b) IT SPECIALIZATION COURSES: Specialization Courses shall be directed towards the following areas:

Consulting (e.g., Knowledge management Enterprise

Resource Planning (ERP), Telecommunication)

Research (e.g., iS Research, Statistical Research Methods)

Management (e.g. Role of CIO Technology Management)

IT Resource Planning (e.g. Corporate Information

Systems Plan, Computer Resource Plan)

Services Science, Management and Engineering (SSME)

18

c) CAPSTONE PROJECT (Presented in national or international public forum)

6

TOTAL UNITS

36

7.1.3 Doctor in Information Technology (DIT)

Curriculum

Units

Total Units

a) IT SPECIALIZATION COURSE:

All courses must be related on the skills and expertise of the faculty pool

18

b) DISSERTATION

Requires publication in at least 1 local and 1 international
refereed journal or refereed proceedings

12

TOTAL UNITS

30

Section 7.2 Research Programs

7.2.1 Master of Science in Computer Science (MSCS)

Curriculum

Units

Total Units

a) CS CORE COURSES: A minimum of 12 units of core courses are required in the following areas:

Advanced Data Structures and Algorithms

Advanced Computer Organization

and Advanced Operating Systems

Theory of Programming Languages

Theory of Computation

12

b) CS SPECIALIZATION COURSES: Specialization courses may be directed towards the following areas:

Intelligent Systems (e.g. auto reasoning systems,

intelligent systems)

Theoretical Computer Science

Computational Science

Advanced Computer Networks

Computer Security

Advanced Software Engineering

18

C) THESIS

Required to be presented in a national or international

IT conference

6

TOTAL UNITS

36

7.2.2. Doctor of Philosophy in Computer Science (PhD CS)

Curriculum

Units

Total Units

a) CS SPECIALIZATION COURSES:

All courses must be related based on the skills and expertise of the faculty pool

18

b) DISSERTATION

Requires publication in at least 1 local and 1 international
refereed journal or refereed proceedings

12

TOTAL UNITS

30

Section 8. Sample Program of Study

Below are sample curricula for each of the respective program. The program of study is based on the assumption that the students are pursuing their graduate studies on a full time basis.

Section 8.1 Professional Programs

8.1.1 Master of Information and Technology (MIT)

FIRST YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Advanced Operating System and Networking
Advanced Database Systems
Advanced Systems Design and Implementation
Technology and Project Management

MIT001

MIT002

MIT003

MIT004

3

3

3

3

TOTAL

12

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course 1

Specialization Course 2

Specialization Course 3

Specialization Course 4

MITM01

MITM02

MITM03

MITM04

3

3

3

3

TOTAL

12

SECOND YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course 5

Specialization Course 6

Capstone Project 1

MITM05

MITM06

MIT01.1A

3

3

3

TOTAL

9

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Capstone Project 2 (Best if immersed in the industry)
(Pilot tested and presented in a public forum)

MIT01.1A

3

TOTAL

9

8.1.2 Master in Information Systems (MIS)

FIRST YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Organization, Management and Administration of Information Systems
IT Project and Change Management
Advanced Accounting/Finance/Economics/ Business Systems
IS Policy and Strategy

MIS001

MIS002

MIS003

MIS004

3

3

3

3

TOTAL

9

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course 1

Specialization Course 2

Specialization Course 3

Specialization Course 4

MISM01

MISM02

MISM03

MISM04

3

3

3

3

TOTAL

12

SECOND YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course 5

Specialization Course 6

MISM05

MISM06

3

3

TOTAL

6

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Capstone Project (Best if immersed in the industry)
(Pilot tested and presented in a public forum)

MIS011

6

TOTAL

6

8.1.3 Doctor in Information Technology (DIT)

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course
Specialization Course
Specialization Course

DIT001

DIT002

DIT003

3

3

3

TOTAL

9

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course
Specialization Course
Specialization Course

DIT004

DIT005

DIT006

3

3

3

TOTAL

9

SECOND YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Dissertation Writing (Proposal Defense)

DIT011

3

TOTAL

3

Second Semester

DESCRIPTIVE TITLE**COURSE CODE**

TOTAL UNITS

Dissertation Writing (Local Refereed Paper Paper Presentation)
Best to start sandwich abroad (6-12 months)

DIT012

3

TOTAL

3

THIRD YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Dissertation Writing (International Refereed
Paper Presentation)
Best to complete sandwich abroad
[6-12 months)

DIT013

3

TOTAL

3

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Dissertation (Final Defense

DIT014

3

TOTAL

3

Section 8.2 Research Programs

8.2.1 Master of Science in Computer Science (MSCS)

FIRST YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Advanced Data Structure and Algorithm

Advanced Computer Organization and Advanced Operating Systems

Theory of Programming Languages

Theory of Computation

MSCS01

MSCS02

MSCS03

MSCS04

3

3

3

3

TOTAL

12

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course 1

Specialization Course 2

Specialization Course 3

Specialization Course 4

MSCSM1
MSCSM2
MSCSM3
MSCSM4

3
3
3
3

TOTAL

12

SECOND YEAR

First Semester

DESCRIPTIVE TITLE

COURSE CODE

TOTAL UNITS

Specialization Course 5
Specialization Course 6

MSCSM5
MSCSM6

3
3

TOTAL

6

Second Semester

DESCRIPTIVE TITLE

COURSE CODE

TOTAL UNITS

Thesis (required to be presented in a national or international IT conference)

MSCS11

6

TOTAL

6

8.2.2 Doctor of Philosophy in Computer Science (PhD CS)

FIRST YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course

Specialization Course

Specialization Course

PHDCS1

PHDCS2

PHDCS3

3

3

3

TOTAL

9

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Specialization Course

Specialization Course

Specialization Course

PHDCS4

PHDCS5

PHDCS6

3

3

3

TOTAL

9

SECOND YEAR

First Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Dissertation Writing (Proposal Defense)

PHDCS11

6

TOTAL

6

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**Dissertation Writing (Local Refereed Paper
Paper Presentation)

Best to start sandwich abroad (6-12 months)

PHDCS12

0

TOTAL

0

THIRD YEAR

First Semester

DESCRIPTIVE TITLE

COURSE CODE**TOTAL UNITS**

Dissertation Writing (Local Refereed Paper
Paper Presentation)
Best to start sandwich abroad (6-12 months)

PHDCS13

0

TOTAL

0

Second Semester

DESCRIPTIVE TITLE**COURSE CODE****TOTAL UNITS**

Dissertation (Final Defense

PHDCS14

6

TOTAL

6

Annex A contains the sample course description for the professional and research ITE programs (core and elective courses).

Section 9: Revalida Requirements. Revalida is a mechanism instituted by an institution to assess and validate the graduate student's knowledge and skills acquired in the pursuit of the program. Assessment of individual knowledge and skills are still best done during the course work. The Revalida mechanism typically conducted at the end of the program should assess the integration of these acquired knowledge and skills. The Revalida is in the form (separate or combined) of the following:

Final Research Paper with presentation to a local or international conference

- Capstone Project with Defense
- Thesis
- Dissertation (for PhD)

SEC. 10. Capstone Project/Thesis/ Dissertation requirements

Section 10.1. Professional Programs

10.1.1

Master in Information Technology (MIT)

A Masters' Capstone Project is a culminating activity that generates an output useful in the development of IT solutions. This may be but not limited to application development that focuses on software engineering process or application design that focuses on effective testing procedure or a study on application development processes. The student concerned must hold a key responsibilities towards the development of the Capstone Project., The Capstone Project may be pilot tested and the result of the research and development must be presented in a national or international public forum.

10.1.2.

Master in Information Systems (MIS)

A Masters' Capstone Project is a culminating activity that generates an output that is useful in the employment of an IS solution. This may be but not limited to applications development that focuses on improvement of information flow within the organization, or project management that focuses on deployment of IS in organizations. The student must hold key responsibilities towards the development of the Capstone Project. The Capstone Project may be pilot tested and the result of the research and development must be presented in a national or international public forum.

10.1.3.

Doctor in Information Technology (DIT)

The dissertation is a documentary evidence summarizing the research completed by the doctoral candidate. As part of the dissertation requirement, the doctoral candidate must publish at least two (2) papers related to the dissertation. It must be at least 1 local and 1 international refereed IT scientific papers, n the process of writing the dissertation, the doctoral candidate is encouraged to do a sandwich program with a duration between three (3) to

12 months in a foreign university or IT research laboratory.

Section 10.2. Research Programs

10.2.1.

Master of Science in Computer Science (MSCS)

A thesis is a document that discusses a result of an idea or technique that generates knowledge and/or contributes solutions to Computer Science problems. This may be but not limited to algorithm development that focuses on its improvement or variation, architectural design that focuses on effective implementation or a study on hybrid algorithm development in various areas. The thesis would require active work with an academic researcher. The thesis must be presented in a national or international IT conference.

10.2.2.

Doctor of Philosophy in Computer Science (PhD CS)

The dissertation is a documentary evidence summarizing the research completed by the doctoral candidate. As part of the dissertation requirement, the doctoral candidate must publish at least two (2) papers related to the dissertation. These must be in at least 1 local and 1 international refereed Computer Science journal. In the process of writing the dissertation, the doctoral candidate is encouraged to do a sandwich program with a duration between three (3) to twelve (12) months in a foreign university or IT research laboratory.

SEC. 11. Industry Linkage Requirements for the Professional Programs.

Section 11.1. Industry-Academe Linkage.

Industry-academe linkage programs are important. The partnership between the industry and academe must be institutionalized with the intent that the curriculum shall be designed and shall fit according to the needs and requirements of the industry. The tie-up is an indication that the program has already achieved its maturing point

in quality and excellence. The partnership must be beyond the usual OJT or practicum program in the undergraduate level and must be focused on the following: applications, faculty immersion program in the industry, and commercialization initiatives. The partnership expectation in the IT related field must be established between the HEI and the industry in the form of a Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU).

ARTICLE V

OTHER REQUIREMENTS

SEC. 12. Department.—The department structure is based on the concept of vertical articulation. This implies that HEI's can offer Bachelor's, Master's and Doctorate program of the same discipline under one department. Each department must have the following:

Section 12.1 Professional Programs

12.1.1.

A Higher Education Institution (HEI) offering an ITE program shall have a full-time administrator who shall administer the program. The administrator can be a Dean, Department Head, Director, Coordinator or its equivalent depending on the organizational structure of the HEI.

12.1.2.

There must be at least three (3) full-time ITE faculty members, one (1) of whom can be the Program Head. These faculty members must have the following:

12.1.2.1.

Show proof that they have undertaken ICT development projects in the past and are currently active in ICT development projects.

12.1.2.2.

have at least a Master's degree in ITE. Two (2) of which must hold a Doctorate degree in ITE if the HEIs also offer Doctorate programs.

12.1.2.3.

render at least 24 hours in residence per week inclusive of consultation hours and have a minimum contract of one (1) year in the college / department.

12.1.3.

The department must have policies and guidelines on benefits and incentives for faculty undertaking applied Information Communication Technology (ICT) development works.

12.1.4.

The department must have a unit that manages all transactions activities pertinent to ICT projects and manned by a permanent staff.

12.1.5.

Full-time faculty members must handle 50% of all ITE courses in the graduate program.

12.1.6.

At least fifty percent 50% of the ITE faculty must have IT experience in industry within the last five (5) years. Industry experience may be full-time work or part-time consultancies as evidenced by a contract, certification or MOA/MOU. The involvements and in the form of technical administration, systems engineering, applications development, IT research, IT project management or its equivalent.

12.1.7.

At least 60% of the faculty must have existing funded IT research and development projects or have published at least three (3) professional articles in Information Technology within the last five (5) years.

12.1.8.

At least one (1) of the faculty members must have Doctorate in Information Technology, Ph D in Computer

Science or IT allied programs.

12.1.9.

All faculty members handling Doctorate courses (at least one (1) of the faculty members if offering master's only) must have an earned Doctorate degree fulfilling any of the following requirements.

12.1.9.1.

An earned Doctorate in an IT program-CS or IT with industry experience in IT projects;

12.1.9.2.

At least an earned Doctorate degree in any allied field with proven competencies gained from studies or industry experience on IT projects.

12.1.10.

All faculty members handling Doctorate courses must have published at least one scholarly paper every two (2) years in Information Technology in peer reviewed publications with ISSN that include journals and conference proceedings.

Section 12.2 Research Programs

12.2.1.

A Higher Education Institution (HEI) offering an ITE program shall have a full-time administrator who shall administer the program. This administrator can be a Dean, Department Head, Director, Coordinator or its equivalent depending on the organizational structure of the HEI.

12.2.2.

There must be at least three (3) full-time ITE faculty members, one (1) of whom can be the Program Head. These faculty members must have the following:

12.2.2.1

show proof of publications refereed journals or refereed proceedings of national conferences, completed by the current faculty members.

12.2.2.2.

have at least a Master's degree in CS, two (2) of which must hold a Doctorate degree in CS if the HEIs also offer Doctorate programs.

12.2.2.3.

render at least 24 hours in residence per week inclusive of consultation hours and have a minimum contract of one (1) year in the college/department.

12.2.3.

The department must also ensure that 50% of all ITE courses in the program are handled by full-time faculty members.

12.2.4.

The department must have policies and guidelines on benefits and incentives for faculty undertaking research work e.g. de-loading , research awards, patents and intellectual property rights.

12.2.5.

The department must have a clear research agenda anchored on the institution's philosophy and framework and must be aligned with the Medium Term Development Plan for Higher Education (MTDPHE) and must answer the needs of the industry.

12.2.6.

The department must have a budget for research undertakings in Information Technology that is equivalent to at least 2% of the college/department/school/unit's general budget.

12.2.7.

The department must have an IT research unit that manages, monitors and evaluates research activities, and manned by a permanent staff. It must have adequate facilities for the conduct of research.

12.2.8.

At least 60% of the faculty must have existing research and have published at least three (3) papers in Computer Science within the last five (5) years.

12.2.9.

At least two (2) of the faculty members must have Master of Science or Doctor of Philosophy in Computer Science degrees.

12.2.10.

All faculty members handling Doctorate courses (at least one (1) of the faculty members if offering Master's only) must have an earned Doctorate degree fulfilling any of the following requirements.

12.2.10.1

. An earned PhD. In Computer Science;

12.2.10.2.

At least an earned Doctorate degree in any CS allied field with proven competencies gained from studies or industry experience on computer science.

12.2.11

. All faculty members handling Doctorate courses must have published at least one (1) scholarly paper every two (2) years on Computer Science in peer reviewed publications with ISSN that include journals, conference proceedings.

SEC.13. Program Administration Section

Section 13.1 Program Administrator

A Higher Education Institution (HEI) offering graduate ITE program shall have a full-time faculty member administering the program. The administrator can be a Dean, Department Head, Director, Coordinator or equivalent based on the organization of the HEI.

Section 13.2. General Qualifications of the Program Administrator.-

13.2.1

Program Administrator of an ITE program up to the Doctorate program must have a Ph./D. in Computer Science or allied fields for the program being offered with proven competencies gained from studies or industry experience on IT projects. He/ She must also have published at least two (2) scholarly papers on Information Technology in peer reviewed publications with ISSN within the last five (5) years.

13.2.2.

Program Administrator of an ITE program up to the Masters program must possess a Master degree similar to the program being offered with proven competencies gained from studies or industry experience on IT projects. He/She must also have published at least two (2) scholarly papers on Information Technology in peer reviewed publications with ISSN within the last five (5) years. For professional programs, in lieu of publications, he/she must hold an industry certification or must be involved in an IT project within the last two (2) years and must be actively involved in an IT organization.

Section 13.3 General Functions and Responsibilities of the Program Administrator - The general functions and/or responsibilities of the Dean/ Department Chair/Director/Coordinator must be as follows, thus:

13.3.1.

To assist in the formulation of institutional policies, curriculum development and offerings;

13.3.2.

To exercise educational leadership among the concerned faculty members by;

13.3.3.

To initiate and institute a faculty and staff development program;

13.3.4.

To prepare and assign the teaching load of the faculty members and directing them to advise students in their program of studies; and

13.3.5.

To rank and recommend the appointment, promotion, retirement, termination and instituting disciplinary actions on faculty members and non-teaching personnel of the institution vis-a-vis IT, subject to the HEI's policies and procedures;

13.3.6.

To coordinate with the office concerned with student services;

13.3.7.

To encourage research and extension activities among faculty and students;

13.3.8.

To institute methodologies of instruction, adopt proper textbooks and recommend textbooks collections in the library;

13.3.9.

To exercise overall supervision of all academic and non-academic personnel of the IT college or department;

13.3.10.

To oversee the formation, implementation and evaluation of plans and programs for development and the supervision/coordination of activities and services for the advancement of goals and objectives; and

13.3.11.

To help enforce the concerned HEI's rules and the mandates affecting education, and the procedures, policies, rules and regulations promulgated under authority of or as adopted by the Commission and/or the HEI.

SEC. 14. ITE Faculty.—An ITE faculty member is one who teaches in either one of the ITE degree programs and must have at least one (1) of the following to wit:

14.1 Professional Programs Qualifications. The faculty for the professional programs should meet any of the following qualifications:

14.1.1.

At least a Master's degree in ITE;

14.1.2.

At least a Master's degree in another field plus completion of coursework requirements for a Master's degree in ITE;

14.1.3.

At least a Master's degree in an allied discipline plus at least three (3) years of experience in the IT profession such as technical support management, systems design or applications programming or research and development.

14.1.4.

At least an earned Doctorate in an IT program or allied fields.

14.2 Research Program Qualifications. The faculty for the research programs should meet any of the following qualifications:

14.2.1

At least a Master's degree in Information Technology -only CS or IT;

14.2.2

At least a Master's degree in an allied discipline plus completion of coursework requirements for a Master's degree in CS or IT;

14.2.3

At least a Master's degree in an allied discipline plus at least three (3) years of experience in the IT profession such as systems design or systems programming or research and development.

14.2.4

An earned Ph.D. CS or allied fields

SEC. 15. Library

15.1 Librarian

HEIs offering ITE must have at least a one (1) full time licensed librarian. The librarian (s) must work closely with the Program Administrator in collection development for the ITE program.

The librarian(s) must be encouraged to-join recognized librarian societies and associations for professional development.

15.2 Library Collection

The library collection of the HEI must meet the following requirements, namely:

15.2.1

To support HEIs curricular needs and to provide enough books for students, its library must have at least five (5) non-duplicated graduate level titles per ITE course and one (1) volume per course of a particular year of the curriculum for every ten (10) students enrolled in that year. At least 20% of the books must have been published within the last four (4) years. At least 80% of the graduate book holdings must be on reference books and textbooks and not vendor specific technology books.

15.2.2

The library must include up-to-date subscriptions of IT journals, periodicals and magazines that are published locally and internationally, in print and/or electronic format. Electronic subscriptions must include access to full text. These must include at least two (2) peer-reviewed ICT journals per program.

SEC. 16. Facilities and Equipment.

HEIs intending to offer graduate programs in ITE must provide research laboratory for its graduate students. The laboratory must provide the latest equipment such as computers, mobile devices and other specialized equipment depending on research area. The laboratory must have equipment for five (5) students for working simultaneously and a ratio of one every five (5) students. The computer equipment assigned to the graduate students must be configured such that it would allow the students to have access to various server systems based on the advanced courses offered.

Internet ports or Wi-Fi access must also be provided. In the event, students will be bringing in their own machines, the HEI must provide the students with licensed software (excluding office productivity tools) and/or open source software.

ARTICLE VI

TRANSITORY, REPEALING AND EFFECTIVITY CLAUSE

SEC. 17. Transitory Clause.—HEIs that have been granted permit or recognition must conform herein effective SY 2011-2012. However, the re-aligning of the M.S. in Information Technology (MSIT) to Master in Information Technology, and Master and M.S. in Information Management (MIM and MSIM) to Master in Information Systems, and Master in Computer Science (MCS) to either MSCS or MIT or MIS, must be accomplished by all HEIs offering ITE the soonest. Furthermore, students in their second year have the option to finish and complete the old curricular requirements.

SEC. 18. Repeal Clause.—All pertinent rules and regulations or parts thereof that are inconsistent with the provisions of these policies and standards are hereby repealed or modified accordingly.

SEC. 19. Effectively Clause—This CMO shall be effective beginning SY 2010-2011 after publication in the Official Gazette or in a newspaper of general circulation.

Quezon City, Philippines, May 20, 2010.

(Sgd.) EMMANUEL Y. ANGELES
Chairman

Annex A Course description

Computer Science

Care Courses

Advanced Data Structures and Algorithms

This course covers the design, analysis and proofs of correctness of algorithms. It also discusses algorithms for advanced data structures, set manipulation and searching, graphs and geometric problems. In terms of analysis techniques, it includes asymptotic worst case and average case, as well as amortized analysis. The development of a probability model is covered for average case analysis NP-completeness will also be discussed.

Advanced Computer Organization and Advanced Operating Systems

This course covers the advanced topics in the theory, design and implementation of operating systems. It will also cover selected areas such as performance of operating systems, distributed operating systems, operating systems for multiprocessor systems and operating systems research.

Theory of Computation

This course covers formal languages which include topics on regular languages, regular expressions, finite-state machines, context-free languages, grammars and pushdown machines. It also covers computability with topics on primitive recursive functions, partial recursive functions, recursive languages, recursively enumerable languages, and Turing machines. Computational complexity space and time complexity, complexity classes (such as P, NP, PSPACE, L and NL), and complete problems.

Theory of Programming Languages

This course covers a survey of programming language paradigms with focus on issues in the design, implementation, and applications of programming languages. Syntactic and semantic specifications will also be covered.

Elective Courses

Modeling, and System Performance and Evaluation in Computer Science

This course covers methods and concepts of computer and communication network modeling, and system performance and evaluation. It will also discuss stochastic processes; measurement techniques; monitor tools; statistical analysis of performance experiments; simulation models; analytic modeling and queueing theory; M/M, Erlang, G/M, M/G, batch arrival, bulk service and priority systems; work load characterization; performance evaluation problems.

Information Technology

Advanced Operating System and Networking

This course covers hardware and software issues in modern operating systems, distributed and networked operating system, and real time operating systems. It includes selected topics on multithreading, distributed systems, device drivers, object oriented operating systems, advanced file systems, parallel virtual machines, and load balancing. The course also covers the study of computer network architectures, protocols, and interfaces. Discussion will also include end-to-end protocols, congestion control, high-speed networking, and network management.

Advanced Database Systems

This course covers modern database and information systems as well as research issues in the field. It will cover selected topics on object-oriented, workflow active deductive, spatial, temporal, and multimedia data bases. It will also discuss recent advances in database systems such as data mining, on-line analytical processing, data warehousing, declarative and visual query languages, multimedia database tools, web and unstructured data sources, and client-server and heterogeneous systems.

Advanced Software Engineering

This course covers systematic approaches to software design project management, implementation, documentation and maintenance. It will also cover software design methodologies such as Systems Analysis/Systems Design, Object-oriented Analysis/Object-oriented Design and software quality assurance and testing.

Technology and Project Management

This course covers the fundamental project management principles and methodology for managing the software development life-cycle and process models. It will also cover topics on process metrics software project planning, monitoring, control and schedule mechanisms, budget estimates, risk assessment, and leadership, motivation, and team building.

Information Systems

Organization Management and Administration of Information Systems

This course covers topics on information technology and organizations information technology and individuals (privacy ethics job security, job changes) information technology and information security, information technology within the organization (technology introduction and implementation) business process engineering and information technology between organizations (electronic data interchange and electronic commerce). This course also covers the role at information systems in organizations and how they relate to organizational objectives and organizational structure. Basic concepts are introduced including the systems point of view and organization information flows and the nature of information systems.

IT Project and Change Management

This course covers topics on managing projects within an organizational context including the processes related to initiating planning executing controlling reporting and closing a project. It also covers topics on project integration, scope, time, cost, quality control and risk management Emphasis will be on managing the changes in organizations resulting from introducing or revising information systems and identifying project champions working with user teams training and documentations.

Advanced Accounting/Finance/Economics /Business Systems (Financial and

Managerial Accounting)

This course covers accounting with emphasis on preparation of financial statements for external parties (financial accounting) and accumulation of cost information to aid internal planning and control (managerial accounting). It will also include topics on measurement of assets and liabilities revenues and expenses the accountings cycle financial statements cost terminology, cost behavior product costing and relevant costs for decision making.

IS Policy and Strategy

This course covers topics for top management with strategic perspective for aligning competitive strategy, core competencies and information systems. It will also discuss topics on the development and implementation of policies and plans to achieve organizational goals and the definition of systems that support the operational, administrative and strategic needs of the organization, its business unit, and individual employees. It will put emphasis on approaches to managing the information systems function in organizations including examination of the dual challenges of effectivity controlling the use of well-established information technologies while experimenting with selected emerging technologies.

Elective Courses

IT-Enabled Business

This course covers business models processes and activities made possible by the internet. It includes theoretic aspects of commerce such as consumer relationship management, supply chain management, inventory management, business strategy, auctions and portals, issues associated with electronic commerce such as security privacy content selection and rating intellectual property right, authentication, encryption, acceptable use policies and legal liabilities are explored. It also emphasizes IT-enabled entrepreneurship and business creation and IT use small to medium sized enterprises.

Financial and Project Management

This course covers project management with emphasis that a project is completed on time within budget and has high quality. The course will examine the task of project resource management with a focus on IT and services. It will cover conventional aspects of project management such as the project evaluation, planning, roles, responsibilities scheduling and tracking. In addition, this class will examine risk management, change management, critical chain management, build vs. buy analysis package vs. custom solutions, vendor qualification and selection, and the roles of certification in the process.

Information Systems Strategy

This course covers the management of computer-based information resources in the context of business organizations. It will also cover selected issues on management strategies and policies for improving organizational productivity measurement evaluation and acquisition of management information services, office automation end-user computing, computer use in international environments social organizational perspectives and ethical implications.

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