

COLLEGE OF ENGINEERING

College of Engineering Building (Men's Section)

Phone: (974) 4403-4303

Email: CENG_Graduate@qu.edu.qa

Website: <http://www.qu.edu.qa/engineering/graduate.php>

ABOUT THE COLLEGE

The mission of the College of Engineering is to prepare globally competent and socially responsible graduates by providing high-quality education. Through its quality programs and partnerships, the College fosters research and scholarly endeavors that advance knowledge and contribute to the welfare of the country. In today's highly competitive today, an important criterion for academic and research excellence is the fostering of graduate-level training that features interdisciplinary, cutting-edge research and high-quality programs. Graduate training in the College of Engineering is committed to building strong foundations in order to advance knowledge and attract high caliber students. The College has successfully developed world-class educational programs, outstanding research activities, and strong industrial supports. It offers research and graduate programs that will enhance advanced knowledge of students, promote growth of their values, and prepare them to meet future engineering challenges.

MASTER OF ENVIRONMENTAL ENGINEERING

College of Engineering, Engineering Building

Phone: (974) 44034121 / 4303 / 4122

Email: ceng_graduate@qu.edu.qa

Website:

<http://www.qu.edu.qa/engineering/chemical/program/EMP/index.php>

ABOUT THE PROGRAM

The program is designed to suit engineering and suitably qualified science graduates who are seeking a formal qualification that will equip them to work in and contribute to this fast developing field. A distinctive feature of this program is that it is highly topical. Therefore, students in this program will have challenging, real-world issues to study 'on the doorstep' of the University. The real-world input (arising from the pressing needs of local industry) ensures that the curriculum is relevant to sustainable development of Qatar, as well as the industry's needs and assist with future employment of the program's graduates.

Environmental engineers develop sustainable solutions to environmental problems. They deal with issues such as designing water and wastewater treatment plants, designing solid waste disposal systems, site remediation approaches and emission control measures. In addition, the new environmental challenges will provide new opportunities for environmental engineers. Successful response to the impacts of global climate

change, fast-moving introduction of sustainable development practices in industry, and greener operations will require the skills of environmental engineers. Major corporations, governmental agencies, private consulting and construction firms, and universities are just some of the organizations that employ environmental engineers.

Objectives

Graduates of the Master of Environmental Engineering program will:

1. Contribute to sustainable development in their respective employment sectors such as industry and governmental agencies;
2. Take an active role in their continuous professional development to enable the state of Qatar to build the knowledge-based economy emphasized in QNV2030;
3. Promote ethical and professional standards in their careers with respect to the duty of care towards the environment and sustainable development.
4. Contribute to fulfilling the environmental, societal, economical and technological needs to address the challenges of the knowledge-based economy.

Learning Outcomes

On completion of the master program, graduates will able to:

1. Apply knowledge of biological science, chemistry, physics, mathematics, statistics, mass, energy and mass conservation, and transport principles needed to understand and solve environmental engineering problems.
2. Design and conduct experiments necessary to gather data and create information for use in analysis and design.
3. Demonstrate advanced knowledge and skills essential for professional practice of environmental engineering.
4. Predict and determine fate and transport of substances in and among air, water and soil phases, as well as in engineered systems.
5. Gain knowledge on globalization and other contemporary issues necessary to understand the impact of environmental engineering solutions in a global, societal, and environmental context.

Opportunities

Environmental engineering training offers graduates the opportunities to work in several domains of environmental protection. The major areas include air pollution control, industrial hygiene, hazardous waste management, toxic materials control, water supply, wastewater management, storm water management, solid waste disposal, public health, and land management. Within each of these major categories are many sub-specialties. The degree will enhance prospects for potential employment in Governmental bodies (Ministry of Environment, Ministry of Works), national and international industries located in and outside Qatar as well as service and utility providers among others. Also, potential employment

opportunities exist in consulting companies as well as in research institutions.

Admission Requirements

All applicants to the Master of Science in Environmental Engineering who meet the following minimum criteria will be considered for admission to Qatar University:

1. Applicants who completed a Bachelor or a higher level degree with a minimum cumulative GPA of 2.80 out of 4.00 from a university or college accredited by an international accrediting association, or by the Ministry of Higher Education or comparable authority in that country may be admitted to either the research or the professional tracks offered by the program
2. Applicants who completed a Bachelor or a higher level degree with a cumulative GPA between 2.5 and 2.8 out of 4.0 may be admitted only to the professional (project) track of the program. Students admitted with a GPA below 2.8 must attain a GPA of 3.0 or higher in the first semester and must register for a minimum of two regular courses in the field of study in the first semester. If a student fails to attain 3.0 or higher in the first semester, the student will be automatically dismissed from the program.
3. Achieved a minimum score of 520 on the paper-based TOEFL or equivalent test taken within 2 years of the start of the intended semester of admission OR earned a previous degree from an accredited institution of higher education in a Program where English was the language of instruction.
4. Passing an interview with the College's admission panel. The panel may request additional bridging course(s).

All applicants to the Master of Science in Environmental Engineering program are required to submit the following documents to the Admissions Department:

- Complete Online Admissions Application
- Final and official university transcripts
- Official TOEFL or equivalent score report or other evidence of English proficiency in accordance with QU Policy.
- Two letters of recommendation from undergraduate professors or employers
- Health Certificate
- Photocopy of the applicant's Qatar ID card (Non-Qatari applicants must provide a copy of their passport)
- Two recent identical passport-size photographs with white background
- Application Fees

Admission to the Master of Science in Environmental Engineering program takes place in the fall semester only (September). For additional information on the program, please see their website at: http://www.qu.edu.qa/engineering/master_brief/master_env_eng.php.

DEGREE REQUIREMENTS

The M.S. Science in Environmental Engineering degree requires a minimum of 35 credit hours of graduate-level course work for the thesis or the project options. The students with the Project option should pass a comprehensive exam.

- A total of 19 credit hours in Core Requirements
- A minimum of 16 credit hours in either the project option or the thesis option as detailed below:
 - **Project option:** A minimum of 4 credit hours in the Project Option requirement package and 12 credit hours in the Major Electives package.
 - **Thesis Option:** A minimum of 7 credit hours in Thesis Option Requirements package and 9 credit hours in the Major Electives package.

Core Requirements (19 credit hours)

- EEMP 504 Environmental Chemistry
- EEMP 505 Environmental Transport and Water Resources
- EEMP 506 Microbiological Processes in Environmental systems
- EEMP 507 Environmental Systems and Modeling
- EEMP 508 Environmental Measurements and Statistical Labs
- EEMP 509 Physico-chemical Processes in Environmental Eystems
- EEMP 510 Design Project

Elective courses

- EEMP 621 Solid Waste Management
 - EEMP 622 Hazardous Waste and Contaminated Sites Management
 - EEMP 623 Marine Environment and Human Development
 - EEMP 624 Environmental Sustainability
 - EEMP 625 Industrial Waste Water Treatment
 - EEMP 626 Clean Energy Resources
 - EEMP 527 Research Strategies and Methods*
 - EEMP 628 Special Topics in Environmental Engineering
 - EEMP 629 Atmospheric Pollution and Air Quality Management
 - EEMP 530 Environmental Assessment and Management**
- * This is a required course for thesis option.
** This is a required course for project (non-thesis) option.

Project Option Requirements (4 credit hours)

- EEMP 591 Industrial Master Project
- EEMP 530 Environmental Assessment and Management

Thesis Option Requirements (7 credit hours)

- EEMP 595 Master Thesis I
- EEMP 596 Master Thesis II
- EEMP 527 Research strategies and methods

STUDY PLAN

Master of Science in Environmental Engineering
Thesis Option

FIRST SEMESTER (9 credit hours)			
Term	Course #	Course Title	Cr Hrs
Fall	EEMP 504	Environmental Chemistry	3
	EEMP 505	Environmental Transport and Water Resources	3
	EEMP 506	Microbiological Processes in Environmental Systems	3
Total			9
SECOND SEMESTER (10 credit hours)			
Term	Course #	Course Title	Cr Hrs
Spring	EEMP 507	Environmental Systems and Modeling	3
	EEMP 508	Environmental Measurements and Statistical Lab	1
	EEMP 509	Physicochemical Processes in Environmental Systems	3
	EEMP 510	Design Project	3

Total	10
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THIRD SEMESTER (10 credit hours)			
Term	Course #	Course Title	Cr Hrs
Spring	EEMP XXX	Technical Elective	3
	EEMP 527	Research Strategies and Methods	3
	EEMP 595	Thesis	1
	EEMP XXX	Technical Elective	3
Total			10

FOURTH SEMESTER (6 credit hours)			
Term	Course #	Course Title	Cr Hrs
Spring	EEMP XXX	Technical Elective	3
	EEMP 596	Thesis	3
Total			6

STUDY PLAN

Master of Science in Environmental Engineering
Project Option

FIRST SEMESTER (9 credit hours)			
Term	Course #	Course Title	Cr Hrs
Fall	EEMP 504	Environmental Chemistry	3
	EEMP 505	Environmental Transport and Water Resources	3
	EEMP 506	Microbiological Processes in Environmental Systems	3
Total			9
SECOND SEMESTER (10 credit hours)			
Term	Course #	Course Title	Cr Hrs
Spring	EEMP 507	Environmental Systems and Modeling	3
	EEMP 508	Environmental Measurements and Statistical Lab	1
	EEMP 507	Environmental Systems and Modeling	3
	EEMP 510	Design Project	3
Total			10

THIRD SEMESTER (8 credit hours)			
Term	Course #	Course Title	Cr Hrs
Fall	EEMP XXX	Technical Elective	3
	EEMP XXX	Technical Elective	3
	EEMP 530	Environmental Assessment & Management	2
Total			8
FOURTH SEMESTER (8 credit hours)			
Term	Course #	Course Title	Cr Hrs
Spring	EEMP XXX	Technical Elective	3
	EEMP XXX	Technical Elective	3
	EEMP 591	Industrial Master Project	2
Total			8

DOCTOR OF PHILOSOPHY IN ENGINEERING

College of Engineering, Engineering Building
Phone: (974) 44034123 / 4303 / 4122
Email: ceng_graduate@qu.edu.qa

Website:

http://www.qu.edu.qa/engineering/phd_brief/phdprogram.php

Program Coordinator

Prof. Abbas Amira

ABOUT THE PROGRAM

The Doctor of Philosophy in Engineering is now offered for the first time in 2011. The mission of the doctoral program in the College of Engineering is to provide students with intensive advanced training in research that leads to the highest level of scholarly achievement, and enables them to conduct research independently to address new challenges as innovators. In the emerging development context in Qatar, this program is designed to fulfill the growing needs for engineers and scientists with advanced education and research experience. The PhD program is highly research-intensive and it is designed to enhance students' competencies in contributing to the existing body of knowledge, innovation and creation of new knowledge and techniques. Students are expected to equip themselves with strong theoretical and methodological foundations and to develop their ability to conduct research independently.

The College of Engineering has already established itself as a recognized leader in engineering and technologies. This leadership in research has further enhanced and complemented its capabilities with the offering of a doctoral degree in engineering. This program is enriched and augmented with the extensive research activities of the College of Engineering, and its world-class faculty members with expertise in sustainable research and reputation. Students enrolled in the program are required to complete a minimum of 6 credit hours of coursework and 54 credit hours of research work. A typical duration of the program is six semesters (three years) and the maximum duration is twelve semesters (six years). The Program currently caters only to full-time students. The Program offers concentration on Architecture, Urban Planning, Chemical Engineering, Civil Engineering, Computer Science, Computer Engineering, Electrical Engineering, Mechanical Engineering, Industrial and Systems Engineering, Engineering Management, Environmental Engineering, and Materials Science and Engineering.

Objectives

Graduates of the doctoral program will be able to fulfill the following educational objectives:

1. Foster innovation of new ideas, methods and techniques in science and engineering.
2. Contribute to the advancement of the scientific body of knowledge in engineering and related fields.
3. Lead research and express the results in scientific forums.

Learning Outcomes

By the time a student completes all requirements of the program, the student will have achieved the following learning outcomes:

1. Able to systematically review, analyze, assimilate and interpret the body of scientific literature and innovations in their area of discipline.
2. Apply and validate innovations and discoveries in the lab or real-world settings in more efficient and effective ways.
3. Produce high quality research.
4. Disseminate effectively the research output in reputable international journals, conferences, patents, research proposals and other scientific venues.

Opportunities

Graduates from this doctoral program will be in a better position to secure employment in the state of Qatar and worldwide, especially in higher teaching and research institutions, NPRP projects, and in private and Government R & D sectors. The State of Qatar pledged 2.8% of its annual GDP to education and research, in support of building a knowledge-based economy in the future. This expansion in knowledge will create new employment opportunities in research centers such as QSTP, QF, Ministries, National laboratories and it is expected that PhD holders would be one of the major recruits in these entities.

Admission Requirements

All applicants to the Doctor of Philosophy program who meet the following minimum criteria will be considered for admission to Qatar University:

1. Earned Master's degree in a related field with a minimum cumulative GPA of 3.0 out of 4.0 from a university or college accredited by an international accrediting association or by the Ministry of Higher Education or equivalent authority in that country.
2. Achieved a minimum score of 520 on the paper-based TOEFL or equivalent test, taken within 2 years of the start of the intended semester of admission OR earned a previous degree from an accredited institution of higher education in a Program where English was the language of instruction.
3. Submit test scores for the GRE or GMAT exams, as required by the concentration areas of the program, taken within less than 2 years prior to the start of the intended semester of admission.
4. Passed an interview with the College's admission panel.

All applicants to the Doctor of Philosophy program are required to submit the following documents to the Admissions Department:

- Complete Online Admissions Application
- Final and official university transcripts
- Official TOEFL or equivalent score report or other evidence of English proficiency in accordance with QU Policy.
- Health Certificate
- Three letters of recommendation (at least two from instructors or current supervisors) addressing the applicant academic achievement and professional accomplishments

- Proposed thesis topic or general area of research (approximately 1000 words)
- Photocopy of the applicant's Qatar ID card (Non-Qatari applicants must provide a copy of their passport)
- Two recent identical passport-size photographs with white background
- Application Fee

Admission to the Doctor of Philosophy program takes place in the fall and spring semesters. For additional information on the program, please see the following website: <http://www.qu.edu.qa/engineering/phd/brief/phdprogram.php>

DEGREE REQUIREMENTS

Doctor of Philosophy in Engineering

A minimum of 60 credit hours are required to complete the Doctor of Philosophy in Engineering, including the following:

- A minimum of 15 credit hours in Core Required Courses
- A minimum of 12 credit hours in Concentration Elective Courses
- A minimum of 33 credit hours for the PhD Thesis
- Passing the comprehensive examination
- Passing the Candidacy Examination
- Passing the Dissertation Defense

Core Required Courses (15 CH)

Students must complete 6 credit hours in the courses listed below in addition to 9 CH from the Core Supporting Requirements sub-package.

- DENG 602 Applied Research Methodology
- DENG 621 Graduate Seminar

Core Supporting Requirements sub-package (9 CH)

Students must complete 9 credit hours from the following courses:

- DENG 603 Advanced Numerical Analysis
- DENG 604 Applied Statistics Techniques
- DENG 624 Innovation and Technology Management
- DENG 625 Sustainable Development
- DENG 626 Modeling and Simulation

Concentration in Civil Engineering (12 CH)

Students who choose the Civil Engineering Concentration Area must complete 12 CH in the Civil Engineering Electives package and 33 CH in the Civil Engineering Thesis Requirement package as detailed below.

Civil Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- CVEN 624 Theory of Plates and Shells
- CVEN 630 Advanced Geo-mechanics
- CVEN 662 Traffic Safety Analysis

- CVEN 710 Advanced Special Topics I
- CVEN 711 Advanced Special Topics II
- CVEN 660 Advanced Traffic Engineering

Civil Engineering Thesis Requirement (33 CH)

Students must complete the following courses

- DENG 699 PhD Thesis

Concentration in Electrical Engineering (12 CH)

Students who choose the Electrical Engineering Concentration area must complete 12 CH in the Electrical Engineering Electives package and 33 CH in the Electrical Engineering Thesis Requirement package as detailed below.

Electrical Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- ELEC 552 Power System Dynamics & Control
- ELEC 561 Advanced Digital Signal Processing
- ELEC 653 Advanced Topics in Power Electronics
- ELEC 654 Advanced Topics in Machines and Drives
- ELEC 655 Advanced Topics in Control System Theory
- ELEC 656 Advanced Digital Communication
- ELEC 657 Biomedical Signal Processing & Diagnostics
- ELEC 658 Medical Imaging
- ELEC 659 Communication and Information Theory
- ELEC 660 Communication Networks
- ELEC 751 Advanced Special Topics I
- ELEC 752 Advanced Special Topics II
- ELEC 753 Time-Frequency Signal Processing

Electrical Engineering Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Mechanical Engineering (12 CH)

Students who choose the Mechanical Engineering Concentration area must complete 12 CH in the Mechanical Engineering Electives package and 33 CH in the Mechanical Engineering Thesis Requirement package as detailed below.

Mechanical Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- MECH 600 Advanced Finite element Ana
- MECH 565 - Advanced Thermodynamics for Master and PhD
- MECH 569 - Solar Energy Utilization for Master and Ph
- MECH 588 - Energy Conversion for Master and PhD
- MECH 652 Advanced Special Topics I
- MECH 652 Advanced Special Topics II

Mechanical Engineering Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Materials Science and Engineering (12 CH)

Students who choose the Materials Science and Engineering Concentration area must complete 12 CH in the Materials Science and Engineering Electives package and 33 CH in the Materials science and Engineering Thesis Requirement package as detailed below.

Materials Science and Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

MSCE 591 Corrosion Engineering
MSCE 592 Failure Analysis and Prevention
MECH 595 Advanced Physical Metallurgy
MECH 597 Coatings and Surface Engineering
MECH 598 Nanotechnology
MSCE 651 Special Topics I
MSCE 652 Special Topics II

Materials Science and Engineering Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Industrial and Systems Engineering (12 CH)

Students who choose the Industrial and Systems Engineering Concentration area must complete 12 CH in the Industrial and Systems Engineering Electives package and 33 CH in the Industrial and Systems Engineering Thesis Requirement package as detailed below.

Industrial and Systems Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

IENG 554 Decision Techniques and Data Analysis
IENG 556 Supply Chain and Logistics
IENG 557 Systems Analysis and Design
IENG 558 Robotics and Automation Technology
IENG 651 Advanced Special Topics I
IENG 652 Advanced Special Topics II

Industrial and Systems Engineering Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Engineering Management (12 CH)

Students who choose the Engineering Management Concentration area must complete 12 CH in the Engineering Management Electives package and 33 CH in the Engineering Management Thesis Requirement package as detailed below.

Engineering Management Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- EMP 504 Process Improvement Techniques
- EMP 506 Production and Operations Management
- EMP 507 Enterprise Information Analysis and Business Applications
- EMP 508 Decision Techniques and Data Analysis
- EMP 522 Service Operations Management
- EMP 651 Advanced Special Topics I

Engineering Management Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Environmental Engineering (12 CH)

Students who choose the Environmental Engineering Concentration area must complete 12 CH in the Environmental Engineering Electives package and 33 CH in the Environmental Engineering Thesis Requirement package as detailed below.

Environmental Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- EEMP 651 Special Topics
- EEMP 505 Environmental Transport and Water Resources
- EEMP 507 Environmental Systems and Modeling
- EEMP 509 PhysicoChemical Processes in Environmental Systems
- EEMP 521 Solid Waste Management
- EEMP 526 Clean Energy Resources

Environmental Engineering Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Chemical Engineering (12 CH)

Students who choose the Chemical Engineering Concentration area must complete 12 CH in the Chemical Engineering Electives package and 33 CH in the Chemical Engineering Thesis Requirement package as detailed below.

Chemical Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- CHME 650 Transport Phenomena
- CHME 653 Advanced Process Dynamics and Control
- CHME 661 Principles of Bioprocess Engineering
- CHME 662 Advanced Chemical Engineering Thermodynamics
- CHME 651 Special Topics I
- CHME 652 Special Topics II

Chemical Engineering Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Computer Science (12 CH)

Students who choose the Computer Science Concentration area must complete 12 CH in the Computer Science Electives package and 33 CH in the Computer Science Thesis Requirement package as detailed below.

Computer Science Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- CMPT 507 Advanced Operating Systems
- CMPT 542 Computer Security
- CMPT 564 Storage Area Networks
- CMPT 571 Advanced Algorithm Design and Analysis
- CMPT 581 Special Topics in Computing
- CMPT 583 Special Topics in Network Systems
- CMPS 653 Big Data Analytics

Computer Science Thesis Requirement (33 CH)

Students must complete the following course:

- DENG 699 PhD Thesis

Concentration in Computer Engineering (12 CH)

Students who choose the Computer Engineering Concentration area must complete 12 CH in the Computer Engineering Electives package and 33 CH in the Computer Engineering Thesis Requirement package as detailed below.

Computer Engineering Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- CMPT 541 Advanced Computer Networks
- CMPT 543 Wireless Communication
- CMPT 546 Telecommunications Policies and Regulations
- CMPT 567 Wide Area Digital Networking
- CMPE 651 Advanced Special Topics I
- CMPE 652 Advanced Special Topics II

Computer Engineering Thesis Requirement (33 CH)

Students must complete the following course:

- DENG 699 PhD Thesis

Concentration in Architecture (12 CH)

Students who choose the Architecture Concentration area must complete 12 CH in the Architecture Electives package and 33 CH in the Architecture Thesis Requirement package as detailed below.

Architecture Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- PHAP 701 Participatory Design and Planning
- PHAP 702 Architecture and Urbanism of Globalized Cities

PHAP 710 Building Performance Assessments and Measurements

PHAP 711 History, Theory, and Criticism in Architecture

PHAP 712 Energy and Buildings

PHAP 751 Advanced Special Topics in Architecture I

PHAP 752 Advanced Special Topics in Architecture II

Architecture Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

Concentration in Urban Planning (12 CH)

Students who choose the Urban Planning Concentration area must complete 12 CH in the Urban Planning Electives package and 33 CH in the Urban Planning Thesis Requirement package as detailed below.

Urban Planning Electives package (12 CH)

Students must complete 12 credit hours from the following courses:

- MUPD 600 Planning Theory
- MUPD 652 Theory of Urban Form and Design
- PHAP 701 Participatory Design and Planning
- PHAP 702 Architecture and Urbanism of Globalized Cities
- PHUP 753 Sustainable Urbanism
- PHUP 751 Special Topics I
- PHUP 752 Special Topics II

Urban Planning Thesis Requirement (33 CH)

Students must complete the following courses:

- DENG 699 PhD Thesis

FULL TIME STUDY PLAN

Doctor of Philosophy in Engineering

FIRST SEMESTER (9 credit hours)			
Term	Course #	Course Title	Cr Hrs
Fall	DENG 620	Applied Research Methodology	3
	DENG XXX	Core Required Course 1	3
	YYYY XXX	Concentration Elective Course	3
Total			9

SECOND SEMESTER (9 credit hours)			
Term	Course #	Course Title	Cr Hrs
Spring	DENG 621	Graduate Seminar	3
	DENG XXX	Core Required Course II	3

	YYYY XXX	Concentration Course II	Elective	3
Total				9

THIRD SEMESTER (9 credit hours)				
Term	Course #	Course Title		Cr Hrs
Fall	DENG XXX	Core Required Course III		3
	YYYY XXX	Concentration Course III	Elective	3
	YYYY XXX	Concentration Course IV	Elective	3
Total				9

FOURTH SEMESTER (9 credit hours)				
Term	Course #	Course Title		Cr Hrs
Spring	DENG 699	PhD Thesis		9
Total				9

FIFTH SEMESTER (12 credit hours)				
Term	Course #	Course Title		Cr Hrs
Fall	DENG 699	PhD Thesis		12
Total				12

SIXTH SEMESTER (12 credit hours)				
Term	Course #	Course Title		Cr Hrs
Fall	DENG 699	PhD Thesis		12
Total				12