

**THE MASTER OF ENGINEERING IN INTERDISCIPLINARY STUDIES WITH  
ADVANCED CERTIFICATE IN WIRELESS INNOVATION  
COMPARISON OF CURRENT AND REVISED REQUIREMENTS**

<b>CURRENT REQUIREMENTS</b> <b>(36 units, 12 courses):</b>	<b>REVISED REQUIREMENTS</b> <b>(30 credits, 10 courses):</b>
<p><b>Required: (9 courses, 27 units)</b>            EL 630 Probability            EL 501 Wireless Personal Communication Systems            EL 601 Principles of Digital Communications:            Modulation &amp; Coding            CS 915 Mobile Computing            EL 536 Principles of Communication Networks            EL 930 Wireless Information Networks Lab            EL 602 Wireless Communications: Channel            Modeling &amp; Coding            CS 681 Information, Privacy &amp; Security            EL995 Wireless Innovation Capstone Project</p>	<p><b>Group 1: Required (2 courses, 6 credits)</b>            EL 6303 Probability            EL 9953 Project</p>
<p><b>Electives (Choose 3 courses from a list, 9 units):</b>            Including EL, CS, Management courses.</p>	<p><b>Group2: Restricted Electives (3 courses,9 credits):</b>            choose from following            EL 5013 Wireless Personal Communication            Systems            EL 5023 Wireless Information Networks Lab I            EL 6013 Principles of Digital Communications:            Modulation &amp; Coding            EL 6023 Wireless Communications: Channel            Modeling &amp; Coding            EL 6033 Modern Wireless Communications:            Techniques and Systems            EL 6063 Information Theory            EL 6073 Coding Theory            EL 6753 Radio Propagation for Wireless Systems            EL 7023 Space-Time Wireless Communications</p>
	<p><b>Electives:</b> choose 5 courses (15 credits) from EL, CS and/or Management. Up to 3 management courses (9 credits) are allowed.</p>
	<p><b>GPA Requirement:</b>            &gt;=3.0 among all graudate courses,            &gt;=3.0 among GROUP1 and GROUP2</p>

# **THE MASTER OF ENGINEERING IN INTERDISCIPLINARY STUDIES WITH ADVANCED CERTIFICATE IN WIRELESS INNOVATION**

## **Revised 30 Credit Program, Effective Fall 2007**

### **GOALS AND OBJECTIVES**

The program Interdisciplinary Studies in Engineering leads to the Master of Engineering degree. It is intended for students seeking in-depth knowledge in fields requiring courses from multiple disciplines, especially disciplines taught by different academic departments. The degree meets the needs of many companies seeking professionals who must integrate knowledge from different fields and create new knowledge through research at the interface of different fields.

### **REQUIREMENTS**

To obtain the degree, students must satisfactorily complete a total of 30 credits in graduate courses with a capstone experience and at least one 12-credit graduate advanced certificate in an engineering department or in the Department of Computer and Information Science. This is the first such graduate interdisciplinary program at Polytechnic University or in the New York City metropolitan area. The advanced certificates and courses required already exist at the university; new ones will be created and approved as the program evolves to meet the needs of students and industry. Admission to the program requires a bachelor's degree from an accredited institution, with a superior academic record and completion of all prerequisite courses. Applicants who are otherwise sufficiently prepared for admission may nevertheless be required to take specific undergraduate and introductory level graduate courses. Such graduate courses may count towards the master's degree, depending on the practice of the department offering the advanced certificate. To administer this interdisciplinary program, each academic department will assign an adviser (or more than one if needed as the program grows). These advisers will form an advisory team to evaluate applicants for admission to the program. Based upon a student's selection of the first certificate, an adviser from the appropriate department will become the student's adviser. Advisers will help students select appropriate courses and determine their progress. To satisfy the requirements for the Master of Engineering degree, students must complete a total of 30 credits of courses, as described below, and maintain a B average for each certificate.

1. Certificate 1 (required): a 12-credit advanced certificate in any engineering department or in the Department of Computer and Information Science.
2. Additional courses agreed upon by the student and adviser to total 30 credits.

One or more courses in management are generally encouraged. A student may also choose to complete a second certificate as part of the additional courses beyond the first certificate. The majority of the 30 credits must be from engineering disciplines and the first advanced certificate included in the degree must be from one of the advanced certificates listed below. Prospective students must specify the first advanced certificate as part of the application process. There is no option for a thesis in this degree program. An average GPA of at least 3.0 is required in all graduate courses taken at Polytechnic for graduate credit. No more than 9 of the 30 credits may be transferred as part of this degree, based upon prior work at other acceptable institutions in subject matter relevant to this degree. A maximum of 3 transfer credits may be applied toward each certificate.

The degree shall include a capstone experience in one of the following ways: (a) a capstone course within one of the advanced certificates included in the degree; (b) a for-credit internship that builds on the

program of study within the degree and is monitored by a faculty adviser\*; or (c) an advanced design course that builds on the program of study and is explicitly designated by the adviser as the capstone course for the student's program of study. Where feasible, Polytechnic will designate in the University catalog a capstone course within each of the advanced certificates. It will generally be a laboratory or design project course or include a major design project. Where this is not done (b) or (c) will be the preferred mode of completing the degree.

*\* There is a general requirement for an intern experience as part of the Master of Science or Master of Engineering degree at Polytechnic. See Academic Policies and Degree Requirements in this catalog.*

## **ENGINEERING ADVANCED CERTIFICATE**

### **WIRELESS INNOVATION**

Below is a selection of courses focused on wireless innovation that fulfills requirements for a Certificate in Wireless Communications and for the degree Master of Engineering in Interdisciplinary Studies in Engineering.

#### **GROUP1:** Required

EL 6303 Probability (Required)

EL 9953 Advanced Project I (Required)

#### **GROUP2:** Restricted Electives: Choose 3 courses (9 credits) from the following:

EL 5013 Wireless Personal Communication Systems

EL 5023 Wireless Information Networks Lab

EL 6013 Principles of Digital Communications: Modulation & Coding

EL 6023 Wireless Communications: Channel Modeling & Coding

EL 6033 Modern Wireless Communications: Techniques and Systems

EL 6063 Information Theory

EL 6073 Coding Theory

EL 6753 Radio Propagation for Wireless Systems

EL 7023 Space-Time Wireless Communications

**GROUP3:** Electives. Choose 5 courses (15 credits) in electrical engineering, management or computer science. A maximum of three management courses is allowed. Sample Courses are listed below:

EL5363 Principles of Communication Networks

EL6373 Local and Metropolitan Area Networks

EL 6393 Advanced Network Security

MG 8673 Technology Strategy

MG 6073 Marketing

MG 7503 Electronic Business

MG 8653 Innovation Management

CS 6813 Information, Privacy & Security  
CS 6823 Network Management & Security  
CS 9153 Mobile Computing

**GPA requirements:** An overall GPA of  $\geq 3.0$  in all graduate courses is required. In addition, a 3.0 average is required in the courses taken to satisfy groups 1 and 2.