

DEPARTMENT OF ELECTRICAL ENGINEERING

UNDERGRADUATE PROGRAM GUIDE

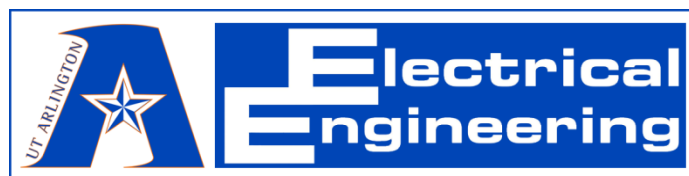
The University of Texas at Arlington

Undergraduate Advisor
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501 Nedderman Hall

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<http://www.uta.edu/ee>



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EE UNDERGRADUATE PROGRAM GUIDE

INFORMATION FOR NEW OR PROSPECTIVE STUDENTS

The purpose of this brochure is to help explain the undergraduate program in Electrical Engineering offered at The University of Texas at Arlington. Answers to often-asked questions are provided, but it serves only as a supplement to the UTA Undergraduate Catalog.

The Catalog is the authoritative source of university information. You should become familiar with it and consult it for answers to questions regarding policies, regulations, and course descriptions.

WHAT IS ELECTRICAL ENGINEERING?

Although the electrical engineering field was created by the rapidly developing electric power and electronics industries, it has steadily grown to include a very wide range of technical applications. The strong mathematics background of an electrical engineer allows him or her to apply these skills to a very broad range of challenging areas, such as the fields listed below:

| | |
|-------------------------|---------------------|
| Artificial Intelligence | Medical Electronics |
| Automatic Control | Microwaves |
| Computers | Optoelectronics |
| Communications | Photonics |
| Electric Power | Remote Sensing |
| Electronics | Robotics |
| Image Processing | Signal Processing |
| Information Processing | Solid State Devices |
| Laser Technology | |

Examples of challenges for future electrical engineers are given below:

- Telecommunications — voice, data, images; networks, HDTV, cellular radio, displays, fiber optics, satellites
- Faster computers and intelligent interfaces — parallel processors, speech recognition, training systems
- Generation and distribution of electrical power on earth and in space, renewable energy sources
- Navigation and control systems for autos, airplanes, and spacecraft
- Remote sensing of environment
- Biomedical instrumentation and prostheses
- Automation and robotics sensing, simulation, control
- New microwave, millimeter wave, and electro-optical devices for communications, signal processing, and data storage — optical disks, light wave communication, remote sensing

In addition, electrical engineers make excellent lawyers, doctors, businessmen and women, and teachers!

ACCREDITATION

The curriculum is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (ABET). Thus, the EE program places emphasis on meeting the ABET criteria.

PROGRAM EDUCATIONAL OBJECTIVES

Based on the missions of UT Arlington, UTA College of Engineering, and UTA Electrical Engineering department, the Electrical Engineering Program Educational Objectives (PEOs) are to produce graduates who:

- PEO1: Possess a broad yet practical knowledge in electrical engineering, science, and mathematics with particular depth in electromagnetics, circuits, electronics, and controls.
- PEO2: Possess a practical knowledge in other key areas such as thermal engineering, mechanics, and economics.
- PEO3: Are skilled in applying mathematical tools and engineering judgment to professional design, analysis and problem solving; work well either individually or in multidisciplinary teams; and can effectively articulate technical ideas to both technical and non technical audiences.
- PEO4: Understand the importance of lifelong learning, ethics and professional accountability, and their role as leaders in society.

These PEOs are consistent with the mission of the Department of Electrical Engineering (EE) which includes:

- Producing highly competent graduates at the baccalaureate, masters, and doctoral levels.
- Performing state-of-the art research in the various disciplines of electrical engineering.
- Providing service to the community and the electrical engineering profession through outreach programs, involvement in professional societies, consulting, and interaction with industry and government.
- Promoting lifelong learning by providing a stimulating and challenging program of excellence.

PROGRAM OUTCOMES

The BSEE program provides students with a broad electrical engineering education to ensure that its graduates have:

- a. An ability to apply knowledge of mathematics, science and engineering
- b. An ability to design and construct experiments, as well as to analyze and interpret data
- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d. An ability to function on multidisciplinary teams
- e. An ability to identify, formulate, and solve engineering problems
- f. An understanding of professional and ethical responsibility

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- 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 lifelong learning
- j. A knowledge of contemporary issues
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

UNDERGRADUATE PROGRAM

The undergraduate program in electrical engineering stresses fundamental concepts to prepare the engineering graduate for a lifelong career. The program is divided into pre-professional and professional programs with the division occurring between the sophomore and junior years. The pre-professional program stresses general engineering and foundation courses in mathematics and science. Students are admitted to the professional program upon completion of the pre-professional program with suitable grades. The professional program consists of core courses in electronics, digital systems, electromagnetics, energy conversion, feedback control systems, and communications systems as well as electives from diverse technical areas. Through selection of technical electives, students may specialize in certain fields of electrical engineering. These specialties include computers, biomedical, robotics, optics, signal processing, VLSI, and high frequency electronics. In addition to analysis skills, emphasis is placed on laboratory experience and design projects.

PROGRAM OVERVIEW

The final pages of this brochure show a suggested course sequence (flow chart) for UTA's Bachelor of Science in Electrical Engineering degree. All pre-professional courses must be passed with a minimum GPA of 2.25 before the student is admitted to the professional program.

The courses are identified on the flow chart by their official prefixes. The first letters indicate the department responsible for the course offering. The first of the four digits following this shows the course level (1 - freshman, 2 - sophomore, etc.). The second digit is the credit hours the course carries. The last two digits are used to identify the specific course. Check the catalog for course descriptions.

In the pre-professional section, the courses are arranged in a hierarchy. That is, the courses on a path above a given course are prerequisite for that course. The pre-professional program supplies the foundation upon which the professional program courses will draw. The Mathematics sequence builds on high school Algebra, Geometry, and Pre-Calculus with Calculus I through III and Differential Equations/Linear Algebra. Chemistry and Physics provide a natural science base. Introduction to Engineering, Introduction to EE Lab, Computer Solution of EE Problems, Statics & Dynamics, C Programming Concepts, Electrical Circuits, Electromagnetics I, and Electronics I prepare the student for the engineering courses in the professional program. The essential requirement to communicate effectively is recognized by two semesters of English composition. Upon

effective completion of the pre-professional program, the student is ready for the more in-depth instruction of the professional program.

The Humanistic-Social Courses (Government, History, English Literature, and Fine Arts elective) may be taken any time before graduation, as long as prerequisites are satisfied.

Students for whom English is the primary language must present a minimum of two high school units in a single foreign language. Students without such credit are considered to have a deficiency that must be removed prior to graduation by taking two courses in a single modern foreign language totaling not less than six semester credit hours. Students declaring credit for high school foreign language study must provide supporting evidence, e.g., a transcript. Students for whom English is a secondary language may request a waiver of this requirement.

ENTRANCE REQUIREMENTS

Detailed information pertaining to admission to the University and the Engineering College is provided in the current Undergraduate Catalog. Generally, freshmen entering the EE Department must have been graduated from high school with an appropriate math and science background and received a minimum SAT (Scholastic Aptitude Test) score of 1200 or the equivalent ACT (American College Test) score of 28.

ADVISING AND REGISTRATION PROCESS

The EE Advising Office is located at 501 Nedderman Hall; the Undergraduate Advisor is Dr. Stephen Gibbs. Prior to registering for classes, all EE students in the pre-professional program must be advised. Students who have been accepted into the professional program and received an official degree plan are usually exempt from Advising. (Check MyMav for advising status each semester.) More information about advising days and hours can be obtained from the Advising Office at 817-272-2671.

Once the Advising Form is approved and the time to register is determined, a non-conflicting class schedule can be created. The necessary information is available on-line at <http://www.uta.edu>. Registration and schedule adjustments may be performed via the online MyMav system. The Registration Timetable may also be found online.

TRANSFER STUDENTS

Transfer students include those from other departments within UTA as well as those from other educational institutions. All transfer students must have a minimum 2.50 GPA on all courses applicable to the pre-professional program in order to be accepted into the EE Department.

UTA does not accept transfer credit from technology schools or from schools with programs not accredited by ABET. However, some courses listed as technology courses transfer from other colleges. Even though these courses transfer into UTA, most of them do not apply to the EE Degree Plan. A decision on the applicability of such courses will be made by the Undergraduate Advisor.

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PROFESSIONAL PROGRAM

Upon completion of pre-professional courses and before enrolling in 3000 level EE courses, student must apply to the professional program. The required application is available in the Advising Office. Students who have been accepted into the professional program and received an official degree plan are usually exempt from registration advising. (Check MyMav for advising status each semester.)

DEGREE PLAN

The degree plan is prepared by the EE Advising Office and filed with the Registrar's Office when the student is accepted into the professional program. The degree plan cannot be generated until all required pre-professional courses are completed and reflected on the student's UTA transcript. A student requesting exemption from foreign language based on high school credit must submit a high school transcript for verification prior to preparation of the degree plan.

Any student who finds it necessary to request changes to the degree plan should check with the Advising Office for procedures. Degree Plan Changes must be approved by the Undergraduate Advisor.

GRADUATING SENIORS

Graduating seniors should apply to graduate using the online application from on Registrar's Office. The form may be found at <http://ww3.uta.edu/registrar/graduation.asp>.

ACADEMIC REGULATIONS

1. Three Time Rule: A student may not attempt a course (at UTA and/or any other institution) more than three (3) times and apply that course toward the EE Degree. Enrollment in a course for a period of time sufficient for assignment of a grade, including a grade of W, is considered an attempt.

2. D Grade Rule: A grade of D or lower in a pre-professional course indicates unsatisfactory preparation for further engineering education. Any such course in which a D is received must be repeated before enrolling in any course for which it is a prerequisite. This requirement is subject to the Three-Time Rule.

3. Transfer Credit: Credit for courses that have been earned at another accredited college or university with a grade of C or better may be transferred to UTA. Courses completed with a grade of D or below will not be accepted in transfer. Transfer work will be subject to approval by the Undergraduate Advisor. Some courses accepted by the university may not be applicable to the EE Degree Plan.

4. Repeating Courses: A student may repeat only courses in which the student has made a D or F. Courses transferred to UTA from another college or university may not be repeated for credit.

5. Low GPA: Any student who accumulates a grade point deficiency (below 2.0) in courses in the major field of study is placed on probation. The student is removed from this probationary status when the grade point deficiency in the major is eliminated. After two semesters of a deficient GPA, the student will be required to change majors.

FACULTY

The EE Department has 33 full-time faculty members, 4 full-time senior lecturers, and 5 part-time adjunct faculty.

Faculty

Kambiz Alavi
Jonathan W. Bredow
Donald Butler
Ronald L. Carter
Zeynep Celik-Butler
J. C. Chiao
W. Alan Davis
Venkat Devarajan
William E. Dillon
Daniel Engels
Babak Fahimi
Sungyong Jung
George V. Kondraske
Wei-Jen Lee
Frank Lewis

Qilian Liang
Mingyu Lu
Robert Magnusson
Michael Manry
Soontorn Oraitara
Dan Popa
K. R. Rao
Harry Stephanou
Meng Tao
Saibun Tjuatja
Michael Vasilyev
Zhou Wang
Kai-Shing Yeung
Weidong Zhou

Senior Lecturer

Stephen Gibbs
Henry Kearny
Rasool Kenarangui
Howard Russell
Nikolai Stelmakh

Adjunct Faculty

Jason Losh
David Wang
Peter Wang

ALUMNI

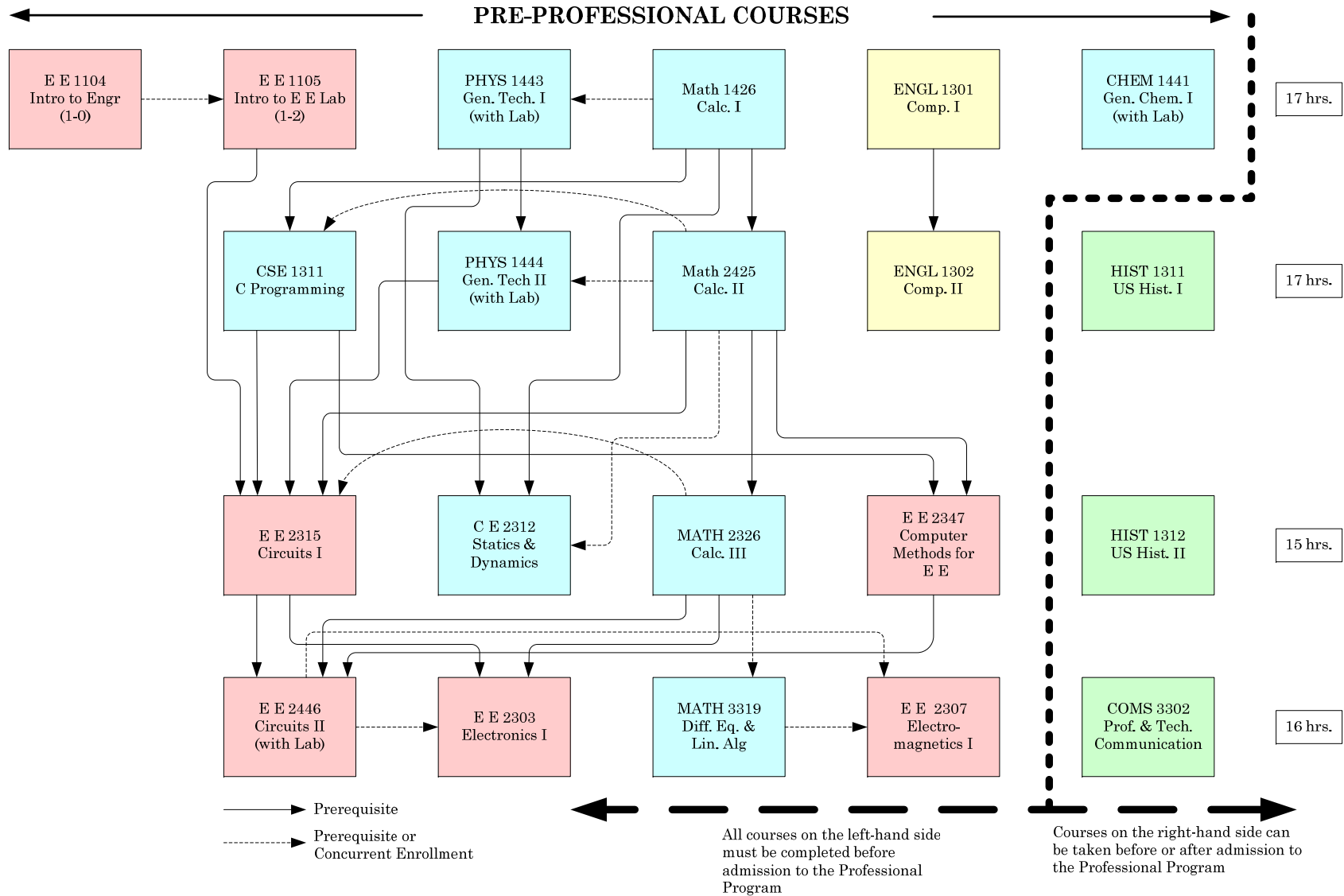
Our graduates work in academia, research and industry, in both private and public sectors. Some have become leading contributors in a variety of fields and some have moved on to corporate management

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Student _____

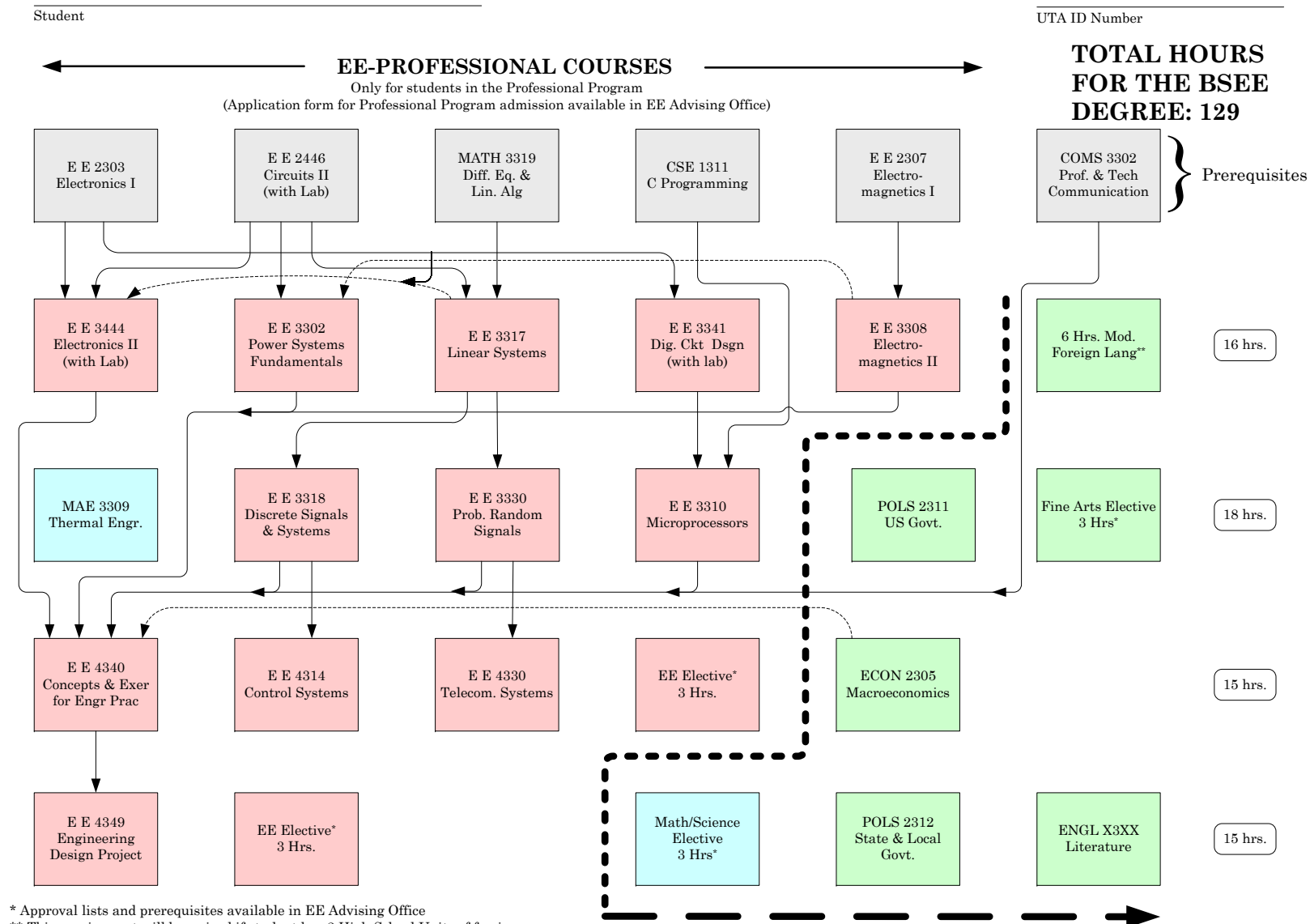
UTA ID Number _____

BSEE DEGREE PLAN (2007-2009 Catalog)



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BSEE DEGREE PLAN (2008-2009 Catalog)



* Approval lists and prerequisites available in EE Advising Office
 ** This requirement will be waived if student has 2 High School Units of foreign language. The HS Transcript must be submitted to verify credits.

Courses on the right-hand side can be taken before or after admission to the Professional Program