

## ESL And Special Courses

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### **D 999 Maintenance of Matriculation**

Students who have completed all credits for an advanced degree but still have not completed a Master's thesis, Engineer project, Doctoral dissertation, or other academic requirements, enroll for D999 unless a leave of absence has been granted. Approval from the Registrar's office is required. D999 carries no credit and no grade is issued. A nominal fee is charged.

### **DE 10 Developmental English (Intensive Level)**

This course will provide the non-native English-speaking student with a systematic review of English grammar, an introduction to discourse and contextual meaning, and perspectives of American cultural interactions. Special attention will be paid to the development of basic writing, reading, speaking, and listening skills. Students will learn interpretation and organizational skills, and how to use a dictionary and library. American-English pronunciation with emphasis on word stress, sentence stress and rhythm, rising intonation, and rising-falling intonation will be covered.

### **DE 80 Developmental English (Beginner Level)**

This course will provide the non-native English-speaking student with a review of standard American-English grammar necessary in the development of organization and coherence in speaking, writing, and listening. Students will be introduced to reading strategies that will enhance their ability to perceive the author's intent and comprehend overall meaning, even when they lack familiarity with vocabulary or with some grammatical structures. Focus on the vowel and consonant sounds of English, as well as an introduction to American-English rhythm, intonation, and word/sentence stress, will contribute to both fluency and accuracy in promoting comprehensible speech.

### **DE 81 Developmental English (Intermediate Level)**

This course will focus on the improvement of oral, listening, and written skills and strategies particularly relevant to academic interaction. Students will learn to communicate effectively in formal and informal contexts through the development of questioning and responding skills. Instruction in the logic of English rhetoric will increase the student's awareness and application of patterns of organization in writing, reading, and listening to lectures in English, with specific emphasis on the conventions of academic discourse. Practice in giving oral presentations will include attention to the correct pronunciation of individual sounds as well as to the elements of stress, rhythm, and intonation. A review of English grammar in context, with specific emphasis on sentence structure and verb tenses, reinforces the interactive nature of the course.

### **DE 82 Developmental English (Advanced Level)**

This course focuses specifically on the improvement of the essential tasks and skills necessary for success in academic writing at the graduate level and the development of oral strategies for academic interaction. Instruction emphasizes the recognition and application of rhetorical patterns of organization, an understanding of reader expectations and reactions, and the examination and discussion of appropriate texts from a wide range of disciplines. Grammatical structures will be addressed in the context of various writing tasks such as summary writing and data commentary that provide the basis for the construction of research papers in students' individual fields of study. In addition, the presentation of verbal summaries and diagrams, with close attention to the improvement of the pronunciation of English sounds, stress, rhythm, and intonation will be covered.

### **Ramp course for Graduate Certificate in CyberSecurity program**

This 3-credit ramp course is designed for graduate students in disciplines other than computer science who are interested in participating in the Graduate Certificate in CyberSecurity program. Depending on the student's transcript and background, this course may be recommended to be taken as a prerequisite to the program. The student will get no formal credit from this course.

#### **Course Contents**

The course will have three components: math, operating systems, and telecommunications. It will be initially taught by three instructors in the related areas. Following are the contents in each area:

#### **Math (four 2.5-hour sessions)**

- Elements of set theory; understanding sets, subsets, union, ordered set, partial and absolute ordered sets
- Basics of modular mathematics
- Definition of reflexive, asymmetric, and transitive relations
- Basics of functions and operations

- Binary numbers, operations, and arithmetic
- Truth tables for Boolean functions like AND, OR, and EXCLUSIVE OR
- Prime numbers and their properties
- Basic Probability Theory
- Asymptotic notation, complexity classes (especially P, NP, NP-complete)
- Number Theory: prime number theorem, Euler phi function, computing gcd's, Chinese remainder theorem, quadratic residues
- Abstract algebra: definition of groups, order of a group and order of a group element,  $Z_n$ ,  $Z_n^*$ , Fermat's theorem, primitive elements, rings, polynomial rings, finite fields
- Linear algebra: matrix inversion, determinants, solving systems of linear equations

**Operating System (four 2.5-hour sessions):**

- General understanding of functions and services provided by OS
- Simple file protection schemes offered by OS, such as file modes in UNIX, file systems of UNIX and Windows
- Memory management; allocation of buffer space to applications
- Consequences of buffer overflow and application core dump
- OS logs

**Telecom (four 2.5-hour sessions):**

- Basic knowledge of seven layer of OSI and responsibilities of each layer:
- The definition and meaning of protocol data units
- Addressing and routing in IP
- Address resolution between MAC address and IP address
- CRC coding
- Meanings of connectionless and connection oriented
- The difference between circuit and packet switching
- Access control and contention with collision detection
- LAN protocol architecture
- Basics of TCP/IP
- Basics of wireless communications