جامعة قطر
QATAR UNIVERSITY
كلية الهندسة
COLLEGE OF ENGINEERING

Doctor of Philosophy (PhD) Program (Research-based – Research Intensive)

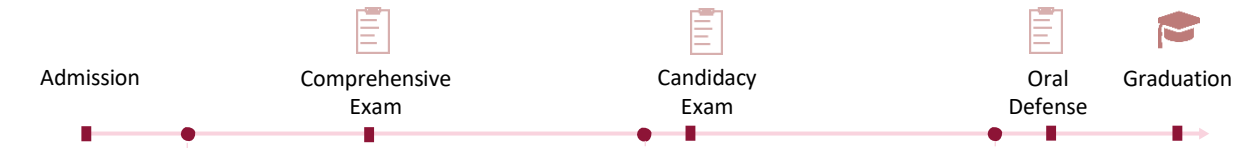
1. Curriculum Structure

The structure of the PhD program is as follows:

Curriculum Components	Total Courses	Total Cr Hrs
Core Courses	1	3
Required Courses in Major	-	-
Elective Courses in Major	3	9
Concentration		
Minor		
Free Electives (if Applicable)		
Others: Thesis	1	48
Total	**5**	**60**

2. Study Plan

The typical three years study plan can be represented as follows:



First Year (12 Cr Hrs)		
Fall (6 Cr Hrs)		
Course #	Course Title	CHs
DENG 702	Appl. Res. Meth.	3
XXX I	Technical Elective I	3
Spring (6 Cr Hrs)		
Course #	Course Title	CHs
XXX II	Technical Elective II	3
XXX III	Technical Elective III	3

Second Year (24 Cr Hrs)		
Fall (12 Cr Hrs)		
Course #	Course Title	CHs
XXX 899	PhD Thesis	12
	Candidacy Exam	
Spring (12 Cr Hrs)		
Course #	Course Title	CHs
XXX 899	PhD Thesis	12

Third Year (24 Cr Hrs)		
Fall (12 Cr Hrs)		
Course #	Course Title	CHs
XXX 899	PhD Thesis	12
Spring (12 Cr Hrs)		
Course #	Course Title	CHs
XXX 899	PhD Thesis	12
	Oral Defense	

3. Degree Requirements

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

- A 3 credit hours Core Course (DENG 702: Applied Research Methodology)
- A minimum of 9 credit hours in Concentration Elective Courses
- A minimum of 48 credit hours for the PhD Thesis
- Passing the comprehensive examination
- Passing the candidacy examination
- Passing the Dissertation Defense

Concentration in Electrical Engineering

Students who choose the Electrical Engineering Concentration Area must complete 9 CH in the Electrical Engineering Electives package and 48 CH in the Electrical Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Electrical Engineering Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

ELEC 708: Advanced Optimization Methods
ELEC 752: Advanced Special Topics I
ELEC 752: Advanced Special Topics II
ELEC758: Multimedia Processing
ELEC 763: Electric Power Generation by Renewable Sources
ELEC 764: Modern Radio Frequency Communication Systems
ELEC 767: Machine Learning
ELEC 768: Non-Linear Control Systems
ELEC 769: Detection and Estimation Theory

Electrical Engineering Thesis Requirement

Students must complete the following courses:

ELEC 899 PhD Thesis

Concentration in Civil Engineering

Students who choose the Civil Engineering Concentration Area must complete 9 CH in the Civil Engineering Electives package and 48 CH in the Civil Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Civil Engineering Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

CVEN 710: Advanced Special Topics I

CVEN 711: Advanced Special Topics II

CVEN 712 : Advances in Civil Engineering Practice and Research

Civil Engineering Thesis Requirement

Students must complete the following courses

CVEN 899 PhD Thesis

Concentration in Mechanical Engineering

Students who choose the Mechanical Engineering Concentration Area must complete 9 CH in the Mechanical Engineering Electives package and 48 CH in the Mechanical Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Mechanical Engineering Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

DENG 704: Project Management

MECH 720: Finite Element Analysis

MECH 701: Advanced Thermodynamics

MECH 702: Solar Energy Utilization

MECH 741: Advanced Special Topics I

MECH 742: Advanced Special Topics II

Mechanical Engineering Thesis Requirement

Students must complete the following courses:

MECH 899 PhD Thesis

Concentration in Materials Science and Engineering

Students who choose the Materials Science and Engineering Concentration Area must complete 9 CH in the Materials Science and Engineering Electives package and 48 CH in the Materials Science and Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Materials Science and Engineering Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

DENG 704: Project Management

MECH 726: Advanced Physical Metallurgy

MSCE 761: Special Topics I

MSCE 762: Special Topics II

Materials Science and Engineering Thesis Requirement

Students must complete the following courses:

MSCE 899 PhD Thesis

Concentration in Industrial and Systems Engineering

Students who choose the Industrial and Systems Engineering Concentration Area must complete 9 CH in the Industrial and Systems Engineering Electives package and 48 CH in the Industrial and Systems Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Industrial and Systems Engineering Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

IENG 756: Supply Chain and Logistics

IENG 757: Systems Analysis and Design

IENG 758: Robotics and Automation Technology

IENG 751: Advanced Special Topics I

Industrial and Systems Engineering Thesis Requirement

Students must complete the following courses:

IENG 899 PhD Thesis

Concentration in Engineering Management

Students who choose the Engineering Management Concentration Area must complete 9 CH in the Engineering Management Electives package and 48 CH in the Engineering Management Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Engineering Management Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

EMP 752: Advanced Special Topics II
DENG 704: Applied Statistics Techniques
DENG 724: Innovation and Technology Management
DENG 725: Sustainable Development
DENG 726: Modelling and Simulation

Engineering Management Thesis Requirement

Students must complete the following courses:

EMP 899 PhD Thesis

Concentration in Environmental Engineering

Students who choose the Environmental Engineering Concentration Area must complete 9 CH in the Environmental Engineering Electives package and 48 CH in the Environmental Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Environmental Engineering Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

EEMP 721: Solid Waste Management
EEMP 724: Environmental Sustainability
EEMP 725: Industrial Waste Water Treatment
EEMP 733: Renewable and Sustainable Energy Systems
EEMP 751: Advanced Special Topics in Environmental Engineering-I
EEMP 752: Advanced Special Topics in Environmental Engineering-II

Environmental Engineering Thesis Requirement

Students must complete the following courses:

EEMP 899 PhD Thesis

Concentration in Chemical Engineering

Students who choose the Chemical Engineering Concentration Area must complete 9 CH in the Chemical Engineering Electives package and 48 CH in the Chemical Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Chemical Engineering Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

CHME 750: Transport Phenomena
CHME 751: Special Topic I
CHME 752: Special Topic II
CHME 753: Advanced Process Dynamics and Control
CHME 761: Bioprocess Engineering
CHME 762: Advanced Chemical Engineering Thermodynamics
CHME 763: Advanced Reaction Engineering

Chemical Engineering Thesis Requirement

Students must complete the following courses:

CHME 899 PhD Thesis

Concentration in Computer Science

Students who choose the Computer Science Concentration Area must complete 9 CH in the Computer Science Electives package and 48 CH in the Computer Science Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Computer Science Electives package (9 Cr Hrs)

Students must complete 9 credit hours from the following courses:

CMPT 711: Visual Computing
CMPT 712: Network Security
CMPT 723: Distributed Systems and Cloud Computing
CMPT 742: Information Security
CMPS 753: Big Data analytics
CMPT 771: Algorithm Design and modeling
CMPT 773: Machine Learning
CMPT 782: Special Topics in Computer Science

Computer Science Thesis Requirement
Students must complete the following course:
CMPS 899 PhD Thesis

Concentration in Computer Engineering

Students who choose the Computer Engineering Concentration Area must complete 9 CH in the Computer Engineering Electives package and 48 CH in the Computer Engineering Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Computer Engineering Electives package (9 Cr Hrs)
Students must complete 9 credit hours from the following courses:
CMPT 702: Advanced Robotics
CMPT 710: Embedded Computing Systems
CMPT 711: Visual Computing
CMPT 712: Network Security
CMPT 741: Advanced Computer Networks
CMPT 743: Wireless Communication
CMPT 773: Machine Learning
CMPT 783: Special Topics in Computer Engineering

Computer Engineering Thesis Requirement
Students must complete the following course:
CMPT 899 PhD Thesis

Concentration in Architecture

Students who choose the Architecture Concentration Area must complete 9 CH in the Architecture Concentration Electives package and 48 CH in the Architecture Concentration Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Architecture Electives package (9 Cr Hrs)
Students must complete 9 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
Students must complete the following courses:
PHAP 899 PhD Thesis

Concentration in Urban Planning

Students who choose the Urban Planning Concentration Area must complete 9 CH in the Urban Planning Concentration Electives package and 48 CH in the Urban Planning Concentration Thesis Requirement package as detailed below. The students also have the option to take a maximum of 1 graduate level course (3CH) from outside the program but within QU upon the program coordinator approval.

Urban Planning Electives package (9 Cr Hrs)
Students must complete 9 credit hours from the following courses:
PHAP 702: Architecture and Urbanism of Globalized Cities
MUPD 700: Planning Theory
MUPD 752: Theory of Urban Form and Design
PHAP 701: Participatory Design and Planning
PHUP 753: Sustainable Urbanism
PHUP 751: Advanced Special Topics in Urban Planning I
PHUP 752: Advanced Special Topics in Urban Planning II

Urban Planning Thesis Requirement
Students must complete the following courses:
PHUP 899 PhD Thesis