# UNIVERSITY FACULTY SENATE FORMS

**Academic Program Approval**

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

**Submitted by:** _Kenneth Barner_____phone number_(302) 831-6937_

**Department:** _Electrical and Computer Engineering_____email address_barner@udel.edu_

**Action:** _(1) **Add New Concentration and (2) Revise Graduate Policy**_____
   (Example: add major/minor/concentration, delete major/minor/concentration, revise
   major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

**Effective term**__08S_____
      (use format 04F, 05W)

**Current degree**_____MS, Ph.D _____
      (Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

**Proposed change leads to the degree of:** MS, Ph.D (no change in degree) __
      (Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

**Proposed name:**_ Concentration name: **Signal Processing & Communications**
_____
      Proposed new name for revised or new major / minor / concentration / academic unit
      (if applicable)

**Revising or Deleting:**

   **Undergraduate major / Concentration:**_____
                              (Example: Applied Music – Instrumental degree BMAS)

   **Undergraduate minor:**_____
                        (Example: African Studies, Business Administration, English, Leadership, etc.)

   **Graduate Program Policy statement change:**_____
                              (**Must attach** your Graduate Program Policy Statement)

   **Graduate Program of Study:** _MS in Electrical and Computer Engineering; PhD in
Electrical and Computer Engineering_____
                        (Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

   **Graduate minor / concentration:**_____

**Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.**

Three copies of the graduate policy are attached: (1) old policy [2005], (2) new policy, and (3) new policy with changes highlighted. Note that in addition to the highlighted sections, new material includes the appendices that describe each of the concentrations. The appendices are all new text, and are therefore not highlighted.

**List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?**

(Be aware that approval of the curriculum is dependent upon these courses successfully passing through the Course Challenge list. If there are no new courses enter "None")

None. The concentrations are based on existing courses.

**Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education: http://www.ugs.udel.edu/gened/**

**Identify other units affected by the proposed changes:**
(Attach permission from the affected units.  If no other unit is affected, enter "None")

None.

**Describe the rationale for the proposed program change(s):**
(Explain your reasons for creating, revising, or deleting the curriculum or program.)

The concentrations provide course structure to each of the sub discipline areas served by the department. Students typically specialize in one of the areas covered by the proposed concentrations. Official concentrations will thus enable them to formally designate a concentrated field of work and add structure to their program. Students following a multidisciplinary or other specialized program of study need not designate a concentration area. Thus adding concentrations will enhance our program, but not limit students (who do not choose concentrations) to specific courses of study.

The requirement that students have a minimum specified GPA to be eligible for the Qualifying Examination is designed to ensure that students demonstrate a certain level of competency before sitting for the examination. Prior results show that students not demonstrating this level of mastery tended to fail the exam. The change also gives students strong motivation for doing well in courses.

**Program Requirements:**
(Show the new or revised curriculum as it should appear in the Course Catalog.  If this is a revision, be sure to indicate the changes being made to the current curriculum and **include a side-by-side comparison** of the credit distribution before and after the proposed change.)

See attached.

**ROUTING AND AUTHORIZATION:**     (Please do not remove supporting documentation.)

Department Chairperson _____ Date_____

Dean of College_____ Date_____

Chairperson, College Curriculum Committee_____ Date_____

Chairperson, Senate Com. on UG or GR Studies_____ Date_____

Chairperson, Senate Coordinating Com._____ Date_____

Secretary, Faculty Senate_____ Date_____

Date of Senate Resolution_____ Date to be Effective_____

Registrar _____ Program Code_____ Date_____

Vice Provost for Academic Affairs & International Programs_____ Date_____

Provost _____ Date_____

Board of Trustee Notification _____ Date_____

Revised 10/23/2007   /khs

# Department of Electrical & Computer Engineering

## *Graduate Studies Concentration in*

## *Signal Processing, Communications, and Controls*

Students in the Signal Processing, Communications, and Controls (SPCC) concentration focus on research and coursework in multimedia signal processing, statistical and nonlinear signal processing, image processing, time-frequency analysis, wireless communications, information theory, coding, as well as emerging SPCC theories and applications. The SPCC concentration is available to students in the MSECE and Ph.D. degree programs. Students in the SPCC concentration must complete the following:

## Course Requirements

### A minimum of two courses from the following:

| | | |
|---|---|---|
| ELEG 630 – Information Theory | | 3 Credits |
| ELEG 631 – Digital Signal Processing | | 3 Credits |
| ELEG 635 – Digital Communications | | 3 Credits |
| ELEG 636 – Statistical Signal Processing | | 3 Credits |

### A minimum of two courses from the following:

| | | |
|---|---|---|
| ELEG 611 – Linear Systems Theory | | 3 Credits |
| ELEG 619 – Multimedia Communications | | 3 Credits |
| ELEG 633 – Image Processing | | 3 Credits |
| ELEG 654 – Sensor and Data Wireless Networks | | 3 Credits |
| ELEG 677 – Biosignal Processing | | 3 Credits |
| ELEG 675 – Image Processing With Biomedical Applications | | 3 Credits |
| ELEG 811 – Channel Coding Theory and Practice | | 3 Credits |
| ELEG 812 – Wireless Digital Communications | | 3 Credits |
| ELEG 832 – Wavelets and Filter Banks | | 3 Credits |
| ELEG 833 – Nonlinear Signal Processing | | 3 Credits |

### Required Courses

| | | |
|---|---|---|
| ELEG 663 – Signal Processing Seminar (each semester) | | 0 Credits |

## General Requirements

Students must also complete the general degree requirements as detailed in the Electrical and Computer Engineering Graduate Policy and University Catalog. These requirements include credit requirements and, for Ph.D. and thesis option MSECE students, the carrying out of research and completion of a dissertation/thesis.