

# **SOUTHEASTERN**



**ADVANCED LEVEL**

**BULLETIN**

**2020-2021**

**Southeastern CLLL1**

Tel: +30- 211-116-2936

Web: [www.southeastern.edu.gr](http://www.southeastern.edu.gr) Email: [info@southeastern.edu.gr](mailto:info@southeastern.edu.gr)

# **ADVANCED LEVEL PROGRAMS**

BIOMEDICAL SCIENCES

COMPUTER SCIENCE

GENERAL ENGINEERING AND APPLIED SCIENCES

BUSINESS ADMINISTRATION

INTERNATIONAL RELATIONS, POLITICS AND  
DIPLOMACY

POST-ROMAN MIDDLE EASTERN STUDIES

PSYCHOLOGY

EDUCATION in LEADERSHIP

# TABLE OF CONTENTS

Course Abbreviations	9
<b>Introduction</b>	
<i>SOUTHEASTERN</i>	11
History	11
Mission	11
Objectives	12
Goals	13
Philosophy	13
<b>General Information</b>	
Admission Information	14
Requirements for the Advanced Level	14
Thesis or Dissertation Requirements	15
Course Requirements	15
Part-time Study	15
Qualifying Examinations	15
Advanced Level Candidacy	15
Dissertation Prospectus Defense	15
Dissertation	16
Final Oral Examination	16
Time Limit	16
Advisor	16
Program of Study	16
Research and Dissertation	16
<b>Financial Information</b>	
Tuition Discount	17
Withdrawals and Refunds	17
Refund Schedule for Continuing Students	17
Financial Assistance	18
Upper Level Assistantship Center	18
Career Planning and Development	18
Course Numbering System	18
Admission Policies and Procedures	18
Qualifications for Admission	18
Application	18
<b>General Requirements for the Advanced Level</b>	
Course Requirements	20
Language Requirement	20
Residency Requirement	20
Qualifying Examination	20
Advanced Level Candidacy	20
Dissertation	21
Dissertation Prospectus	21
Abstract and Oral Examination	21
Time Limit	21
Advisor	21
Directed Study or Research	21
Transfer of Credit	21
Advanced Level Program	22
Advanced Level Program	22
Summer Term	22
Grades and Academic Standing	22
Incomplete Coursework	23
Suspension or Dismissal	23

Petitions	23
Leave of Absence	23
Registration	24
Full-Time Students	24
Part-Time Students	24
Adding or Dropping a Course	24
Program Completion	24
Transcripts	24
Name Changes or Corrections	25
<b>Advanced Level of Biomedical Sciences</b>	
Thesis or Dissertation Requirements	26
Course Requirements	27
Part-time Study	27
Qualifying Examination	27
Advanced Level Candidacy	27
Dissertation Prospectus Defense	27
Dissertation	28
Final Oral Examination	28
Time Limit	28
Advisor	28
Program of Study	28
Course Descriptions	29
<b>Advanced Level of Computer Science</b>	
Thesis or Dissertation Requirements	32
Course Requirements	32
Part-time Study	33
Qualifying Examination	33
Advanced Level Candidacy	33
Dissertation Prospectus Defense	33
Dissertation	33
Final Oral Examination	33
Time Limit	34
Advisor	34
Program of Study	34
Course Descriptions	35
<b>Advanced Level of General Engineering and Applied Sciences</b>	
Thesis or Dissertation Requirements	37
Course Requirements	37
Part-time Study	38
Qualifying Examinations	38
Advanced Level Candidacy	38
Dissertation Prospectus Defense	38
Dissertation	38
Final Oral Examination	38
Time Limit	39
Advisor	39
Course Descriptions	40
<b>Advanced Level of Business Administration</b>	
Program Description	51
Learning Objectives	51
Admission Requirements	51
Degree Requirements	52
Course Descriptions	53
<b>Advanced Level of International Relations, Politics and Diplomacy</b>	

Thesis or Dissertation	57
Requirements	57
Course Requirements	57
Part-time Study	58
Qualifying Examinations	58
Advanced Level Candidacy	58
Dissertation Prospectus Defence	58
Dissertation	58
Final Oral Examination	58
Time Limit	58
Advisor	59
Transfer of Credits	59
Course Descriptions	60

#### **Advanced Level of Post-Roman Middle Eastern Studies**

Post-Roman Middle Eastern Studies	63
Course Descriptions	64

#### **Advanced Level of Psychology**

Thesis or Dissertation	67
Requirements	67
Course Requirements	67
Part-time Study	68
Qualifying Examinations	68
Advanced Level Candidacy	68
Dissertation Prospectus Defence	68
Dissertation	68
Final Oral Examination	68
Time Limit	69
Advisor	69
Transfer of Credits	69
Course Descriptions	70

#### **Advanced Level of Education in Leadership**

Thesis or Dissertation	71
Requirements	71
Course Requirements	72
Part-time Study	72
Qualifying Examinations	72
Advanced Level Candidacy	72
Dissertation Prospectus Defence	72
Dissertation	73
Final Oral Examination	73
Time Limit	73
Advisor	73
Transfer of Credits	73
Course Descriptions	74







# **COURSE ABBREVIATIONS**

## **Advanced Level Courses**

DBA	BUSINESS ADMINISTRATION
DBIO	BIOMEDICAL SCIENCE
DCS	COMPUTER SCIENCE
DEE	ELECTRICAL ENGINEERING
DEK	GENERAL ENGINEERING
DGE	GENERAL ENGINEERING
DMA	MATHEMATICS
DME	MANUFACTURING & MECHANICAL ENGINEERING
DPSC	INTERNATIONAL RELATIONS, POLITICS AND DIPLOMACY
DPSY	PSYCHOLOGY
EDD	EDUCATION
HIST	HISTORY



# **SOUTHEASTERN**

## **ADVANCED LEVEL PROGRAMS**

### **HISTORY**

SOUTHEASTERN was originally founded in 1982 as Southeastern College in affiliation with the Boston University College of Engineering by dedicated American and Greek educators and professionals.

The mission of Southeastern College as stated by the Boston University College of Engineering was as follows:

1. To make available the latest developments in Engineering and Science to area students from Greece, the Middle East and Africa.
2. To help students attain genuine fluency in English so as to achieve the effective communication skills required for successful international competition.
3. To encourage cultural interaction on the part of students who will become leaders in their own countries in confronting the contemporary technical and social problems of the Eastern Mediterranean and Africa.
4. To assist Greek industry in its technological modernization and economic development.
5. To foster interaction between leading research scientists, engineers and educators.

Initially, SOUTHEASTERN under the name of Southeastern College was intended to be a three-year lower level institution, with students transferring to the U.S.A. for the last segment of their lower level studies.

SOUTHEASTERN offered instruction in engineering, natural sciences and liberal arts elective courses. In 1988, it entered into a 3:2 Dual-Degree Program with George Washington University School of Engineering and Applied Sciences. The first lower level program completions were issued to 12 students in 1989.

### **MISSION**

SOUTHEASTERN provides its students through online and/or open learning programs with opportunities to develop the intellectual, social and personal skills necessary to exercise influence and achieve success and personal fulfilment in an increasingly interdependent world; a world where the ability to understand other cultures and communicate effectively across national and cultural boundaries is as vital as traditional academic achievement.

Since its inception, SOUTHEASTERN'S mission has been to respond to the evolving needs of society by offering capable and motivated students:

- excellent lower level and upper level degree programs
- intellectual growth with scholarly and creative activities
- a research culture and environment; preparation for upper level studies; quality research for upper level studies
- the link between study and professional achievement

SOUTHEASTERN has a responsibility to preserve, foster and transmit the cultural and intellectual heritage of our pluralistic, interdependent and changing world.

SOUTHEASTERN has a responsibility to foster academic freedom by assuring that its members may express their ideas openly and freely.

SOUTHEASTERN has a responsibility to provide a setting in which students may acquire and develop skills of intellectual inquiry and values of human understanding.

SOUTHEASTERN has a responsibility to encourage students to realize their greatest potential and make substantial contributions to society as educated persons, skilled professionals and thoughtful citizens.

SOUTHEASTERN has a responsibility to cultivate in the student an understanding that the SOUTHEASTERN experience is a segment of a lifelong process and learning continuity.

Underlying its academic programs, which are taught to a multicultural student body by a highly qualified and internationally minded faculty, is a commitment to the value of understanding and appreciating human differences and commonalities.

SOUTHEASTERN is committed to the educational philosophy, standards of the American model of university education and believes deeply in and encourages freedom of expression and seeks to foster tolerance and dialogue. Upper level students will be equipped with critical thinking, life-long learning skills, personal responsibility and leadership.

To achieve its mission, SOUTHEASTERN places students at the center of its efforts, values structure and strongly emphasizes academic excellence through highly qualified faculty and a well-equipped learning environment. The small-sized classes, the usage of the English language in instruction, the meticulous selection of faculty, curricula, and teaching methodologies as well as the admission of foreign students reflect the structure and educational philosophy of an American institution of higher learning, thus making SOUTHEASTERN a most competitive institution in Europe, and especially in the area of Southeastern Europe.

## **OBJECTIVES**

The objectives of SOUTHEASTERN are to equip students with an excellent education enabling them to compete successfully in the European, and particularly Southeastern European, job markets; to adopt productive roles in society as professionals and intellectuals; and/or to embark on upper level programs of their choice.

Through our admissions system, the level of course offerings, the emphasis on General Education course requirements, orientation and academic counselling sessions, SOUTHEASTERN projects the image of a leading institution in post-secondary education in Southeastern Europe. Its success in meeting objectives can be measured by the number of upper level students who have found employment in their chosen professional fields and by the number admitted to prestigious European and American universities for upper level studies.

The role of American education in the world marketplace has changed dramatically in recent years due to rapid advances in communication and information technologies thereby precipitating a truly global business environment. Pronounced political and economic transformations across Eastern Europe and the prospect of the European Union comprising 28 countries with a population of 350 million are creating new opportunities for American companies and new challenges for managers educated according to American post-secondary education standards.

Bold steps are taken at SOUTHEASTERN to prepare managers and specialists for competition in the international marketplace through its high quality education and the importance placed on personality development.

## **GOALS**

SOUTHEASTERN recognizes that the primary goals of the instructional program are to increase the ability of students to learn, to think critically, to express their ideas clearly and cogently, to understand themselves, their culture and their society, both past and present, and to appreciate the multicultural diversity of their world. Students must also demonstrate competency in analytical skills and the methods of intellectual inquire, and develop an appreciation of aesthetic values.

- to provide excellent lower level and upper level educational programs
- to achieve social, economic and professional opportunities for its students
- to provide intellectual growth with scholarly and creative activities
- to prepare for upper level studies
- to develop a research culture and environment, for both lower level and upper level students
- to develop life-long studies (lower level and upper level)
- to initiate quality research for upper level students
- to increase the number of lower level students while maintaining high standards of admission
- to continue to recruit excellent scholars, researchers and professionals as faculty who are fully committed to SOUTHEASTERN's mission
- to acquire the reputation of a premier education and research institute with a long-term future by securing and increasing its financial strength

## **PHILOSOPHY**

The educational philosophy of SOUTHEASTERN is based upon maintaining close ties between faculty and students as a way of ensuring the optimization of the learning process while carefully counselling them in the choice of a study plan which not only complies with University requirements but reflects at the same time their own personal aspirations. Emphasis is placed upon promoting flexibility in the development of new programs consistent with the never-ending evolution of knowledge.

## **RESEARCH GOALS**

SOUTHEASTERN's new research mission is to create and synthesize knowledge and to use it in addressing world issues. To realize its mission, SOUTHEASTERN is committed to the following goals:

- A: To attract high-quality students
- B: To develop a supportive research culture and environment
- C: To initiate the quality of research by both faculty and students
- D: To enhance SOUTHEASTERN's reputation as a teaching and research-oriented university

## **GENERAL INFORMATION**

The Advanced Level Programs at SOUTHEASTERN seeks to admit highly motivated, creative, intelligent, cooperative and career-focused leaders.

Admission to study towards advanced level program completion requires an appropriate lower and upper level degree from a recognized institution and evidence of capacity for productive work in the field selected, such as may be indicated by lower level grades.

Upper level programs at SOUTHEASTERN are supervised by the Chairman of the Upper Level Program, assisted by the Steering Committee consisting of coordinators of the different program areas.

The Upper Level Program Committee has the entire responsibility of developing, modifying and maintaining the upper level program with the approval of the Senate. This committee consists of the Chairman of the Upper Level Program, members of the Steering Committee, faculty teaching at SOUTHEASTERN, librarian, provost, career officer, and one student representative of each program.

Faculty members participating in upper level programs are listed at the back of this catalog in accordance to academic rank, year of appointment at SOUTHEASTERN, degrees and dates received, and the institutions granting the degrees.

## **ADMISSION INFORMATION**

### **Application**

Application requires special forms.

A complete application includes the following items:

- **Application**
- **University degree - certified copy**
- **Official translation in English from the Ministry of Foreign Affairs for Greek students or a similar official translation for other nationals**
- **Two recommendation forms to be completed by professors and or employers**
- **Resume or curriculum vitae**
- **A TOEFL score of 580, or equivalent, if English is your second language**
- **Personal interview**

## **REQUIREMENTS FOR THE ADVANCED LEVEL**

The Advanced Level Program requires the satisfactory completion of 72 semester hours of approved coursework.

An entering student who has an upper level degree relevant to the proposed advanced level field of study may be awarded up to 24 credits toward advanced level program completion on the basis of acceptable post lower level upper level coursework.

## **THESIS OR DISSERTATION REQUIREMENTS**

Students are required to submit a thesis at the end of their program which counts for 16-24 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the student's professional needs since they can select the minimum number of credits if they wish to do less research and writing.

## **COURSE REQUIREMENTS**

Students are required to complete a minimum of 64 credits applicable to their certificate; 32 credits must be structured courses, 28 credits of which must be at the 5000 level or higher. A minimum of 16 credits of research/dissertation is required.

There are no structured course requirements for post-upper level Advanced Level students, but such students are required to complete 32 credits applicable to their degree, all of which must be at the 5000 level or higher. A minimum of 16 credits of research/dissertation coursework is required.

Coursework used to fulfill the Advanced Level degree requirements may not be used to complete the requirements of any other degree program.

Advanced Level candidates, who have completed all course requirements, or hold appointments as research assistants, are considered full-time students and should be enrolled for a minimum of 2 credits per semester. Full-time status enables students to access libraries, laboratories, instructional staff, and other academic facilities at SOUTHEASTERN.

## **PART-TIME STUDY**

Occasionally, students are permitted to pursue the post-upper level Advanced Level on a part-time basis. Such students must demonstrate a commitment to the program on an ongoing basis. Part-time students must fulfill the same degree requirements and are subject to the same policies, time frames, and deadlines as full-time students.

## **QUALIFYING EXAMINATIONS**

The student's area of concentration determines the specific nature and scope of the qualifying examination.

Both qualifying examinations are limited to three attempts. Departments may limit attempts to one, if they choose. All Advanced Level students must take the applied mathematics examination the first time it is offered after matriculation. All Advanced Level students must complete both qualifying examinations by the end of their fifth semester.

## **ADVANCED LEVEL CANDIDACY**

A student in the Upper Level Program Advanced Studies will be accepted to Advanced Level candidacy upon successful completion of both qualifying examinations. At that time, the student will receive formal notice of acceptance to Advanced Level candidacy. The maximum period allowed between matriculation and acceptance to Advanced Level candidacy is usually five semesters, but departments can specify a lesser time frame based on qualifying examination results. Under no circumstances will a student who is not an Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

## **DISSERTATION PROSPECTUS DEFENSE**

Within one year of becoming a candidate, the student is expected to present an oral dissertation proposal to the prospective dissertation committee and obtain approval for the written dissertation prospectus. The committee evaluates the potential of the proposed research and the student's academic preparation to engage in dissertation research. Upon approval by the committee members and the department upper level associate chairman, the student submits the Advanced Level Dissertation Prospectus Defense form to the department office.

## **DISSERTATION**

An Advanced Level candidate is expected to prepare and carry out an independent and original research project in partial fulfillment of the dissertation requirement. The dissertation committee is made up of faculty and on occasion scholars from outside SOUTHEASTERN.

## **FINAL ORAL EXAMINATION**

Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their fields and demonstrate mastery of their field of specialization as related to the dissertation. The Examining Committee is composed of at least five members of whom two must be (tenured or tenure-earning) faculty from the student's academic department. Each department determines the appointment of the chairman.

## **TIME LIMIT**

Both the post-lower level and post-upper level programs must be completed within five years of the individual's acceptance into Advanced Level candidacy as determined by the department and the SOUTHEASTERN Upper Level Committee.

## **ADVISOR**

Candidates for the Advanced Level Program are required to have as an advisor a member of the upper level faculty in the department of their field of specialization.

## **PROGRAM OF STUDY**

A program of study must be approved by the student's advisor and submitted to the appropriate departmental upper level committee for approval. Failure to obtain approval of such a plan of study within this time frame will preclude registration in the next semester.

## **RESEARCH AND DISSERTATION**

Students may register for research with approval of the faculty member concerned. Students may register for dissertation credits only after completing their prospectus, and with their advisor's approval. A candidate for the Advanced Level degree may not register for more than 12 credits of research/dissertation in a single semester.

## FINANCIAL INFORMATION

### Tuition and Fees

SOUTHEASTERN reserves the right to alter any of these charges without notice.

### Full-time Students

Post-Upper Level Advanced Level  
Program € 29,400

### Part-time Students

Tuition: € 525 per semester credit hour  
Application Fee € 75

## TUITION DISCOUNT

A 10% discount is offered when the respective semester's tuition is paid in full. SOUTHEASTERN can also arrange a loan for the student to finance his/her tuition fees.

It is traditional for Greek private schools of all levels to grant discounts to relatives. For members of the immediate family, SOUTHEASTERN's policy is either to grant a 5% discount to each brother and sister or 10% to one.

## WITHDRAWALS AND REFUNDS

SOUTHEASTERN operates on an academic term basis by which commitments are made to teaching staff and to others whose services are essential to SOUTHEASTERN's operation. The application fee is not refundable under any circumstances. Continuing students, who withdraw from class, or from SOUTHEASTERN, are entitled to refunds of both tuition and fees (according to the stated "Refund Schedule") which will be computed on the basis of the last day of class attendance. However, for more efficient processing of the refund it is recommended that withdrawing students complete and submit the appropriate forms to the Office of Records and Office of Student Accounts. The amount refunded or credited is computed with reference to the date the student filed a withdrawal form. Tuition and fees will be refunded to students withdrawing during a regular semester as follows:

## REFUND SCHEDULE FOR CONTINUING STUDENTS

Time of Withdrawal	Percentage of Tuition and Fees Refundable
Before classes start	100% less Euro 75
During the first week of classes	75%
During the second week of classes	60%
During the third week of classes	40%
During the fourth week of classes	25%
After the fourth week of classes	0%

Tuition and fees will be refunded to students withdrawing during a short Winter/Summer Session as follows:

Time of Withdrawal	Percentage of Tuition and Fees Refundable
Before classes start	100% less Euro75
After one class meeting	75%
After two class meetings	60%
After three class meetings	40%
After four class meetings	25%
After five class meetings	0%

## **FINANCIAL ASSISTANCE**

Applications for assistantships must be submitted before May 15th each year.

## **UPPER LEVEL ASSISTANTSHIP CENTER**

Teaching, research and other upper level assistantships are available in most SOUTHEASTERN programs. The total maximum workload for full-time upper level students is 15 hours per week. Upper level assistants must be full-time matriculated students with a GPA of 3.0 or higher.

## **CAREER PLANNING AND DEVELOPMENT**

Based on the Upper Level Program's strong commitment of getting to know students on a personal basis and working with them as individuals, the Career Planning and Development Office (CPDO) assists students in clarifying career choices, defining job-search strategies, and in pursuing challenging employment opportunities. The CPDO is totally committed to supporting student job effort, and is focused on working with them as partners in developing challenging lifetime careers.

## **COURSE NUMBERING SYSTEM**

All courses have a 4-digit number which identifies the level of the course.

- 5xxx** Courses that are usually taken during the first year, without any prerequisite(s).
- 6xxx** prerequisite(s).
- 7xxx** Courses usually taken during the second year of the program.
- 8xxx** Courses usually taken during the third year of the program.
- 9xxx** Courses usually taken as directed study or research.

## **ADMISSION**

### **Policies and Procedures**

The following general regulations concern all SOUTHEASTERN Upper Level Program students. Each student is responsible for becoming familiar with the general regulations of the more specific requirements stated in the individual section on each department, division, or program, which may go beyond or supplement SOUTHEASTERN standards.

### **Qualifications for Admission**

Any well-qualified person with a baccalaureate degree from a recognized college or university or with equivalent international education may apply for admission to the SOUTHEASTERN Upper Level Program. A student's lower level program should include introductory studies in the humanities, social sciences, and natural sciences and engineering. The student may be required to make up any deficiencies in his or her academic background by completion of specified courses without credit. **SOUTHEASTERN does not permit a student to enrol simultaneously in more than one upper level program, unless those programs have been previously approved by the Academic Council of SOUTHEASTERN as a combined degree program.**

### **Application**

Applications and instructions for submission of complete credentials may be obtained from Note that only application requests can be received at this address. Any other questions can be answered via e-mail at [info@Southeastern.edu.gr](mailto:info@Southeastern.edu.gr)

A non-refundable application fee of €100 must be submitted with each application. This fee cannot be waived or deferred. **Applications will not be considered without the application fee.**

**All applicants must also submit the following credentials:**

1. *official transcripts* or records of each college or university attended. A college senior should submit an official report of the work completed through the first semester of the senior year as early as possible.
2. *letters of recommendation* in English from at least two faculty members in the proposed field of upper level study who are familiar with American higher education.

*Recommended but not required.*

3. *official test results* of the Upper level Record Examination (GRE) (General Test and Subject Test) and/or the Miller Analogies Test (MAT), as required by the department to which the student is applying. Check departmental requirements in this bulletin or the Department/Program Information Sheet portion of the application.

For GRE application materials and information, contact the Educational Testing Service, P.O. Box 6000, Princeton, NJ 08541-6000; 609-771-7670; E-mail: gre-info@ets.org; Web: The Upper level Records Examination.

Information about the MAT may be obtained at most universities or by writing to the Psychological Corporation, Miller Analogies Test, 19500 Bulverde Road, San Antonio, TX 78259. Telephone: 800-622-3231; Web: Miller Analogies Test.

**All credentials submitted in support of an application become the property of SOUTHEASTERN. Neither originals nor copies may be returned.**

### **Application Deadlines**

For most programs, the deadlines for admission are September 15 for the Fall admission and February 15 for Spring admission. Adhering to these deadlines will also ensure that you are considered for all available forms of merit-based financial aid, both University-wide and departmental.

By submitting an application by the deadlines stated, you will be considered for financial assistance as university funds allow. Applications that are complete at the time of the deadlines will be given priority. An application is considered complete when all required credentials, as listed above, have been received by The Upper Level Program.

### **Application Submission**

The completed Application for Admission and supporting credentials should be directed to [admissions@southeastern.edu.gr](mailto:admissions@southeastern.edu.gr) :

## **GENERAL REQUIREMENTS FOR THE ADVANCED LEVEL**

### **Course Requirements**

For the upper level and advanced level

Candidates are required to complete a minimum of 18 upper level semester courses (72 credits) or the equivalent. Specific requirements relative to the selection of courses, seminars, and research or directed study will be determined for each student by the department or division in the field of concentration.

Normally, no more than four courses may be taken concurrently. Each student must register for at least one course each semester until completion of all departmental course requirements unless granted an authorized leave of absence.

Candidates are required to complete the equivalent of a minimum of twelve upper level semester courses (48 credits). Specific requirements relative to the selection of courses, seminars, and research or directed study will be determined for each student by the department or division in his or her field of concentration. Normally, no more than four courses may be taken concurrently, and each student must register for at least one course each semester until completion of all departmental course requirements unless granted an authorized leave of absence.

### **Language Requirement**

Candidates must give evidence of sufficient mastery of at least one foreign language to enable them to use that language effectively in their area of study.

### **Residency Requirement**

Each student must satisfy a residency requirement of a minimum of two consecutive regular semesters of full-time upper level study at SOUTHEASTERN. Full-time study in this context is full-time commitment to the discipline as determined by the department. Without necessarily implying full-time course enrolment, this commitment permits access to libraries, laboratories, instructional staff, and other academic facilities of SOUTHEASTERN, including the department of concentration.

### **Qualifying Examination**

All students shall demonstrate mastery of their fields of specialization in special examinations set by their department of specialization. All parts of the qualifying examination must be passed before the dissertation prospectus or outline will be accepted by the SOUTHEASTERN Upper Level Program.

### **Advanced Level Candidacy**

A student in the SOUTHEASTERN Advanced Level program will be accepted to Advanced Level candidacy upon successful completion of such qualifying examinations as are designated by the department. At that time, the department will notify the SOUTHEASTERN Upper Level Program, which will formally accept the student to Advanced Level candidacy. Once entered, a Advanced Level candidacy will expire on its fifth anniversary and after such time will be renewed only if the student re-qualifies for candidacy as determined by the

department and the SOUTHEASTERN Upper Level Program. In no instance will a student who is not an Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

## **Dissertation**

Candidates shall demonstrate their abilities for independent study in dissertations representing original research or creative scholarship.

## **Dissertation Prospectus**

After completing coursework, language requirements, and the qualifying examinations, a student proposes a dissertation topic and asks the department to identify first and second (and in some departments third) readers for the dissertation. The dissertation prospectus should be completed before the more extensive phase of dissertation research is undertaken. The SOUTHEASTERN Upper Level Program is responsible for reviewing and evaluating a draft prospectus. The review is followed by revision and the production of a final draft, which must be approved by the readers, the chair of upper level studies. Although the length of the prospectus will vary from discipline to discipline, it cannot exceed twenty double-spaced (or ten single-spaced) pages, not including bibliography.

## **Abstract and Final Oral Examination**

Students undergo final oral examinations in which they defend their dissertations as valuable contributions to knowledge in their fields and demonstrate a mastery of their fields of specialization in relation to their dissertations. The examining committee is composed of five or more faculty members of the SOUTHEASTERN Upper Level Program, at least two of whom are from the student's discipline. Before the final oral examination can be scheduled, the candidate must obtain initial approval of a dissertation abstract from the readers, the director of upper level studies, and the chairman. The abstract, which cannot exceed 350 words in length, describes the thesis, methods, and general content of the dissertation. The abstract must be submitted to the office at least three weeks before the examination. Two weeks before the examination, the schedule of the examination is due in the SOUTHEASTERN Upper Level Program office, together with fourteen copies of the approved abstract. Students are responsible for arranging an examination date with the department and for requesting that the SOUTHEASTERN Upper Level Program schedule the examination.

## **Time Limit**

The program must be completed within seven years after the first registration. The program must be completed within five years after the first registration.

## **Advisor**

A candidate for the Advanced Level degree is required to have as an advisor a member of the upper level faculty in the department of their field of specialization. If an advisor is not assigned in advance of registration, the student should consult the departmental chairman about assignment procedures.

## **Directed Study or Research**

Students may register for directed study or research with approval of the faculty member concerned. Passing in the SOUTHEASTERN Upper Level Program directed study and research courses at the 9000 level may be indicated by the grade of P. The minimum credit is one-half a semester course (2 credits). A candidate for the Advanced Level degree may not register for more than three such courses in a single semester.

## Transfer of Credit

Upper level courses in other accredited upper level institutions not used toward the awarding of any other degree may be transferred on recommendation of the student's specialization advisor and the chairman of the department with the approval of the SOUTHEASTERN Upper Level Program. Credit for work to be taken concurrently with studies in the SOUTHEASTERN Upper Level Program must be approved before registration for such courses; all such courses must have been taken for a letter grade (not pass/fail). No transfer of credit for courses taken before the senior year of college or from correspondence or extension schools will be accepted.

## Advanced Level program

No more than four courses may be transferred from other universities. Of these, only one may be credited toward an upper level degree. If a department requires more than the minimum of 18 semester courses, a student may transfer an additional number of courses corresponding to that number required in excess of the 18.

## Advanced Level program

No courses may be transferred from other universities unless a department requires more than the minimum of 12 semester courses. A student may transfer the number of courses corresponding to that number required in excess of the 12.

## Summer Term

Certain courses taken during the Summer Term at SOUTHEASTERN may be credited toward the Advanced Level degree if prior approval is obtained from the candidate's department of specialization. The number of credits that can be earned in one session is limited to six.

Students in the SOUTHEASTERN Upper Level Program who are engaged during the summer in full-time research as an essential component of their upper level specialization programs are eligible for summer research registration status.

## Grades and Academic Standing

The SOUTHEASTERN Upper Level Program uses a system of letter grades for evaluating coursework, as shown in the following chart.

Grade	Explanation
A	Pass with Credit
A-	
B+	
B	
B-	
C+	Considered failure
C	
C-	

D	
F	
P	Pass with credit; directed study and research courses at the 9000 level only
I	Incomplete, with additional work required
J	Registration in same or continuing course in the following semester necessary (excluding summers)
AU	Audit, no credit
N	No credit granted toward upper level program completion
W	Withdrew after five weeks
MG	Missing grade, grade not assigned

A student with an outstanding balance due the Office of Student Accounting Services will not receive a grade report, transcript, or diploma until payment has been made.

### **Incomplete Coursework, Failing Grades, and Grade Changes**

When the work of a course has not been completed within the semester of registration, the grade of I is used. This automatically becomes a permanent I (unsatisfactory grade) unless the coursework is completed within the following calendar year. Grades of I and C+ or lower are interpreted as failures. A student receiving such grades in more than two semester courses (or more than a total of 8 credit hours) is liable to be terminated. Grades, including incompletes, may not be changed after a period of one year from the time the original grade is recorded.

### **Suspension or Dismissal**

SOUTHEASTERN, through its various faculties or appropriate committees, may suspend or dismiss any student from SOUTHEASTERN for reasons of scholarship, aptitude, or conduct.

### **Petitions**

In presenting any request to the faculty or to its several committees, students will use the prescribed form, obtainable at the SOUTHEASTERN Upper Level Program office.

### **Leave of Absence**

Normally, students must register for each regular semester until completion of all degree requirements. Upon written request, a student will be allowed up to two semesters of leave of absence without committee consideration. Leaves of absence beyond two semesters may be granted in cases of substantiated illness, one-semester maternity or paternity leave, or military service. In exceptional cases, the student should petition the chair of the SOUTHEASTERN Upper Level Program with approval of the chairman of the department or division of concentration.

A student who files for a leave of absence from SOUTHEASTERN before classes start is eligible to receive full credit of tuition and fees. Students should refer to "Withdrawals and

Refunds" under Financial Information, page 16, for the refund schedule after the beginning of classes. A student who is on leave and who has borrowed federal and/or private loans may be required to begin repayment while on leave. If leave is granted, a certificate of authorized leave of absence is issued and a copy included in the student's record.

The period of authorized leave of absence is counted as a part of the time allowed for completion of degree requirements. Students may not complete any degree requirements in a semester for which they have been granted leave of absence. Students must be registered in the semester in which the degree requirements are completed, as well as in the preceding semester.

Students who wish to withdraw from SOUTHEASTERN must submit their requests in writing to the SOUTHEASTERN Upper Level Program Records Office. A request for a withdrawal or leave of absence is effective on the day it is received in the appropriate office; charges are cancelled in accordance with SOUTHEASTERN's published refund schedule, based on the effective date of the student's leave of absence or withdrawal. Mere absence from class does not reduce financial obligations or guarantee that final grades will not be recorded.

## **Registration**

Candidates for admission may not register until they receive a formal statement of acceptance. Registration is conducted under the direction of the Office of Records.

## **Full-Time Students**

*By enrolment* A student enrolled in three to four-and-a-half courses (12 to 18 credits) will be considered full-time and will be charged full tuition and fees. A student may register for more than four courses (16 credits) only with approval of the Committee on Academic Standards.

*By certification* A student registered for fewer than three courses or 12 credits (a minimum of one course must be taken until all coursework requirements have been completed) but engaged otherwise in full-time study, research, or teaching pertinent to the completion of degree requirements or to gaining competence in the field of study, may be certified as a full-time student. Such a student must pay tuition on a per-course basis and full-time fees. A student desiring full-time certification must submit to the SOUTHEASTERN Upper Level Program, during the official registration period, a completed full-time certification form approved by the advisor and department chairman or director of upper level studies.

## **Part-Time Students**

All part-time students who are candidates for degrees must register each regular semester for no less than one semester course until all departmental course requirements are completed.

## **Adding or Dropping a Course**

Students who register for any course are held responsible for its completion unless they officially withdraw by the deadline date or change to the status of auditor within the first five weeks of class.

## **Program Completion**

Advanced Level degrees are awarded in June. Commencement exercises are held in June only. Students planning to receive their degrees at the June commencement must submit diploma applications by February 1.

## **Transcripts**

Requests for official transcripts must be made in writing, either by letter or by completing a Transcript Request form available from the SOUTHEASTERN Office of Records. Please include the following information: full name, including any former names; signature; the SOUTHEASTERN ID number on schools attended and dates; degrees awarded; and complete address of transcript destinations. The first three copies are free. The transcript fee for additional copies is €15 per copy, and payment must accompany the request. Processing time for transcript requests received by mail is three to five business days.

## **Name Changes or Corrections**

Misspelled names on official documents can be corrected by presenting a current driver's license or other form of identification to the Office of Records.

Currently enrolled students who wish to change their names must present sufficient reason and identification to the Office of Records. Upon approval, the student will be asked to complete a Name Change form.

# **ADVANCED LEVEL OF BIOMEDICAL SCIENCES**

## **(MOLECULAR BIOLOGY, CELL BIOLOGY, BIOCHEMISTRY AND NANOTECHNOLOGY)**

### **REQUIREMENTS FOR THE ADVANCED LEVEL DEGREE**

The Advanced Level Program requires the satisfactory completion of 72 semester hours of approved upper level work and coursework (including a dissertation research) for its post lower level mode.

An entering student who has an upper level degree relevant to the proposed advanced level field of study may be awarded up to 24 credits toward advanced level on the basis of acceptable post-lower level upper level coursework.

### **PREREQUISITES**

Basic knowledge of Microsoft Office. Use of Internet resources. Students specializing in biomedical science must satisfy the program completion requirements by taking the following non-credit seminars during the first semester.

#### **EN 5000 Academic Writing (Non-credit)**

This course is designed to give higher level students an overview of advanced methods of academic writing and research common to different disciplines. Based on the recommendations of the Modern Language Association of America, the course outlines the most recent conventions of written and oral presentation.

#### **MA 5000 Mathematics Basics (Non-credit)**

This workshop is intended to help students to review basic mathematics concepts that are needed for their upper level studies. The focus will be on calculus concepts and linear algebra.

#### **RM 5000 Research Methodology (Non-credit)**

This course investigates theories and methods related to conducting research and equip students with the tools to conduct primary and secondary research. It also provides students with the analytical tools and different techniques to conduct original research.

### **THESIS OR DISSERTATION REQUIREMENTS**

Students are required to submit an Advanced Level thesis at the end of their program which counts for 16-24 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the student's professional needs since they can select the minimum number of credits if they wish to do less research and writing.

## **COURSE REQUIREMENTS**

Students are required to complete a minimum of 64 credits applicable to their degree; 32 credits must be structured courses, 28 credits of which must be at the 5000 level or higher. A minimum of 24 credits of research/dissertation is required.

There are no structured course requirements for Advanced Level students, but such students are required to complete 32 credits applicable to their degree, all of which must be at the 5000 level or higher. A minimum of 8 credits of research/dissertation coursework is required.

Coursework used to fulfill the Advanced Level degree requirements may not be used to complete the requirements of any other degree program.

## **PART-TIME STUDY**

Occasionally, students are permitted to pursue the post-upper level Advanced Level on a part-time basis. Such students must demonstrate a commitment to the program on an ongoing basis. Part-time students must fulfill the same degree requirements and are subject to the same policies, time frames, and deadlines as full-time students.

## **QUALIFYING EXAMINATIONS**

The student's area of concentration determines the specific nature and scope of the qualifying examination. Students must pass two written comprehensive examinations covering basic knowledge in (a) applied mathematics and (b) one area of specialized study selected from the following: biomedical science, biology, biochemistry, chemistry and physics. The Upper Level Program Committee administers the applied mathematics examination of the specialized exam.

Both qualifying examinations are limited to three attempts. Departments may limit attempts to one, if they choose. All Advanced Level students must take the applied mathematics examination the first time it is offered after matriculation. All Advanced Level students must complete both qualifying examinations by the end of their fifth semester.

## **ADVANCED LEVEL CANDIDACY**

A student in the Advanced Level program will be accepted to Advanced Level candidacy upon successful completion of both qualifying examinations. At that time, the student will receive formal notice of acceptance to Advanced Level candidacy. The maximum period allowed between matriculation and acceptance to Advanced Level candidacy is usually five semesters, but departments can specify a lesser time frame based on qualifying examination results. Under no circumstances will a student who is not a Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

## **DISSERTATION PROSPECTUS DEFENSE**

Within one year of becoming a candidate, the student is expected to present an oral dissertation proposal to the prospective dissertation committee and obtain approval for the written dissertation prospectus. The committee evaluates the potential of the proposed research and the student's academic preparation to engage in dissertation research. Upon approval of the committee members and the department upper level associate chairman, the student submits the Advanced Level Dissertation Prospectus Defense form to the department office.

## **DISSERTATION**

An Advanced Level candidate is expected to prepare and carry out an independent and original research project in partial fulfillment of the dissertation requirement. The dissertation committee must consist of Upper Level Program faculty.

## **FINAL ORAL EXAMINATION**

Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their fields and demonstrate mastery of their field of specialization as related to the dissertation. The Examining Committee is composed of at least five members of whom two must be (tenured or tenure-earning) faculty from the student's academic department. Each department determines the appointment of the chairman.

## **TIME LIMIT**

Both the post-lower level and post-upper level programs must be completed within five years of the individual's acceptance into Advanced Level candidacy as determined by the department and the SOUTHEASTERN Upper Level Committee.

## **ADVISOR**

Candidates for the Advanced Level degrees are required to have as an advisor a member of the upper level faculty in the department of their field of specialization.

## **PROGRAM OF STUDY**

A program of study must be approved by the student's advisor and submitted to the appropriate departmental upper level committee for approval no later than registration for the fifth course. Failure to obtain approval of such a plan of study within this time frame will preclude registration in the next semester.

## **Advanced Level**

For the Advanced Level, 32 course credits are required. The required courses are the same as described above for the Advanced Level. However, depending on the student's background, one or more of the courses required may be waived in consultation with the instructors of these courses.

## **COURSE DESCRIPTIONS**

### **DBIO 5110 Molecular Biology and Biochemistry I (4)**

The course will cover topics including protein structure and function, the molecular basis of enzyme action, membranes and transport across membranes, bioenergetics, control of intermediary metabolism, the molecular basis of replication, transcription of genetic information. The course is intended to provide upper level students in the life sciences background for advanced study and research in molecular biology and biochemistry.

### **DBIO 5215 Applied Microbiology (4)**

Both the basic and applied aspects of microbiology are covered in an integrated fashion, with an emphasis on medical microbiological processes and applications. The experimental basis of microbiology is discussed; the general principles of cell structure and function, the classification and diversity of micro-organisms, biochemical processes in cells, and the genetic basis of microbial growth and evolution. From an applied viewpoint, we discuss disease processes in humans that are caused by micro-organisms in food and agriculture, and industrial (biotechnological) processes employing the micro-organisms.

### **DBIO 5216 Current Topics in Immunology (4)**

To learn the molecular and cellular mechanisms by which the host recognizes and responds to its non-self environment. To appreciate how the integrity of the individual is maintained. To learn the practical application of immunology resulting in tools for experimental science.

### **DBIO 6117 Molecular and Clinical Virology (4)**

The course covers the function and formation of virus particles, protein-nucleic acid interactions and genome packaging, virus genomes, replication, expression, infectious cycles, pathogenesis and sub-viral agents. Topics also include viral diseases, epidemiology of viruses, laboratory diagnosis and therapy, classification of viruses, diagnosis of infection, antiviral drugs, vaccines and different clinical syndromes.

### **DBIO 6118 Seminar in Biotechnology (4)**

Seminar course intended for health professionals, scientists and engineers interested in biotechnology. Discussion will be focused on the underlying scientific principles and industrial, agricultural, pharmaceutical, and biomedical applications of recombinant DNA technology. Course will address the legalities involved in the regulation and patenting of molecular biotechnology.

### **DBIO 6137 Advanced Course in Neurochemistry (4)**

To expose the upper level student to current developments in neuroscience research and neurophysiology.

### **DBIO 6226 Clinical Laboratory Methods (4)**

A specialized course intended to gain knowledge regarding laboratory procedures and methods in clinical research.

### **DBIO 6569 DNA and Protein Sequence Analysis (4)**

Fundamental concepts from molecular biology and molecular genetics are presented. Biological inferences are made from DNA and protein sequence data using mathematical and computer science techniques. Pair wise sequence comparative analyses and homolog identification is studied in detail. The dynamic programming algorithm is extended to deal with more general cases and applied to RNA structure prediction. Additional topics include: multiple sequence alignment and conserved sequence pattern recognition methods, phylogenetic tree reconstruction to study molecular evolution, methods of identifying coding

regions in genomic data, algorithms to solve the fragment assembly problem of DNA sequencing, techniques for physical mapping, and mathematical models and computations algorithms for genetic regulation. An introduction to protein 3-dimensional structure predictions is also given.

#### **DBIO 6563 Cellular and Molecular Systems Analysis (4)**

The course addresses the interface between cellular and molecular phenomena using methods of engineering system analysis. Topics include storage and processing of genetic information in the cell, the regulation and control of gene action, the analysis of cell surface receptor/ligand binding and trafficking, signal transduction, receptor-mediated cell responses, metabolic pathways and control mechanisms, cell proliferation and growth, and some analysis of the immune system. The interpretation and analysis of these systems will be based, as much as possible, on the engineering methodologies taught in traditional signals and systems courses, with some additional training in nonlinear system kinetics and dynamics. The emphasis in the course will be to expose lower level and upper level students to molecular/cellular phenomena for which there is sufficient experimental data and mechanistic understanding for the analysis from an engineering perspective. The aim is not just to translate the cellular and molecular systems into engineering terminology, but to attempt to be sufficiently predictive for the design of modified biological systems.

#### **DBIO 6565 Molecular Biotechnology (4)**

Prerequisite: consent of instructor. Covers the basic properties of biological macromolecules and assemblies including proteins, nucleic acids, and membranes. Among the topics covered are the forces that govern biological structures, how proteins act as catalysts, how membranes act to store energy, and how nucleic acids and proteins are synthesized in cells. Methods for manipulating the living cells to change their properties and to produce specific proteins or nucleic acids are detailed.

#### **DBIO 6566 Structure and Function (4)**

Physical structure and properties of DNA. The physical principles of the major experimental methods to study DNA are explained, among them: X-ray analysis, NMR, optical methods (absorption, circular dichroism, fluorescence), centrifugation, gel electrophoresis, chemical and enzymatic probing. Different theoretical models of DNA are presented, among them: the melting (helix-coil) model, the polyelectrolyte model, the elastic-rod model, the topological model. Theoretical approaches to treat the models, (e.g., Monte Carlo method) are covered. Special emphasis is on DNA topology and DNA unusual structures, and their biological significance. In parallel with DNA, major structural features of RNA are considered. Main principles of DNA-protein interactions are presented. The role of DNA and RNA structure in most fundamental biological processes, replication, transcription, recombination, reparation, and translation are considered.

#### **DBIO 7727 Biomaterials and Tissue Engineering II (4)**

Provides the chemistry and engineering skills needed to solve challenges in the biomaterials and tissue engineering area, concentrating on material properties, mechanics and specific research topics. Covers the properties of polymers and gels as well as fatigue and fracture of materials. Research topics such as tissue engineering, polymer chemistry, drug delivery, and micro-nano bio-systems.

#### **DBIO 7732 Biomaterials and Principles of Tissue Engineering (4)**

Prerequisite: Upper level course in mechanics or consent of instructor. This is a course in biomaterials used in tissue engineering designed for upper level students in biomedical engineering. To understand these applications, basic principles are used from the fields of chemistry (physical, organic, and biological), materials science and engineering,

thermodynamics, fluid mechanics, diffusion and mass transport, chemical reaction kinetics, mechanics and biomechanics, surface and colloid science, and physiology.

**DBIO 7736 Biomedical Transport (4)**

Students are introduced to the analysis and characterization of physiological systems and biomedical devices in which chemical reaction and the transport of mass and momentum play predominant roles. Fundamental scientific issues and analytical techniques are introduced and applied to case studies of specific engineering problems. Some knowledge of a high-level computer programming language is essential.

**DBIO 9000 Research**

By petition only. Participation in a research project under the direction of a faculty advisor. Final report or thesis is required. Variable credit.

**DBIO 9001 Thesis (16-24)**

By petition only. Preparation of an original thesis under the guidance of a faculty advisor.

# **ADVANCED LEVEL OF COMPUTER SCIENCES**

## **REQUIREMENTS FOR THE ADVANCED LEVEL DEGREE**

The Advanced Level requires the satisfactory completion of 72 semester hours of approved upper level work and coursework (including a dissertation research) for its post lower level mode.

An entering student who has an upper level relevant to the proposed advanced level field of study may be awarded up to 24 credits toward a Advanced Level degree on the basis of acceptable post-lower level upper level coursework.

### **EN 5000 Academic Writing (Non-credit)**

This course is designed to give higher level students an overview of advanced methods of academic writing and research common to different disciplines. Based on the recommendations of the Modern Language Association of America, the course outlines the most recent conventions of written and oral presentation.

### **MA 5000 Mathematics Basics (Non-credit)**

This workshop is intended to help students to review basic mathematics concepts that are needed for their upper level studies. The focus will be on calculus concepts and linear algebra.

### **RM 5000 Research Methodology (Non-credit)**

This course investigates theories and methods related to conducting research and equip students with the tools to conduct primary and secondary research. It also provides students with the analytical tools and different techniques to conduct original research.

## **THESIS OR DISSERTATION REQUIREMENTS**

Students are required to submit an Advanced Level thesis at the end of their program which counts for 16-24 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the student's professional needs since they can select the minimum number of credits if they wish to do less research and writing.

## **COURSE REQUIREMENTS**

Students are required to complete a minimum of 64 credits applicable to their degree; 32 credits must be structured courses, 28 credits of which must be at the 5000 level or higher. A minimum of 16 credits of research/dissertation is required. There are no structured course requirements for post-upper level Advanced Level students, but such students are required to complete 32 credits applicable to their degree, all of which must be at the 5000 level or higher. A minimum of 8 credits of research/dissertation coursework is required.

Coursework used to fulfill the Advanced Level degree requirements may not be used to complete the requirements of any other degree program.

Students who have completed all course requirements, are considered full-time students and should be enrolled for a minimum of 2 credits per semester. Full-time status enables students to access libraries, laboratories, instructional staff, and other academic facilities at SOUTHEASTERN.

## **PART-TIME STUDY**

Occasionally, students are permitted to pursue the post-upper level Advanced Level on a part-time basis. Such students must demonstrate a commitment to the program on an ongoing basis. Part-time students must fulfill the same degree requirements and are subject to the same policies, time frames, and deadlines as full-time students.

## **QUALIFYING EXAMINATIONS**

The student's area of concentration determines the specific nature and scope of the qualifying examination. Students must pass two written comprehensive examinations covering basic knowledge in (a) applied mathematics and (b) one area of specialized study selected from the following: computer science, computer engineering, systems engineering. The Upper Level Engineering Program Committee administers the applied mathematics examination of the specialized exam.

Both qualifying examinations are limited to three attempts. Departments may limit attempts to one, if they choose. All Advanced Level students must take the applied mathematics examination the first time it is offered after matriculation. All Advanced Level students must complete both qualifying examinations by the end of their fifth semester.

## **ADVANCED LEVEL CANDIDACY**

A student in an SOUTHEASTERN program will be accepted to Advanced Level candidacy upon successful completion of both qualifying examinations. At that time, the student will receive formal notice of acceptance to Advanced Level candidacy. The maximum period allowed between matriculation and acceptance to Advanced Level candidacy is usually five semesters, but departments can specify a lesser time frame based on qualifying examination results. Under no circumstances will a student who is not a Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

## **DISSERTATION PROSPECTUS DEFENSE**

Within one year of becoming a candidate, the student is expected to present an oral dissertation proposal to the prospective dissertation committee and obtain approval for the written dissertation prospectus. The committee evaluates the potential of the proposed research and the student's academic preparation to engage in dissertation research. Upon approval of the committee members and the department upper level associate chairman, the student submits the Advanced Level Dissertation Prospectus Defense form to the department office.

## **DISSERTATION**

A Advanced Level candidate is expected to prepare and carry out an independent and original research project in partial fulfillment of the dissertation requirement.

## **FINAL ORAL EXAMINATION**

Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their fields and demonstrate mastery of their field of specialization as related to the dissertation. The Examining Committee is composed of at least five members of whom two must be (tenured or tenure-earning) faculty from the student's academic department. Each department determines the appointment of the chairman.

### **TIME LIMIT**

Both the post lower level and post upper level programs must be completed within five years of the individual's acceptance into Advanced Level candidacy as determined by the department and the SOUTHEASTERN Upper Level Committee.

### **ADVISOR**

Candidates for the Advanced Level degrees are required to have as an advisor a member of the upper level faculty in the department of their field of specialization.

### **PROGRAM OF STUDY**

A program of study must be approved by the student's advisor and submitted to the appropriate departmental upper level committee for approval no later than registration for the fifth course. Failure to obtain approval of such a plan of study within this time frame will preclude registration in the next semester.

## COURSE DESCRIPTIONS

### **DCS 7060 Performance Analysis of Computer Systems (4)**

Introduction to measurement, modeling, and simulation of computer systems. Applications of probability and stochastic processes to computer systems modeling; queues and queuing networks; discrete event simulations. Applications in client/server systems and networking are emphasized.

### **DCS 7080 Computer Graphics (4)**

Introduction to computer graphics algorithms, programming methods, and applications. Focus on fundamentals of two-and three-dimensional raster graphics: scan-conversion, clipping, geometric transformations, and camera modeling. Introduce concepts in computational geometry, computer-human interfaces, animation, and visual realism.

### **DCS 7640 Studies in Artificial Intelligence (4)**

Studies computer systems that exhibit intelligent behavior, in particular, perceptual and robotic systems. Topics include human-computer interfaces, computer vision, robotics, game playing, pattern recognition, machine learning, speech recognition, knowledge representation, and planning.

### **DCS 7653 Studies in Computer Networks (4)**

Concepts underlying the design of high-performance computer networks and scalable protocols. Topics include Internet design principles and methodology, TCP/IP implementation, packet switching and routing algorithms, multicast, quality of service considerations, error detection and correction, and performance evaluation.

### **DCS 7701 Optimal and Robust Control (4)**

Fundamentals of multivariable control analysis and synthesis. Control objectives include achieving robust stability and performance (robust control) and minimization of cost functions (optimal control). Advanced topics include modeling (state space, transfer function matrix), MIMO poles and zeroes, controllability and observability, stability and robustness, structured and unstructured perturbations, the small gain theorem, optimization theory, and the Maximum Principle. Estimation and control techniques include Linear Quadratic (H<sub>2</sub>), full-state LQR, LQG, (H), and Kalman filtering. Applications and numerical examples taken from robotics, aircraft control, and vibration control.

### **DCS 7711 Software Architecture (4)**

Software architecture with emphasis on large, distributed, concurrent software systems (i.e., software for telecommunications, real-time control systems, e-commerce applications). Architectural design using patterns and object frameworks. Development of software architecture for a software product line (i.e., a group of products sharing key functionality). Review and analysis of the architecture of existing software systems.

### **DCS 7712 Advanced Software for Computer Engineers (4)**

**Prerequisites:** Computer networking fundamentals, C, C++, or Java programming experience. Explores the design of software using state-of-the-art technologies; emphasis on distributed systems, Web-based applications, and the use of the latest application frameworks; project-oriented course.

### **DCS 7713 Parallel Computer Architecture (4)**

Problems in parallel processing, how they are addressed by current parallel computers, and design of future systems. Topics include characteristics of parallel applications; parallel system support; cache coherency protocols; network interfaces; switch and interconnection

network design; scalable systems; and hardware-software tradeoffs. Examples of both small-scale and large-scale parallel systems, including web servers, clusters of networked PCs, MPPs, and vector supercomputers.

**DCS 7714 Software Performance Engineering (4)**

Performance analysis of real-time software and systems. Petri net theory, including timed, colored, and stochastic nets. Introduction to queuing theory. Analysis of software performance using software execution models and information processing graphs. Software safety and system performance. Includes use of the Embedded Systems Laboratory.

**DCS 7715 Wireless Communications (4)**

Design and analysis of robust wireless communication systems. Spread-spectrum and CDMA. Radio-channel modeling: propagation, path loss, multipath, and fading. Cellular system design. Coding, diversity, and equalization. Alternative communication channels. Case studies. Multiple-access, mobility, and networking issues.

**DCS 7719 Statistical Pattern Recognition (4)**

The statistical theory of pattern recognition, including both parametric and nonparametric approaches to classification. Covers classification with likelihood functions and general discriminant function, density estimation, supervised and unsupervised learning, decision trees, feature reduction, performance estimation, and classification using sequential and contextual information, including Markov and hidden Markov models. A project involving computer implementation of a pattern recognition algorithm is required.

**DCS 7900 Advanced Topics in Computer Science (4)**

Seminar restricted to advanced level students; topics of mutual interest to faculty and students and not currently available in the upper level program.

**DCS 9000 Research**

By petition only. Participation in a research project under the direction of a faculty advisor. Final report or thesis is required. Variable credit.

**DCS 9001 Thesis 16-24 credits**

By petition only. Preparation of an original thesis under the guidance of a faculty advisor.

# **ADVANCED LEVEL OF GENERAL ENGINEERING AND APPLIED SCIENCES**

## **REQUIREMENTS FOR THE ADVANCED LEVEL DEGREE**

The Advanced Level requires the satisfactory completion of 72 semester hours of approved upper level work and coursework (including a dissertation research) for its post lower level mode.

An entering student who has an upper level qualification relevant to the proposed advanced level field of study may be awarded up to 24 credits toward advanced level program completion on the basis of acceptable post-lower level upper level coursework.

### **EN 5000 Academic Writing (Non-credit)**

This course is designed to give higher level students an overview of advanced methods of academic writing and research common to different disciplines. Based on the recommendations of the Modern Language Association of America, the course outlines the most recent conventions of written and oral presentation.

### **MA 5000 Mathematics Basics (Non-credit)**

This workshop is intended to help students to review basic mathematics concepts that are needed for their upper level studies. The focus will be on calculus concepts and linear algebra.

### **RM 5000 Research Methodology (Non-credit)**

This course investigates theories and a method related to conducting research and equips students with the tools to conduct primary and secondary research. It also provides students with the analytical tools and different techniques to conduct original research.

## **THESIS OR DISSERTATION REQUIREMENTS**

Students are required to submit a Advanced Level thesis at the end of their program which counts for 16-24 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the student's professional needs since they can select the minimum number of credits if they wish to do less research and writing.

## **COURSE REQUIREMENTS**

Post-lower level students are required to complete a minimum of 64 credits applicable to their degree; 32 credits must be structured courses, 28 credits of which must be at the 5000 level or higher. A minimum of 16 credits of research/dissertation is required. There are no structured course requirements for post-upper level Advanced Level students, but such students are required to complete 32 credits applicable to their degree, all of which must be at the 5000 level or higher. A minimum of 8 credits of research/dissertation coursework is required.

Coursework used to fulfill the Advanced Level degree requirements may not be used to complete the requirements of any other degree program. Advanced Level students who have completed all course requirements, or hold appointments as teaching fellows or research assistants, are considered full-time students and should be enrolled for a minimum of 2 credits per semester. Full-time status enables students to access libraries, laboratories, instructional staff, and other academic facilities at SOUTHEASTERN.

## **PART-TIME STUDY**

Occasionally, students are permitted to pursue the post-upper level Advanced Level on a part-time basis. Such students must demonstrate a commitment to the program on an ongoing basis. Part-time students must fulfill the same degree requirements and are subject to the same policies, time frames, and deadlines as full-time students.

## **QUALIFYING EXAMINATIONS**

The student's area of concentration determines the specific nature and scope of the qualifying examination. Students must pass two written comprehensive examinations covering basic knowledge in (a) applied mathematics and (b) one area of specialized study selected from the following: civil engineering, architectural engineering, electrical engineering, mechanical engineering, or manufacturing engineering. The Upper level Committee administers the applied mathematics examination of the specialized exam.

Both qualifying examinations are limited to three attempts. Departments may limit attempts to one, if they choose. All Advanced Level students must take the applied mathematics examination the first time it is offered after matriculation. All Advanced Level students must complete both qualifying examinations by the end of their fifth semester.

## **ADVANCED LEVEL CANDIDACY**

A student in an SOUTHEASTERN program will be accepted to Advanced Level candidacy upon successful completion of both qualifying examinations. At that time, the student will receive formal notice of acceptance to Advanced Level candidacy. The maximum period allowed between matriculation and acceptance to Advanced Level candidacy is usually five semesters, but departments can specify a lesser time frame based on qualifying examination results. Under no circumstances will a student who is not a Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

## **DISSERTATION PROSPECTUS DEFENSE**

Within one year of becoming a candidate, the student is expected to present an oral dissertation proposal to the prospective dissertation committee and obtain approval for the written dissertation prospectus. The committee evaluates the potential of the proposed research and the student's academic preparation to engage in dissertation research. Upon approval of the committee members and the department upper level associate chairman, the student submits the Advanced Level Dissertation Prospectus Defense form to the department office.

## **DISSERTATION**

A Advanced Level candidate is expected to prepare and carry out an independent and original research project in partial fulfillment of the dissertation requirement

## **FINAL ORAL EXAMINATION**

Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their fields and demonstrate mastery of their field of specialization as related to the dissertation. The Examining Committee is composed of at least five members of whom two must be (tenured or tenure-earning) faculty from the student's academic department. Each department determines the appointment of the chairman.

**TIME LIMIT**

Both programs must be completed within five years of the individual's acceptance into Advanced Level candidacy as determined by the department and the SOUTHEASTERN Upper Level Committee.

**ADVISOR**

Candidates for the Advanced Level degree are required to have as an advisor a member of the upper level faculty in the department of their field of specialization.

# COURSE DESCRIPTIONS

## AREA I

### **DEK 7411 Fluid-Structure Interaction (4)**

**Prerequisite:** understanding of fluid mechanics and dynamics at a level commensurate with an lower level degree in aerospace or mechanical engineering. Discussion of basic phenomena occurring when the response of a solid structure immersed in or bounding a flow has a significant influence on the flow. Methods are developed and applied.

### **DEK 7419 Environmental Hydrology and Storm water Management (4)**

This course presents an overview of the environmental hydrology issues and it introduces the student into the storm water management practices with emphasis on sustainable ways of collecting and treating storm water. In particular, it covers issues such as urban sprawl and runoff, runoff quality, storm water hydrology, stream processes and soil conservation, surface and subsurface drainage, runoff collection and treatment methods, pollution prevention and treatment strategies.

### **DEK 7582 Advanced Mechanical Behavior of Materials (4)**

Fundamental concepts of modern materials behavior and materials engineering. Emphasis on analytical and numerical methods for predicting material properties and behavior, as well as some discussion of the relationships between solid structure and material properties. Topics include: constitutive relations, fracture, fatigue, plasticity, creep, damping, impact, and deformation. Elastic, plastic, and viscous behavior. Some discussion of the effects of processing-thermodynamics, kinetics- may be addressed. Specific examples from ceramics, metals, polymers, and composites is given, with the emphasis changing for each offering.

### **DME 7707 Finite Element Analysis (4)**

An introduction to the finite element method with emphasis on fundamental concepts. Variational equations, Galerkin's method. Finite element applications to linear elliptic boundary value problems in structures, solid and fluid mechanics, and heat transfer. Optimality, convergence, function spaces and energy norms. Isoperimetric elements. Mixed methods, penalty methods, selective reduced integration; applications may include Kirchoff plate theory, incompressible elasticity, Stokes flow. Thick and thin beams, plates and shells. Implementation: element data structures, numerical integration, assembly of equations, element routines, solvers. Advanced topics may include: dynamic analysis, stabilized methods, eigenvalue problems, hybrid analytical methods.

### **DEK 7719 Convective Heat Transfer (4)**

Analytical and numerical prediction of heat transfer in wall-bounded flows. Laminar and turbulent boundary layer solutions for internal and external flows. Introduction to turbulence models. Natural convection. Mass transfer. Effects of surface roughness, transpiration, pressure gradients. Similarity solutions for boundary layer heat transfer. Superposition methods for non-uniform boundary condition problems. Application of computer models to design problems.

### **DEK 7740 Vision, Robotics and Planning (4)**

**Prerequisite:** upper level standing or consent of the instructor. Methodologies required for constructing and operating intelligent mechanisms. Comprehensive introduction to robot kinematics for motion planning. Dynamics and control of mechanical systems. Formal treatment of differential relationships for understanding the control of forces and torques at the end effector. Discussion of robot vision and sensing and advanced topics in robot

mechanics, including elastic effects and kinematic redundancy. Students may not receive credit for both.

**DEK 7760 Intelligent Systems (4)**

Extensive discussion of the central issues in constructing machines capable of intelligent behavior. Computational and biological learning, neural networks, and fuzzy logic. Class presentations and semester project required.

**DEK 7781 Mechanics of Composite Materials (4)**

Micromechanical and macro mechanical models of fiber-reinforced composite materials. Topics include anisotropic laminae and laminates (CLT), fiber/resin interaction and interfaces, strength and stiffness models, fracture, fatigue, vibration, and impact. Some discussion of processing science issues such as resin flow, consolidation, and fiber orientation. Examples of production methods and recent design applications in aerospace, medical, civil infrastructure, recreation, and transportation are presented.

**DEK 7982 Engineering with Micro-electromechanical Devices (4)**

**Prerequisite:** permission of instructor. Design and system development of MEMS devices for advanced engineering applications. Emphasis on using existing semiconductor fabrication processes to develop silicon-based, micrometer-scale mechanical and optical devices, such as accelerometers, deformable mirrors, and micro valves. After learning the principles of MEMS sensors, actuators, and control systems, individual student designs are submitted to a MEMS foundry where they are made into working MEMS devices in a seven-layer surface micromachining fabrication process. Testing and evaluation of devices using high-speed interferometry and real-time control are also studied.

**DEK 7983 Precision Engineering (4)**

**Prerequisite:** permission of instructor. Theory and practice of measurement, control, and material removal on components having tolerances of feature sizes smaller than one micrometer. Emphasis on state-of-the-art precision actuation and machining processes used to manufacture compact discs, hard drives, and laser mirrors. Students learn the principles of metrology, kinematic design, error analysis, micro-actuation, and micromechanical behavior of materials. They will also be exposed to ultra precision machining processes including ion beam milling, ductile-regime grinding, and diamond turning, through both lectures and hands-on laboratory exercises.

**DEK 9000 Research**

By petition only. Participation in a research project under the direction of a faculty advisor. If not leading to a Advanced Level dissertation, a final report is normally required. Variable credit.

**DEK 9001 Independent Study**

By petition only. Upper level students may study, under a faculty member's supervision, subjects not covered in a regularly offered course. Final report and/or written examination normally required.

# COURSE DESCRIPTIONS

## AREA II

### **DME 7705 Operations Management (4)**

Focuses on the design and control of manufacturing and service systems. Topics include process analysis, capacity planning, forecasting, simulation, scheduling, inventory analysis, quality control, material requirements planning, work design, and technology.

### **DME 7708 Advanced Process Control (4)**

**Prerequisite:** equivalent with permission of instructor. Integrated study of process control and modern control theory. Includes process modeling and simulation, analysis of linear and non-linear dynamics, evaluation and selection of actuators and measurements, control structure design for single and multiple variable systems, and control algorithm design. Examples drawn from a variety of process control applications.

### **DME 7710 Dynamic Programming and Stochastic Control (4)**

Introduction to sequential decision-making via dynamic programming. The principle of optimality as a unified approach to optimal control of dynamic systems and Markovian decision problems. Applications from control theory and operation research include linear-quadratic problems, the discrete Kalman Filter, inventory control, network, investment, and resource allocation models. Adaptive control and numerical solutions through successive approximation and policy iteration, suboptimal control, and neural network applications involving functional approximations and learning.

### **DME 7719 Advanced Stochastic Modeling and Simulation (4)**

**Prerequisites:** knowledge of stochastic processes, or consent of the instructor. Introduction to Markov chains, point processes, diffusion processes as models of stochastic systems of practical interest. The course focuses on numerical and simulation methods for performance evaluation, optimization, and control of such systems.

### **DME 7720 Advanced Optimization Theory and Methods (4)**

**Prerequisites:** consent of instructor. Complements by introducing advanced optimization techniques. Emphasis on non-linear optimization and recent developments in the field. Topics include: unconstrained optimization methods such as gradient, conjugate direction, Newton and quasi-Newton.

### **DME 7732 Combinatorial Optimization and Graph Algorithms (4)**

Design data structures and efficient algorithms for priority queues, minimum spanning trees, searching in graphs, strongly connected components, shortest paths, maximum matching, and maximum network flow. Some discussion of intractable problems and distributed network algorithms.

### **DME 7735 Computer Graphics (4)**

Techniques for computing, representing, and displaying two-and three-dimensional objects. Topics include two-and three-dimensional transformations, symmetry, data reconstruction, surface modeling, and realistic imaging.

### **DME 7740 Vision, Robotics and Planning (4)**

Methodologies required for constructing and operating intelligent mechanisms. Comprehensive introduction to robot kinematics for motion planning. Dynamics and control of mechanical systems. Formal treatment of differential relationships for understanding the

control of forces and torques at the end effector. Discussion of robot vision and sensing and advanced topics in robot mechanics, including programming models. Methods of control and analysis include optimal control, dynamic programming, fuzzy control, adaptive control, hierarchical control, genetic algorithms, simulated annealing, Lagrangian relaxation, and heavy traffic approximations. Examples and case studies focus on applications from manufacturing systems, computer and communication networks, and transportation systems.

#### **DME 7750 Computer-Integrated Manufacturing (4)**

**Prerequisite:** consent of instructor. Elements of CAD/CAM systems examined with an emphasis on system integration tools, graphical programming of spatially oriented tasks, as well as automatic code generation necessary to provide the voluminous code needed to drive a factory floor. Students gain insight into the interplay between system components, interfaces, and the overall system.

#### **DME 7923 Upper Level Project**

By petition only. A practical manufacturing design, analysis, fabrication, or production project. Written report required. Variable credit

#### **DME 8912 Wastewater Treatment, Recycling and Reuse**

This course aims at presenting an overview of the functions and processes followed within an urban wastewater treatment plant. It further targets at familiarizing the student with the water recycling and reuse methods. The course covers issues such as water supply and sanitation, wastewater flow rates and quality, wastewater treatment processes, treatment and disposal of sludge, natural treatment processes, small wastewater treatment units, wastewater reclamation and reuse, and effluent disposal.

#### **DME 9000 Research**

By petition only. Participation in a research project under the direction of a faculty advisor. Final report or thesis is required. Variable credit.

#### **DME 9001 Thesis 16-24 credits**

By petition only. Preparation of an original thesis under the guidance of a faculty advisor.

#### **DME 9951 Independent Study**

By petition only. Under faculty supervision, upper level students may study subjects not covered in a regularly offered course. Final report and/or written examination normally required. Variable credit.

# COURSE DESCRIPTIONS

## AREA III

### **DEE 7701 Optimal and Robust Control (4)**

Fundamentals of multivariable control analysis and synthesis. Control objectives include achieving robust stability and performance (robust control) and minimization of cost functions (optimal control). Advanced topics include modeling (state space, transfer function matrix), MIMO poles and zeroes, controllability and observability, stability and robustness, structured and unstructured perturbations, the small gain theorem, optimization theory, and the Maximum Principle. Estimation and control techniques include Linear Quadratic (H2), full-state LQR, LQG, (H), and Kalman filtering. Applications and numerical examples taken from robotics, aircraft control, and vibration control.

### **DEE 7708 Advanced Process Control (4)**

Integrated study of process control and modern control theory. Includes process modeling and simulation, analysis of linear and non-linear dynamics, evaluation and selection of actuators.

### **DEE 7709 Dynamic Programming and Stochastic Control (4)**

Introduction to sequential decision-making via dynamic programming. The principle of optimality as a unified approach to optimal control of dynamic systems and Markovian decision problems. Applications from control theory and operation research include linear-quadratic problems, the discrete Kalman Filter, inventory control, network, investment, and resource allocation models. Adaptive control and numerical solutions through successive approximation and policy iteration, suboptimal control, and neural network applications involving functional approximations and learning

### **DEE 7711 Software Architecture (4)**

Software architecture with emphasis on large, distributed, concurrent software systems (i.e., software for telecommunications, real-time control systems, e-commerce applications). Architectural design using patterns and object frameworks. Development of software architecture for a software product line (i.e., a group of products sharing key functionality). Review and analysis of the architecture of existing software systems.

### **DEE 7712 Advanced Software for Computer Engineers (4)**

**Prerequisites:** Computer networking fundamentals, C, C++, or Java programming experience. Explores the design of software using state-of-the-art technologies; emphasis on distributed systems, Web-based applications, and the use of the latest application frameworks; project-oriented course.

### **DEE 7713 Parallel Computer Architecture (4)**

Problems in parallel processing, how they are addressed by current parallel computers, and design of future systems. Topics include characteristics of parallel applications; parallel system support; cache coherency protocols; network interfaces; switch and interconnection network design; scalable systems; and hardware-software tradeoffs. Examples of both small-scale and large-scale parallel systems, including web servers, clusters of networked PCs, MPPs, and vector supercomputers.

**DEE 7714 Software Performance Engineering (4)**

Performance analysis of real-time software and systems. Petri net theory, including timed, colored, and stochastic nets. Introduction to queuing theory. Analysis of software performance using software execution models and information processing graphs. Software safety and system performability. Includes use of the Embedded Systems Laboratory.

**DEE 7715 Wireless Communications (4)**

**Prerequisites:** Design and analysis of robust wireless communication systems. Spread-spectrum and CDMA. Radio-channel modeling: propagation, path loss, multipath, and fading. Cellular system design. Coding, diversity, and equalization. Alternative communication channels. Case studies. Multiple-access, mobility, and networking issues.

**DEE 7717 Image Reconstruction and Restoration (4)**

Principles and methods of reconstructing images and estimating multidimensional fields from indirect and noisy data; general deterministic (variational) and stochastic (Bayesian) techniques of regularizing ill-posed inverse problems; relationship of problem structure (data and models) to computational efficiency; impact of typically large image processing problems on viability of solution methods; problems in imaging and computational vision including tomography and surface reconstruction. Computer assignments.

**DEE 7720 A & B Digital Video Processing (4)**

Review of sampling/filtering in multiple dimensions, human visual system, fundamentals of information theory. Motion analysis: detection, estimation, segmentation, tracking. Image sequence segmentation. Spectral analysis of image sequences. Video enhancement: noise reduction, super-resolution. Video compression: transformation, quantization, entropy coding, error resilience. Video compression standards (H.26X and MPEG families). Future trends in image sequence compression and analysis. Homework and project will require MATLAB programming.

**DEE 7724 Advanced Optimization Theory and Methods (4)**

By introducing advanced optimization techniques. Emphasis on nonlinear optimization and recent developments in the field. Topics include: unconstrained optimization methods such as gradient, conjugate direction, Newton and quasi-Newton methods; constrained optimization methods such as gradient projection, feasible directions, barrier and interior point methods; duality theory and methods; convex duality; and introduction to other advanced topics such as semi-definite programming, incremental gradient methods and stochastic approximation algorithms. Applications had drawn from control, production and capacity planning, resource allocation, communication and neural network problems. Students may not receive credit for both.

**DEE 7725 Queuing Systems (4)**

Performance modeling using queuing networks analysis of product form and non-product form networks, numerical methods for performance evaluation, approximate models of queuing systems, optimal design and control of queuing networks. Applications from manufacturing systems, computer systems, and communication networks. Students may not receive credit for both.

**DEE 7726 Dynamic Programming and Stochastic Control (4)**

Introduction to sequential decision making via dynamic programming. The principle of optimality as a unified approach to optimal control of dynamic systems and Markovian decision problems. Applications from control theory and operation research include linear-quadratic problems, the discrete Kalman Filter, inventory control, network, investment, and resource allocation models. Adaptive control and numerical solutions through successive

approximation and policy iteration, suboptimal control, and neural network applications involving functional approximations and learning.

**DEE 7731 Devices (4)**

Physics of present-day compound devices, and emerging devices based on quantum mechanical phenomena. MESFETs, Transferred Electron Devices, avalanche diodes, photo detectors, and light emitters. Quantum mechanical devices based on low dimensionality confinement through the formation of heterojunctions, quantum wells, and super lattices. High electron mobility transistors, resonant tunnelling diodes, quantum detectors, and lasers. Materials growth and characterization are integral to the course.

**DEE 8891 Seminar: Computer Systems Engineering (2)**

A weekly two-hour seminar on recent research topics in computer systems engineering, including reliable computing, computer systems, software engineering, VLSI systems, and other related areas. Speakers include faculty and upper level students in the area.

**DEE 8892 Seminar: Electro-Physics (2)**

A weekly two-hour seminar on recent research topics in the area of electro-physics, including solid state materials and devices, photonics, electromagnetics, computers in physics, and other related areas. Speakers include faculty and upper level students in the area.

**DEE 9000 Research**

By petition only. A project, study, or research carried out under the guidance of a faculty member.

**DEE 9001 Thesis 16-24 credits**

By petition only. Preparation of an original thesis under the guidance of a faculty advisor.

**DEE 9910 Computer Engineering Design Project**

By petition only. Specification and solution of a computer engineering design problem under the direction of a faculty advisor. A final report is required. Variable credit.

**DEE 9911 Systems Design Project (4)**

By petition only. Specification and solution of a systems engineering design problem under the direction of a faculty advisor. A final report is required. Variable credit.

**DEE 9913 Electrical Engineering Design Project (4)**

By petition only. Specification and solution of an electrical engineering design problem under the direction of a faculty advisor. A final report is required. Variable credit.

**DEE 9951 Independent Study (4)**

By petition only. Under faculty supervision, upper level students may study subjects not covered in a regularly scheduled course. A final report and/or written examination is required. Variable credit.

# CIVIL ENGINEERING

## COURSE DESCRIPTIONS

### **DGE 6205 Advanced Strength of Materials (4)**

Deflection of beams using singular functions, unsymmetrical bending of beams, beams on elastic foundation. Beam-column problems, shear center for thin-walled beam cross sections, curved beams. Applications of energy methods, torsion, basic equations for theory of elasticity, thin- and thick-walled cylinders, stress concentration, and failure criteria.

### **DGE 6206 Design of Reinforced Concrete Structures (4)**

Structural behavior of reinforced concrete structures, ultimate strength and deformation characteristics; design of structural components including beams, columns, floor slabs, box-type girders; introduction to prestressed concrete; special topics.

### **DGE 7208 Advanced Reinforced Concrete Structures (4)**

Conception, analysis, and design of low-rise and high-rise buildings by ultimate-strength methods, precast systems, progressive collapse, earthquake considerations, domes, folded plates, shell-type structures, and special topics.

### **DGE 7210 Methods of Structural Analysis (4)**

Modern methods of analysis of statically indeterminate structures, matrix analysis based on flexibility, stiffness, energy and variational methods, sub structuring techniques; consideration of plastic collapse of structures; introduction to the finite element method.

### **DGE 7211 Design of Metal Structures (4)**

Structural behavior of metal structures, conception and design of advanced structural components and systems, hysteretic behavior, plastic design principles, box-type girders, cable systems, composite girders, and special topics.

### **DGE 7213 Reliability Analysis of Engineering Structures (4)**

Probability theory, theory of structural reliability, probabilistic analysis of strength and loads, risk and reliability function, empirical distribution, probability plot. The design service life, method of perturbation, Monte Carlo simulation. Fatigue and fracture, proof testing, inspection and repair-replacement maintenance.

### **DGE 7214 Analysis of Plates and Shells (4)**

Bending and stretching of thin elastic plates under loading with various boundary conditions, continuous plates and plates on elastic foundations, theory of folded-plate structures. Theory of curved surfaces; general linear bending theory and its simplification to membrane theory; bending stresses in shells of revolution, shallow-shell theory.

### **DGE 7216 Structural Dynamics (4)**

Vibration of continuous systems: membranes, beam plates, and shells; approximate methods of vibration analysis; methods of integral transform; analysis of nonlinear systems; wave propagation.

### **DGE 7217 Random Vibration of Structures (4)**

Introduction to random processes, responses of linear structures to stationary and non-stationary random inputs. Structural responses to earthquakes, waves, boundary-layer turbulences, wind loads, etc. Failure analysis of structures under random loads.

**DGE 7218 Structural Design to Resist Natural Hazards (4)**

Prediction of forces due to earthquakes and strong winds; generalized codes; pseudo static methods for preliminary design; codes based on spectra, energy absorption and ductility; influence of foundations; ground failures; static and aero elastic effects of strong winds. Design project.

**DGE 7220 Continuum Mechanics (4)**

Introduction to the mechanics of continuous media. Tensor calculus; kinematics; stress and stress rate, conservation of mass, conservation of linear and angular momentum, energy balance, second law of thermodynamics; constitutive theory; linear and nonlinear elasticity, Newtonian fluids, micro polar elasticity.

**DGE 7223 Mechanics of Composite Materials (4)**

Stress-strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage.

**DGE 7227 Introduction to Finite Element Analysis (4)**

Variational formulation of the finite element method. Weighted residual techniques. Computer implementation of the finite element method. Application to problems in heat transfer, stress analysis, fluid flow, and structural analysis.

**DGE 7228 Advanced Finite Element Analysis (4)**

Review of variational formulation of the finite element method. Formulation of various continuum and structural elements. Application to static and dynamic problems in elasticity, plasticity, large deflection, and instability in plates and shells. Recent developments in finite element methods.

**DGE 7232 Geotechnical Engineering (4)**

Principles of soil mechanics applied to the analysis and design of mat foundations, pile foundations, retaining structures including sheeting and bracing systems, and waterfront structures. Foundations on difficult soils and reinforced earth structures.

**DGE 7233 Geotechnical Earthquake Engineering (4)**

Ground motion, wave propagation, foundation isolation, site response analysis, seismic stability of retaining structures, soil structure interaction.

**DGE 7923 Advanced Structural Analysis (4)**

The application of mechanics to the analysis of indeterminate structural forms important to civil and aeronautical engineering, with emphasis on modern structural types. The analysis of fundamental structural forms, including curved beams, arches, rings, thin walled cell-type structures, and members with variable inertia, for stress and deflection by the classical methods. Influence lines for indeterminate structures. Introduction to matrix analysis and vibration of structures.

**DGE 7924 Advanced Steel Design (4)**

An advanced course in steel design using the Load Resistance Factor Design (LRFD). Component design, connections, composite and built-up sections are covered. Design problems involve braced and rigid structures subjected to gravity, wind and seismic loads.

**DGE 7925 Advanced Reinforced Concrete Design (4)**

Further study of concrete design with emphasis on columns with biaxial bending, flat slab theory and design, and the analysis and design of prestressed concrete structural members.

**DGE 7926 Structural Stability (4)**

Elastic buckling of columns, including the effects of initial crookedness and eccentricity. Large deflections of the Euler column. Tangent modulus and double modulus theory. Beam columns and the stability of frameworks and trusses. Torsional buckling of columns and lateral buckling of beams. Plate buckling with applications to flange buckling and web crippling of plate girders.

**DGE 7928 Structural Mechanics (4)**

An introduction to the theory of structural mechanics emphasizing the application of energy methods. Application to equilibrium and stability of beams, struts, frameworks, rings and plates and the dynamics of rigid and deformable bodies.

**DGE 9000 Research**

By petition only. Participation in a research project under the direction of a faculty advisor. Final report or thesis is required. Variable credit.

**DGE 9001 Thesis 16-24 credits**

By petition only. Preparation of an original thesis under the guidance of a faculty advisor.

**DMA 6201 Numerical Methods in Engineering (4)**

Eigenvalue problems. Numerical solution of systems of equations and ordinary differential equations. Solution techniques for elliptic, parabolic, and hyperbolic partial differential equations. Numerical methods for solving finite element equations. Introduction to solution of fluid-flow problems.

**DMA 6202 Application of Probability Methods in Civil Engineering (4)**

Uncertainty in real-world information; basic probability concepts and models; random variables; useful probability distributions, statistical estimation of distribution parameters from observed data; empirical determination of distribution models; testing hypothesis; regression and correlation analyses; decision theory.

**DME 8911 Advanced Fluid Mechanics**

This is an intermediate course between the fluid mechanics and computational fluid dynamics. The aim of this module is to analyze with the aid of mathematical equations the basic flow phenomena starting from general simple flows to more complicated patterns. Prerequisites: Advanced Numerical Methods for Engineers, Fluid Mechanics.

**DME 9001 Compressive Flow**

The goal of this course is to layout the fundamental concepts and results for the compressible flow of gases. The emphasis will be on physical understanding of the phenomena and basic analytical techniques. Prerequisites: Computational Fluid Dynamics, Advanced Numerical methods for Engineers.

**DME 9101 Soil-Structure interaction (Finite Element methods)**

The module is intended to provide the students with an understanding of how real structures interact with the surrounding soil. This is also carried out with the aid of soil-structure interaction software for some typical cases. It is assumed that students have a first degree in Civil Engineering, and are therefore familiar with soil mechanics and structural mechanics as

well as numerical methods. Prerequisites: Mechanics of Soils, Advanced Numerical methods for Engineers.

**DME 9102 Computer Aided Design**

The aim of the course is to deliver in-depth techniques for parametric representation of curves, surfaces and solids and relevant entity manipulation based on transformations, to provide understanding of geometric modeling, solid modeling and mechanism synthesis and to introduce the design process based on established methods. At the end of the course, students should be able to understand and implement the optimal method in modeling a complex component theoretically and practically using a piece of design software, to analyze and synthesize a mechanism based on given requirements. Prerequisites: Advanced Numerical methods for Engineers

**DME 9103 Computer Aided Manufacturing**

The aim of the course is to introduce advanced methodologies in a modern manufacturing environment based on use of computers, to study in depth use of computers during the manufacturing process and to apply these technologies to manufacturing systems. At the end of the course, students should have a broad understanding of the theory and practice of use of computers in engineering manufacture, should be able to use computer integrated manufacturing techniques for various manufacturing processes, to relate designs and robotics to a manufacturing process, to analyze a manufacturing problem, and to provide an effective solution for a manufacturing process. Prerequisites: Manufacturing Processes

# **ADVANCED LEVEL OF BUSINESS ADMINISTRATION**

## **Program Description**

SOUTHEASTERN offers a dynamic Advanced Level program through online and/or open learning program designed for professionals who want to advance their career through the most advanced business education we offer. When you complete this rigorous program, you'll have attained advanced knowledge and a sophisticated awareness of the contemporary strategic issues and practices related to your chosen business area.

Our Advance Level program offers a state-of-the art curriculum and experienced, highly qualified professors.

Our curriculum has a three-tiered focus. You'll examine current theories, practices, and issues in business, train in research methods; and study the relationships between business and social and global issues. We believe that advanced level students must be adept in all three areas to be successful contributors to the expansion of knowledge and improvement of business and public management practices. For your dissertation, you'll conduct research on a topic of current importance and interest to you. The dissertation would frequently impact - and help illuminate - the strategic issues you face in your profession.

The program encourages you to accept the added responsibility of a shared professional commitment to the advancement of your profession and the highest ethical standards of private or public service.

## **Learning Objectives**

The prime objective of the DBA program is to produce upper level students who can contribute to the advancement of their professions and to the expansion of knowledge relating to the current theories, practices, and issues in business and public management. This primary objective is achieved through guiding students in developing:

- a through knowledge of scientific and scholarly research methods and their application in the business setting in a senior management position, as a consultant, as a teacher at the SOUTHEASTERN level;
- advanced critical thinking, conceptual and analytical skills;
- a grasp of both the seminal theories and the latest practices in business management including an intensive knowledge of theory and practice in one field of business;
- the tools to perform original applied research that advances business knowledge;
- an appreciation of cultural, ethical, and global issues and their impact on business theory and practices; and
- the skills necessary for effective decision making in complex environments through integrating theoretic insights with practical knowledge.

## **Admission Requirements**

SOUTHEASTERN seeks candidates with strong intellects, proper educational preparation, breadth and depth of managerial or professional experience and the capacity for disciplined scholarly investigation. While most applicants have an Upper level program in a business or a public management-related field, applicants with academic preparation in other fields are welcome to apply. Advanced Level candidates must be fluent in English and are expected to write at a level meeting the standards of scholarly publications. You are expected to understand contemporary practices in business and public management and the economic, social and political context in which they are conducted. The admission decision is made by a

faculty committee, and is based on your total accomplishments and skills. Specifically, admission to the program requires:

- Educational preparation: An upper level program
- Experience: Applicants with responsible managerial or professional work experience will be given preference. A professional resume is required.
- GMAT or GRE examination: You are required to take the GMAT or GRE examination (within 10 years prior to application to the program) and have the test score results forwarded to SOUTHEASTERN.
- English language proficiency: If your native language is not English, you must supply evidence of English language proficiency, such as a score of 580 or higher on the TOEFL or other evidence.
- Recommendations: Written recommendations attesting to your ability to succeed in an advanced level program are required.
- Statement of purpose: A statement of purpose of approximately 1000 words is required. This statement should address your goals and your reasons for seeking advanced level program completion.

The admission decision is based on the full range of your skills and accomplishments as shown in the application materials. Strength in one of the above areas can offset weakness in another area.

## **Requirements**

You must successfully complete a minimum of 60 semester credits beyond the preparatory upper level courses listed above. Included are: 20 semester credits of foundation courses, 20 semester credits of business core courses, 8 semester credits of electives and a minimum of 12 credits of dissertation research. Although research papers, reports and examinations may be required in advanced level seminars, the major assessment points in the Advance Level Program are: the qualifying examination taken after the foundation curriculum is completed; the business core examination taken after the required business core courses are completed; and the dissertation. Passing scores on the qualifying and business core examinations are required before you are allowed to present a dissertation proposal and advance to candidacy. To fulfil the degree requirements, your dissertation must be completed and defended successfully within seven years of entry into the program.

## **COURSE DESCRIPTIONS**

### **DBA 7001 Quantitative Research Methods (4)**

Topics include survey design; experimental design; statistical analysis of survey and experimental data; multivariate statistical analysis including analysis of variance, multiple regression, the general linear model, factor analysis, and other methods; time series analysis; and other topics. You will learn how to interpret the statistical results contained in scholarly papers and articles. You will learn how to apply these methods using statistical software through hands-on analysis of research data sets.

### **DBA 7002 Qualitative Research Methods (4)**

Examines contemporary approaches to qualitative analysis in business. You will learn about and practice using such qualitative research techniques as open-ended interviewing, focus groups and the case study approach. Other topics include the use of qualitative research software, the philosophic foundations of knowledge and the effective display of data.

### **DBA 7003 Economic Theory and Policy (4)**

Explores the theory of prices and markets and examines macroeconomics policies of government that affect the management decisions of business. Explores the theoretical roots of competing policy options in areas such as taxation, fiscal and monetary policy, international trade and antitrust regulation. Also assesses the implications for business decisions of various government regulations as they affect the productivity and overall performance of the private sector.

### **DBA 7004 Management and Organizational Theory (4)**

Begins by developing a paradigm perspective on the nature of scientific research and theory. From that platform, we examine seminal contributors to theories of organization and individual behavior in organizations with attention to both historical context and current approaches. Topics such as classical management theory; the human relations perspective; motivation, institutional theory; comparative organizational designs; change processes; the organizational-environment contingency, and systems perspectives; inter-organizational forms, organizational learning; organizational dysfunction and ethical perspectives are examined. Students take an active role in presenting and critiquing early and current theory and practice as well as relating theory and research to their own experience.

### **DBA 7006 Technology Systems in Business (4)**

Integrates the theory, research and practice from the fields of technology management, information systems, and operations management with a focus on the planning and implementation of technology into the organization. You will explore theories of technology evolution and information transfer, resource optimization, and the structuring of work organizations. These theories will be used in the examination of the research and application of technology adoption and transfer strategies, productivity and competitiveness and implementation of technology-based systems in re-defining the organization of work. You will examine the current state of the art in technology systems in both manufacturing and non-manufacturing environments.

### **DBA 7007 Business, Government and Society (4)**

Examines the complex interface between the public and private sectors within contemporary American society as well as in a comparative context, both historical and global. A review of the extensive scholarly literature in the field includes widely varying visions of the public interest with regard to business. At the same time, real world case studies provide you with a practical understanding of and techniques for managing business-government relations at the local, state, federal, and multinational level. You will learn advanced problem-defining,

analytical and communication skills in dealing with messy problems faced by businesses involving government regulation, politics, ethics and corporate social responsibility.

**DBA 7012 Organizational Systems and Change (4)**

Uses the development of systems theories and the open systems and network models to study the varieties of organizational designs and their implications. You will study organizational development and other methods for creating and sustaining organizational change including such issues as participation and empowerment, process consultation, team development and implementation, gain sharing, corporate culture and its alteration, and various methods for focusing on quality. Techniques for organizational redesign and organizational learning such as reengineering, action research and the use of consultants for planning and implementing change are examined and critiqued. You will examine practical applications to existing organizations in relation to your current and past organizational experiences.

**DBA 7920 Corporate Finance (4)**

Examines financial processes as they relate to corporate financial decision making and the types of near-term and long-term financial decisions which must be made by managers. Topics include capital structure, credit policies, financial operation, capital budgeting and transaction financing.

**DBA 7921 Marketing Management (4)**

Covers the full range of the principles, theories, and practice of the management of the marketing function. You will learn the theories of the field including both key seminal literature and current published research. You will explore problem-solving techniques for practical application through cases and modeling techniques, and will study current developments in marketing from both academic and practitioner perspectives.

**DBA 7922 Strategy and International Business (4)**

Covers the theory and practice of developing and implementing strategies for gaining competitive advantage in the global business environment. You will master the theoretical body of knowledge in the fields of strategic management and international business. In the process of the study of this theoretical work, you will also consider a variety of empirical approaches used to research the international competitive strategy process. You will explore the accelerating globalization of industries, regionalization of competition, and the institutional contexts that both facilitate and impede the formation and implementation of strategies globally. You will also consider such emerging topics as organizational change, competitive dynamics, development of firm resources and capabilities, sustainable competitive advantage, regional approaches to competitive strategy, and the formation of new organizational forms such as strategic alliances and inter-firm networks.

**DBA 7930 Financial Theory and Applications (4)**

Explores contemporary financial theories and their applications. Topics include asset pricing, option theory and financial risk management.

**DBA 7953 Management of Innovation and Technology (4)**

Covers the role of technology and innovation in competitive business situations. You will master the theory and practice of the management of innovation and technology and consider a variety of empirical approaches used to research this field. You will also examine through case studies, readings and class discussions the major strategic and managerial issues that arise as firms strive to manage technologies and the process of technological innovation. Covering product, process and information technologies, you will explore such topics as national issues of industrial competitiveness, the nature of technology and innovation,

strategies regarding technology planning, development and acquisition, and managerial issues regarding the implementation of these strategies.

#### **DBA 7962 Project and Systems Management (4)**

Covers the mathematical and intuitive methods used to determine the most feasible plans and designs for complex and often large-scale systems and projects. Emphasis is placed on the theory and techniques of directing and controlling resources for a fixed-term project established for achieving specific goals and objectives. You will study the latest techniques for scheduling, selecting appropriate work methods, estimating and budgeting, monitoring and controlling, and progress reporting of actual results against established budgets. You will use computer-based software packages and literature research in developing a comprehensive term project.

#### **DBA 7971 Buyer Behavior (4)**

Covers both the consumer and industrial perspectives with regard to the buyer decision processes in reference to need recognition and search; pre-purchase alternative evaluation; buyer purchase; and consumption, satisfaction and divestment. You will examine individual differences along with buyer knowledge, attitudes, motivation and self concept, personality, values and lifestyle. You will study psychological processes, information processing, learning, and influencing attitudes and behavior as well as environmental influences with emphasis on culture, ethnicity, social class and status, personal influence, family and household influences and, finally, situational influences. A treatment of marketing issues and ethics is provided. Throughout the course, emphasis will be placed on both theoretical and applied research.

#### **DBA 7980 Operations and Supply Chain Management (4)**

Covers the fundamental issues and recent developments in the diverse field of Operations Management, including Manufacturing and Service Management, Supply Chain Management, and Project and Systems Management. You will study the role of Operations and Supply Chain Management and their interactions with other functional areas within the firm. You will examine in-depth the contemporary issues related to Total Quality Management, Just-in-Time Systems, Supply and Value Chains, Reengineering and other Business Improvement Processes. Case method and review and analysis of pertinent scholarly and practitioner research are used to enhance your learning experience and to help you develop a framework for understanding, analyzing and addressing operations and supply chain management issues.

#### **DBA 7981 Public Administration Policy and Practice (4)**

Explores the role of public administration in contemporary society by means of examining its theoretical foundations, ethical dilemmas, and political environment. Emphasis on intensive readings in original works within the discipline foundation and collateral contemporary work that spans the public, private and independent sectors. Specific subject areas include conceptual analysis and critique of bureaucracy; the development of management theory and its subsequent application in the public sector; organizational design, behavior and change; decision making models and group dynamics; public administration and policy process; the ethics of public service; administrative leadership; and the legal foundations of public administration.

#### **DBA 7982 Information Systems and Applications (4)**

Covers the fundamental principles and issues of management information technology (IT) as a corporate resource. You will focus on the roles of both the IT manager and the functional manager requiring IT resources. You will also explore the future role of information systems and information technology that will contribute to the productivity and competitiveness of organizations and will enhance the quality of work-related activities. Selected issues in

systems analysis and design, and project management will be covered with an emphasis on understanding the underlying concepts and translating them into practice. You will survey and critique current literature, perform design exercises and understand the use of case method in business applications. Topics include planning for advanced computer and communication technology as an organizational change process, and planning and forecasting for future technological developments.

**DBA 8991 Special Topics in Business Administration (1 – 4)**

Covers areas and subjects that are not offered in the regular curriculum. Special topics are a mechanism that facilitates the development of new courses and encourages experimentation and curriculum development in the different business administration fields.

**DBA 9999 Dissertation Research (16-24)**

May be applied for only after completion of all required coursework and passing all required examinations.

# **ADVANCED LEVEL OF INTERNATIONAL RELATIONS, POLITICS AND DIPLOMACY**

## **REQUIREMENTS FOR THE ADVANCED LEVEL DEGREE**

The Advance Level Program requires the satisfactory completion of 72 semester hours of approved upper level coursework (including a dissertation research) for its post mode.

An entering student who has an upper level degree relevant to the proposed advanced level field of study may be awarded up to 24 credits toward advanced level program completion on the basis of acceptable post-lower level upper level coursework.

### **EN 5000 Academic Writing (Non-credit)**

This course is designed to give higher level students an overview of advanced methods of academic writing and research common to different disciplines. Based on the recommendations of the Modern Language Association of America, the course outlines the most recent conventions of written and oral presentation.

### **MA 5000 Mathematics Basics (Non-credit)**

This workshop is intended to help students to review basic mathematics concepts that are needed for their upper level studies. The focus will be on calculus concepts and linear algebra.

### **RM 5000 Research Methodology (Non-credit)**

This course investigates theories and methods related to conducting research and equip students with the tools to conduct primary and secondary research. It also provides students with the analytical tools and different techniques to conduct original research.

## **THESIS OR DISSERTATION REQUIREMENTS**

Students are required to submit a Advanced Level thesis at the end of their program which counts for 16-24 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the student's professional needs since they can select the minimum number of credits if they wish to do less research and writing.

## **COURSE REQUIREMENTS**

Students are required to complete a minimum of 64 credits applicable to their degree; 32 credits must be structured courses, 28 credits of which must be at the 5000 level or higher. A minimum of 16 credits of research/dissertation is required. There are no structured course requirements for post-upper level Advanced Level students, but such students are required to complete 32 credits applicable to their degree, all of which must be at the 5000 level or higher. A minimum of 8 credits of research/dissertation coursework is required.

Coursework used to fulfill the Advanced Level degree requirements may not be used to complete the requirements of any other degree program.

Students, who have completed all course requirements, or hold appointments as teaching fellows or research assistants, are considered full-time students and should be enrolled for a minimum of 2 credits per semester. Full-time status enables students to access libraries, laboratories, instructional staff, and other academic facilities at SOUTHEASTERN.

## **PART-TIME STUDY**

Occasionally, students are permitted to pursue the Advanced Level on a part-time basis. Such students must demonstrate a commitment to the program on an ongoing basis. Part-time students must fulfill the same degree requirements and are subject to the same policies, time frames, and deadlines as full-time students.

## **QUALIFYING EXAMINATIONS**

The student's area of concentration determines the specific nature and scope of the qualifying examination. Students must pass two written comprehensive examinations covering basic knowledge in economics and finance.

Both qualifying examinations are limited to three attempts. Departments may limit attempts to one, if they choose. All Advanced Level students must take the applied mathematics examination the first time it is offered after matriculation. All Advanced Level students must complete both qualifying examinations by the end of their fifth semester.

## **ADVANCED LEVEL CANDIDACY**

A student in an SOUTHEASTERN program will be accepted to Advanced Level candidacy upon successful completion of both qualifying examinations. At that time, the student will receive formal notice of acceptance to Advanced Level candidacy. The maximum period allowed between matriculation and acceptance to Advanced Level candidacy is usually five semesters, but departments can specify a lesser time frame based on qualifying examination results. Under no circumstances will a student who is not a Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

## **DISSERTATION PROSPECTUS DEFENSE**

Within one year of becoming a candidate, the student is expected to present an oral dissertation proposal to the prospective dissertation committee and obtain approval for the written dissertation prospectus. The committee evaluates the potential of the proposed research and the student's academic preparation to engage in dissertation research. Upon approval of the committee members and the department upper level associate chairman, the student submits the Advanced Level Dissertation Prospectus Defense form to the department office.

## **DISSERTATION**

An Advanced Level candidate is expected to prepare and carry out an independent and original research project in partial fulfillment of the dissertation requirement

## **FINAL ORAL EXAMINATION**

Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their fields and demonstrate mastery of their field of specialization as related to the dissertation. The Examining Committee is composed of at least five members of whom two must be (tenured or tenure-earning) faculty from the student's academic department. Each department determines the appointment of the chairman.

## **TIME LIMIT**

Both the post-lower level and post-upper level programs must be completed within five years of the individual's acceptance into Advanced Level candidacy as determined by the department and the SOUTHEASTERN Upper level Committee.

## **ADVISOR**

Candidates for the Advanced Level degrees are required to have as an advisor a member of the upper level faculty in the department of their field of specialization.

## **TRANSFER OF CREDITS**

An entering student who has an upper level degree relevant to the proposed advanced level field of study may be awarded up to 24 credits toward advanced level program completion on the basis of acceptable post-lower level upper level coursework.

## **COURSE DESCRIPTIONS**

### **DPSC 6901 Advanced Theories of International Relations (4)**

This seminar is the core IR theory seminar for political science advanced level students with a field in international relations. PSC 6901 covers the main debates and topics in the field and includes a focus on new directions in IR theorizing. It provides students with a solid grounding in the field and prepares them for advanced upper level work on more specialized topics. The seminar addresses issues and concepts such as: levels of analysis, realism, hegemony, and the role of non-state actors, rationality and strategic choice, international cooperation, theories of war and peace, and constructivism.

### **DPSC 6902 Advanced Theories of International Political Economy (4)**

The objectives of this course are to introduce Advanced Level students to core readings in the field of international political economy and to encourage them to think and write critically about this scholarly work in preparation for their comprehensive field exams. An introductory upper level course in international relations theory is a prerequisite for this seminar (although it may also be taken concurrently) – and the course is restricted to Advanced Level students.

In terms of content, the seminar begins with an introduction to political economy and to debates regarding methodological approaches. We then focus on classic theoretical perspectives on problems of international cooperation before turning, in Part II, to a variety of subfields within international political economy: trade, finance, investment, and regulation. In these empirical applications, which will introduce substantive aspects of policy and institutions, our primary focus will remain on lines of reasoning and analytical approaches, as is appropriate in an advanced level course. Nevertheless, students may find that a basic international economics text is useful during Part II.

### **DPSC 7101 Identity and Power in International Politics (4)**

This course explores the definition and role of identity and power in explaining major events in international politics. How are the principal actors defined – as territorial, ideological, religious, cultural, ethnic, class, etc? Does the identity or self-image of the actor matter, or is the actor's behavior in international affairs simply a function of situational factors (i.e., material interests)? Can a nation's self-image also create concrete interests? One example may be America's need to intervene to protect human rights even in situations where the United States has no apparent material interests (Somalia?). How does one identify, mobilize or constrain the use of power to protect material interests? Why did the Soviet Union not use its power in 1991 to preserve its identity? Realists argue that identity is epiphenomenal or a rationalization of power. Constructivists argue that power exists only as it is interpreted. This course assumes that both identity and power are independent variables. After breaking these variables down, we explore their influence in expelling the major wars of the 20<sup>th</sup> century.

### **DPSC 7201 Theories of Foreign Policy Decision-making (4)**

This course provides students with an introduction to theorizing about decision-making in foreign policy. It is not intended to be exhaustive, but rather illustrative of the type of work being done in different parts of this sub-field at different times in the history of the discipline. Since most of the courses in the field of international relations look at macro-level variables, this course concentrates heavily on work done on micro-level factors in foreign policy analysis and decision-making more generally.

### **DPSC 7302 Theories of Security in World Politics (4)**

In the 40 years following World War II, the study of security assumed a divide between international relations (the politics between states) and domestic politics (the politics within states) and gradually became separated from studies of economics. International or national security largely centered on two different enterprises: (1) exploring the likelihood of conflict between states in different systems and scenarios (when does conflict occur) and (2) examining the causes and consequences for actors of pursuing different strategies (what determines which strategy states will choose and what are the consequences for security – i.e., war, conquest, security gain, security loss, etc. – of different choices). Since the end of the Cold War debates about the meaning of security and the prevalence of intra-state conflict have led many to question usefulness of the assumed difference between international and domestic politics, and between security and economics. Also studies of conflict have increasingly focused on a variety of variables, some of which can be classified as international (thus the new title for the course).

This course will examine the way scholars have addressed security in world politics over time. Part of this examination will look at the historical unfolding of debates, but the course is constructed analytically so as to encourage an exploration of different types of questions. (Which questions prove most fruitful, why do some seem to be misleading or result in dead ends? What are the tradeoffs of addressing different questions?) The reading list also includes a variety of research strategies and methods so as to encourage attention to different strategies for research and the costs and benefits of these choices.

### **DPSC 7401 Authoritarianism in Comparative Perspective (4)**

This course examines authoritarianism both in theory and in practice. It is designed for advanced students in political science, especially Advanced level candidates.

### **DPSC 7501 The Politics of International Law (4)**

The objectives of this course are to introduce students to basic principles of public international law and to encourage them to think and write critically about recent research by scholars working on the frontier between international law and international politics. No prior study in the field of international law is required. An introductory upper level course in international relations theory, however, is a prerequisite for this seminar, as we will test and evaluate competing schools of IR theory in our class discussions.

### **DPSC 7701 Politics and Public Policy (4)**

This course examines the role that politics plays in shaping public policy in the United States. We begin by considering the individual-level motivations held, and the institutional-level constraints faced, by elected officials, unelected administrators, and nongovernmental actors. We then explore the connection between public policy and elections and public opinion, the agenda setting process, interest group mobilization and influence, the news media, legislative committees and parties, the power of the president, bureaucratic performance and accountability, judicial decision making, policymaking under separate powers, state policymaking in a federal system, and street-level implementation. We conclude by assessing direct democracy, an alternative way of making public policy with its own political processes and institutions.

### **DPSC 7801 Introduction to Comparative Politics (4)**

This course is designed to introduce students to the main concepts, topics, and debates in comparative politics. It will provide the basis for subsequent coursework and research in the comparative politics subfield.

**DPSC 7812 Politics and Organizations (4)**

Most of contemporary politics is heavily bureaucratized; political actors are very often not individuals but organizations which, in turn, are nested inside other organizations and which interact with yet more organizations. Organization theorists disagree about many things but one thing they all agree on is that organizations do not behave as individuals do. Organizations have behavioral peculiarities of their own and to understand contemporary politics we must understand the way organizations or bureaucracies behave.

The purpose of this course is to introduce students to the variety of approaches to organizational behavior in social science and help them apply it to specific political problems. Political science as a discipline has generated little insights into organizational behavior. Instead, the two main streams of thought about organizations have been developed in sociology and economics and the course is set up loosely as a debate between partisans of these two disciplinary approaches.

**DPSC 7819 Democracy and Democratization in Comparative Perspective (4)**

This class is designed to be an introduction to the comparative study of democratization. For the past two decades, democratization has been one of the most prominent topics in the study of comparative politics. During that time, a variety of theories and approaches have been put forward to explain why some countries become democratic but others do not, the timing of the transition from authoritarian rule to democracy, and why attempts at democratization succeed or fail. Different scholars have identified economic factors, cultural factors, the interplay between the authoritarian state and the political opposition, and other factors as explanatory variables. Despite the attention given to these issues, there is no uniform agreement on the causes of democratization or a model that can satisfactorily explain the majority of cases.

Most of the readings for this class are empirically grounded in one or more regions of the world, but they are not simply descriptive case studies. All aspire to provide general findings. One of our tasks is to determine which approaches are most useful in explaining multiple cases of democratization, and also to identify the limits of the different approaches.

**DPSC 8000 Directed Study**

Directed study must be approved in advance of registration by the staff member concerned and the Committee on Upper Level Instruction. Instructor and hours arranged.

**DPSC 9000 Thesis**

By petition only. Preparation of an original thesis under the guidance of a faculty advisor.

## **ADVANCED LEVEL IN POST-ROMAN MIDDLE EASTERN STUDIES**

The Program in Near Eastern Studies provides students advanced level training in a to study contemporary institutions, economy and modern history of the near and Middle East. Students from other departments who have an interest in near and Middle Eastern studies may enter the program by special arrangement with the director. Their work is guided by their own departmental adviser and the director of the Program in near and Middle Eastern Studies.

### **Students should fulfil the following requirements:**

- \* One must course in Ottoman History with focus on the Middle East, one course in Middle Eastern History
- \* Two related courses to the Middle Eastern History (with the approval of the coordinator and supervisor).
- \* One seminar on a topic related to the Advanced Level dissertation.
- \* Advanced level of knowledge of a Middle Eastern Language to use first hand sources in Advanced Level dissertation is compulsory. Therefore, if in the case of need, the continuation of the language training is necessary in the Advanced Level Program.

The Program in PR-NMSP also facilitates advanced level study that bridge European and Middle Eastern history, international relations with emphasis on the Middle East and/or another world area, economic development and comparative politics, or the comparative study of colonialism and empires.

## COURSE DESCRIPTIONS

### **HIST 5101 Ottoman Imperial Socio-Economic History I, 1453-1600 (4)**

Mehmet the Conqueror and the establishment of the Ottoman Empire. Ottoman administration in its classical form. The Cift-Hane system. The Shari'a and Orf The Clergy, ulema, and religious orthodoxy. Heterodox movements.

### **HIST 5102 Ottoman Imperial Socio-Economic History II, 1600-1918 (4)**

### **HIST 5103 Economy of the Middle East in the 19th and 20th Centuries (4)**

Major Issues in Medieval and Early Modern Economies: Study of the main transformations in the economies of Europe and the Near East from late Roman times to the mid-17th century. Examination of the disappearance of monetary economy, emergence of manorialism, and trade life in the Mediterranean basin. Development of markets and the domination of the Atlantic economy. Price inflation. Reasons for and consequences of these developments.

### **HIST 5310 Ottoman History: 1300-1600 (4)**

General history of the Empire, transformation of a frontier into a world Empire, administrative, economic and religious institutions.

### **HIST 5312 Ottoman History: 1600-1914 (4)**

From the expansion of the Empire into the Balkans and Middle East until the First World War (WWI). Economic crisis of the 16th century, internal problems, Celali Revolts, territory lost, internal and external questioning of Ottoman legitimacy -the ayan, land notable, problem, Balkan separatist Movements, the Syrian Question 1831-33, the provincial organization in Lebanon, Question of Egypt, problem of Mehmed Ali Pasha of Egypt, Rebels in Syria in 1840s and 'events' of 1860s in the Middle East, Ottoman reforms, new Provincial organization of the Empire, and political, economic Issues.

### **HIST 5333 Introduction to Ottoman Diplomats (4)**

History and development of the field of archival research. Archives and archival sources in Turkey. Development of the field of Ottoman diplomacy. Types and classifications of Ottoman documents. Internal structure of Ottoman official correspondence, decrees and diploma prior to the Tanzimat period. Ottoman official documentation in the period of reforms until the dissolution of the Ottoman Empire.

### **HIST 5334 Transition from Late Byzantium to Early Ottoman History (4)**

Comparison of the institutions of the Byzantine Empire and those of its successor state, the Ottoman Empire. Discussion of continuity and change. Examinations of institutions such as the palace, pious endowments, land regime, taxation, guilds, armed forces based on Byzantine and Ottoman documents.

### **HIST 5441 Feudalism: East and West (4)**

Examination of the origins and development of the diverse modern concepts of "Feudal" and "Feudalism" from late medieval and early-modern legal theory through the Enlightenment and Marxism down to modern times. The courses will go on to deal with the elements of these concepts as historical phenomena in medieval and early-modern Europe and in the Byzantine and Ottoman empires.

### **HIST 5442 Ottoman Social and Economic History I, II (4)**

Ottoman Beylik as a frontier state. Hegemony in Anatolia and the Balkans. The Battle of Ankara and struggle for Revival. The conquest of Constantinople. The definitive foundation

of the classical Ottoman Empire. The Ottoman Empire as a world power, internal disorders, social, economic and religious institutions.

**HIST 6101 Sources of Ottoman Social and Economic History (4)**

The Ottoman land regime. Social and legal changes throughout periods. Reading and analysis of sources berats, mtihimmes, sicils, tahrirs, temetttiats and vakfiyyes.

**HIST 6102 The Constitutional Periods in the Ottoman Empire (4)**

The development of Ottoman government and society during the reign of Sultan Abdul amid II (1876-1909), with special attention to the role he played in completing the work of the Tanzimat reform movement carried out earlier in the 19th century, while at the same time suppressing many of the political and social ramifications of reform.

**HIST 6111 Cultural History of the Ottoman Empire 1-11 (4)**

Analysis of the cultural history of the Ottoman Empire from 1453 to the period of the Turkish Republic. Topics include social and cultural structures of the Ottoman I Empire, language, literature and artistic tradition, and analysis and interpretation of some significant works (divans, biographies of poets, kasides, memoirs).

**HIST 6112 Seminar in Ottoman History I (4)**

Reading and interpretation of selected sets of documents according to the interests of students.

**HIST 6113 Seminar in Ottoman History 11 (4)**

Independent work on the periods of transition and modernization of the Ottoman state and society.

**HIST 6114 Rebellions and Revolutions in Early Modern History (4)**

The concept of the General Crisis of the seventeenth century. Dissolution of feudal structures. Popular upheavals, revolutions and civil wars. Explanation of the importance of this concept for the political, religious, social and economic histories of European states as well as of the Ottoman Empire.

**HIST 6115 Family and Gender in the Middle East (4)**

The course focuses on the role of the families in the policy making and relations with the local authorities, and also their economic role for the development of the country. It also elaborated on the gender relations in Middle Eastern countries under the Ottoman rule.

**HIST 6116 Social Movements in the Middle East (4)**

Social movements in the Middle East as one of the determinants of social and political change, political structure and democratization process toward 2000s. Whether civil society institutions contribute to the democratization process or not and to what extent they are successful in the region.

**HIST 6117 Human Rights in the Middle East (4)**

This course examines the emergence and development of an international movement dedicated to the promotion of human rights since World War 11. Special attention will be given to the legal institutions in the Middle East, national or international that influenced its evolution and character.

**HIST 6118 Egypt in Modern Times (4)**

Modern Egyptian history from the end of the Ottoman-Mamluk period to the present, largely through an exploration of the scholarly literature and of various paradigms that have been used to interpret that history.

**HIST 6301 Afghanistan and the Great Powers, from the 18th century to the present (4)**

The course deals with struggle of the Great Powers for the control over the Middle East with a specific focus on Afghanistan. The tribal Afghan kingdom in the 18<sup>th</sup> century, rivalries between Russia and Britain in the 19th ("the Great Game"), and on those between the Soviet Union and the US in the 20th century, and Washington's support in the 1980's for Islamist groups fighting the Soviet occupation of Afghanistan, its consequences, the Taliban movement are the issues that this course deals with.

**HIST 6302 Syria and Iraq under the Ottoman Rule and the Great Powers, from the late 19th century to the present (4)**

War and Politics in the Modern Middle East: The course introduces Clausewitz's theory of war and examples of conventional state warfare in the Middle East. The goal of the course is to compel students to think seriously and critically about war and the ways in which it is and is not changing in the twenty-first century.

**HIST 6401 Conflict over Kuwait: Iraq, Britain and U.S from the early 19th century to the present (4)**

Modernity and the Middle East: The course deals with the how the Ottoman Modernization appeared in the Middle East when the Ottoman Reforms at work especially after the middle of the 19th century under the reform programs of 1839 and 1856 imperial reform edicts.

**HIST 6501 Revolutions in the Middle East (4)**

Nationalisms and Nation-States in the Middle East: Emergence of national identities, nationalist movements, and nation-states in the modern Middle East, studied comparatively and in relation to various approaches to understanding nationalism and state formation.

## **ADVANCED LEVEL OF PSYCHOLOGY**

The Advance Level offers a program of study through online and/or open learning developmental science leading to Advanced Level Program Completion Psychology. This degree includes Human Development and Lifespan Cognitive Neuroscience topics.

### **REQUIREMENTS FOR THE ADVANCED LEVEL DEGREE**

The Advance Level Program requires the satisfactory completion of 72 semester hours of approved upper level work and coursework (including a dissertation research) for each post lower level mode.

An entering student who has an upper level degree relevant to the proposed advanced level field of study may be awarded up to 24 credits toward an advanced level degree on the basis of acceptable post-lower level upper level coursework.

#### **EN 5000 Academic Writing (Non-credit)**

This course is designed to give higher level students an overview of advanced methods of academic writing and research common to different disciplines. Based on the recommendations of the Modern Language Association of America, the course outlines the most recent conventions of written and oral presentation.

#### **MA 5000 Mathematics Basics (Non-credit)**

This workshop is intended to help students to review basic mathematics concepts that are needed for their upper level studies. The focus will be on calculus concepts and linear algebra.

#### **RM 5000 Research Methodology (Non-credit)**

This course investigates theories and methods related to conducting research and equip students with the tools to conduct primary and secondary research. It also provides students with the analytical tools and different techniques to conduct original research.

### **THESIS OR DISSERTATION REQUIREMENTS**

Students are required to submit a Advanced Level thesis at the end of their program which counts for 16-24 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the student's professional needs since they can select the minimum number of credits if they wish to do less research and writing.

### **COURSE REQUIREMENTS**

Students are required to complete a minimum of 64 credits applicable to their degree; 32 credits must be structured courses, 28 credits of which must be at the 5000 level or higher. A minimum of 24 credits of research/dissertation is required.

There are no structured course requirements for Advanced Level students, but such students are required to complete 32 credits applicable to their degree, all of which must be at the 5000 level or higher. A minimum of 8 credits of research/dissertation coursework is required.

Coursework used to fulfill the Advanced Level degree requirements may not be used to complete the requirements of any other degree program. Advanced Level students, who have completed all course requirements, or hold appointments as teaching fellows or research assistants, are considered full-time students and should be enrolled for a minimum of 2 credits

per semester. Full-time status enables students to access libraries, laboratories, instructional staff, and other academic facilities at SOUTHEASTERN.

### **PART-TIME STUDY**

Occasionally, students are permitted to pursue the Advanced Level on a part-time basis. Such students must demonstrate a commitment to the program on an ongoing basis. Part-time students must fulfill the same degree requirements and are subject to the same policies, time frames, and deadlines as full-time students.

### **QUALIFYING EXAMINATIONS**

The student's area of concentration determines the specific nature and scope of the qualifying examination. Students must pass two written comprehensive examinations covering basic knowledge in (a) applied mathematics and (b) one area of specialized study selected from the following: biomedical science, biology, biochemistry, chemistry and physics. The Upper Level Program Committee administers the applied mathematics examination of the specialized exam.

Both qualifying examinations are limited to three attempts. Departments may limit attempts to one, if they choose. All Advanced Level students must take the applied mathematics examination the first time it is offered after matriculation. All Advanced Level students must complete both qualifying examinations by the end of their fifth semester.

### **ADVANCED LEVEL CANDIDACY**

A student in the Upper Level Program Advanced Studies will be accepted to Advanced Level candidacy upon successful completion of both qualifying examinations. At that time, the student will receive formal notice of acceptance to Advanced Level candidacy. The maximum period allowed between matriculation and acceptance to Advanced Level candidacy is usually five semesters, but departments can specify a lesser time frame based on qualifying examination results. Under no circumstances will a student who is not a Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

### **DISSERTATION PROSPECTUS DEFENSE**

Within one year of becoming a candidate, the student is expected to present an oral dissertation proposal to the prospective dissertation committee and obtain approval for the written dissertation prospectus. The committee evaluates the potential of the proposed research and the student's academic preparation to engage in dissertation research. Upon approval of the committee members and the department upper level associate chairman, the student submits the Advanced Level Dissertation Prospectus Defense form to the department office.

### **DISSERTATION**

An Advanced Level candidate is expected to prepare and carry out an independent and original research project in partial fulfillment of the dissertation requirement. The dissertation committee must consist of Upper Level Program faculty.

### **FINAL ORAL EXAMINATION**

Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their fields and demonstrate mastery of their field of specialization as related to the dissertation. The Examining Committee is composed of at least five members of whom two must be (tenured or tenure-earning) faculty from the student's academic department. Each department determines the appointment of the chairman.

### **TIME LIMIT**

Both programs must be completed within five years of the individual's acceptance into Advanced Level candidacy as determined by the department and the SOUTHEASTERN Upper level Committee.

### **ADVISOR**

Candidates for the Advanced Level degrees are required to have as an advisor a member of the upper level faculty in the department of their field of specialization.

### **TRANSFER OF CREDITS**

An entering may be awarded up to 24 credits toward an advanced level degree on the basis of acceptable post-lower level upper level coursework.

### **Course Requirements:**

PSY 5550, two courses of statistics

24 credit hours from the following:

PSY 5501, PSY 5513, PSY 5518, PSY 6530, PSY 5331, PSY 5560, PSY 6673,  
PSY 6618

24 credit hours of an Advanced Level Dissertation

12 credit hours of Elective Courses

# COURSE DESCRIPTIONS

## **DPSY 6528 Human Brain Mapping (4)**

Localization in the brain of human mental functions and study of their neural mechanisms. Topics include methods (MRI, PET, TMS, ERP) memory, perception, recognition, attention and executive processes.

## **DPSY 7101-7102 Developmental Neuropsychology (4)**

Study of the neural mechanisms underlying behavioral development. Topics include the plasticity of the developing brain in response to deprivation or damage and mechanisms underlying specific syndromes (e.g. aphasia, dyslexia, learning disabilities, hyperactivity, autism, and Tourette's syndrome).

## **DPSY 7110-7111 Cognitive Development (4)**

Cognitive development from birth through adolescence. Relationship of cognition to other traditional areas of psychology (e.g. perception, language, learning, memory, physiology and psychopathology).

## **DPSY 7911 Developmental Psychopathology (4)**

Developmental deviations and psychological disorders of childhood. Developmental etiologies of neurotic and psychotic disturbances.

## **DPSY 7771-7772 Behavioral Medicine (4)**

Examines applications from the social and behavioral sciences and the allied health professions as they are integrated within the practice of traditional medicine.

## **DPSY 7751 Personality Theory (4)**

Examines the major contemporary approaches to personality and clinical psychology.

## **DPSY 7752 Clinical Psychological Assessment of Adults (4)**

Theoretical and empirical bases of diagnostic and structured interviews. Standardized cognitive tests, psychopathology rating scales and projective methods.

## **DPSY 8001 Child Therapy (4)**

Child Therapy cases and processes are explored in a multi-theoretical prospective.

## **DPSY 8901 Advanced Psychopathology (4)**

This seminar presents an overview to specific disorders and syndromes. Neurobiological, psychoanalytic, behavioral and social prospective are emphasized.

## **ADVANCED LEVEL OF PHILOSOPHY EDUCATION in LEADERSHIP**

The program is designed for the experienced and practicing professional. This Advanced Level program offers through online and/or open learning program the opportunity for leaders inside or outside private secondary and postsecondary education. Distinguished characteristics of the program include leadership development, systems thinking, technology enhanced learning, lifelong learning and integration of teaching, scholarship and service.

The program outcomes include enhanced personal vision of education and educational leadership, increased understanding of the importance of theory and research to the worlds of practice and evaluation.

### **REQUIREMENTS FOR THE ADVANCED LEVEL DEGREE**

The Advanced Level Program requires the satisfactory completion of 72 semester hours of approved upper level work and coursework (including a dissertation research) for each post lower level mode.

An entering student who has an upper level degree relevant to the proposed advanced level field of study may be awarded up to 24 credits toward advanced level program completion on the basis of acceptable post-lower level upper level coursework.

#### **EN 5000 Academic Writing (Non-credit)**

This course is designed to give higher level students an overview of advanced methods of academic writing and research common to different disciplines. Based on the recommendations of the Modern Language Association of America, the course outlines the most recent conventions of written and oral presentation.

#### **MA 5000 Mathematics Basics (Non-credit)**

This workshop is intended to help students to review basic mathematics concepts that are needed for their upper level studies. The focus will be on calculus concepts and linear algebra.

#### **RM 5000 Research Methodology (Non-credit)**

This course investigates theories and methods related to conducting research and equip students with the tools to conduct primary and secondary research. It also provides students with the analytical tools and different techniques to conduct original research.

### **THESIS OR DISSERTATION REQUIREMENTS**

Students are required to submit an Advanced Level thesis at the end of their program which counts for 16-24 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the student's professional needs since they can select the minimum number of credits if they wish to do less research and writing.

### **COURSE REQUIREMENTS**

Students are required to complete a minimum of 64 credits applicable to their degree; 32 credits must be structured courses, 28 credits of which must be at the 5000 level or higher. A minimum of 24 credits of research/dissertation is required.

There are no structured course requirements for post-upper level Advanced Level students, but such students are required to complete 32 credits applicable to their degree, all of which

must be at the 5000 level or higher. A minimum of 8 credits of research/dissertation coursework is required.

Coursework used to fulfill the Advanced Level requirements may not be used to complete the requirements of any other degree program.

Advanced Level students, who have completed all course requirements, or hold appointments as teaching fellows or research assistants, are considered full-time students and should be enrolled for a minimum of 2 credits per semester. Full-time status enables students to access libraries, laboratories, instructional staff, and other academic facilities at SOUTHEASTERN.

## **PART-TIME STUDY**

Occasionally, students are permitted to pursue the Advanced Level on a part-time basis. Such students must demonstrate a commitment to the program on an ongoing basis. Part-time students must fulfill the same degree requirements and are subject to the same policies, time frames, and deadlines as full-time students.

## **QUALIFYING EXAMINATIONS**

The student's area of concentration determines the specific nature and scope of the qualifying examination. Students must pass two written comprehensive examinations covering basic knowledge in (a) applied mathematics and (b) one area of specialized study selected from the following: biomedical science, biology, biochemistry, chemistry and physics. The Upper Level Program Committee administers the applied mathematics examination of the specialized exam.

Both qualifying examinations are limited to three attempts. Departments may limit attempts to one, if they choose. All Advanced Level students must take the applied mathematics examination the first time it is offered after matriculation. All Advanced Level students must complete both qualifying examinations by the end of their fifth semester.

## **ADVANCED LEVEL CANDIDACY**

A student in The Upper Level Program Advanced Studies will be accepted to Advanced Level candidacy upon successful completion of both qualifying examinations. At that time, the student will receive formal notice of acceptance to Advanced Level candidacy. The maximum period allowed between matriculation and acceptance to Advanced Level candidacy is usually five semesters, but departments can specify a lesser time frame based on qualifying examination results. Under no circumstances will a student who is not a Advanced Level candidate be allowed to defend a completed Advanced Level dissertation.

## **DISSERTATION PROSPECTUS DEFENSE**

Within one year of becoming a candidate, the student is expected to present an oral dissertation proposal to the prospective dissertation committee and obtain approval for the written dissertation prospectus. The committee evaluates the potential of the proposed research and the student's academic preparation to engage in dissertation research. Upon approval of the committee members and the department upper level associate chairman, the student submits the Advanced Level Dissertation Prospectus Defense form to the department office.

## **DISSERTATION**

An Advanced Level candidate is expected to prepare and carry out an independent and original research project in partial fulfillment of the dissertation requirement. The dissertation committee must consist of upper level faculty.

## **FINAL ORAL EXAMINATION**

Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their fields and demonstrate mastery of their field of specialization as related to the dissertation. The Examining Committee is composed of at least five members of whom two must be (tenured or tenure-earning) faculty from the student's academic department. Each department determines the appointment of the chairman.

## **TIME LIMIT**

Both programs must be completed within five years of the individual's acceptance into Advanced Level candidacy as determined by the department and the SOUTHEASTERN Upper level Committee.

## **ADVISOR**

Candidates for the Advanced Level degrees are required to have as an advisor a member of the upper level faculty in the department of their field of specialization.

## **TRANSFER OF CREDITS**

An entering student may be awarded up to 24 credits on the basis of acceptable upper level coursework.

## **COURSE DESCRIPTIONS**

### **EDD 6301            Advanced Level Seminar (4)**

This course explores systems thinking and building of learning communities. It also provides students with a critical account of key issues in education today. Understand the critical analysis of key issues in Education Studies to encourage the student's thinking about education in its broadest terms. An examination of educational issues as they relate to other phases of educational provision, such as home schooling and universities. The use of specific examples of educational diversity to illustrate how concerns such as ethnicity, gender and class operate in educational institutions. To explore some of the pros and cons relative to current methods of educating students in the 21<sup>st</sup> century-the technological learning techniques employed by educators today's competitive cultures.

### **EDD 7305            Quantitative Methods (4)**

This course introduces the student to secondary data as a powerful tool for providing context to an otherwise small-scale study as well as being efficient way of bringing together a large amount of data, particularly where access to the field may be difficult. Introduces the student to the use of secondary data in educational and social research, and provides a practical resource for researchers who are new to the field of secondary data analysis. Considers the potential for using secondary data both as their primary research method, and as a useful strategy in mixed methods designs.

### **EDD 7306            Qualitative Methods (4)**

This course introduces the student to the mixed methods approach. The increased use of the internet research. The more frequent use of methods such as triangulation and focus groups. Understand the developments in research ethics. The understanding of the clear straight forward method to data collection methods and data analysis.

### **EDD 7701-7702    Advanced Leadership (4-4)**

A study of major theories of leadership and organizational design. The student is exposed to a plethora of important issues with a balanced and fair coverage of a topic to form their own opinion or to support their research. Be exposed to the different topics addressing issues regarding educational leadership. There is numerous issue to questions relevant to the topics and challenge the student through the readings. The controversy and different views among the leadership issues will be stimulating and clarifying or reinforce the topics of discussion. The student is engaged in: critical thinking, challenging questions and additional readings and/or websites.

### **EDD 7901-7902    Advanced Foundation (4-4)**

A study of philosophical, psychological and technological foundations of education with an emphasis on theories of teaching curriculum, counseling adult education, research and leadership. The students uses case studies and examples drawn from a wide variety of learning environments as they promote dynamic and engaging approaches to experience new ways of teaching. In addition, explore the innovative and significant aspects of educational leadership brought together by international colleagues to generate new understanding resulting from the debates for researchers, academics, policy-makers and practitioners.

**EDD 7991-7992 Directed Research (4-4)**

Required in each of the last two semesters. Students work with their dissertation advisor at the course instructor to develop a dissertation research proposal to carry out the research and to prepare the final dissertation report. Grasp a clear understanding of the dissertation proposal elements relative to various aspects of the advanced level dissertation. The advanced level student is expected to comprehend and articulate a clear understanding of the research applications designed for educational and social research methods, and their subsequent application the dissertation.

**EDD 8999 Dissertation (24)**

Required in each of the last two semesters and following semesters until the completion of the dissertation.