

# **Egypt-Japan University of Science and Technology**

## **School of Electronics, Communications and Computer Engineering**

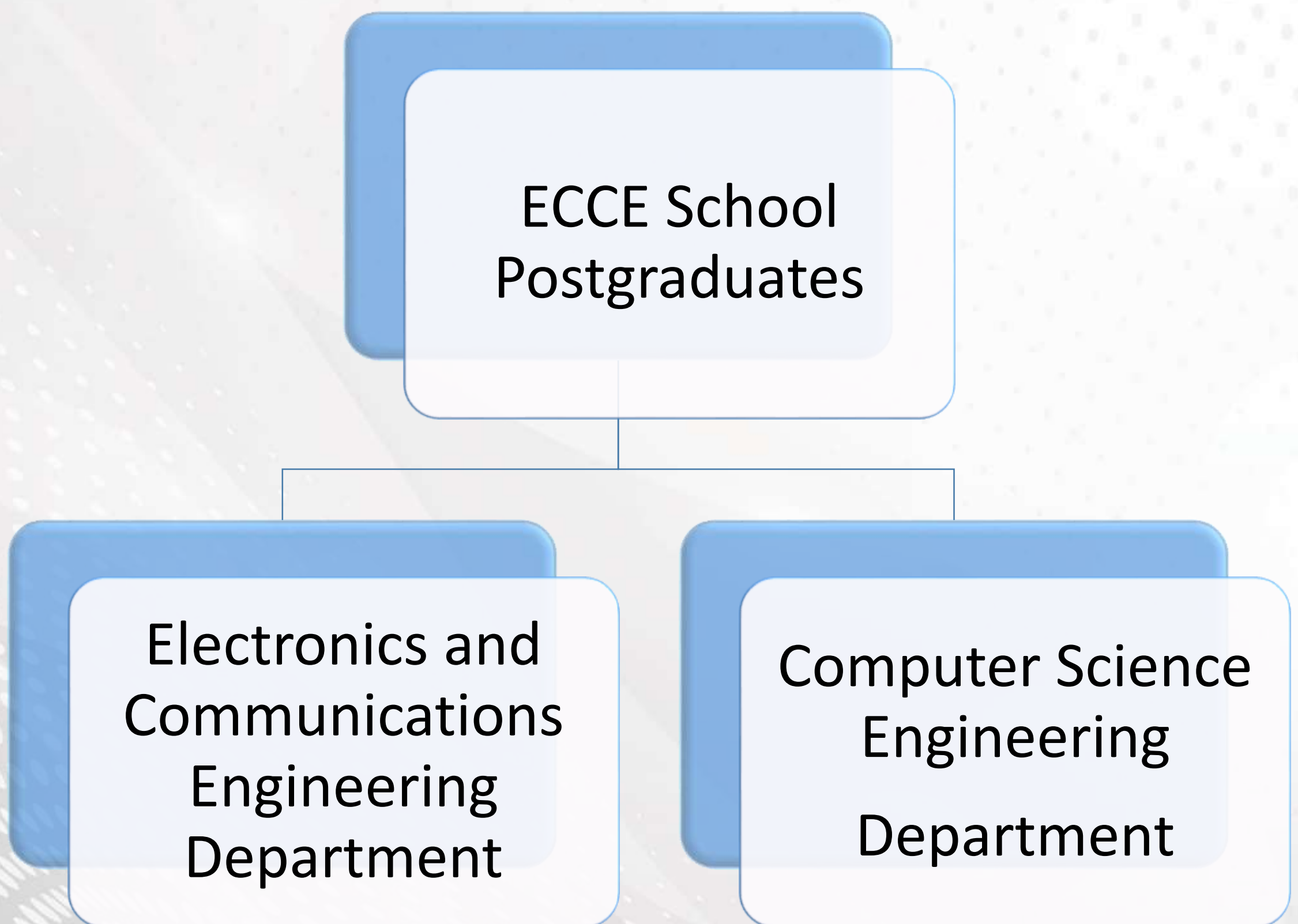
### **Postgraduate Program**



**جامعة بحثية مصرية ... ذات شراكة يابانية**

**EGYPTIAN RESEARCH-ORIENTED UNIVERSITY  
WITH JAPANESE PARTNERSHIP**

# School Structure



## **Electronics and Communications Engineering (ECE):**

M.SC.

- M.Sc. sPROGRAMtudents must complete a total of at least 36 credit hours, within the following guidelines:
- Course-work of 18 credit hours, including core courses of 6 credit hours, elective courses of 9 credit hours and a Project-Based Learning course of 3 credit hours.
- Thesis – work of 18 credit hours.
- M.Sc. students have to pass successfully six courses with three credit hours each.

Core Courses:

- ECE 501- Advanced Analog Integrated Circuits
- ECE 502 – Advanced Digital and Data Communications

Elective courses:

The elective courses are divided into two major areas; Electronics and Communications. Each course is worth 3 – credit hours. Students select the 6-credit elective courses from the sets of Electronics and/or Communications elective courses. Students can also select, with the aid of their academic advisors, elective courses from other interdisciplinary graduate programs.

Electronics Elective Courses:

- ECE 503 -Advanced Digital Integrated Circuits
- ECE 504- Computer-Aided Verification of Electronic Circuits and Systems
- ECE 505 -Analyses and Design of VLSI Mixed-Signal Integrated Circuits
- ECE 506- Advanced IC Processing and Layout
- ECE 507 -Advanced Solid State Devices
- ECE 508- Advanced Integrated Circuits for Communications
- ECE 509 -VLSI Design: System Approach

### **Communications Elective Courses:**

- ECE 510- Advanced Digital Signal Processing
- ECE 511- Information Theory
- ECE 512- Error Control Coding
- ECE 513- Digital Image Processing
- ECE 514 -Sensors and DSP Systems Design
- ECE 515 -Microwave Engineering
- MTH 501 -Advanced Mathematics and Statistics I

### **Project-Based Learning Courses:**

Students select one of the following 3-credit hours Project-Based Learning courses:

- ECE 701- Project-Based Learning in Electronics
- ECE 702 -Project-Based Learning in Communications

### **M.Sc. Thesis:**

The M.Sc. candidate should prepare and defend a Thesis based on a high-valued research work in one research topic in the fields of Electronics/Communications.

ECE 801 M. Sc. Thesis

### **Complementary Courses:**

In addition to students holding a bachelor degree in Electronics and Communications Engineering, students holding bachelor degrees in engineering, in relevant specializations, may be admitted in the program. This may include, but not limited to:

- Computer Engineering
- Biomedical Engineering
- Mechatronics and Robotics Engineering

Students holding bachelor degrees in engineering, in relevant specializations, should pass successfully complementary courses of up to 12 credit hours, as determined by the Department Council and approved by the Department Council, before registration in the program.

The complementary courses are listed below; each course is worth 3 credit hours:

- ECE 450- Microelectronics Circuits
- ECE 451- Integrated Circuit Devices
- ECE 452- Communications Systems Fundamentals
- CSE 453- Computer Networks
- ECE 453- Signals and Systems
- ECE 454- Digital Signal Processing

The credit hours of the complementary courses are not accounted in the M.Sc. course-work requirements.

## **Ph.D. PROGRAM**

Ph.D. students must complete a total of at least 48 credit hours, within the following guidelines:

- Course-work of 18- credit hours, including four elective courses, selected from the sets of Electronics and/or Communications elective courses, and research seminar courses of 6 credit hours. Students can also select, with the aid of their academic advisors, elective courses from other interdisciplinary graduate programs.
- Thesis -work of 30 credit hours.

Ph.D. students have to pass successfully six courses with three credit hours each.

## **Electronics Elective Courses:**

- ECE 601- Quantum and Optical Electronics
- ECE 602- Radio Frequency Integrated Circuits Design
- ECE 603 -Nanoscale Fabrication
- ECE 604- Nanoelectronic Devices and Circuits
- ECE 605- High-Speed Signals and Image Processing with VLSI
- ECE 606 Complex Digital Systems Design

### **Communications Elective Courses:**

- ECE 607- Mobile Communications
- ECE 608 -High Speed Communications Networks
- ECE 609- Neural and Nonlinear Information Processing
- ECE 610- Advanced Antenna Design
- ECE 611- Wireless Sensor Networks
- ECE 612- Numerical Electromagnetic
- ECE 613- Advanced Wireless Communications Systems
- ECE 614- Advanced Optical Communications Systems
- ECE 615- Advanced Optimization Techniques
- ECE 616- Statistical Signal Processing
- MTH 601- Advanced Mathematics and Statistics II

### **Advanced Research Seminar Courses:**

- Ph.D. students select two of the following 3- credit hours research seminar courses:
  - ECE 703- Seminars on Advanced Topics in Electronics I
  - ECE 704- Seminars on Advanced Topics in Electronics II
  - ECE 705 -Seminars on Advanced Topics in Communications I
  - ECE 706 -Seminars on Advanced Topics in Communications II

### **Ph.D. Thesis:**

The Ph.D. candidate should prepare and defend a Thesis based on a high-valued research work in one research topic in the fields of Electronics/Communications.

The Thesis should present a new contribution (s) in the respective field of research.

ECE 802- Ph.D. Thesis

## **Computer Science Engineering (CSE):**

**M.Sc. students have to pass successfully six courses with three credit hours each.**

### **Core Courses:**

CSE 501- Advanced Programming Concepts

CSE 503 -Advanced Computer Architecture

### **Elective Courses:**

Students select the 9-credit elective courses from the sets of Computer and/or Software Systems elective courses. Students can also select, with the aid of their academic advisors, elective courses from other interdisciplinary graduate programs.

MTH 501- Linear Algebra and Calculus

MTH 502: Probability and Statistics

### **Computer Systems Elective Courses:**

CSE 502 -Parallel Computing

CSE 504- Advanced Digital Systems

CSE 505- Advanced Embedded Systems

CSE 506- Distributed Systems

CSE 507- Mobile Computing

CSE 599 -Advanced Topics in Computer Science and Engineering

### **Software Systems Elective Courses:**

CSE 508- Advanced Combinatorial Algorithms and Data Structures

CSE 509- Computer-Aided Geometric Design and Modeling

CSE 510- Advanced Database Systems

CSE 511- Advanced System Intelligence

CSE 512- Machine Learning

CSE 513 -Multi-Agent Systems

CSE 514- Formal Verification

CSE 515-Theory of Computation

CSE 516- Complexity

CSE 517- Randomized Algorithms

CSE 518- Bioinformatics

CSE 599 -Advanced Topics in Computer Science and Engineering

### **Project-Based Learning Courses:**

CSE 701- Project-Based Learning in Computer Science and Engineering

### **M.Sc. Thesis:**

The M.Sc. candidate should prepare and defend a Thesis based on a high-valued research work in one research topic in the fields of Computer Science and Engineering.

CSE 801 - M. Sc. Thesis

### **Complementary Courses:**

In addition to students holding a bachelor degree in Computer Science and Engineering, students holding bachelor degrees in related relevant Engineering specializations may be admitted in the program. This may include:

- Communications and Computer Engineering
- Electronics and Communications Engineering.

Students, from these specializations, should pass successfully complementary courses of up to 18 credit hours, as determined by the Department Council and approved by the Department Council, before registration in the program. The credit hours of the complementary courses are not counted in the course-work requirements.

### **The complementary courses are listed below; each course is worth 3 credit hours:**

1. CSE 450- Digital Systems
2. CSE 451- Microprocessors
3. CSE 452- Computer Architecture
4. CSE 453- Computer Networks
5. CSE 454- Embedded Systems
1. CSE 455- Optimization



## **Ph.D. PROGRAM:**

Ph.D. students must complete a total of at least 48 credit hours, within the following guidelines:

Course-work of 18 - credit hours, including 12 - credit hours' elective courses from the sets of Computer Science and Engineering courses and research seminar courses of 6 credit hours. Students can also select, with the aid of their academic advisors, elective courses from other interdisciplinary graduate programs.

### **• Thesis work of 30 credit hours.**

Ph.D. students have to pass successfully six courses with three credit hours each.

Computer Systems Courses

CSE 601- Parallel Processor Architecture

CSE 602 - Advanced Compilers

CSE 603 - Computer Systems Security

CSE 604 - Queuing Theory

CSE 605- Information Theory for Communication Systems

CSE 606- Advanced Computer Networks

Software Systems Courses

CSE 607 -Stochastic Processes

CSE 608- Computer Vision

CSE 609- Cryptography

CSE 610- Natural Language Processing

CSE 611- Computing in Robotics

CSE 612- Advanced Machine Learning.

### **Advanced Research Seminar Courses:**

CSE 702- Seminars on Advanced Topics in Computer Science and Engineering I  
CSE 703- Seminars on Advanced Topics in Computer Science and Engineering II

## **Ph.D. Thesis:**

The Ph.D. candidate should prepare and defend a Thesis based on a high-valued research work in one research topic in the fields of Computer Science and Engineering.

The Thesis should present a new contribution(s) in the respective field of research.

## **CSE 802 - Ph.D. Thesis.**