The University of Connecticut

School of Engineering

ENGINEERING PHYSICS (EE)

GUIDE TO COURSE SELECTION

AY 2002-2003

for

Engineering Physics (EngPhys) Majors

in the School of Engineering and College of Liberal Arts and Sciences

Prepared by the
Electrical & Computer Engineering Curricula & Courses Committee
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1.0 INTRODUCTION

The objective of this Guide is to outline courses offered by the School of Engineering and the College of Liberal Arts and Sciences leading toward a degree in Engineering Physics (EngPhys) which will prepare the student for a career in the chosen field, meet the curricular requirements of the Departments, the School of Engineering and the College of Liberal Arts and Sciences, and the University, and meet nationally recognized standards for Engineering Physics as established by the Accreditation Board for Engineering and Technology (ABET). This Guide is intended to be used in conjunction with the University of Connecticut General Catalog as a source of information regarding degree requirements in Engineering Physics.

This Guide describes the Engineering Physics (EngPhys) curriculum which is intended to provide the core of knowledge expected of a professional engineer working in this field. In addition to the required core courses, there are a number of senior year Professional Requirement courses which are chosen based on the desired area of concentration. The suggested professional requirement courses for the Engineering Physics program allow students to align themselves with either Electrical Engineering, Mechanical Engineering, or Materials Engineering. This guide has been tailored to the Electrical Engineering concentration in Engineering Physics; other guides are available for the other concentrations. The choice of the Professional Requirement courses, subject to the rules noted below, is up to the student and his or her advisor. Finally, all plans of study developed by the student must satisfy the curriculum requirements in EngPhys and the minimum requirements for engineering science and design established by ABET (as discussed in section 4.0).

1.1 Preparation of Plans of Study

Prior to registration during the first semester of the Junior year, or for transfer students in the second semester at UConn, whichever is later, each student must complete a Plan of Study form documenting the program he/she intends to follow to satisfy the degree requirements of the chosen major in engineering. In order to help students in developing a suitable Plan of Study form which meets graduation requirements, the ECE department holds Plan of Study meetings, normally scheduled during the 4th or 5th week of each semester. All students intending to file a Plan of Study form in EngPhys must attend one of these meetings to receive copies of this Guide as well as other information regarding the various options available within the EngPhys curriculum.

Preparation of a Plan of Study form is accomplished by carefully reading both the University of Connecticut General Catalog and this Guide in order to select an area of specialization which meets the student's interests. Note that a Plan of Study form should be approved through the Departmental level (by both the ECE and Physics departments) prior to registration in the semester that the student is required to file a Plan of Study form. Failure to have the Plan of Study form approved prior to registration can result in scheduling problems if the student does not take care in planning his/her remaining

semesters carefully. In some cases this can result in delaying the student's anticipated graduation date.

2.0 ENGINEERING PHYSICS CURRICULUM

The Computer Engineering program of study offered in the School of Engineering has been developed according to the guidelines of the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET) and is designed to give sound knowledge of basic principles in mathematics, physics, and chemistry; to offer training in the theory, principles, and practices of engineering; and to present the opportunity to obtain additional instruction and experience in one of the major engineering fields. Throughout the four-year curricula, opportunities are available to study general cultural and scientific topics. In addition, elective credits are available which can be used by those interested in professional schools or management and administration to supplement the required courses outlined in this Guide for the EngPhys curriculum. The Engineering Physics program, first offered in Fall 1999, is too new to have been accredited by EAC/ABET. However, ABET accreditation is being actively pursued at present and so the entire program is subject to the same regulations and standards as our established, and accredited programs.

For students in the School of Engineering, the engineering requirements which must be met are stated in detail in the Plan of Study current at the time of the student's entry into the junior year program or the time of the student's admission or readmission to the School, whichever is later. Thus, this Guide provides the details omitted from the University Catalog. Note that a student must have earned at least a 2.0 grade point average for all calculable Upper Division course work to receive the degree.

2.1 General Education Requirements (University Core Curriculum)

As part of all baccalaureate degree programs at the University, students are required to satisfy a common core of coursework known as the General Education Requirements. The General Education Requirements comprise eight categories or groups as summarized below:

Group 1. Foreign Languages

The minimum requirement is met if the student is admitted to the University with three years of a single foreign language in high school, or the equivalent. If the student has not met the minimum requirement through high school coursework, he or she must complete a two semester course sequence in a language at the University.

Group 2. Expository Writing

All students must take ENGL 110 Seminar in Academic Writing or ENGL 111 Seminar in Writing through Literature. In addition to these courses, all students must

complete two Writing (W) courses. As shown in the following pages, two Writing courses are specified in the required coursework in Engineering Physics.

Group 3. Mathematics and Computer Course

All students must take two Quantitative (Q) courses and one Computer (C) course. Students majoring in EngPhys meet this requirement through required coursework in their major.

Groups 4 through 7 (Humanities & Social Sciences coursework)

In the interest of making engineers fully aware of their social responsibilities and better able to consider related non-technical factors in the practice of engineering, coursework in the Humanities and Social Sciences is an integral part of the engineering program. As outlined in the University of Connecticut General Catalog, a minimum of six courses must be taken and distributed as follows:

Literature and the Arts (Group 4):

All students must take two courses: one which emphasizes major works of literature and one which emphasizes major achievements in art, and/or music and/or dramatic arts.

Culture and Modern Society (Group 5):

All students must take HIST 100 The Roots of the Western Experience or HIST 101 Modern Europe and a course which emphasizes non-Western or Latin American Cultures.

Philosophical and/or Ethical Analysis (Group 6):

All students must take a course in philosophical and/or ethical analysis. For students in Engineering, the course that must be taken is PHIL 104 Philosophy and Social Ethics.

Social Scientific and Comparative Analysis (Group 7):

All students must take one course in social science and/or comparative analysis.

Note that details on which courses may be used to satisfy these requirements are given in the Engineering section of the University of Connecticut General Catalog.

Humanities and Social Sciences Area of Concentration

Selection of course work from Groups 4 through 7 above must be such that at least two courses are taken in one of the departments listed, with at least one of these two courses being at the 200-level. This additional requirement allows for achieving depth in a

particular area within the humanities and social sciencs. Students may also meet this requirement for depth by taking an additional course, beyond the minimum prescribed, at the 200-level in one of the departments listed in the Catalog, provided that prior approval is obtained from the Dean.

Examples:

ANTH 106 (Group 7) and ANTH 226 (Group 5 Non-Western)
ENGL 210 (Group 4 Literature) and ENGL 218 (Group 5 Non-Western)
PHIL 104 (Group 6) and PHIL 263 (Group 5 Non-Western)
HIST 100 (Group 5 Western) and HIST 281 (Group 5 Non-Western)

Group 8. Science & Technology

All students must take two courses in science and technology, at least one of which must include a semester of laboratory. Students majoring in EngPhys meet this requirement through required coursework in their major.

2.2 Overview of the Freshman and Sophomore years

The lower division or freshman and sophomore years of the Engineering Physics curriculum are similar to the other engineering curricula and are described in the Engineering Section of the University of Connecticut General Catalog. The required program includes courses in Mathematics, Physics, Chemistry and Engineering with additional coursework in English and the Humanities and Social Sciences.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
PHYS 151Q	4	PHYS 152Q	4
CHEM 127Q	4	CHEM 128Q	4
MATH 115Q[1]	4	MATH 116Q[1]	4
ENGR 100	1	CSE 123C	2
ENGL 110 or ENGL 111	4	Elective	3
	17		17

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
PHYS 242Q	3	PHYS 230Q	3
PHYS 258Z	3	ECE 201	3
MATH 210Q	4	ECE 209W	2
CSE 207	3	MATH 211	3
CSE 208W	2	PHIL 104 (Group 6)	3
Social Science Course	3	Literature course (Group 4)	3
	18		17

[1] May be replaced by the three-semester sequence of MATH 112Q-113Q-114Q. Of this latter sequence, only eight credits are applicable toward the degree; i.e, credits for MATH 112Q are not used.

2.3 Overview of the Junior and Senior years

The Engineering Physics upper division curriculum, as described below, includes required courses and a number of professional requirements. The professional requirements allow a student to align with one of the other engineering disciplines (Electrical Engineering, Mechanical Engineering, or Materials Engineering). The suggested plan below includes professional requirements for the Electrical Engineering option.

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
PHYS 255Q	3	PHYS 257Q	3
MATH 272Q	3	HIST 100 or HIST 101	3
MATH 227Q	3	STAT 224Q	3
ECE 202	3	ECE 261	3
ECE 204	3	ECE 232	3
Arts course (Group 4)	3	Non-Western course (Group 5)	3
	18		18

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
ENGR 295	2	ENGR 295	3
PHYS 261Q	3	PHYS 285Z	3
ECE 241	3	ECE 245	3
ECE 228	3	ECE 229	3
PHYS 271Q	3	Elective	3
	14		15

Quantum Mechanics for Engineers offered by the ECE department may be substituted for PHYS 261Q.

3.0 DOUBLE MAJORS, MINORS, AND ADDITIONAL DEGREES

Opportunities exist to pursue a double major program in Computer Engineering and one of the other undergraduate engineering curricula, to pursue a minor degree program in conjunction with the CMPE degree, or to pursue an additional degree within the University.

Double Major with another Engineering program

Opportunities exist to pursue a double major program in Computer Engineering and one of the other undergraduate engineering curricula. Of the other curricula, the Electrical Engineering (EE) has the most overlap with that of the EngPhys curriculum and presents the best opportunity for a double major. If a student wishes to be a double major within Engineering, he or she should notify the Dean. Careful planning of course selection should be done each semester in consultation with the student's advisor. A separate Plan of Study form from each department must be prepared and submitted for approval.

Minors

Several minors are available within the University that may be attractive to students pursuing the Engineering Physics degree. Examples include minors in Mathematics and Statistics, within the College of Liberal Arts & Sciences.

Additional Degree with another major outside of Engineering

From time to time students wish to obtain an additional degree in a field outside of the School of Engineering. One example of an additional degree would be that found in the EUROTECH program in which the completion of a degree in German Studies within the College of Liberal Arts & Sciences is achieved at the same time the student completes the primary degree in a major within the School of Engineering. Students who have such an interest should discuss the procedure for pursuing the additional degree with the Dean.

4.0 ENGINEERING ACCREDITATION – ABET EC 2000

The Accreditation Board for Engineering and Technology (ABET) is recognized in the United States as the sole agency responsible for accreditation of educational programs leading to degrees in engineering. The first statement of the Engineers Council for Professional Development (ECPD, now ABET) relating to accreditation of engineering educational programs was proposed by the Committee on Engineering Schools and approved by the Council in 1933. The original statement, with subsequent amendments, was the basis for accreditation until 2000. The statement presented here is required of programs beginning in 2001.

All accredited engineering programs must include engineering in the program title (An exception has been granted for programs accredited prior to 1984 under the title of Naval Architecture.) To be considered for accreditation, engineering programs must prepare graduates for the practice of engineering at a professional level.

It is the responsibility of the institution seeking accreditation of an engineering program to demonstrate clearly that the program meets the following criteria.

Criterion 1. Students:

The quality and performance of the students and graduates is an important consideration in the evaluation of an engineering program. The institution must evaluate, advise, and monitor students to determine its success in meeting program objectives.

Criterion 2. Program Educational Objectives:

Each engineering program for which an institution seeks accreditation or reaccreditation must have in place

(a) detailed published educational objectives that are consistent with the mission of the institution and these criteria
(b) a process based on the needs of the program's various constituencies in which the objectives are determined and periodically evaluated
(c) a curriculum and process that ensures the achievement of these objectives
(d) a system of ongoing evaluation that demonstrates achievement of these objectives and uses the results to improve the effectiveness of the program.

Criterion 3. Program Outcomes and Assessment:

Engineering programs must demonstrate that their graduates have

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on multi-disciplinary teams

(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Each program must have an assessment process with documented results. Evidence must be given that the results are applied to the further development and improvement of the program. The assessment process must demonstrate that the outcomes important to the mission of the institution and the objectives of the program, including those listed above, are being measured. Evidence that may be used includes, but is not limited to the following: student portfolios, including design projects; nationally-normed subject content examinations; alumni surveys that document professional accomplishments and career development activities; employer surveys; and placement data of graduates.

The institution must have and enforce policies for the acceptance of transfer students and for the validation of credit courses taken elsewhere. The institution must also have and enforce procedures to assure that all students meet all program requirements.

Criterion 4. Professional Component:

The Professional Component requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The engineering faculty must assure that the program curriculum devotes adequate attention and time to each component, consistent with the objectives of the program and institution. Students must be prepared for engineering practice through the curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier coursework and incorporating engineering standards and realistic constraints that include most of the following considerations: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political. The professional component must include

(a) one year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline
(b) one and one-half years of engineering topics, to include engineering sciences and engineering design appropriate to the student's field of study
(c) a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

Criterion 5. Faculty:

The faculty is the heart of any educational program. The faculty must be of sufficient number; and must have the competencies to cover all of the curricular areas of

the program. There must be sufficient faculty to accommodate adequate levels of student-faculty interaction, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners, as well as employers of students.

The faculty must have sufficient qualifications and must ensure the proper guidance of the program and its evaluation and development. The overall competence of the faculty may be judged by such factors as education, diversity of backgrounds, engineering experience, teaching experience, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies, and registration as Professional Engineers.

Criterion 6. Facilities:

Classrooms, laboratories, and associated equipment must be adequate to accomplish the program objectives and provide an atmosphere conducive to learning. Appropriate facilities must be available to foster faculty-student interaction and to create a climate that encourages professional development and professional activities. Programs must provide opportunities for students to learn the use of modern engineering tools. Computing and information infrastructures must be in place to support the scholarly activities of the students and faculty and the educational objectives of the institution.

Criterion 7. Institutional Support and Financial Resources:

Institutional support, financial resources, and constructive leadership must be adequate to assure the quality and continuity of the engineering program. Resources must be sufficient to attract, retain, and provide for the continued professional development of a well-qualified faculty. Resources also must be sufficient to acquire, maintain, and operate facilities and equipment appropriate for the engineering program. In addition, support personnel and institutional services must be adequate to meet program needs.

Criterion 8. Program Criteria:

Each program must satisfy applicable Program Criteria. Program Criteria provide the specificity needed for interpretation of the basic level criteria as applicable to a given discipline. Requirements stipulated in the Program Criteria are limited to the areas of curricular topics and faculty qualifications. If a program, by virtue of its title, becomes subject to two or more sets of Program Criteria, then that program must satisfy each set of Program Criteria; however, overlapping requirements need to be satisfied only once.

The applicable program criteria for the CMPE major are the "Program Criteria for Electrical, Computer, and Similarly named Engineering Programs" submitted by the Institute of Electrical and Electronics Engineers, Inc., and duplicated below:

PROGRAM CRITERIA FOR ELECTRICAL, COMPUTER, AND SIMILARLY NAMED ENGINEERING PROGRAMS

Submitted by The Institute of Electrical and Electronics Engineers, Inc.

These program criteria apply to engineering programs which include electrical, electronic, computer, or similar modifiers in their titles.

1. Curriculum

The structure of the curriculum must provide both breath and depth across the range of engineering topics implied by the title of the program.

The program must demonstrate that graduates have: knowledge of probability and statistics, including applications appropriate to the program name and objectives; knowledge of mathematics through differential and integral calculus, basic sciences, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components, as appropriate to program objectives.

Programs containing the modifier "electrical" in the title must also demonstrate that graduates have a knowledge of advanced mathematics, typically including differential equations, linear algebra, complex variables, and discrete mathematics.

Programs containing the modifier "computer" in the title must have a knowledge of discrete mathematics.

5.0 FILLING OUT THE PLAN OF STUDY FORM

All students in the first semester of their Junior year in the Engineering curriculum must prepare a written Plan of Study form. These students should work with their advisors to determine a Plan of Study which meets the degree requirements of the School of Engineering and the University. At this time, the student should be advised with respect to matching his/her career interests and the ABET guidelines for Engineering Science/Design, Science, Mathematics, and Humanities education with the choice of electives available to him/her.

After an initial consultation with the advisor, the student should prepare two (2) original copies of the Plan of Study form (available from the Department office) by following the guidelines given below. Once the two original copies are prepared, the student should make an appointment with his/her advisor to have him/her review and approve the form. Both the advisor and the student should check his/her transcript to be sure that all Lower Division (freshman/sophomore) requirements have been met and should check that the proposed Upper Division (junior/senior) plan satisfies Department, School and University requirements. After the form is approved by the advisor, the two originals should be forwarded to the Department Head or his appointee for approval, prior to being forwarded to the Dean. Note: the student should check back with his/her advisor to see if any corrections must be made after the form has been reviewed by the Department Head or his designee.

The Department Head or designee will evaluate and indicate his/her approval of the Plan of Study, and then will send the two originals to the Dean. The Dean will evaluate

the Plan and indicate his approval of it. In the event that approval is not given, the difference of opinion must be worked out among the advisor, the student and the Dean or Department Head, as appropriate.

The Dean's Office will return two copies of the approved tentative Plan of Study form to the advisor: one of the two "originals" which is to be kept in the student's counseling folder, the other being a photocopy to be given to the student.

Note that an approved Plan of Study form can be modified at any time if course offerings and student objectives warrant it. However, no modification that jeopardizes the meeting of requirements will be approved. Modification must be made in consultation with the student's advisor and will usually involve the submission of a "revised" Plan of Study form for approval, in the same manner as the "original" form was prepared and submitted. Although not required until the last semester, it is suggested that a "revised" form be submitted each semester rather than waiting until the final semester. This way any problems can be caught as early as possible. This "revised" Plan of Study form may be created as done initially by forming two new originals, or by marking the changes on the approved "original" and having this "revised" form circulated for approval. Alterations to the courses listed should be made by crossing out the course(s) not taken, writing in those that were, and having the advisor initial and date each change. If extensive changes are to be made, or if a second revision is necessary, a new "original" Plan of Study form must be submitted.

The Plan of Study form should be reviewed at each subsequent registration period. ***In the student's last semester, he/she is required to file a "final" Plan of Study form which accurately lists all the courses that were taken to satisfy degree requirements.*** Any modifications to an already approved Plan of Study form should then be submitted for final approval following the above procedure.

The Plan of Study forms should be filled out neatly and in ink. All approval initials and signatures should also be in ink and dated. Expected date of graduation and year of catalog requirements must be clearly shown. The following guidelines should be adhered to:

Double Major: If you plan to follow a double major, indicate at the bottom of the Plan of Study form what it will be; i.e. " Double Major: department ". Note that some double majors will require submitting a completed Plan of Study form from each department. The approval of the Department Head from the double major department is also required as indicated on the form. Note: Double majors with Materials Engineering (Metallurgy & Materials Engineering department) should indicate which courses are being used as materials courses.

Catalog year and date of graduation: It is extremely important that you accurately list what catalog year you are filing under and your intended date of graduation. Both items are needed for use by the Registrar so that completion of your degree requirements may be certified by your graduation date.

Courses taken: The Plan of Study form must show exactly the courses being used to satisfy degree requirements. Exemption from specific School of Engineering course requirements or substitution of alternative courses must be clearly indicated on the Plan of Study form, explained in the "Comments" section and/or with an attachment, and may require approval via petition by the Dean (see "Exemption and Substitution" below).

Group 1. Foreign Language Requirement: The Foreign Language requirement calls for three years of a single foreign language in High School or a two semester course sequence in a language at the University. The words "High School" should be circled if the student has met this requirement in High School. If not, the appropriate courses should be listed with the credit by category columns modified accordingly (see "Credit Summary" below). Elementary levels of a foreign language should fall under the "Other" category, while more advanced language courses may be counted as "Humanities" credits in the ABET categories.

Group 2. Expository Writing Requirement: The General Education Requirement for Expository Writing is met through ENGL 105 and 109 and two "W" (writing) courses which are part of the engineering curriculum for each department (for CMPE majors, CSE 208W and EE 209W are required). Thus, the Plan of Study form (and the student transcript) must show these courses. If, for some reason beyond the student's control, the major "W" courses are not taken, the student will have to take the required "W" courses outside the department curriculum.

Group 3. Mathematics and Computer Course Requirement: Students in Engineering are required to complete MATH 115Q, 116Q, 210Q, and 211Q which also satisfy the General Education Requirement for quantitative (Q) courses. (Note that MATH 112Q-113Q-114Q may be used to meet the freshman year calculus requirement.) In addition, all students at the University must complete a computer (C) course as part of their General Education Requirements. This is normally done through the freshman year CSE 123C and 124C offerings. If for some reason the student does not meet this requirement, as may be the case for transfer students, he or she should see the Dean as soon as possible.

Group 8. Science Course Requirement: Students in Engineering are required to complete CHEM 127Q, 128Q and PHYS 151Q, 152Q which also satisfy the General Education Requirement for laboratory science courses.

Groups 4 through 7. Humanities and Social Sciences courses: As outlined in the University of Connecticut General Catalog, a minimum of six courses must be taken and distributed as follows:

Literature and the Arts (Group 4): All students must take two courses: one which emphasizes major works of literature and one which emphasizes major achievements in art, and/or music and/or dramatic arts.

Culture and Modern Society (Group 5): All students must take HIST 100 or 101 and a course which emphasizes non-Western or Latin American Cultures.

Philosophical and/or Ethical Analysis (Group 6): All students in Engineering must take PHIL 104 to satisfy the philosophical and/or ethical analysis General Education Requirement.

Social Scientific and Comparative Analysis (Group 7): All students must take one course in social science and/or comparative analysis.

In addition, all students are required to complete an "area of concentration" among the courses chosen to satisfy the Groups 4-7 by having at least two courses taken in one of the departments listed in the Catalog, with at least one of these two courses at the 200-level. Students may also meet this requirement for depth by taking an additional course, beyond the minimum prescribed, at the 200-level in one of the departments listed in the Catalog, provided that prior approval is obtained from the Dean.

Required courses: Required courses are shown on the form. If there are alternatives listed, the course(s) that the student has taken or intends to take should be circled (e.g. HIST 100 or 101, circle 100 or 101 depending on which one was taken). The credit by category columns should be modified as needed (see "Credit Summary" below).

Professional Requirements: The Professional Requirements which are not specified on the Plan of Study form must be chosen according to the guidelines established by the student's major department and the School. The student should be careful in choosing these courses so that that all requirements within an area of specialization are met. The credit by category columns should be modified as needed (see "Credit Summary" below).

Credit Summary: The breakdown of course credits under the various ABET categories should be listed for each row of courses on the Plan of Study form. Engineering Science/Design credit breakdown for the engineering courses may be obtained in each Department office or from the Office of the Dean. The credits by category should be summed for each column and listed under the "Totals" section. Keep in mind that the totals listed must meet or exceed the minimum ABET requirements.

Restrictions: The following courses may not be counted for credit toward graduation: MATH 112Q and 118Q along with other mathematics courses numbered below 110Q; PHYS 101Q, 103Q; CSE 101C; STAT 100; and courses labeled "independent study" or "variable topics" (e.g. courses numbered 298 and 299) taken in departments outside of the School of Engineering. No course taken on a Pass/Fail basis may be counted for credit toward graduation or used to meet any course requirement of the School of Engineering. Many general University restrictions are shown in the Academic Regulations and Procedures section of the University Catalog. Some examples include: Not more than 12 credits of biology at the 100-level may be counted toward graduation; Not more than 2 credits of ESLE 160 may be counted toward graduation; Not more than 6 credits from PHIL 101, 102, 103, 104, 105 may be counted toward graduation; and No credit for a course prerequisite to a second course in the same department may be counted for credit toward graduation after the student has passed the second course.

Exemption and Substitution: Students who desire to be excused from any of the requirements, or to substitute other courses for those prescribed, must do so by submitting a petition to the Dean. Some examples of this type of departure from a published regulation are as follows: exemption from MATH 115Q for a student who had Calculus in high school and started in our MATH 116Q or substitution of PHYS 121Q, 122Q, 125Q for PHYS 151Q, 152Q. Note that a substitution of three courses for two (as in the Physics example) results in only the credits for the two being counted for graduation, i.e. you are making a substitution for the equivalent work. Note that substitutions for courses taken as departmental Professional Requirements usually do not require a petition for approval by the Dean, but may be indicated on the Plan of Study form directly. Students must not write down or leave unchanged anything on the Plan of Study that they have not actually taken or plan to take.

Transfer Courses: Transfer courses should be listed on the Plan of Study form just as any other course, with a superscript of "TC" to indicate which courses were transferred. The credit associated with each transfer course should be noted as explained in the next section (see "Credit Summary" below).

Transfer courses may be counted at their UConn equivalent credit in the category totals if the transcript does not show the number of credits granted for the particular course. The ABET category credit breakdown should also assume the University of Connecticut equivalent credit for transfer work that appears on the transcript in this fashion. If the transcript does show an exact number of credits for the course, then the actual credit granted must be shown. If the credit associated with a transfer course is different from the University of Connecticut equivalent value, the ABET category credits must be determined in the same ratio as the University of Connecticut course breakdown; e.g., the normal breakdown for EE 204 is as follows:

	Engr. Science	Engr. Design	Other
EE 204 (3 credits)	2.0	1.0	0

If the course is actually transferred into the University with a credit value other than the University of Connecticut credit value, as may occur when coming from a trimester system, the ABET credit breakdown must be determined using the above ratios; e.g.,

	Engr. Science	Engr. Design	Other
EE 204 (2.64 transfer credits)	1.76 (2/3)	0.88 (1/3)	0 (0/3)

For transfer work that does not have an exact University of Connecticut equivalent; e.g., 4.25 credits of EE 100 LEVEL, the credits should be listed as follows:

EE 100 LEVEL $(4.25)^{TC}$

In other words, the discipline followed by the level with an indication of how many credits is needed.

To aid students with transfer work, columns for sub-totaling "University of Connecticut Credits" and "Transfer Credits" are listed to the right of the ABET credit categories. These columns should be used to sum the credits across each row, separating those credits earned at University of Connecticut from those completed elsewhere. Clearly, a student without transfer credits need not bother with these columns, since the sum of the ABET columns will provide an easy way to total all credits counting toward the degree. However, it does provide a cross-check in that the sum of the row sub-totals should equal the sum of the ABET column totals for those students without transfer credits.

The total transfer credit granted (not the sum of the University of Connecticut equivalents) less any equivalent restrictions (such as subtracting 3 credits if MATH 107Q is listed since this course does not count for credit in the School) should be listed on the line labeled "Transfer Credits". The total of all credits taken at the University of Connecticut should be listed on the line labeled "University of Connecticut Credits". The sum of the "Transfer Credits" and the "University of Connecticut Credits" should be listed on the "Total Credits" line. The total credits must equal or exceed 134.

Changes: Changes to a previously submitted Plan of Study form may be made in consultation with the advisor and will require submission of a "revised" Plan of Study form for approval, in the same manner as the "original" form was prepared and submitted. This may be done by marking the changes on the previously approved original Plan of Study form, available from the advisor or the Office of the Dean, and having the advisor initial and date each change. No modifications of a photocopy will be accepted. If a second revision of an "original" is necessary, of if extensive changes are to be made, the submission of a new "original" Plan of Study form is required. In the student's last semester, he/she must submit a "final" Plan of Study form which accurately lists all the courses that were taken to satisfy degree requirements.