MSEE/Telecommunications Engineering Degree Requirements
Prior to Fall Quarter 2008-09
Revised Curricular Requirements as of July 23, 2004

The requirements for the M.S.E.E./Telecommunications Engineering will consist of 45 approved graduate credits (48 credits with the Graduate Co-op option). Of these, Telecommunications core credits will be 21. Appropriate courses in other graduate departments of engineering, science or mathematics may be taken as electives. However, a minimum of 30 credits must be taken in the Department of ECE to receive an MSEET. In consequence, no more than 15 quarter credits may be transferred from other institutions or other departments. These must be graduate courses which earned a grade of B or A and which were not used to earn a previous degree. Transfer credits must be approved by the ECE graduate advisor. The salient features of the proposed programs are the following:

- Emphasis on engineering and non-engineering aspects of Telecommunications engineering
- Industry participation through graduate coop programs where the students, national and international, will interact with industries and businesses dealing with telecommunications

Plan of Study

Before the end of the first quarter in the ECE department, for a full-time student, or by the end of the first year for a part-time student, the student must file, a plan of study with the graduate advisor. The form can be found by going to http://www.ece.drexel.edu/grad/plan_of_study_form.pdf

*Engineering:

**Required Core Courses:**

- **ECE-S521: Probability & Random Variables:** (3 credits)

- **ECE-S522: Random Process & Spec Analysis:** (3 credits)
  *Pre-Requisite:* ECES 521

- **ECE-C631: Prin of Computer Networking:** (3 credits)
  *Syllabus:* Principles of circuit switching, packet switching and virtual circuits; protocol layering;
application layer protocols for e-mail and web applications; naming and addressing; flow control and congestion avoidance with TCP; Internet Protocol (IP); routing algorithms; router architectures; multicast protocols; local area network technologies and protocols; issues in multimedia transmissions; scheduling and policing; Quality-of-Service and emerging Internet service architectures; principles of cryptography.

- **ECE-T501: Fundamentals of Comm Engr:** (3 credits)
  **Syllabus:** Fundamentals of Communications Engineering. This course introduces basic modulation, deletion and coding techniques in modern telecommunications systems, including PAM and FSK, spread-spectrum and OFDM, ML receiver, ISI and equalization, compression code and coded modulation. May be repeated once for credit.
  **Pre-Requisite:** ECES 521 and ECES 522

- **ECE-T511: Phys Foundations of Telecomm:** (3 credits)
  Optical communication devices: optical switches, couplers, isolators, sources, modulators, detectors, amplifiers. Overview of active circuits.

- **ECE-T512: Wireless Systems:** (3 credits)

- **ECE-T513: Wireless Networks:** (3 credits)

**Non-Engineering:**

It is strongly recommended that Telecom students take COM 650 and MIS 620. These courses deal with business and legal aspects of Telecommunications.

- **COM-650: Telecommunications Policy** (3 credits)
  **Syllabus:** Topics covered in this course include Global Telecommunications, History of the Telecommunications Industry & Technology. Spectrum Allocation. FCC & CCIT Regulations etc.
Intellectual Property. This course is currently offered by the Department of Humanities & Communications.

- **MIS-620: Telecommunications Management** (3 credits)
  Business Aspects of Telecommunications. Managing and Controlling Frequencies etc. **Syllabus:**
  Management aspects of planning and controlling/decision making for telecommunication networks: human resources, financial planning and control, marketing, cost/benefit analysis. Marketing aspects of Telecommunications.

_Electives:_

The following list contains suggested electives from the graduate offerings in the Electrical & Computer Engineering department. These courses will allow the students to choose specific tracks (Microwave Systems or Signal Processing or Photonics Systems or Networking or etc. depending on their career goals).

- Digital Signal Processing
- Microwave Networks
- Fiberoptics
- Photonic Devices
- VLSI Design
- Computer Networking

Students may also choose other elective courses from the ECE Graduate menu.

**Please note that ECEC 500 and ECEC 600 will not count towards the required 15 courses.**

Total Number of Credits required for Graduation:

48 CREDITS with the GRADUATE CO-OP OPTION OR 45 CREDITS without the GRADUATE CO-OP OPTION