



# THE AMERICAN UNIVERSITY OF ATHENS

## THE SCHOOL OF GRADUATE STUDIES

### BULLETIN

2020-2021

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## **Accreditation**



American University of Athens is accredited by Accreditation Service for International Schools, Colleges and Universities (ASIC). The university has earned Premier status with ASIC for its commendable areas of operation. ASIC accreditation helps students and parents make a more informed choice and will also help a school, college, university, training provider or distance education provider, demonstrate to the international student body that they are a high-quality institution.

ASIC is recognized by UKVI in UK, is a member of the CHEA International Quality Group (CIQG) in USA and is listed in their International Directory, is a member of the BQF (British Quality Foundation), are affiliates of ENQA (European Network for Quality Assurance) and are institutional members of EDEN (European Distance and E-Learning Network)



# **PROGRAMS**

## **MASTER OF SCIENCE**

BIOMEDICAL SCIENCES  
BIOMEDICAL SCIENCES PHARMACY OPTION  
COMPUTER SCIENCE  
ENGINEERING AND APPLIED SCIENCES  
ARCHITECTURAL ENGINEERING  
COMPUTER SYSTEMS ENGINEERING  
TELECOMMUNICATIONS  
PETROLEUM ENGINEERING

## **MASTER OF BUSINESS ADMINISTRATION**

BUSINESS ADMINISTRATION  
SHIPPING  
For LAWYERS

## **MASTER OF ARTS**

BUSINESS COMMUNICATION  
POLITICS AND POLICY-MAKING  
INTERNATIONAL AND MARITIME LAW  
PSYCHOLOGY  
POST-ROMAN MIDDLE EASTERN STUDIES  
TESOL  
EDUCATION IN ORGANIZATIONAL LEADERSHIP

## Table of Contents

Course Abbreviations	6
<b>Introduction</b>	
Mission	7
Goals & Objectives	7
Educational Philosophy	9
<b>General Information</b>	
General Information	10
Admission Information	10
Admission of Transfer Students	10
Requirements for the Master in Business Administration Degree (M.B.A.)	11
Requirements for the Master of Arts Degree	11
Requirements for the Master of Science Degree	11
Prerequisites for All Students	11
Thesis Requirements	12
<b>Financial Information</b>	
Withdrawals and Refunds	12
Refund Schedule for Continuing Students	12
Financial Assistance	12
Graduate Assistantship Center	12
<b>General Academic Information and Courses of Instruction</b>	
Learning Resources Center	13
International Programs and Studies	13
Career Planning and Development	13
Course Numbering System	13
<b>School of Natural &amp; Health Sciences</b>	
Master of Science in Biomedical Sciences	14
Course Descriptions	15
Master of Science in Biomedical Sciences – Pharmacy Option	17
Course Description	18
<b>School of Sciences &amp; Engineering</b>	
Master of Science in Computer Science	20
Course Descriptions	22
Master of Science in Engineering and Applied Sciences	24
General Engineering Course Descriptions	28
Mechanical Engineering Course Descriptions	31
Computer Systems Engineering Course Descriptions	38
Civil and Environmental Engineering Course Descriptions	38
Master of Science in Systems Engineering	39
Course Descriptions	40
Master of Science in Telecommunications	44
Course Descriptions	46
Master of Science in Petroleum Engineering	48
Course Descriptions	49
<b>School of Business Administration</b>	
Master of Business Administration	50
Course Descriptions	53
Master of Business Administration in Shipping	58
Course Description	60
Master of Business Administration for Lawyers	61

Course Description	63
<b>School of Liberal Arts</b>	
Master of Arts in Business Communication	65
Course Descriptions	67
Master of Arts in Politics and Policy-Making	68
Course Descriptions	71
Master of Arts in International and Maritime Law	74
Course Descriptions	76
Master of Arts in Psychology	79
Course Descriptions	81
Master of Post-Roman Middle Eastern Studies	83
Course Descriptions	85
Master of Arts in TESOL	88
Course Descriptions	90
Master of Education in	
Organizational Leadership	92
Course Descriptions	94

## **COURSE ABBREVIATIONS**

BC	Business Communication
BIO	Biology
CS	Computer Sciences
EC	Economics
EK	General Engineering
FIN	Finance
HIST	History
IML	International Maritime Law
LI	Law
MAN	Management
ME	Mechanical Engineering
MED	Education
MK	Marketing
ML	Maritime Law
PEN	Petroleum Engineering
PSC	Political Science
PSY	Psychology
QM	Quantitative Methods
SE	Systems Engineering
SST	Shipping Management
TEL	Telecommunications
TESOL	Teaching English to Speakers of Other Languages

# INTRODUCTION

## Mission

The online and/or open learning programs in *The American University of Athens (AUA)* exist to enable students to realize their educational goals. AUA's first priority is to promote the welfare and intellectual progress of students. To fulfil its mission, we design programs and activities to help students develop the academic competencies, professional skills, critical and creative abilities, and ethical values of learned persons who live in a democratic society, an interdependent world, and a technological age; we seek to foster a rigorous and contemporary understanding of the liberal arts, sciences, and professional disciplines. In a challenging yet supportive environment, at an affordable cost, AUA provides programs as follows: 1) Accounting, Finance and Economics 2) Management 3) Marketing and General Business 4) Computers 5) Natural Sciences and Engineering 6) Mathematics 7) Humanities 8) Social Sciences and Communication.

The student's university experience will be powerfully rewarding. The rewards will come not only in intellectual satisfaction, but also in philosophical enrichment and in the benefits of social life.

1. To preserve, foster and transmit the cultural and intellectual heritage of our pluralistic, interdependent, and changing world.
2. To foster academic freedom by assuring that its members may express their ideas openly and freely.
3. To provide a setting in which students may acquire and develop skills of intellectual inquiry and values of human understanding.
4. To encourage students to realize their greatest creative potential and make substantial contributions to society as educated persons, skilled professionals, and thoughtful citizens.
5. To provide opportunities for students and faculty to challenge their abilities and to examine critically the values of culture and society.
6. To cultivate in the student an understanding that the university experience is a segment of a lifelong process of study and learning.
7. To provide programs supporting the admission, retention, and education of populations that have not had equal education opportunity, and to provide all students with a meaningful range of services, facilities, and opportunities for personal development.

## Goals and Objectives

1. AUA recognizes teaching, research, and public service as its major responsibilities. Of these, undergraduate instruction has first priority. A second major priority is to offer quality graduate and post-graduate instruction and programs in areas in which there is particular faculty strength and an important social need. Research that advances and encourages learning is integral to all instruction and is supported by The American University of Athens. AUA fulfils its major responsibility in public service through its teaching and research. It also serves its community as a center of culture, science, and technology, and encourages the community to draw on the special talent of its faculty and students.
2. AUA recognizes that the primary goals of the instructional program are to increase the ability of the 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 methods of intellectual inquiry, and develop an appreciation of aesthetic values.

In maintaining these goals the AUA is committed to providing a foundation in the liberal arts and sciences for all baccalaureate degrees. AUA maintains the quality of this foundation through the high priority placed on the liberal arts and sciences.

Upon this foundation of liberal education, the AUA offers a choice of courses, majors, minors, and professional and career curricula to meet the needs and interests of its students. The professional and applied fields are an important part of AUA. It offers opportunities in disciplines or fields of study which have proven their value, or which promise a significant new value for society, or which serve a substantial public need, or which can achieve and maintain distinction. AUA will limit the variety of its offerings to assure that the programs it offers are of the highest quality possible.

3. AUA recognizes that education is not restricted to formal learning in a class-room setting. AUA therefore supports a wide variety of instructionally related programs designed to provide students with opportunities for diverse human and cultural experiences and for the development of personal skills and creativity.

## **Educational Philosophy**

In its undergraduate program, The American University of Athens stresses the broader character of general education. During the first two years a student spends his/her class time in mathematics, natural sciences, social sciences, humanities, foreign language, and fine arts. These two years of structured liberal-arts courses help to establish a strong educational foundation. Throughout the final two years, students concentrate on developing professional competence in one academic discipline and a basic understanding of another unrelated academic field (minor), if they choose to.

The curriculum develops three main skills which are essential for a well rounded education: learning to use the language of scholarship and science, learning how to think creatively, and learning how to learn.

To this end, a lower-division curriculum has been established which should enable students to acquire an understanding of the fundamental problems, methods and powers of the humanities and the arts, the social and behavioural sciences, mathematics, and the natural sciences.

The educational philosophy of *The American University of Athens (AUA)* 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 AUA 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. As a result, AUA offers a number of Master's and Doctorate programs in the School of Graduate Studies.

# SCHOOL OF GRADUATE STUDIES

## GENERAL INFORMATION

The School of Graduate Studies at *The American University of Athens*, AUA, through its online and/or open learning programs, seeks to admit highly motivated, creative, intelligent, cooperative and career-focused leaders.

Admission to study towards a Master's degree requires an appropriate Bachelor's degree from a recognized institution and evidence of capacity for productive work in the field selected, such as may be indicated by undergraduate grades.

Graduate programs at AUA are supervised by the Chairman of the School of Graduate Studies, assisted by the Steering Committee consisting of coordinators of the different program areas.

The Graduate Program Committee has the entire responsibility of developing, modifying and maintaining the graduate program with the approval of the Senate. This committee consists of the Chairman of the School of Graduate Studies, members of the Steering Committee, faculty teaching at AUA, librarian, provost, career officer, and one student representative from each program.

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

## ADMISSION INFORMATION

### APPLICATION

Application to the School of Graduate Studies requires special forms.

A complete graduation 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 550, or equivalent, if English is your second language**
- ☐ **Personal interview**

### ADMISSION OF TRANSFER STUDENTS

Credits and coursework of incoming transfer students are evaluated by the Dean and Chairperson of the School of Graduate Studies to determine eligibility. Transfer students with a GPA of "B" or above are allowed to transfer no more than eight credits. They are encouraged to file applications two months prior to the beginning of the semester of enrollment to ensure adequate time for all necessary records to be received and evaluated. Applicants must arrange for official transcripts of all previous college/university records to be sent directly to AUA. International students are required to submit additional documentation for immigration purposes.

## **REQUIREMENTS FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE (M.B.A.)**

In order to qualify for an M.B.A. degree a student must complete 44 semester credit hours of coursework and attain a minimum grade point average of “B”.

## **REQUIREMENTS FOR THE MASTER OF ARTS DEGREE**

In order to qualify for the M.A. degree a student must complete 40 semester credit hours of coursework and attain a minimum grade point average of “B”.

## **REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE**

In order to qualify for the M.S. degree a student must complete 40 semester credit hours of coursework and attain a minimum grade point average of “B”.

## **PREREQUISITES FOR ALL STUDENTS**

Students must attend the following non-credit seminars during the first semester:

<b>CS</b>	<b>5000</b>	<b>Computer Basics</b>
<b>EN</b>	<b>5000</b>	<b>Academic Writing</b>
<b>MA</b>	<b>5000</b>	<b>Mathematics Basics</b>
<b>RM</b>	<b>5000</b>	<b>Research Methodology</b>

### **CS 5000 Computer Basics (Non-credit)**

This course provides an overview of computer hardware and software and discusses the range of current applications including database management systems, spreadsheets and project management.

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

This course is designed to give postgraduate 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 graduate 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 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 REQUIREMENTS

Students are required to submit a master's thesis at the end of their program which is equivalent to 8 to 12 credit hours. The range in the credit hours allocated to the thesis is designed to accommodate the students' professional needs since they can select the minimum number of credits if they wish to do less research and writing. Alternatively, they may select the thesis with 12 credit hours if they prefer less class time.

## FINANCIAL INFORMATION

### WITHDRAWALS AND REFUNDS

AUA operates on an academic term basis by which commitments are made to teaching staff and to others whose services are essential to AUA's operation. The application fee is not refundable under any circumstances. Continuing students, who withdraw from class, or from *The American University of Athens*, 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

<b>Time of Withdrawal</b>	<b>Percentage of Tuition and Fees Refundable</b>
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 Intersession as follows:

<b>Time of Withdrawal</b>	<b>Percentage of Tuition and Fees Refundable</b>
Before classes start	100% less Euro 75
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 by May 15<sup>th</sup> each year.

### GRADUATE ASSISTANTSHIP CENTER

Teaching, research and other graduate assistantships are available in most AUA programs. The total maximum workload for full-time graduate students is 15 hours per week. Graduate assistants must be full-time matriculated students with a GPA of 3.00 or higher.

# General Academic Information and Courses of Instruction

## LEARNING RESOURCES CENTER

The Learning Resources Center is a strategic academic service organization, whose purpose is to enhance the teaching research and mission at AUA.

In partnership with academic departments and schools, the LRC facilitates the AUA mission through three separate functions:

- 1) Creating and maintaining core resources including library and information services, computing services and telecommunications.
- 2) Facilitating and contributing to the development of the AUA educational programs.
- 3) Establishing global access to informational, educational, research and management resources.

## INTERNATIONAL PROGRAMS AND STUDIES

*The American University of Athens* is one of the institutions representing the experience and development of American university education and the historical, cultural and geographical characteristics of the ancient capital of Greece, Athens. AUA is fully prepared to meet the challenges of globalization, creating high academic quality graduate programs in the southeastern European Union countries for students from all over the world.

## CAREER PLANNING AND DEVELOPMENT

Based on the Graduate Department's strong commitment of getting to know students on a personal basis and working with them as individuals, the Career Planning and Development Office (CPPO) assists students in clarifying career choices, defining job-search strategies, and in pursuing challenging employment opportunities. The CPPO is totally committed to supporting student job efforts, 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** Courses usually taken during the second year of the program.

A combination of the second, third and fourth digits may refer to undergraduate courses containing the same subject matter; however, the course code beginning with 5 or 6 refers to graduate courses. The last two digits of the course number may refer to sequential courses. For example, a course ending with 1 might be followed by a course having the same first three digits but ending with 2.

# School of Natural & Health Sciences

## MASTER OF SCIENCE IN BIOMEDICAL SCIENCES

### COORDINATOR:

### MISSION OF THE PROGRAM

The program aims to prepare students for careers in the field of biology through online and/or open learning programs while linking it with medicine, drug design and human disease diagnosis. AUA focuses on these areas since they are critical for today's knowledge of biology.

### PREREQUISITES

Basic knowledge of Microsoft Office. Use of Internet resources.

Students majoring in biomedical sciences must satisfy the graduation requirements by taking the following non-credit seminars during the first semester:

EN	5000	Academic Writing
CIS	5000	Computer Basics
MA	5000	Mathematics Basics
RM	5000	Research Methodology

### GRADUATION REQUIREMENTS

They should complete a total of 40 credits including the M.S. thesis which is 8-12 credits. The total GPA must be at least 3.00.

### MASTER'S THESIS REQUIREMENTS

Students must complete 40 credit hours of core courses and electives. If they take the thesis option, they should submit a thesis of 15,000 – 30,000 words.

### CORE COURSES

BIO	5101	Biophysics
BIO	5110	Molecular Biology/Biochemistry
BIO	5120	Current Topics in Cell Biology
BIO	5130	Fundamentals of Physiology

### ELECTIVES

Students can select from the following courses to satisfy their elective requirements.

BIO	5215	Applied Microbiology
BIO	5216	Current Topics in Immunology
BIO	5225	Human Genetics and Inherited Disease
BIO	5235	Essentials of Neural Sciences
BIO	6117	Molecular and Clinical Virology
BIO	6118	Seminar in Biotechnology
BIO	6136	Human Nervous System Neurochemistry
BIO	6137	Advanced Course in Neurochemistry
BIO	6226	Clinical Laboratory Methods
BIO	6227	Advanced Cell Culture Techniques
BIO	6228	Operation of the Scanning Electron Microscope and Materials Specimen Preparation
BIO	6238	Psychiatric Disorders

## **COURSE DESCRIPTIONS**

### **BIO 5101 Biophysics (4)**

The course familiarizes students with the physics behind biological processes. It updates students with the latest advances in the physics of complex biological systems.

### **BIO 5110 Molecular Biology/Biochemistry (4)**

The emphasis of this course is on eukaryotes. Topics covered include modern techniques in molecular analysis of biomolecules, levels and mechanisms of gene regulation, including transcription and translation, genome organization, chromosome structure, and gene structure. Subjects such as RNA processing, protein processing, viruses, cancer, yeast and drosophila molecular genetics, and the immune system are also covered.

### **BIO 5120 Current Topics in Cell Biology (4)**

The course explores the current topics in the study of cells, the basic unit of life. It discusses their components and their different types and the chemical processes that occur within them.

### **BIO 5130 Fundamentals of Physiology (4)**

This course discusses the fundamental aspects of physiological processes and explains the function of the human and animal organ systems. Emphasis on homeostatic mechanisms and deregulation during disease. Topics include: muscles, nervous system, cardiovascular and respiratory system, blood, body fluids and excretion, digestion, hormones, reproduction.

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

Both the basic and applied aspects of microbiology are covered in an integrated fashion. The experimental basis of microbiology is discussed; the general principles of cell structure and function, the classification and diversity of microorganisms, 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 microorganisms in food and agriculture, and industrial (biotechnological) processes employing the microorganisms.

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

This course presents the basic concepts underlying the immune processes. Emphasis on the human immune system and the immune response regulation. Topics include: immune tissues, chemokines, antibodies, T-cell receptors, antigen presentation, B-T-macrophages interaction, cell-mediated cytotoxicity, regulation of immune response, autoimmunity, tumor and transplantation immunology, hypersensitivity, immunological techniques.

### **BIO 5225 Human Genetics and Inherited Disease (4)**

Methods of evolutionary inference from comparisons of nucleic acid and protein sequence data, as well as the impact of molecular phylogenetics on evolutionary biology. Emphasis on current recombinant DNA techniques, including polymerase chain reaction methodologies and cloning strategies.

### **BIO 5235 Essentials of Neural Sciences (4)**

Presents the basic concepts of nervous system biology, anatomy and physiology and the relevant scientific methods. Topics include: CNS anatomy, synaptic organization, somatic sensation, vision, hearing, balance, chemical senses, motor systems, autonomic nervous system, cognitive functions, development, and aging.



**BIO 6117 Molecular and Clinical Virology (4)**

The course bridges the gap between biophysics and biochemistry. It involves the study of the building blocks of life. It examines the infectious agents found in all life forms.

**BIO 6118 Seminar in Biotechnology (4)**

The focus of the course is on how biotechnology helps in the manipulation of biological organisms to make products that benefit human beings. Biotechnology contributes to such diverse areas as food production, waste disposal, mining, and medicine.

**BIO 6136 Human Nervous System Neurochemistry (4)**

Examines the biochemistry of the mammalian nervous systems with special emphasis on neurotransmitter synthesis and action and the chemical base of nervous system disorders. Topics include: molecular structure of the synapse, neurotransmitter metabolism, CNS metabolism, acetylcholine, catecholamines, excitatory and inhibitory amino acids, unconventional neurotransmitters, related diseases, pharmacology and therapeutics.

**BIO 6137 Advanced Course in Neurochemistry (4)**

Covers topics of mammalian physiology with special emphasis on the neuronal control of physiological processes and the related neuroanatomical pathways. Topics include: muscles-movement and reflexes, senses, sympathetic and parasympathetic systems, heart, respiration, neuroendocrine integration, higher cognitive functions-speech, learning and memory.

**BIO 6226 Clinical Laboratory Methods (4)**

Students will have the opportunity to develop technical skills and practical knowledge sufficient to perform basic procedures commonly used in the field of molecular biology. In addition, students will develop the ability to analyze experimental results obtained with these techniques.

**BIO 6227 Advanced Cell Culture Techniques (4)**

This technique enables researchers to establish in vitro cultures of animal and plant cells. In this module, the fundamental cell culture concepts and practices are covered. The subject integrates the different types of cell cultures with their applications. The module includes three major sections: Aseptic Techniques, Human (cancer cell lines) Animal Cell lines and cloning. On completion of this module, students should be able to a) possess a basic knowledge regarding aseptic techniques, tissue culture of cells and their application and b) perform basic aseptic techniques to establish different types of cultures.

**BIO 6228 Operation of the Scanning Electron Microscope and Materials Specimen Preparation (4)**

This course provides a theoretical background and practical knowledge of basic routine specimen preparation techniques for electron microscopy. It covers biological specimen preparation for SEM, including fixing, embedding, sectioning, drying, coating and staining techniques. An introduction to cryo-techniques and immuno-methodologies is included. On completion of this module, students should be able to become competent SEM operators at a basic skills level.

**BIO 6238 Psychiatric Disorders (4)**

Studies human mental disorders with special emphasis on neurotransmitter involvement, clinical symptoms and pharmacological treatments. Topics include: depression (uni-polar and bi-polar), schizophrenia, psychotic disorders, anxiety, sleep disorders, drug addiction, and medication-induced disorders.

# **MASTER OF SCIENCE IN BIOMEDICAL SCIENCES (PHARMACY OPTION)**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

The program aims to prepare students through online and/or open learning programs for careers in the field of biology while linking it with medicine, drug design and human disease diagnosis. Pharmacy is a complex, exciting profession and an integral part of the interdisciplinary healthcare environment. The responsibilities and scope of practice of the pharmacist continues to change. This requires a serious commitment to life-long learning in order to serve best the public interest.

## **PREREQUISITES**

Basic knowledge of Microsoft Office and use of Internet resources. Students majoring in biomedical sciences must satisfy requirements by taking the following non-credit seminars during the first semester:

EN	5000	Academic Writing
CIS	5000	Computer Basics
MA	5000	Mathematics Basics
RM	5000	Research Methodology

## **GRADUATION REQUIREMENTS**

They should complete a total of 40 credits including the M.S. thesis which is 8-12 credits. The total GPA must be at least 3.00.

## **MASTER'S THESIS REQUIREMENTS**

Students must complete 40 credit hours of core courses and electives. If they take the thesis option, they should submit a thesis of 15,000 – 30,000 words.

## **CORE COURSES**

BIO	5101	Biophysics
BIO	5110	Molecular Biology/Biochemistry
BIO	5120	Current Topics in Cell Biology
BIO	5130	Fundamentals of Physiology

## **ELECTIVES**

Students can select from the following courses to satisfy their elective requirements.

BIO	5215	Applied Microbiology
BIO	5216	Current Topics in Immunology
BIO	5225	Human Genetics and Inherited Disease
BIO	5235	Essentials of Neural Sciences
BIO	6117	Molecular and Clinical Virology
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BIO	6136	Human Nervous System Neurochemistry
BIO	6137	Advanced Course in Neurochemistry
BIO	6226	Clinical Laboratory Methods
BIO	6227	Advanced Cell Culture Techniques
BIO	6228	Operation of the Scanning Electron Microscope and Materials Specimen Preparation
BIO	6238	Psychiatric Disorders

## **COURSE DESCRIPTIONS**

### **BIO 5101 Biophysics (4)**

The course familiarizes students with the physics behind biological processes. It updates students with the latest advances in the physics of complex biological systems.

### **BIO 5110 Molecular Biology/Biochemistry (4)**

The emphasis of this course is on eukaryotes. Topics covered include modern techniques in molecular analysis of biomolecules, levels and mechanisms of gene regulation, including transcription and translation, genome organization, chromosome structure, and gene structure.

### **BIO 5120 Current Topics in Cell Biology (4)**

The course explores the current topics in the study of cells, the basic unit of life. It discusses their components and their different types and the chemical processes that occur within them.

### **BIO 5130 Fundamentals of Physiology (4)**

This course discusses the fundamental aspects of physiological processes and explains the function of the human and animal organ systems.

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

Both the basic and applied aspects of microbiology are covered in an integrated fashion. From an applied viewpoint, we discuss disease processes in humans that are caused by microorganisms in food and agriculture, and industrial (biotechnological) processes employing the microorganisms.

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

This course presents the basic concepts underlying the immune processes. Emphasis on the human immune system and the immune response regulation.

### **BIO 5225 Human Genetics and Inherited Disease (4)**

Methods of evolutionary inference from comparisons of nucleic acid and protein sequence data, as well as the impact of molecular phylogenetics on evolutionary biology. Emphasis on current recombinant DNA techniques, including polymerase chain reaction methodologies and cloning strategies.

### **BIO 5235 Essentials of Neural Sciences (4)**

Presents the basic concepts of nervous system biology, anatomy and physiology and the relevant scientific methods. Topics include: CNS anatomy, synaptic organization, somatic sensation, vision, hearing, balance, chemical senses, motor systems, autonomic nervous system, cognitive functions, development, and aging.

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

The course bridges the gap between biophysics and biochemistry. It involves the study of the building blocks of life. It examines the infectious agents found in all life forms.

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

The focus of the course is on how biotechnology helps in the manipulation of biological organisms to make products that benefit human beings. Biotechnology contributes to such diverse areas as food production, waste disposal, mining, and medicine.

**BIO 6136 Human Nervous System Neurochemistry (4)**

Examines the biochemistry of the mammalian nervous systems with special emphasis on neurotransmitter synthesis and action and the chemical base of nervous system disorders.

**BIO 6137 Advanced Course in Neurochemistry (4)**

Covers topics of mammalian physiology with special emphasis on the neuronal control of physiological processes and the related neuroanatomical pathways.

**BIO 6226 Clinical Laboratory Methods (4)**

Students will have the opportunity to develop technical skills and practical knowledge sufficient to perform basic procedures commonly used in the field of molecular biology.

**BIO 6227 Advanced Cell Culture Techniques (4)**

This technique enables researchers to establish in vitro cultures of animal and plant cells. In this module, the fundamental cell culture concepts and practices are covered. The subject integrates the different types of cell cultures with their applications. The module includes three major sections: Aseptic Techniques, Human (cancer cell lines) Animal Cell lines and cloning. On completion of this module, students should be able to a) possess a basic knowledge regarding aseptic techniques, tissue culture of cells and their application and b) perform basic aseptic techniques to establish different types of cultures.

**BIO 6228 Operation of the Scanning Electron Microscope and Materials Specimen Preparation (4)**

This course provides a theoretical background and practical knowledge of basic routine specimen preparation techniques for electron microscopy. It covers biological specimen preparation for SEM, including fixing, embedding, sectioning, drying, coating and staining techniques. An introduction to cryo-techniques and immuno-methodologies is included. On completion of this module, students should be able to become competent SEM operators at a basic skills level.

**BIO 6238 Psychiatric Disorders (4)**

Studies human mental disorders with special emphasis on neurotransmitter involvement, clinical symptoms and pharmacological treatments.

# **School of Sciences & Engineering**

## **MASTER OF SCIENCE IN COMPUTER SCIENCE**

### **COORDINATOR:**

### **MISSION OF THE PROGRAM**

The graduate program in computer science prepares students through online and/or open learning programs for careers at the forefront of computing research, business applications and industrial progress. Computer science has become a highly active and fast changing discipline and Master's degree students have the opportunity to work at the cutting edge of this fundamental and exciting field.

Computer science deals with the programming, use, management, and organization of computers. Graduate students specialize in many different areas, several of which have strong ties to other disciplines such as mathematics, electrical engineering, statistics, accounting, and business administration.

### **PREREQUISITES**

Basic knowledge of computers. To receive an M.S. in Computer Science, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

### **GRADUATION REQUIREMENTS**

They should complete a total of 40 credits including the M.S. thesis which is 8-12 credits. The total GPA must be at least 3.00.

### **MASTER'S THESIS REQUIREMENTS**

The thesis should have an originality of work and offer a contribution to computer sciences either in a theoretical way or in application.

### **SPECIALIZATIONS OFFERED**

- ☐ Advanced Information Systems and Software Engineering
- ☐ Algorithms and Computer Systems
- ☐ Network Systems and Advanced Computer Technology

## **CORE COURSES**

Master's candidates are required to complete all the core courses for each specialization:

### **SPECIALIZATION 1 – Advanced Information Systems and Software Engineering**

- CS 5520 Programming Languages
- CS 5540 Artificial Intelligence
- CS 5551 Software Engineering
- CS 5560 Introduction to Data Base Systems

### **SPECIALIZATION 2 – Algorithms and Computer Sciences**

- CS 5530 Analysis of Algorithms
- CS 5535 Complexity Theory
- CS 5537 Probability in Computing
- CS 5552 Intro to Operating Systems II

### **SPECIALIZATION 3 – Network Systems and Advanced Computer Technology**

- CS 5550 Computer Architecture
- CS 5555 Computer Networks
- CS 5580 Advanced Computer Graphics
- CS 5585 Image and Video Computing

## **ELECTIVES**

Students can select any of the above courses as electives in addition to the following courses. Electives also include courses from other departments with the approval of the Chairman of the Graduate School.

- CS 5904 Advanced Data Structure
- CS 5908 Process Control
- CS 6890 Topics in Computer Sciences
- CS 6900 Seminar in Information Systems

## **COURSE DESCRIPTIONS**

### **CS 5520 Programming Languages (4)**

Concepts of programming languages: data, storage control, and definition structures; concurrent and distributed programming; functional and logic programming.

### **CS 5530 Analysis of Algorithms (4)**

Studies the design and efficiency of algorithms in several areas of computer sciences. Topics may be chosen from: graph algorithms, sorting and searching, NP-complete problems, pattern-matching, parallel algorithms, and dynamic programming.

### **CS 5535 Complexity Theory (4)**

The topics for this course cover various aspects of complexity theory, such as the basic time and space classes, the polynomial-time hierarchy and the randomized classes. This is a pure theory class, so no applications were involved.

### **CS 5537 Probability in Computing (4)**

Survey of probabilistic ideas of the theory of computation. Topics may include Monte Carlo and Las Vegas probabilistic computations, average case complexity analysis, random and pseudorandom strings, games and cryptographic protocols, information, inductive inference, reliability; and others.

### **CS 5540 Artificial Intelligence (4)**

Presents a survey of topics in artificial intelligence, including heuristic programming; hill climbing, searching in solution space and policy space; game playing, pattern recognition and scene analysis, theorem proving; machine learning.

### **CS 5550 Computer Architecture (4)**

Overview of concepts underlying the design of high-performance computer architectures, with emphasis on quantitative evaluation and effect on compiler and operating system design. Topics include pipelined, superscalar, vector, and parallel processors; hard-wired scheduling and branch prediction; cache and virtual-memory hierarchy design; shared memory and message-passing scalable multiprocessors. Case studies including RISC/CISC and SIMD/MIMD architectures.

### **CS 5551 Software Engineering (4)**

Introduction to the construction of reliable software testing methodologies, retrofitting, regression testing, structured design and structured programming, software characteristics and quality, complexity, entropy, deadlock, fault tolerance, formal proofs of program correctness, chief program teams, and structured walk-throughs.

### **CS 5552 Introduction to Operating Systems II (4)**

Examines process synchronization, I/O techniques, buffering, file systems; processor scheduling, memory management, virtual memory, job scheduling, resource allocation; system modeling; performance measurement and evaluation.

### **CS 5555 Computer Networks (4)**

Discusses the concepts underlying the design of high-performance computer networks and scalable network protocols. Topics include Internet design principles and methodology, TCP/IP implementation, packet switching and routine algorithms, multicast, quality of service (QoS) considerations, error detection and correction, network security and performance evaluation.

**CS 5560 Introduction to Database Systems (4)**

Examines data models: entity-relationship, hierarchical, network, and mainly relational; commercial relational languages, relational database design, file organization, indexing and hashing, query optimization, transaction processing, concurrency and recovery techniques, integrity, security.

**CS 5580 Advanced Computer Graphics (4)**

Survey of advanced modeling, rendering, and animation algorithms. Emphasis on implementation and underlying theory for simulating various phenomena. Topics include photorealistic image synthesis, modeling natural objects and phenomena, character animation, virtual reality, and advanced computer-human interface techniques.

**CS 5585 Image and Video Computing (4)**

Introduction to image computation within context of image and video as multimedia data types. Provide background in image processing and image formation. Focus on algorithms for image and video analysis based on color, texture, shading, stereo, and motion.

**CS 5904 Advanced Data Structure (4)**

Review of basic data structures and Java syntax. Data abstraction and object-oriented design in the context of high-level languages and databases. Design implementation from the perspective of data structure efficiency and distributed control. Tailoring priority queues, balanced search trees, and graph algorithms to real-world problems, such as network routing, database management, and transaction processing.

**CS 5908 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 and measurements, control structure design for single and multiple variable systems, and control algorithm design. Examples drawn from variety of process control applications.

**CS 6890 Topics in Computer Sciences (4)**

Current topics in computer sciences as determined by advances in the field.

**CS 6900 Seminar (4)**

Series of one-hour seminars on current research topics presented by computer science faculty.



# **MASTER OF SCIENCE**

## **IN**

### **ENGINEERING AND APPLIED SCIENCES**

#### **COORDINATOR:**

#### **MISSION OF THE PROGRAM**

The Master of Science is a graduate degree with emphasis on advanced training in engineering and applied sciences and prepares students through online and/or open learning programs for careers at the forefront of computing, research, business application and industrial progress. Students receiving the Master of Science degree may choose to continue studies toward a doctoral degree or to enter the engineering or applied sciences field.

The Master of Science degree may be earned in one of the following specializations:

- ☐ General Engineering and Applied Sciences
- ☐ Computer Systems Engineering
- ☐ Mechanical Engineering and Electrical Engineering
- ☐ Civil and Environmental Engineering

The general engineering program designation is appropriate when the program of study does not conform to one of the other designated areas of specialization listed above and involves coursework from several different areas of engineering and applied sciences.

As part of their studies, students normally participate in research with supporting faculty and are encouraged to publish their research results in journals or present them in conferences. Students complete either a formal thesis or a project as part of their requirements.

There is a program that focuses on the Civil and Environmental Engineering. Research projects may include:

1. Waste water treatment, recycling and reuse.
2. Storm water management and sustainable urban drainage systems (SUDS).
3. Water scarcity and desalination.

#### **PREREQUISITES**

Basic knowledge of engineering. If the students have no prior knowledge then there is a need for extra courses from the undergraduate level.

To receive an M.S. in Engineering, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

## GRADUATION REQUIREMENTS

Students must complete 40 credit hours with the following distribution:

- 1) The successful completion of 28-32 credit hours of courses that fall within the specialization areas or within the general engineering courses.
- 2) Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## MASTER'S THESIS REQUIREMENTS

Students must fulfill the following requirements:

- 1) Complete at least eight credits of graduate coursework with an overall GPA of 3.00 or above and no more than two class grades below "B".
- 2) Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- 3) Complete and defend a Master's thesis that is equivalent to 8-12 credit hours.
- 4) The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis, which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in the engineering field and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and then produce a professional report which constitutes original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- 5) The student has to defend the thesis in front of a three-person committee, which includes two instructors in the same field and one from another department.

## SPECIALIZATIONS OFFERED

The School offers three specialization areas which respond to the contemporary demands of today's world. Students must take at least four courses within the specific specialization to satisfy the requirements. Students may take a fifth course if they wish to prepare an 8-credit thesis rather than a 12-credit one. The specialization areas offered by AUA are:

- ☐ General Engineering and Applied Sciences
- ☐ Mechanical Engineering (fluid mechanics, dynamics and controls, materials)
- ☐ Computer Systems Engineering (signal processing and communication, systems and controls, computer communications and networks, software engineering)

## CORE COURSES

Each specialization of the Master of Science programs contains no core courses; students select from the courses listed within the specialization areas.

### SPECIALIZATION 1 – General Engineering

EK	5301	Introduction to Transportation Systems
EK	5500	Probability with Statistical Applications
EK	5501	Mathematical Methods I: Linear Algebra and Complex Analysis
EK	5502	Mathematical Methods II: Differential Equations and Numerical Algorithms
EK	5510	Fourier Transforms
EK	5542	Advanced Fluid Mechanics
EK	5701	Advanced Fluid Dynamics of the Environment
EK	5702	Advanced Structural Dynamics
EK	6005	Engineering Analysis
EK	6330	Transportation Policy and Environmental Limits

EK	6334	Urban Transportation Planning
EK	6504	Numerical Methods for Engineering
EK	6506	Statistical Concepts in Engineering
EK	6508	Advanced Mechanical Behavior of Materials
EK	6519	Theory of Heat Transfer
EK	6541	Classical Thermodynamics

## **SPECIALIZATION 2 – Mechanical Engineering**

ME	5201	Mechanics of Materials (An Energy Approach)
ME	5828	Optimization Theory and Methods
ME	5829	Thermodynamics and Kinetics of Materials and Processes
ME	5830	Materials and Processes in Manufacturing
ME	5831	Phase Transformations
ME	5832	Mechanical Behavior of Materials
ME	5901	Aerodynamics
ME	5902	Aerodynamics of Viscous Fluids
ME	5903	Computational Mechanics of Materials
ME	5904	Computer Methods in Dynamics
ME	5907	Process Modeling and Control
ME	5909	Dynamics of Non-linear Systems
ME	6101	Mechanical Transmissions
ME	6102	Ship Structural Analysis and Design
ME	6901	Advanced Fracture Mechanics
ME	6902	Advanced Stress Analysis
ME	6903	Advanced Vibration Engineering
ME	6904	Finite Element Analysis of Solids and Fluids
ME	6905	Fracture and Fatigue
ME	6906	Electronic and Mechanical Properties of Materials
ME	6909	Process Control
ME	6910	Introduction to Naval Architecture
ME	6913	Product Development
ME	6914	Simulation
ME	6917	Computational Fluid Dynamics for Civil Engineering
ME	6918	Computational Fluid Dynamics for Environmental Engineering
ME	6919	Turbulent Flow and Transport
ME	6928	Numerical Fluid Mechanics
ME	7811	Computational Fluid Dynamics

## **SPECIALIZATION 3 – Computer Systems Engineering**

CS	5904	Advanced Data Structure
CS	5908	Process Control
EK	5660	Introduction to Photonics
EK	5663	Fiber-optic Communication Systems
EK	5665	Electromagnetic Energy Transmission
EK	5911	Software Systems Design
EK	5916	Digital Signal Processing
EK	5917	Applications of Formal Methods
EK	5935	Advanced Discrete Mathematics
EK	6560	Introduction to Robotics

## **SPECIALIZATION 4 – Civil and Environmental Engineering**

EK	5501	Mathematical Methods I: Linear Algebra and Complex Analysis
EK	5502	Mathematical Methods II: Differential Equations and Numerical Algorithms
EK	5849	Environmental Management in Developing Countries
EK	6921	Waste Water Treatment, Recycling and Reuse

EK	6922	Storm Water Management and Sustainable Urban Drainage Systems (SUDS)
EK	7812	Water Scarcity and Desalination
EK	7818	Design for Sustainability
EK	7839	Fundamentals of Ecology

## **ELECTIVES**

Students can select electives from the different specialization areas if they do not wish to fulfill a specific specialization.

# GENERAL ENGINEERING

## COURSE DESCRIPTIONS

### **EK 5301 Introduction to Transportation Systems (4)**

The subject focuses on fundamental principles of transportation systems, introduces transportation systems components and networks, and addresses how one invests in and operates them effectively. The tie between transportation and related systems is emphasized.

### **EK 5701 Advanced Fluid Dynamics of the Environment (4)**

Designed to familiarize students with theories and analytical tools useful for studying fluid mechanical problems in the water environment. Because of the inherent nonlinearities in the governing equations, emphasis is given on making analytical approximations not only for facilitating calculations but also for gaining deeper physical insight. The importance of scales will also be discussed.

### **EK 5702 Advanced Structural Dynamics (4)**

This course begins with the foundations of 3D elasticity, fluid and elastic wave equations, elastic and plastic waves in rods and beams, waves in plates, and dynamics and acoustics of cylindrical shells. The course considers acoustic fluids effects such as radiation and scattering by submerged plates and shells, and interaction between structural elements. Finally, it covers the response of plates and shells to high-intensity loads, dynamic plasticity and fracture, and structural damage caused by implosive and impact loads.

### **EK 5500 Probability with Statistical Applications (4)**

A first course in probability and statistics for students with a level of mathematical maturity and experience comparable to that normally found in entering graduate students. Sample spaces, probability measures, random variables, expectation, applications of transform methods, limit theorems, second order statistics, statistical testing, estimation theory, introduction to random processes, stochastic forecasting, communications theory, and decision analysis.

### **EK 5501 Mathematical Methods I: Linear Algebra and Complex Analysis (4)**

Introduction to basic applied mathematics for science and engineering, emphasizing practical methods and unifying geometrical concepts. Topics include linear algebra for real and complex matrices. Quadratic forms, Lagrange multipliers and elementary properties of the rotation group. Vector differential and integral calculus. Complex function theory, singularities and multi-valued functions, contour integration and series expansions. Fourier and Laplace transforms. Elementary methods for solving ordinary linear differential and systems of differential equations with applications to electrical circuits and mechanical structures.

### **EK 5502 Mathematical Methods II: Differential Equations and Numerical Algorithms (4)**

Analytic and computational methods for physical models encountered in science and engineering. Basic elliptic, parabolic and hyperbolic partial differential equations for physical system. Solutions by separation of variables, eigenfunctions expansions, Green's function, integral representations and variational methods. Lattice and finite element discrimination, linear iterative methods. Matrix inversions. Fast Fourier and wavelet transforms. ODE, phase plane, stability and chaos. Molecular dynamics, integrations and Monte Carlo/Langevin dynamics. Optional project on large scale numerical simulations.

**EK 5510 Fourier Transforms (4)**

Fourier transform as a tool for solving physical problems. Develops the properties of the Fourier transform and the discrete Fourier transform. These transforms are applied to the analysis of linear systems; sampled signals and systems; digital filtering; solution of partial differential equations, and antenna theory; two-dimensional systems; optics; medical imaging; mechanical systems; and statistics. Recommended for graduates and advanced undergraduates in engineering, physics, astronomy, and psychology.

**EK 5542 Advanced Fluid Mechanics (4)**

Incompressible fluid flow. Review of control-volume approach to fluids engineering problems, with advanced applications. Differential analysis of fluid motion. Derivation of full Navier-Stokes, Euler, and Bernoulli equation. Velocity potential and its application to steady 2D flows. Vorticity and vortex motion. Eulerian vs. Lagrangian analysis.

**EK 6005 Engineering Analysis (4)**

Mathematical methods in aerospace and mechanical engineering; vectors and tensors; partial differential equations of heat and mass transfer, wave motion and potential theory, classification of second order PDEs; eigenfunctions expansions, method of characteristics, Fourier and Laplace transforms; complex variable theory, residue integration, conformal mapping; Green's functions, integral equations, variational methods; perturbation methods for non-linear differential equations.

**EK 6330 Transportation Policy and Environmental Limits (4)**

Through a combination of lectures, cases, and class discussions this subject examines the economic and political conflict between transportation and the environment. It investigates the role of government regulation, green business and transportation policy as facilitators of economic development and environmental sustainability. It analyzes a variety of international policy problems including government-business relations, the role of interest groups, non-governmental organizations, and the public and media in the regulation of the automobile, sustainable development, global warming, the politics of risk associated with the transport facilities, environmental justice, equity and transportation and public health in the urban metropolis.

**EK 6334 Urban Transportation Planning (4)**

This course is an introduction to planning transportation in metropolitan areas. This means starting from a scan of the site, its history and its current trends, in order to frame properly the problem, including the relevant actors, institutions, roles and interests. The design and evaluation of alternatives considers this complexity, in addition to construction, operation and maintenance issues. The decision-making and implementation process, including the needed feedback mechanisms, focuses as well on the need to build constituencies and alliances. The course topics include the history of urban transportation, highway finance, environmental and planning regulations, air quality, modal characteristics, land use and transportation interaction and emerging information technologies for transportation planning.

**EK 6504 Numerical Methods for Engineering (4)**

Survey of numerical methods with examples selected from aerospace and mechanical engineering. Numerical solution of systems of linear and non-linear algebraic equations, interpolation and extrapolation, computation of eigenvalues and eigenvectors, numerical integration, techniques for numerical solution of ordinary differential equations and partial differential equations. Required projects involve extensive student use of computers.

**EK 6506 Statisticomechanical Concepts in Engineering (4)**

Specific prerequisites vary according to topic, but do not extend beyond what is covered in the core courses in the undergraduate curriculum in mechanical engineering. Elementary introduction to selected fundamental concepts in probability, random processes, signal processing, and statistical mechanics with strong emphasis on their applications to aerospace and mechanical engineering. Examples taken from acoustics, mechanics, thermodynamics, and fluid dynamics.

**EK 6508 Advanced Mechanical Behavior of Materials (4)**

Basic concepts of modern materials engineering. Emphasis is placed on understanding the relationships between solid structure and material properties. Thermodynamics, kinetics, statistical mechanics, deformation, and fracture are explored. Covers the concepts that are essential for graduate research in materials science or an allied field.

**EK 6519 Theory of Heat Transfer (4)**

Analytical, numerical, and physical aspects of heat transfer phenomena, with emphasis on non-dimensionalization and scaling. Mathematical treatment of steady and unsteady conduction, including finite difference methods. Forced and natural convection in internal and external flows. Thermal radiation and multimode heat transfer. Melting and solidification. Applications to aerospace heat transfer, energy systems, manufacturing, and biological heat transfer.

**EK 6541 Classical Thermodynamics (4)**

Principles and formulation of classical thermodynamics; concept of equilibrium, postulates of macroscopic thermodynamics, Euler equations and Gibbs-Duhem relation, alternative formulations, Maxwell's relations, gas mixtures, phase transitions, applications to processes, cycles and engines. Introduction to irreversible thermodynamics: theory of fluctuations, entropy generation, availability, and second law analysis.

# MECHANICAL ENGINEERING

## COURSE DESCRIPTIONS

### **ME 5201 Mechanics of Materials (An Energy Approach) (4)**

It provides an introduction to continuum mechanics and material modeling of engineering materials based on first energy principles (deformation and strain, momentum balance, stress and stress states, elasticity and elasticity bounds, plasticity and yield design). The overarching theme is a unified mechanistic language using thermodynamics, which allows understanding, modeling and design of a large range of engineering materials.

### **ME 5828 Optimization Theory and Methods (4)**

Introduction to optimization problems and algorithms emphasizing problem formulation, basic methodologies, and the underlying mathematical structures. Covers classical optimization theory as well as recent advances in the field. Topics include modeling issues and formulations, simplex method, duality theory, sensitivity analysis, large-scale optimization, integer programming, interior-point methods, non-linear programming optimality conditions, gradient methods, and conjugate direction methods. Particular applications are considered and a few case studies covered. In addition to extensive paradigms from production planning and scheduling in manufacturing systems, other illustrative applications include fleet management, air traffic flow management, optimal routing in communication networks, and optimal portfolio selection.

### **ME 5829 Thermodynamics and Kinetics of Materials and Processes (4)**

Provides a basic understanding of the laws of thermodynamics as they apply to different elements and compounds and their interactions in the solid, liquid, and gaseous forms as a function of various extensive and intensive variables. Analysis of the path to thermodynamic equilibrium or process kinetics will be covered by discussing reaction kinetics and the laws that govern mass transfer in solids and fluids. Mass transfer through membranes/cellular materials will also be covered. The course primarily covers thermodynamics and kinetics as they apply to the study of materials structure and synthesis.

### **ME 5830 Materials and Processes in Manufacturing (4)**

Graduate-level introduction to manufacturing processes and their relationship to the structure/properties of materials. Detailed development of structure of solids, equilibrium thermodynamics, kinetics, mechanical properties, and some key processes, such as machining, consolidation, and surface modification.

### **ME 5831 Phase Transformations (4)**

Graduate-level introduction to phase transformations; solution thermodynamics; phase diagrams; kinetics of mass transport and chemical reactions; atomistic models of diffusion; nucleation and growth; spinodal decomposition; martensitic transformations; order-disorder reactions; point defects and their relation to transport kinetics.

### **ME 5832 Mechanical Behavior of Materials (4)**

This course relates mechanical behavior of crystalline materials to processes occurring at microscopic and/or atomic levels. Topics covered include structure of materials and their determination by X-ray diffraction; dislocations and their relationship to plastic deformations and strength of materials; fracture and creep.



**ME 5901 Aerodynamics (4)**

This course extends fluid mechanic concepts from Unified Engineering to the aerodynamic performance of wings and bodies in sub/supersonic regimes. It includes subsonic potential flows (source/vortex panel methods), viscous flows (laminar and turbulent boundary layers), aerodynamics of airfoils and wings (including thin airfoil theory, lifting line theory), panel method/interacting boundary layer methods and supersonic and hypersonic airfoil theory.

**ME 5902 Aerodynamics of Viscous Fluids (4)**

The major focus is on boundary layers, and boundary layer theory subject to various flow assumptions, such as compressibility, turbulence, dimensionality, and heat transfer. Parameters influencing aerodynamic flows and transition and influence of boundary layers on outer potential flow are presented, along with associated stall and drag mechanisms. Numerical solution techniques and exercises are included.

**ME 5903 Computational Mechanics of Materials (4)**

The primary focus of this course is on the teaching of state-of-the-art numerical methods for the analysis of the nonlinear continuum response of materials. The range of material behavior considered in this course includes: linear and finite deformation elasticity, inelasticity and dynamics. Numerical formulation and algorithms include: variational formulation and variational constitutive updates, finite element discretization, error estimation, constrained problems, time integration algorithms and convergence analysis. There is a strong emphasis on the (parallel) computer implementation of algorithms in programming assignments. The application to real engineering applications and problems in engineering science is stressed throughout the course.

**ME 5904 Computer Methods in Dynamics (4)**

Formulation of finite element methods for analysis of dynamic problems in solids, structures, fluid mechanics, and heat transfer. Computer calculation of matrices and numerical solution of equilibrium equations by direct integration and mode superposition. Effective eigensolution techniques for calculation of frequencies and mode shapes. Digital computer coding techniques and use of an existing general purpose finite element analysis program. Modeling of problems and interpretation of numerical results.

**ME 5907 Process Modeling and Control (4)**

An introduction to modeling and control as applied to industrial unit processes providing the basis for process development and improvement. Major themes include an integrated treatment of modeling multi-domain physical systems (electrical, mechanical, fluid, and thermal), application of classical control techniques, and system design. Topics include modeling techniques, analysis of linear dynamics, control fundamentals in the time and frequency domain, and actuator selection and control structure design. Examples are drawn from a variety of manufacturing processes and case 4 studies.

**ME 5909 Dynamics of Non-linear Systems (4)**

This course provides an introduction to nonlinear deterministic dynamical systems. Topics covered include: nonlinear ordinary differential equations, planar autonomous systems, fundamental theory (Picard iteration, contraction mapping theorem, and Bellman-Gronwall lemma), and stability of equilibrium by Lyapunov's first and second methods and feedback linearization.

**ME 6101 Mechanical Transmissions (4)**

The course aims to cover the fundamentals of drive system and gear design and technology. This advanced applications' course builds on compulsory Engineering Science courses in earlier parts of the undergraduate curriculum, such as Stress Analysis, Vibration, and Materials together with a smaller amount of Heat Transfer and Fluid Mechanics. Lectures are

aimed at providing a basic understanding of transmission system and machine element design, analysis and manufacture. There are short laboratory sessions in gear measurement, finite element modeling, gear failure analysis and in profile correction and transmission error. A transmission design project is carried out by students in small groups.

**ME 6102 Ship Structural Analysis and Design (4)**

This course is intended for graduate students and advanced undergraduates with an interest in design of ships or offshore structures. It requires a sufficient background in structural mechanics. Hydrostatic loading, shear load and bending moment, and resulting primary hull primary stresses will be developed. Topics include ship structural design concepts, effect of superstructures and dissimilar materials on primary strength, transverse shear stresses in the hull girder, and torsion strength among others. Failure mechanisms and design limit states will be developed for plate bending, column and panel buckling, panel ultimate strength, and plastic analysis. Matrix stiffness, grillage, and finite element analysis will be introduced.

**ME 6901 Advanced Fracture Mechanics (4)**

Definition of strain energy density, strain energy and energy release rate. Determination of elastic and elastic-plastic crack tips. Definition and use of crack opening displacement. Concept of cleavage fracture. Examination of fracture under mixed mode conditions, and crack branching, non-linear fracture mechanics. Determination of elastic-plastic crack tip. Definition of limit load and its application in fracture mechanics. Concept of ductile fracture and the competition between cleavage and ductile fracture. Derivation of Failure Assessment Diagrams and use of Standards in fracture assessments. Creep fracture mechanics. Prediction of crack initiation and growth under creep conditions. Mechanisms of creep fracture.

**ME 6902 Advanced Stress Analysis (4)**

Introduces to the students the fundamental theory of elasticity, stress function formulation and methods for plane stress, plane strain and torsion loading. Furthermore, the analysis of torsion will include thin walled sections of arbitrary but uniform cross section. The course will also introduce dynamic analysis and elastic wave effects. The Convolution Integral will be developed and used to analyze time dependent effects.

**ME 6903 Advanced Vibration Engineering (4)**

To teach students how to use the theoretical principles of vibration, and vibration analysis techniques for the practical solution of vibration problems. A key feature is that students work on identifying and defining the problems to be solved. This includes choices of assumptions, choices of measurements to be made and information to be investigated, and choices of analysis techniques to be employed.

**ME 6904 Finite Element Analysis of Solids and Fluids (4)**

Basic principles of continuum mechanics and finite element methods, modern application to solution of practical problems in solid, structural, and fluid mechanics, heat and mass transfer, other field problems. Kinematics of deformation, strain and stress measures, constitutive relations, conservation laws, virtual work, and variational principles. Discretization of governing equations using finite element methods. Solution of central problems using existing computer programs.

**ME 6905 Fracture and Fatigue (4)**

Investigation of linear elastic and elastic-plastic fracture mechanics. Topics include micro structural effects on fracture in metals, ceramics, polymers, thin films, biological materials and composites, toughening mechanisms, crack growth resistance and creep fracture. It also covers interface fracture mechanics, fatigue damage and dislocation substructures in single crystals, stress- and strain-life approach to fatigue, fatigue crack growth models and mechanisms, variable amplitude fatigue, corrosion fatigue and case studies of fracture and fatigue in structural.

**ME 6906 Electronic and Mechanical Properties of Materials (4)**

This course covers the fundamental concepts that determine the electrical, optical, magnetic and mechanical properties of metals, semiconductors, ceramics and polymers. The roles of bonding, structure (crystalline, defect, energy band and microstructure) and composition in influencing and controlling physical properties are discussed. It also includes case studies drawn from a variety of applications i.e. semiconductor diodes and optical detectors, sensors, thin films, biomaterials, composites and cellular materials, and others.

**ME 6909 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 and measurements, control structure design for single and multiple variable systems, and control algorithm design. Examples drawn from a variety of process control applications.

**ME 6910 Introduction to Naval Architecture (4)**

This course is an introduction to principles of naval architecture, ship geometry, hydrostatics, calculation and drawing of curves of form. It also explores concepts of intact and damaged stability, hull structure strength calculations and ship resistance. Topics include analysis of ship lines drawings and ship model testing.

**ME 6913 Product Development (4)**

Dynamics of converting ideas into marketable products. Choosing products and defining their specifications to achieve competitive advantage. The product development process is decomposed and its elements are examined critically in the context of actual case studies; risk evaluation, concurrent engineering, and impact of new product decisions on the factory. A step-by-step methodology for new product development is derived.

**ME 6914 Simulation (4)**

Modeling of discrete event systems and their analysis through simulation. Systems considered include, but are not limited to, manufacturing systems, computer-communication networks and computer systems. Simulating random environments and output analysis in such contexts. A simulation language is introduced and is the main tool for simulation experimentation.

**ME 6917 Computational Fluid Dynamics for Civil Engineering (4)**

This course provides knowledge to the students regarding the reaction of the civil structures with their environment (wind, water etc). It is very important in the design to consider factors associated with fluid-structure interaction, (Le. large buildings) in which tremendous forces is produced. These forces are characterized by continuous sudden change in direction. The efficiency of the design of the structure therefore is highly affected by the type of the analysis which this course introduces. Prerequisites: Advanced Numerical Methods for Engineers, Fluid Mechanics

**ME 6918 Computational Fluid Dynamics for Environmental Engineering (4)**

Advanced treatment of fluid dynamics to natural physical phenomena and/or engineering processes. A wide range of topics and mathematical techniques are discussed. Prerequisites: intermediate level course in Fluid Mechanics, advanced level engineering, mathematics.

**ME 6919 Turbulent Flow and Transport (4)**

Turbulent flows, with emphasis on engineering methods. Governing equations for momentum, energy, and species transfer. Prerequisites: Computational Fluid Dynamics, Advanced level Engineering Mathematics.

**ME 6928 Numerical Fluid Mechanics (4)**

This course introduces students to numerical methods including number representation and errors, interpolation, differentiation, integration, systems of linear equations, and Fourier interpolation and transforms. Students will study partial and ordinary differential equations as well as elliptic and parabolic differential equations, and solutions by numerical integration, finite difference methods, finite element methods, boundary element methods, and panel methods. Prerequisites: Advanced Numerical methods for Engineers.

**ME 7811 Computational Fluid Dynamics (4)**

The use of CFD to predict internal and external flows has risen dramatically in the past decade. The purpose of this course is to fill the gap in the available literature for novice CFD users who, whilst developing CFD skills by using commercially available software. Although the material has been developed from first principles, the course is of great benefit to those who are familiar with the ideas of calculus, elementary vector, matrix algebra and basic numerical methods. Prerequisites: Advanced Numerical Methods for Engineers, Fluid Mechanics.

# COMPUTER SYSTEMS ENGINEERING

## COURSE DESCRIPTIONS

### **EK 5660 Introduction to Photonics (4)**

Introduction to ray optics, wave optics, Fourier optics and holography, absorption, dispersion. Polarization, anisotropic media, and crystal optics. Guided-wave and fiber optics. Elements of photon optics. Laboratory experiments: interference; diffraction and spatial filtering; polarizers, retarders, and liquid-crystal displays; fiber-optic communication links.

### **EK 5663 Fiber-optic Communication Systems (4)**

Introduction to fiber optics; components, concepts, and systems design techniques required for the planning, design, and installation of fiber-optic communication systems. Single- and multi-mode LED and semiconductor lasers, detectors, connectors and splices, terminal and repeater electronics, wavelength division multiplexing optical amplifiers and solutions, and systems architecture for point-to-point and local area networks. Laboratory work on fiber and electronic measurements.

### **EK 5665 Electromagnetic Energy Transmission (4)**

Electromagnetic waves and propagation; boundary value problem approach; boundary interfaces; transmission lines and waveguides; cavity resonators; impedance matching; physical optics and physical basis of fiber optics; antennas and radiation; microwave devices.

### **CS 5904 Advanced Data Structure (4)**

Review of basic data structures and Java syntax. Data abstraction and object-oriented design in the context of high-level languages and databases. Design implementation from the perspective of data structure efficiency and distributed control. Tailoring priority queues, balanced search trees, and graph algorithms to real-world problems, such as network routing, database management, and transaction processing.

### **CS 5908 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 and measurements, control structure design for single and multiple variable systems, and control algorithm design. Examples drawn from variety of process control applications.

### **EK 5911 Software Systems Design (4)**

Concept of software product life cycle. Various forms of a software product from requirements definition through operation and maintenance. Life cycle models and the activities performed in each phase. Role of rapid prototyping in requirements analysis and design. Design concepts and design strategies. Comparative evaluation of requirements definition and design methods. Analysis and design validation. Small-team projects involving architectural design and software specification.

### **EK 5916 Digital Signal Processing (4)**

Advanced structures and techniques for digital signal processing and their properties in relation to application requirements such as real-time, low-bandwidth, and low-power operation. Optimal FIR filter design; time-dependent Fourier transform and filter banks; Hilbert transform relations; cepstral analysis and deconvolution; parametric signal modeling; multidimensional signal processing; multirate signal processing.

**EK 5917 Applications of Formal Methods (4)**

Formal foundations for the theory and practice of software engineering. Specification languages and verification techniques for showing that an implementation is consistent with a specification. State transition and Petri net models of computation. Proofs of program properties; limitations of program testing. Fundamental techniques for the analysis of space and time complexity of algorithms. Applications of formal methods in a variety of system development contexts.

**EK 5935 Advanced Discrete Mathematics (4)**

Selected topics in discrete mathematics. Formal systems. Mathematical deduction. Logical concepts. Theorem proving. Sets, relations on sets, operations on sets. Functions, graphs, mathematical structures, morphemes, algebraic structures, semi groups, quotient groups, finite-state machines, their homomorphism, and simulation. Machines as recognizers, regular sets. Kleene theorem.

**EK 6560 Introduction to Robotics (4)**

An introduction to the kinematics, dynamics, and control of robot manipulators and to robot motion planning. Specifically, forward kinematics and serial chain manipulators using Denavit-Hartenberg parameters and product of exponentials. Inverse kinematics. The manipulator Jacobian. Manipulator dynamics using the Euler-Lagrange equations and the Newton-Euler formulation. PID, computed torque, and force control. The basic motion planning problem. Configuration space. Motion planning methods such as visibility graphs, Voronoi diagrams, cell decomposition, and potential fields. Introduction to non-holonomic motion planning. Handling uncertainty through preimage back chaining.

# **CIVIL AND ENVIRONMENTAL ENGINEERING**

## **COURSE DESCRIPTIONS**

### **EK 5849 Environmental Management in Developing Countries (4)**

Study Goals for this course are the following: define projects in several phases of the project cycle (feasibility, identification, design and construction, evaluation, operational management) within their respective field of specialisation explain how other than civil engineering disciplines can contribute to project activities abroad distinguish different working environments for civil engineers abroad (management, design and construction, research, financing etcetera) distinguish main organisations involved in development aid at national and international level in terms of their goals, financing policies and actions recognise local working and living environments in socio-economic and technical terms.

### **EK 6921 Waste Water Treatment, Recycling and Reuse (4)**

The course introduces wastewater treatment and systems, emphasizing fundamental biological, chemical and physical processes related to protection of public health environmental quality and water reuse. Process analysis of the configuration and sizing of major types of treatment processes for various sizes of plants and effluent requirements.

### **EK 6922 Storm water Management and Sustainable Urban Drainage Systems (SUDS) (4)**

The course provides students with knowledge of site design and water conservation strategies, methods and tools. Based on understanding ecological principles, students will research new approaches to integrated site and building design. Exercises, case studies, and application of tools provide students hands-on opportunities to investigate design issues and determine outcomes. Before urban development, the water was in balance in its watershed. Current urban development has disrupted the water cycle, separated the unified aspect of water and degraded the health and robustness of the natural urban environment.

### **EK 7812 Water Scarcity and Desalination (4)**

This course surveys the state-of-the-art in water purification by desalination and filtration. Fundamental thermodynamic and transport processes which govern the creation of fresh water from seawater and brackish ground water are developed. The technologies of existing desalination systems are discussed and factors which limit the performance or the affordability of these systems will be highlighted. Energy efficiency is a focus. Nanofiltration and emerging technologies for desalination are considered.

### **EK 7818 Design for Sustainability (4)**

The concept of “green design” is introduced and integrated into design projects. Specific techniques, guidelines and examples are used to emphasize the practical aspects of green design. Valuable case studies are included. While considering the profitability of the product, students are required to design in a way that benefits the global environment. This course focuses on the major impact of buildings on the environment, the role of high performance buildings in more efficient use of natural resources and lessening of negative impacts on the environment.

### **EK 7839 Fundamentals of Ecology (4)**

This is a basic subject in ecology that seeks to improve the understanding of the flow of energy and materials through ecosystems and the regulation of the distribution and abundance of organisms. The course covers productivity and biogeochemical cycles in ecosystems, trophic dynamics, community structure and stability, competition and predation, evolution and natural selection, population growth and physiological ecology.

# **MASTER OF SCIENCE IN SYSTEMS ENGINEERING**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

The program places emphasis on state-of-the-art developments through online and/or open learning programs in engineering concepts. It partakes on the multi-disciplinary engineering approach, from the perspective of systems analysis, development and optimization. It examines the interdependencies of sub-systems of design mechanisms and processes, and integrates the improvements into new coherent engineering systems. The program's scope extends to the utilization and familiarization with commercially available engineering software packages for solving complex problems, as well as to an extensive use of an array of online engineering resources. Emphasis is placed on the development of the "Systems Point of View" in engineering applications. The program is so structured as to keep step with recent engineering developments that require strong integrated knowledge both within a field, as well as across disciplines. Focus is placed on design, and strong foundations are provided on electro-mechanical models.

The following areas are as well incorporated, in order to provide the modern day engineer with a solid base of capabilities:

### **Computer Aided Design and Manufacturing**

- ☐ Finite Element Analysis
- ☐ Usage of Commercially Available Engineering Packages
- ☐ Quality Assurance, and ISO Procedures
- ☐ Engineering Project Management
- ☐ Failure Analysis, Re-engineering

## **PREREQUISITES**

Basic knowledge of engineering. If the students have no prior knowledge then there is a need for extra courses from the undergraduate level.

To receive an M.S. in Systems Engineering, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology



## **GRADUATION REQUIREMENTS**

Students must complete 40 credit hours with the following distribution:

- 1) The successful completion of 28-32 credit hours of courses that fall within the specialization areas or within the general engineering courses.
- 2) Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## **MASTER'S THESIS REQUIREMENTS**

Students must fulfill the following requirements:

- 1) Complete at least eight credits of graduate coursework with an overall GPA of 3.00 or above and no more than two class grades below "B".
- 2) Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- 3) Complete and defend a Master's thesis that counts for 8-12 credit hours.
- 4) The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis, which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in the engineering field and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and then produce a professional report which constitutes original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- 5) The student must defend the thesis to a three-person committee, which includes two instructors in the same field and one from another department.

## **CORE COURSES**

There are no core courses for this Master of Science. Students may select from the following courses.

## **ELECTIVES**

Students can select any of the following courses as electives:

SE	5000	Systems Engineering I
SE	5010	General Engineering I
SE	5020	General Engineering II
SE	5030	Mechatronics
SE	5040	Control Systems and Robotics
SE	5050	Advanced Biotechnology Engineering Concepts and Applications
SE	5060	Failure Analysis, Re-engineering, Quality and Project Management
SE	5080	CAD/CAM and FEA I
SE	6000	Systems Engineering II
SE	6080	CAD/CAM and FEA II

## **COURSE DESCRIPTIONS**

### **SE 5000 Systems Engineering I (4)**

The Systems Point of View, definitions, methodological frameworks. Systems Engineering processes: logical steps, life cycle phases, a two dimensional framework, processes, other methodologies. Formulation of issues: situation assessment, problem/issue identification, value system design examples, requirements statement, generation of alternative or system synthesis, feasibility studies. Analysis of systems with uncertain and/or imperfect information, structural modeling trees, causal loops and influence diagrams, systems dynamic models, economic models and economic systems. Analysis reliability, availability, maintainability and supportability models, discrete events models, networks and graphs, evaluation of large-scale models. Alternative courses of action and decision making: formal decisions, group decisions and voting, Systems Engineering Management.

### **SE 5010 General Engineering I (4)**

Mechanics: Statics, kinematics, dynamics, vibrations, hydrostatics, hydrodynamics and aerodynamics. Strength of Materials: stress and strain, stresses in bars and beams, theory of elasticity, plates and shells, rotating components, stability problem building. Thermodynamics: definitions, first law, second law, processes. Heat transfer: conduction, convection, radiation, heat exchangers. Materials: properties, testing, plastics and tribology. Engineering design-Mechanical machine components: connections, springs, couplings, clutches and brakes, bearings, gears, drives, kinematics. Machine dynamics: forces and moments of inertia, vibrations. Manufacturing processes: shaping and forming, cutting, assembly. Manufacturing systems: machine tool components, control systems, shearing and blanking machines, processor and harnesses for metal forging, metal cutting, welding and soldering, robotics.

### **SE 5020 General Engineering II (4)**

Circuits: components, RL, RC, RLC, circuits, node equations and mesh equations, sinusoidal excitation and phasors, three phase circuits, filters, power distribution, grounding and shielding, operational amplifiers, active RC filters, diodes and transistors, analog integrated circuit optoelectronic devices, power electronics, A/D and D/A converters. Digital systems: logic devices, counters and sequences, microprocessors and microcontrollers, memory system, CAD and simulators, logic analyzers. Communications and signal processing: digital filters, modulation and detection coding, computer communication networks, satellites, mobile and cellular radio communication, optical communication. Computers: architecture, operating systems, languages, I/O devices, memory and mass storage devices. Measurement and Instrumentation: sensors and transducers, error analysis and accuracy, signal conditioning, telemetry, recording instruments, data acquisition. Control systems: feedback, root locus, error analysis and stability, systems compensation, process control, digital control, robots and control.

### **SE 5030 Mechatronics (4)**

Generators and motors, brakes and clutches, amplifiers, actuators, transducers controlled motion, contact makers and electrodes, computer components, sound manufacturing, assembling and connecting, military devices, common devices, passive electrical component. Design: construction design, design for manufacturing, user friendly design, accuracy, adjustment and gauging, reliability, defects, abuse failure and maintenance, barriers, filters, conduits and valves, cost reduction and product improvement, people engineering, ecology, design parameters, product classes and familiar patents.

**SE 5040 Control Systems and Robotics (4)**

Introduction to control systems, mathematical modeling of systems, state variable models, feedback control system characteristics, performance of feedback control systems, stability of linear feedback systems, root locus method, frequency response methods, stability in the frequency domain, design of feedback control systems.

**SE 5050 Advanced Biotechnology Engineering Concepts and Applications (4)**

Physiological systems, bioelectric phenomena, biomechanics, biomaterials, biomedical sensors, biomedical signal analysis, imaging, medical instruments, and devices, biological effects of non-ionizing electromagnetic fields, tissue engineering, prostheses and artificial organs, rehabilitation engineering, human performance engineering, physiological modeling, simulation and control, clinical engineering, medical informatics, artificial intelligence, regulation and organizations.

**SE 5060 Failure Analysis, Re-engineering, Quality and Project Management**

This course combines the process reengineering and change management. The topics covered in this context include mass customization, business process reengineering, and change management for process change. Cases are studied to provide a unifying theme in terms of organizational change, supply chain reengineering and integration aspects.

**SE 5080 CAD/CAM and FEA I (4)**

Introduction, hardware, software, microprocessor based CAD/CAM, geometric modeling, types of surfaces and mathematical representation, types of solids and mathematical representations, CAD/CAM exchange of data, 2-D and 3-D graphic concepts, visual realism, graphic aids, graphics aids and graphics manipulations and editing, computer animation, mechanical assembly, interactive computer programming.

**SE 6000 Systems Engineering II (4)**

Views of systems approach, systems, computer based systems, modeling, specific tasks, systems development activity, development life cycle, configuration management, project management, quality, non-functional aspects, systems performance, evaluators, selected methods, formal theory, quality, quality activity levels, total quality management, development and monitoring of processes.

**SE 6080 CAD/CAM and FEA II (4)**

Mechanical applications, mass property calculations, finite element modeling and analysis, design projects, CAD/CAM integration.

**EK 5401 Drawings and Numbers - Five Centuries of Digital Design (4)**

The aim of this course is to highlight some technical aspects of the classical tradition in architecture that have so far received only sporadic attention. It is well known that quantification has always been an essential component of classical design: proportional systems in particular have been keenly investigated. But the actual technical tools whereby quantitative precision was conceived, represented, transmitted, and implemented in pre-modern relationship between architectural theory and data-processing technologies was as crucial in the past as it is today. This course hopes to promote a more historically aware understanding of the current computer-induced transformations in architectural design.

**EK 5445 Selected Topics in Architecture from 1800 to the Present (4)**

This class is a general study of modern architecture as a response to important technological, cultural, environmental, aesthetic, and theoretical challenges, the main highlight after the European Enlightenment. It focuses on the theoretical, historiographic, and design approaches to architectural problems encountered in the age of industrial and post-industrial expansion across the globe, with specific attention to the dominance of European modernism in setting the agenda for the discourse of a global modernity at large. It explores modern

architectural history through thematic exposition rather than as a simple chronological succession of ideas.

**EK 5465 Contemporary Architecture and Critical Debate (4)**

This course presents a critical review of works, theories, and polemics in architecture in the aftermath of World War II. The aim is to present a historical understanding of the period, and to develop a meaningful framework to assess contemporary issues in architecture. Special attention will be paid to historiographic questions of how architects construe the terms of their “present”.

**EK 6420 Computational Design: Theory and Applications (4)**

This class introduces design as a computational enterprise in which rules are developed to compose and describe architectural and other designs. The class covers topics such as shapes, shape arithmetic, symmetry, spatial relations, shape computations, and shape grammars. It focuses on the application of shape grammars in creative design, and teaches shape grammar fundamentals through in-class, hands-on exercises with abstract shape grammars. The class discusses issues related to practical applications of shape grammars.

**EK 6431 Architectural Design - Perceptions and Processes (4)**

This course explores the notion of in-between by engaging several relationships; the relationship between intervention and perception, between representation and notation and between the fixed and the temporal.

**EK 6432 Architectural Design - Material Essence - The Glass House (4)**

The theme that unites the design is a focus upon the ‘making of architecture and built form’ as a tectonic, technical and materially driven endeavor. It is a design investigation that is rooted in a larger culture of materiality and the associated phenomena, but a study of the language and production of built form as an integrated response to the conceptual proposition of the project. The studio will look to works of architecture where the material tectonic and its resultant technology or fabrication become instrumental to the realization of the ideas, in whatever form they may take. This becomes the “art of technology”— suggesting a level of innovation and creative manipulation as part of the design process to transform material into a composition of beauty and poetry as well as environmental control.

**EK 6436 System and Project Management (4)**

This course is designed for students in the System Design and Management (SDM) program and therefore assumes that you already have a basic knowledge of project management. The objective is to introduce advanced methods and tools of project management in a realistic context such that they can be taken back to the workplace to improve management of development projects. In contrast to traditional courses on the subject we will emphasize scenarios that cannot be fully predicted such as task iterations, unplanned rework, perceived versus actual progress and misalignments between tasks, product architectures and organizations.

**EK 6483 Sustainable Design and Technology Research Workshop (4)**

This workshop investigates the current state of sustainability in regards to architecture, from the level of the tectonic detail to the urban environment. Current research and case studies will be investigated, and students will propose their own solutions as part of the final project. Cases in “Intelligent Buildings” are also examined.

**EK 6491 Building Structural Systems (4)**

This course serves as an introduction to the history, theory, and construction of basic structural systems with an introduction to energy issues in buildings. Emphasis is placed on developing an understanding of basic systematic and elemental behavior; principles of structural behavior and analysis of individual structural elements and strategies for load carrying. The subject introduces fundamental energy topics including thermodynamics, psychometrics, and comfort, as they relate to building design and construction.

# **MASTER OF SCIENCE IN TELECOMMUNICATIONS**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

The mission of the graduate program in telecommunications is to prepare students through online and/or open learning programs for careers in the exciting area of telecommunications. Upon completion of this program, the student will have a strong understanding of data communications, telecommunications principles, telecommunications management and regulations, network management and wireless communications.

## **COMPUTER KNOWLEDGE REQUIREMENTS**

Knowledge of M.S. Office, E-mail and Web access.

## **PREREQUISITES**

To earn an M.S. in Telecommunications, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

## **GRADUATION REQUIREMENTS**

To satisfy their M.S. degree in Telecommunications, students must complete a thesis equivalent to 8 to 12 credit hours and have a grade of “B” or above.

## **MASTER’S THESIS**

The Master’s thesis must demonstrate the student’s ability to effectively communicate in writing the results of a graduate study or constructive work in a field related to telecommunications. The writing of the Master’s thesis may be performed on or off campus, provided that the student’s graduate advisor is kept informed at all times about the progress of the thesis and that he/she is at all times able to examine and supervise the student’s work.

## **CORE COURSES**

TEL	5510	Telecommunications Systems
TEL	5520	Strategic Management in Telecommunications
TEL	5530	Data Communications
TEL	6540	Network Management Systems
TEL	6550	Wireless, Cellular and Personal Communications

## **ELECTIVES**

TEL	5611	Fiber Optic Telecommunications
TEL	5621	Antenna Systems
TEL	5631	Satellite Communications Systems
TEL	5641	Transmission Systems
TEL	5651	Network Design
TEL	5661	Microwave Systems
TEL	5671	Network Protocols and Standards
TEL	5711	ATM Networks
TEL	6681	Internet/Intranet Telecommunications
TEL	6691	Image and Video Compression
TEL	6800	Special Topics in Telecommunications
TEL	6900	Seminar in Telecommunications

## **COURSE DESCRIPTIONS**

### **TEL 5510 Telecommunication Systems (4)**

Discusses the basic technical concepts of telecommunications, including an in-depth look at basic telecommunications terminology and concepts. Topics include an introduction to voice and data networks, signaling, modulation (AM, FM, PM and PCM), signal propagation characteristics, digital coding, detection, transmission systems and switching systems.

### **TEL 5520 Strategic Management in Telecommunications (4)**

Examines the fundamentals of strategic management in telecommunications with an emphasis on the gathering and analysis of competitive intelligence, various forms and methods of forecasting, the setting of goals and objectives and establishing suitable project management plans.

### **TEL 5530 Data Communications (4)**

Introduces data and computer communications standards, terminology and models. Topics include the description of protocols that apply to LANs, MANs and WANs including frame relay and SONET, the Internet, routers, and the Ethernet.

### **TEL 5611 Fiber Optic Telecommunications (4)**

Describes the basic aspects of fiber-optic communication systems. Topics include sources and receivers, optical fibers and their propagation characteristics, optical fiber systems, the principles of operation and properties of operation and properties of optoelectronic components, signal guiding characteristics of glass fibers, and system design issues.

### **TEL 5621 Antenna Systems (4)**

Introduces the fundamental antenna concepts and uses them to analyze basic antenna systems. Topics include physical principles of radiation, wire radiators, linear and planar arrays, horns, reflecting and nonreflecting apertures, lenses, broad-band systems, printed circuit antennas, and antenna measurements.

### **TEL 5631 Satellite Communications Systems (4)**

Presents the theoretical and practical considerations of satellite communications systems. Topics include satellite orbits, link equations, communications payload, system performance, modulation techniques, on-board processing, earth stations, and propagation effects.

### **TEL 5641 Transmission Systems (4)**

Provides a description of transmission systems for TV, telephone, and data-using satellites, microwave repeaters, mobile radio, and broadcast transmitters. Topics include common digital schemes and spread-spectrum modulation, time, frequency, and code multiplexing, link performance, capacity, total system design, and cost optimization.

### **TEL 5651 Network Design (4)**

Discusses the tools and techniques for the economic design of telecommunication networks that meet the requirement (for example, reliability or performance) goals of an organization. Topics include the application of queuing methods, optimization and network models, heuristic search techniques for the design of modern communication networks, call center design, virtual private network design, and local networks.

**TEL 5661 Microwave Systems (4)**

Describes the practical aspects of microwave systems. Topics include radar systems and electronic systems operating in heavily interfering environments, linear and nonlinear characteristics of individual components and their relation to system performance, amplifiers, mixers, filters, and frequency sources.

**TEL 5671 Network Protocols and Standards (4)**

Examines the telecommunications protocols and standards for fixed and mobile networks, fixed/mobile integration technology, and design of telecommunications networks. Topics include resolution of equipment incompatibilities, sender/receiver coordination, reliability maximization, error minimization, performance optimization, fixed/mobile networks, interface design, medium access control, synchronization and error control, data layer protocol, and internetworking of fixed and mobile networks.

**TEL 5711 ATM Networks (4)**

Presents the basic concepts and techniques used in asynchronous transfer mode (ATM) communications networks. Topics include circuit and packet switching techniques, local area networks (LAN), N-ISDN, B-ISDN, ATM standards and protocols, ATM layer, ATM adaptation layer, and physical layer, ATM switching architectures, call and connection control, traffic control, and network management, packet video, signal modeling, and packet loss protection and recovery.

**TEL 6540 Network Management Systems (4)**

Current Networking courses are broad in scope. This course goes in depth into a narrower subtopic that traditionally does not receive as much attention, but is emerging as an increasingly important direction in the research community and in the industry.

**TEL 6550 Wireless, Cellular and Personal Communications (4)**

An overview of wireless communication systems. Propagation and noises. Free-space, terrestrial Indoor propagations. Multipath characteristics of radio-wave. Fading. Models to predict Propagation loss. Fundamental of cellular communications. Cellular system design. Co channel interferences. Digital modulation in wireless systems. Access technologies. Narrowband and wideband systems. Antennas, diversity and Link analysis. Spectral efficiency. Comparison of FDMA, TDMA and CDMA. Spread-spectrum technique. European, Japanese and North American Cellular systems. Security and privacy in wireless systems. Security algorithms. Internetworking in wireless systems. Cellular digital packet data network. Wireless protocols and standards.

**TEL 6681 Internet/Intranet Telecommunications (4)**

Describes Internet/Intranet technology, structure, protocols, access, and applications in the context of real world uses. Topics include Internet engineering, the parameters of the technical aspects of Internet/Intranet, the new directions already emerging, and surveying the imminent Web technologies.

**TEL 6691 Image and Video Compression (4)**

Introduces the basic concepts and techniques used for the compression of digital images and video. Topics include 2-D sampling and quantization, and coding techniques such as differential pulse code modulation, transform coding, sub band/wavelet coding, vector quantization, motion compensation video coding, entropy coding techniques, and coding standards such as JPEG, MPEG, MPEG1, MPEG2, and MPEG4.

**TEL 6800 Special Topics in Telecommunications (4)**

Selected topics of current importance in telecommunications.

**TEL 6900 Seminar in Telecommunications (4)**

A series of five seminars presented by telecommunications experts. The student must present a 2-page report on each seminar.



# **MASTER OF SCIENCE IN PETROLEUM ENGINEERING**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

The Master of Science in Petroleum Engineering has been created to train existing staff and new employees through online and/or open learning programs with skills in oil-field industry. Parallel research taking place at AUA offers the cutting-edge course content in the area of Petroleum Engineering. Three specially prepared courses are offered for Engineering Graduates of other than Petroleum Engineering specializations, such as Mechanical Engineering, Chemical Engineering etc.

## **PETROLEUM ENGINEERING COURSES**

PEN	5101	Formation Evaluation
PEN	5117	Testing of Wells and Liquefiers
PEN	5211	Enhanced Oil Recovery
*PEN	5401	Introduction to Transport Processes in Porous Media (*Required for Graduates without Petroleum Engineering Bachelor's Degree)
PEN	5402	Petroleum Reservoir Engineering Evaluation
PEN	5406	Engineering & Economic Evaluation of Subsurface Reservoirs
PEN	6115	Fluid Flow and Transport Processes in Porous Media
PEN	6581	Environmental Technology in the Petroleum Industry
PEN	6901	Engineering Geostatistics
PEN	6911	Advanced Oilfield Operations
PEN	6991	Intelligent Oilfield Systems - Characterization & Management

## **COURSE DESCRIPTIONS**

### **PEN 5101 Formation Evaluation (4)**

Concepts of petroleum geology, interpretation of down hole surveys and measurements including well logs, MWD, mud logs and samples.

### **PEN 5117 Testing of Wells and Aquifers (4)**

Principles of well testing; down hole device; Aquifer tests; slug tests; DST; pressure transient modeling in homogeneous and heterogeneous systems; parameter estimation; computer aided techniques.

### **PEN 5211 Enhanced Oil Recovery (4)**

This course surveys current enhanced oil recovery processes, including water-flooding, miscible displacement, and thermal oil recovery.

### **PEN 5401 Introduction to Transport Processes in Porous Media (4)**

Properties of porous rocks; capillary effect, single phase and multiphase flow through porous media; diffusion and dispersion, miscible displacement, heat transfer.

### **PEN 5402 Petroleum Reservoir Engineering (4)**

Properties of reservoir fluids, volumetric and material balances for gas and oil reservoirs; reservoir modeling concepts.

### **PEN 5406 Engineering and Economic Evaluation of Subsurface Reservoirs (4)**

Studies, data and methods for estimating size of underground fluid deposits for predicting physical and economic behavior of designed flow schemes, and for quantifying uncertainty.

### **PEN 6115 Fluid Flow and Transport Processes in Porous Media (4)**

Principles of single and multiphase flow through porous media; mechanisms of immiscible and miscible displacement; momentum, heat and mass transport in porous media.

### **PEN 6581 Environmental Technology in the Petroleum Industry (4)**

This course examines engineering and scientific principles necessary for understanding, assessing, and premeditating environmental problems in the petroleum industry including drilling, production, transportation and refining operations. Prerequisite: graduate standing.

### **PEN 6901 Engineering Geostatistics (4)**

Use of geostatistical methods for exploration and development of mineral and petroleum resources, application of semi-variogram, kriging, cokriging, nonlinear and parametric estimation and conditional stimulation.

### **PEN 6911 Advanced Oilfield Operations (4)**

Immersive subsurface and surface environments, web based monitoring and feedback, visualizing risk, unattended operation. Limited to students with graduate standing. Recommended preparation: prerequisites for non-majors.

### **PEN 6991 Intelligent Oilfield Systems Characterization and Management (4)**

Review of soft computing methods such as neural networks, fuzzy logic, problematic reasoning in reservoir characterization, dynamic reservoir modeling, oilfield data integration and analysis of uncertainty in prediction. Limited to students with graduate standing. Recommended preparation: prerequisites for non-majors.

# School of Business Administration

## MASTER OF BUSINESS ADMINISTRATION

### COORDINATOR:

### MISSION OF THE PROGRAM

The mission of the graduate program in business administration at *The American University of Athens* is to offer an educational program which enables students through online and/or open learning programs to develop skills and proficiencies essential for contribution to a dynamic professional and social environment and global economy. The rapid growth and multifaceted development of contemporary business has created the need for executives to combine multidisciplinary academic backgrounds and to respond to a global economy, rapidly changing markets, and powerful technological innovation. Today's managers, investors and policy-makers need to understand the interactions of dozens of markets, work cultures, and investment opportunities. The M.B.A. program thus aims to train executives and future managers by the successful integration of this knowledge. Meeting this challenge, AUA offers an M.B.A. with the following program specializations:

- ☐ International Business
- ☐ Global Financial Analysis and Management
- ☐ Management with a focus on:
  - a. IT and E-Commerce
  - b. Operations
  - c. People and Organizations

### PREREQUISITES

Basic knowledge of business administration, management or economics. If the students have no prior knowledge then there is a need for extra courses from the undergraduate level. These courses include: accounting, finance, marketing and management.

To receive an M.B.A., students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

### GRADUATION REQUIREMENTS

Students must complete 44 credit hours with the following distribution:

- 1) The successful completion of 5 core courses for a total of 20 credit hours.
- 2) The successful completion of 3-4 specialization courses for a total of 12-16 credit hours or, as an alternative, 3-4 electives for the same total of credits.
- 3) Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## MASTER'S THESIS REQUIREMENTS

Students must fulfill the following requirements:

- 1) Have a GPA of 3.00 or above.
- 2) Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- 3) Complete and defend a Master's thesis that counts for 8-12 credit hours.
- 4) The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in the business field and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and then produce a professional report which constitutes original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- 5) The student must defend the thesis to a three-person committee which includes two instructors from the same field and one from another department.

## CORE COURSES

The following courses are to be taken by M.B.A. students regardless of their specialization:

EC	5482	World Economy and Global Competitive Strategies
FIN	5371	Corporate Finance for the Knowledge Age
MAN	5511	Global Perspectives on Organizational Management and Behavior
MAN	5601	Strategic Management
MK	5526	Decision-making on Marketing Concepts

## SPECIALIZATIONS OFFERED

The School offers three specialization areas which respond to the contemporary demands of today's business world. Students must take at least three courses within the specific specialization to satisfy the requirements. Students may take a fourth course if they wish to prepare an 8-credit thesis instead of a 12-credit one. The specialization areas offered by AUA are:

- 1) International Business
- 2) Global Financial Analysis and Management
- 3) Management
  - a. IT and E-commerce
  - b. Operations
  - c. People and Organizations

For satisfying the specialization in **International Business** students must take at least four of the following courses:

FIN	6001	Global Financial Markets and Institutions
MAN	6013	International Business
MAN	6202	Cross-cultural Management
MAN	6503	Developing Business and Marketing Plans for New Ventures
MAN	6633	Management of International Operations
MAN	6904	E-commerce and Internet
MK	6620	Global Perspectives on Consumer Behavior

For satisfying the specialization in **Global Financial Analysis and Management** students must select Corporate Finance from the core courses and at least four of the following courses:

EC	6680	Managerial Economics
FIN	5372	Money, Banking and Financial Strategies
FIN	5500	Financial Management
FIN	6001	Global Financial Markets and Institutions
FIN	6410	Portfolio Theory and Management
FIN	6510	Risk Management
FIN	6615	International Trade and Investments
FIN	6618	Security Investments Analysis
FIN	6671	International Business Finance

For satisfying the specialization in **Management with a focus on IT and E-commerce** students must select at least three of the following courses:

BC	5592	Using the Internet in Business
MAN	6901	Emerging Strategies in Information Management
MAN	6904	E-commerce and Internet
QM	5502	Quantitative Methods in Business and Management

For satisfying the specialization in **Management with a focus on Operations** students must select at least three of the following courses:

BC	5566	Total Quality Management
EC	6680	Managerial Economics
FIN	5381	Managerial Accounting
MAN	6633	Management of International Operations
QM	5502	Quantitative Methods in Business and Management

For satisfying the specialization in **Management with a focus on Organizations and People** students must select four of the following courses:

BC	5441	Team Effectiveness
BC	5628	Perfecting the Presentation
MAN	5631	Ethics in Business and the Professions and in Global Operations
MAN	6202	Cross-cultural Management
MAN	6501	Fundamentals of Entrepreneurship
MAN	6632	Human Resource Management

## **ELECTIVES**

If the student does not select a specialization she/he may select 4-5 courses of the above courses as electives in addition to completing the core courses. Electives also include courses from other departments with the approval of the Chairman of the Graduate School.

## **COURSE DESCRIPTIONS**

### **BC 5441 Team Effectiveness (4)**

This course helps students to discover the qualities and characteristics of effective teams by studying theories of team communication, stages of team development and strategies to increase productivity. The course explores the concept of teamwork and the ability of teams to work together and to accomplish tasks. It also provides techniques to transform groups into working, successful teams.

### **BC 5592 Using the Internet in Business (4)**

This course focuses on the application of the Internet to business. A case study approach is employed to illustrate real life examples of how and why business enterprises are using the Internet to add value. Though students are expected to use the Internet for class assignments, the discussion will center on broader organizational, financial and communication topics. Specific topics that are covered include marketing and sales, customer service, human factors, financial decisions and transactions, organizational communication, and change in the relationship to new technologies.

### **BC 5628 Perfecting the Presentation (4)**

This course helps students to learn the conceptual and practical tools necessary for preparing, organizing and presenting polished and professional presentations. The course is intended to develop excellent public speaking and written report skills and is intended to give both the relative novice and the experienced presenter new skills and techniques to perfect their encounter with the public.

### **EC 6680 Managerial Economics (4)**

Application of economic principles to managerial decision making. Topics may include: demand, costs and market structure and their relation to pricing, product choice and resource allocation; industrial organization; agency theory and personnel economics. Cannot be counted towards majors in economics.

### **EC 5482 World Economy and Global Competitive Strategies (4)**

Key dimensions of the global economy, including international opportunities and risks, are the focus of this course. Trade theory and policy, the balance of payments, foreign exchange markets, exchange rate systems and risks and international payment systems, foreign direct investment are also discussed in the course. The changing rate of multinational corporations; and elements of international corporate strategies are examined.

### **FIN 5371 Corporate Finance for the Knowledge Age (4)**

This course offers a second-level treatment of financial management for advanced students. The emphasis is given on the blending of conceptual and technical tools in solving actual case problems. It is intended to provide students with greater familiarity of actual case problems as faced by the financial officer.

### **FIN 5372 Money, Banking and Financial Strategies (4)**

This course examines the role of money in the economy and the function of financial institutions and markets. It explores financial theory and the function of regulation and control. Students learn how to follow changes in the supply of money and credit and how they affect the growth of the economy, the level of employment, and the rate of inflation. They also understand the role of banks and other financial institutions and how they provide the mechanism for allowing money to perform its function of facilitating the economy.

**FIN 5381 Managerial Accounting (4)**

The study of management accounting for internal reporting and decision-making. The course introduces a business-management approach to the development and use of accounting information. Major topics include cost behavior, cost analysis, profit planning and control measures. Accounting for decentralized operations, capital budgeting decisions, and ethical challenges in managerial accounting are also covered.

**FIN 5500 Financial Management (4)**

A study of the theory of assembling and investing capital. The course provides principles for deciding which capital-using projects to undertake and how much to spend on them, principles for determining the best combination of short-time debt, long-term debt, and equity with which to carry out these projects.

**BC 5566 Total Quality Management (TQM) (4)**

Learn how to integrate TQM into planning and project management, strategic management, process improvement, and how to modify an organizations behavior. Assess supervisor's roles and responsibilities related to quality including identifying and meeting customer's needs, applying tools and techniques for improving systems and processes, developing a quality training plan for work group members and enhancing work group commitment to continuous quality improvement.

**FIN 6001 Financial Markets (4)**

Everyone in today's international marketplace - investors and corporate end-users, brokers, traders, and commercial and investment bankers - must not only know the products and the markets they trade, they must also understand the economics that drive demand and the mathematics that explain it. And as new markets open in Europe, Latin America, and Asia, students must understand all of this from a complex global perspective. This course provides students with the opportunity to study global markets from different perspectives and to use economic concepts for this purpose.

**FIN 6410 Portfolio Theory and Management (4)**

This course focuses on investment environment and concepts used to manage security portfolios. Issues such as portfolio/security risk/return tradeoffs, portfolio diversification, asset allocation, active portfolio management versus indexed portfolios and portfolio performance evaluation are to be discussed in this course. Students will also have hands-on experience in these areas.

**FIN 6510 Risk Management (4)**

This course aims to educate students in the theory and practice of risk management and insurance at an advanced level. The course is designed to prepare students for analytical and technical staff, consulting, and applied research positions in risk management, employee benefits, or insurance. It is also designed to provide students with a solid understanding of the application of mathematics in economics and finance to address contemporary risk management issues. Emphasis is placed on the diagnosis, analysis, pricing, and the customization of solutions to risk management problems, broadly defined to include both financial and operational risk exposures.

**FIN 6615 International Trade and Investments (4)**

The course focuses on the development of exports and imports in the context of changing international trade and investment relations. There will be analyses of: domestic and foreign environments and international sales and decisions in terms of product selection, risk minimization, choice of distribution channels and trade intermediaries, shipping terms and facilities, supporting documentation, necessary licenses, exchange and export-import controls, tax incentives, financing options, insurance, customs clearing, and other requirements.

**FIN 6618 Security Investments Analysis (4)**

Focuses primarily upon analysis of securities from both the fundamental and technical sides. The methodology for analyzing financial reports, valuing securities, selecting investments and managing a portfolio are also discussed.

**FIN 6671 International Business Finance (4)**

The course analyzes the international environment and its influence on corporate financial management of international operations, motivation for direct foreign investment, international banking operations; government programs to encourage exports are also explored. Problems related to multinational companies are discussed.

**MAN 5511 Global Perspectives on Organizational Management and Behavior (4)**

Obtaining, mobilizing, and managing an organization's human and intellectual capital is the key to short- and long-term business success. In this course students will develop a conceptual framework for understanding the human elements of working and managing in organizational settings. Recent psychology research and organizational behavior theory will help students develop effective management skills. The students will discuss the fundamental tenets of managing human capital and identify and list challenges to effective organizational management. They will also design strategy for identifying problems and the well being of a work group.

**MAN 5601 Strategic Management (4)**

This course helps students to understand the functioning of organizations as a whole and the integration of marketing, finance, human resources and information and control systems into a common mission. The course provides students with competencies which include the ability to analyze industries and societal environments; the ability to assess patterns or develop strategy over time and across functional subsystems; and the ability to monitor organizational effectiveness and to manage the strategic change process.

**MAN 5631 Ethics in Business and the Professions and in Global Operations (4)**

The course covers the basic concepts and theories for analysis of moral issues arising in business and professional practice; personal and organizational code of ethics; ethical dilemmas with an understanding of the social, economic and political contexts. Issues of the global electronic communication are also discussed.

**MAN 6013 International Business (4)**

The course introduces students to the issues involved in doing business in the growing world market of the 21st century. Topics include international trade, the international monetary system and political, legal and cultural considerations of world business.

**MAN 6202 Cross-cultural Management (4)**

Cross-cultural management is a topic that is receiving increasing attention as a result of growing diversity in the workplace. This course will focus on cultural differences in effective management styles and introduces methods for preparing employees for overseas assignments.

**MAN 6501 Fundamentals of Entrepreneurship (4)**

Successful entrepreneurial ventures bring together a visionary leader, a committed team and a marketable idea. This course examines the characteristics, knowledge, skills and abilities necessary to successful entrepreneurship. It explores how entrepreneurs select others for involvement, development of an entrepreneurial culture, and find, screen and evaluate ideas for new business opportunities.



**MAN 6503 Developing Business and Marketing Plans for New Ventures (4)**

New ventures start with an idea, but they succeed through careful planning. In this course students will write a business plan to launch and operate a new venture. In addition, this course will emphasize strategies to identify, attract, and sell to customers. The resulting business and marketing plan provides a basis for raising capital and attracting commitments from potential customers, suppliers, and employees.

**MAN 6632 Human Resource Management (4)**

This course combines emphasis on the advanced personnel functions and current issues in human resource management. The functional focus includes human resources planning, techniques for predicting job success, evaluation of a program's effectiveness, career management and costing human resources. Case studies are assigned and discussed to link the theory to practice.

**MAN 6633 Management of International Operations (4)**

The course provides an understanding of the role of operations management in the successful operation of any organization concerned with the production of goods and/or services. It focuses on the problems of management decisions in such areas as European Union settings. Evaluates operations management decisions in such areas as process and selection, choice of technology, flow and output and capacity. Demand strategies are analyzed along with control techniques of MRP, SFC, and DRP, the workforce on relationship to job design, job enrichment and issues of measurement and productivity. Topics include the international environment, international strategies and risks, and managing human resources in the international environment.

**MAN 6901 Emerging Strategies in Information Management (4)**

Strategic planning and decision-making are crucial to all organizations. Information management is particularly subject to changes in public policy and social expectations. The legal and social environment regarding privacy and the ownership of information is constantly changing. This course will focus on the interplay of internal and external factors in planning for the future of information management.

**MAN 6904 E-commerce and Internet (4)**

This course focuses on the development of e-commerce and e-business. It illustrates how the Internet helps to develop businesses and how it transforms the business environment. There are real-life cases to show students how the processes of selling and buying takes place on the Internet and how organizations need to adapt their strategies, tactics and technology to transform themselves and the success and failure they face during this process.

**MK 5526 Decision-Making on Marketing Concepts (4)**

The course is designed to explore fully the change of the marketing department in a business organization with the objective of identifying marketing decision and problems areas. The course has in-depth coverage of the marketing mix strategies along with an understanding that the marketing concept is practical and adaptable to both profit and non-profit organizations.

**MK 6620 Global Perspectives on Consumer Behavior (4)**

Why people buy is a matter of critical interest to marketing management, thus the consumer is the focus of the marketing system. Marketing activities such as pricing, product development, branding, promotion and relations among channel members are analyzed and developed to reflect a commitment for providing consumer satisfaction.

**QM 5502 Quantitative Methods in Business and Management (4)**

Large amounts of quantitative data are produced by and for business. This course helps you to make sense of them and their analysis. Students will learn to perform simple quantitative analyses, and to understand and interpret the results of them. Wherever there is uncertainty, quantitative methods are statistical methods, and the course gives a good grounding in statistics for business and economics. Other quantitative tools are operational research (management science) methods which will be covered as well in this course. Students are expected to have basic mathematical skills.

# MASTER OF BUSINESS ADMINISTRATION IN SHIPPING

## COORDINATOR:

## MISSION OF THE PROGRAM

The mission of the graduate program in Business Administration at *The American University of Athens* is to offer an educational program which enables students through online and/or open learning programs to develop skills and proficiencies essential for contribution to a dynamic professional and social environment and global economy. The rapid growth and multifaceted development of contemporary business has created the need for executives to combine multidisciplinary academic backgrounds and to respond to a global economy, rapidly changing markets, and powerful technological innovation. Today's managers, investors and policy-makers need to understand the interactions of dozens of markets, work cultures, and investment opportunities. The M.B.A. program thus aims to train executives and future managers by the successful integration of this knowledge. Meeting this challenge, AUA offers an M.B.A. with the following program specializations:

- ☐ International Business
- ☐ Global Financial Analysis and Management
- ☐ Management with a focus on:
  - d. IT and E-Commerce
  - e. Operations
  - f. People and Organizations

## PREREQUISITES

Basic knowledge of business administration, management or economics. If the students have no prior knowledge then there is a need for extra courses from the undergraduate level. These courses include: accounting, finance, marketing and management.

To receive an M.B.A., students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

## GRADUATION REQUIREMENTS

Students must complete 44 credit hours with the following distribution:

- ☐ The successful completion of 5 core courses for a total of 20 credit hours.
- ☐ The successful completion of 3-4 specialization courses for a total of 12-16 credit hours or, as an alternative, 3-4 electives for the same total of credits.
- ☐ Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## MASTER'S THESIS REQUIREMENTS

Students must fulfill the following requirements:

- ☐ Have a GPA of 3.00 or above.
- ☐ Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- ☐ Complete and defend a Master's thesis that counts for 8-12 credit hours.
- ☐ The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in the business field and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and then produce a professional report which constitutes original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- ☐ The student must defend the thesis to a three-person committee which includes two instructors from the same field and one from another department.

## SPECIALIZATIONS OFFERED

The School offers three specialization areas which respond to the contemporary demands of today's business world. Students must take at least three courses within the specific specialization to satisfy the requirements. Students may take a fourth course if they wish to prepare an 8-credit thesis instead of a 12-credit one. The specialization areas offered by AUA are:

- ☐ International Business
- ☐ Global Financial Analysis and Management
- ☐ Management
  - IT and E-commerce
  - Operations
  - People and Organizations
- ☐ Shipping

This program provides students with a combination of conceptual, analytical and managerial training in Shipping. A sound understanding of the application of techniques in Shipping Operations and Maritime Law is offered.

ML 5301	Maritime Law
ML 5401	Marine Insurance
ML 4406	Collisions, Limitations and Liabilities
and	
SST 5301	Introduction to Ship Operation and Management
SST 5501	Chartering Policy and Analysis
SST 5502	Management of Maritime Operations
SST 5999	Maritime Environmental Principles
SST 6001	Shipping Policies
SST 6401	Advanced Ship Operation

## **COURSE DESCRIPTIONS**

### **ML 4406 Collisions, Limitations and Liabilities (4)**

It focuses on comparative international and commercial legal environment for vessel managers. Course considers such topics as control (dispute resolution, ownership, maritime liens, mortgages, registry, port state control); liability (maritime workers, marine environment, collisions, limitation of liability); and contracts (carriage of goods and passengers, charter parties, general average, towage, pilot age, salvage).

### **ML 5301 Maritime Law (4)**

Initial consideration of peculiarly American Admiralty jurisdiction and practice, after which a survey of substantive rules of the general maritime law respected by shipping and trading nations is essayed. Carriage of goods by water (including bills of lading, charter parties, and general average), collisions, salvage, and seafarers' personal injuries are treated as discrete subjects with warranties of seaworthiness, applicability of multilateral treaties, harmonizing effects of worldwide London insurance markets, and modern English precedent being recurring themes.

### **ML 5401 Marine Insurance (4)**

This course examines the legal principles which underpin relationships between parties to the insurance contract (including intermediaries and third parties) and evaluates the role of standard terms in marine insurance contracts. While much of the general law of insurance is based on principles developed in connection with insuring cargo and ships against perils of the sea, those general principles now coexist alongside a codified statutory regime which is applicable only to marine insurance contracts.

### **SST 5301 Introduction to Ship Operation and Management (4)**

Principles of ship operation and management. Ship procurement, planning sailing schedules, ship's paper, custom procedures, expenses and freight rates, chartering, lines conferences and port operations.

### **SST 5501 Chartering Policy and Analysis (4)**

The aim of this course is to describe and analyze the chartering theory and practice in dry bulk and tanker operations from the ship-owner, chartered and shipbroker's point of view.

### **SST 5502 Management of Maritime Operations (4)**

The aim of this course is to provide a detailed introduction to the efficient and effective methods of Ship Management and Ship Operations in order to run the vessels within international standards.

### **SST 5999 Maritime Environmental Principles (4)**

The environmental protection and pollution prevention regulatory framework is presented in this course.

### **SST 6001 Shipping Policies (4)**

The aim of this course is to present the international regulatory framework of the shipping business and to analyze all international conventions and regulations.

### **SST 6401 Advanced Ship Operation (4)**

This course will provide students with a conceptual understanding of owning or managing a marine shipping company from a Canadian perspective. Topics covered include basic trade theory, the structure of marine transportation companies, marine markets, charter parties, risk management, ship finance, budgeting, labor relations, crewing, ship construction and repair, an introduction to marine insurance and current specialty topics in the shipping business.

# **MASTER OF BUSINESS ADMINISTRATION FOR LAWYERS**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

This program has been designed for both legal executives and law practitioners.

The MA degree of AUA is designed to offer its students through online and/or open learning programs the necessary knowledge and skills to better understand business, managerial and communication issues. This program will help students to interrelate with specialized legal studies in commercial, contract and European Law by studying optional single courses via the Institute of Legal Executives, ILEX.

The aim of the program is to enable lawyers to deal with business issues connected to legal activities and/or legal executive activities and requirements.

An emphasis is given to the use of financial statements, the distinction between cash flow and profits, valuation issues involved in financial statement analysis and concepts of taxation are examined.

## **PREREQUISITES**

The following courses are to be taken by M. B. A. students regardless of their specialization:

EC 5482	World Economy and Global Competitive Strategies
FIN 5371	Corporate Finance for the Knowledge Age
MAN 5511	Global Perspectives on Organizational Management and Behavior
MAN 5601	Strategic Management
MK 5526	Decision-Making on Marketing Concepts

## **GRADUATION REQUIREMENTS**

Students must complete 44 credit hours with the following distribution:

- ☐ The successful completion of 5 core courses for a total of 20 credit hours.
- ☐ The successful completion of 3-4 specialization courses for a total of 12-16 credit hours or, as an alternative, 3-4 electives for the same total of credits.
- ☐ Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## **MASTER'S THESIS REQUIREMENTS**

Students must fulfill the following requirements:

- ☐ Have a GPA of 3.00 or above.
- ☐ Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- ☐ Complete and defend a Master's thesis that counts for 8-12 credit hours.

- The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in the business field and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and then produce a professional report which constitutes original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- The student must defend the thesis to a three-person committee which includes two instructors from the same field and one from another department.

## **LAW COURSES**

Optional participation with the ILEX examination for single subject diplomas

LI	5310	Contract and Consumer Law
LI	5314	Business Law
LI	5420	Law of Intellectual Property
LI	5421	Law of Contract
LI	5425	Strategic Thinking and the Legal Issues (4)
LI	5426	Negotiations (4)
LI	5427	Financial Reporting and Taxation (4)
LI	5335	European Union Law
LI	6429	Company and Partnership Law
LI	6435	Planning Law
LI	6432	Public Law

## **COURSE DESCRIPTIONS**

Optional participation with the ILEX examination for single subject diplomas

### **LI 5310 Contract and Consumer Law (4)**

This course provides students with the theoretical foundations and practical applications of contract and consumer law. The course utilizes a model and method approach, which presents theory and procedure in a case problem context. The course acquaints students with various traditional legal theories and compares the contrasts them with law as it has evolved to meet new changes in society. Areas to be covered include compulsory disclosure information, consumer claims and defenses, abusive collective practice, state and federal regulation of the cost of credit and alternative dispute resolution.

### **LI 5314 Business Law (4)**

Legal analysis of contemporary environment of business law including the common law, legal reasoning, court systems and procedures, constitutional law, torts, contracts and corresponding areas of Article 2 of the Uniform Commercial Code, agency, property, bailment, international law, and related jurisprudential topics in light of social, ethical, political, economic, and global perspectives.

### **LI 5420 Law of Intellectual Property (4)**

The course is an introduction to the law of intellectual property. This course is a pre-requisite for advanced courses in IP, but also a good survey of the area for students interested in pursuing other legal careers. The focus of the course is on understanding the distinctions and similarities between the various aspects of intellectual property law.

### **LI 5421 Law of Contract (4)**

The objective of this course is to provide an introduction to the fundamental facts that anyone should know about the Law of Contract. It discusses the principles that make a contract valid or not. The basic components that must always be in a valid contract - offer, acceptance, consideration (money) and intention to enter legal relations are explained. With the aid of real life cases, the rights and obligations that contracts create and which the law will enforce are thoroughly examined.

### **LI 5425 Strategic Thinking and the Legal Issues (4)**

This course will enable the student to understand the model and principles used to describe and analyze the interaction of interconnected interests with a focus on problem-solving skills in a strategic situation. Law-making, regulations of public administration and other law issues are also examined.

### **LI 5426 Negotiations (4)**

The student will acquire a conceptual framework for preparing and conducting negotiations; the art of negotiating one-to-one relationships as well as in teams.

### **LI 5427 Financial Reporting and Taxation (4)**

This course examines the various aspects of financial reporting to persons and institutions outside the corporation and deals with information indispensable to a lawyer.

### **LI 5335 European Union Law (4)**

This course introduces students to the legal environment of the EU including the structure and legal methodology of the European Community/Union. Tensions between the national legal systems and the (superior) EC legal order are explored.



**LI 6429 Company and Partnership Law (4)**

Surveys agency law, whose principles are important in many other areas of law. Studies the legal organizations commonly used by small businesses: partnerships and limited liability companies (LLCs).

**LI 6435 Planning Law (4)**

A planning course involving the application of the law of corporations and of federal taxation to planning business operations in partnership and corporate form. May be taught in seminar format.

**LI 6432 Public Law (4)**

Emphasizes legal relations of states inter se. Topics include the resolution of disputes between states; the legality of the threat and use of force; individual responsibility; the conflict between domestic and international law; obligations of nationals; and international organizations.

# **School of Liberal Arts**

## **MASTER OF ARTS**

### **IN**

## **BUSINESS COMMUNICATION**

#### **COORDINATOR:**

#### **MISSION OF THE PROGRAM**

Communications are critical to businesses especially with the advancement in information technologies. A Master's in Business Communication provides students through online and/or open learning programs with the tools and skills for excelling in the ways of communicating their messages. It also strengthens their skills in presentations, information technologies and understanding the communication process. This is carried out by an interdisciplinary process of learning experiences augmented by field study and internships as they pursue their degrees with a great emphasis on computer, Internet and Web applications. The course explores a broad range of topics important to business leaders, such as interpersonal and intercultural communication, organizational management, technological expertise, business acumen, and leadership.

#### **PREREQUISITES**

Basic knowledge of business administration, management or economics. If the students have no prior knowledge then they need to take extra courses from the undergraduate level. These courses include: accounting, finance, marketing and management.

To receive an M.A. in Business Communication, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

#### **GRADUATION REQUIREMENTS**

Students must complete 40 credit hours with the following distribution:

1. The successful completion of 5 core courses for a total of 20 credit hours.
2. The successful completion of 2-3 electives for a total of 8-12 credit hours.
3. Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## MASTER'S THESIS REQUIREMENTS

Students must fulfill the following requirements:

- 1) Complete at least eight credits of graduate coursework with an overall GPA of 3.00 or above and no more than two class grades below "B".
- 2) Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- 3) Complete and defend a Master's thesis that counts for 8-12 credit hours.
- 4) The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of graduate study. Students are expected to prepare a thesis which integrates the knowledge they have acquired with original research. They are expected to choose a topic that captures the latest developments in the business communication field and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and produce a professional report which constitutes original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- 5) The student must defend the thesis to a three-person committee, which includes two instructors from the same field and one from another department.

## CORE COURSES

BC	5331	Dynamics of Person-to-Person Communication
BC	5441	Team Effectiveness
BC	5592	Using the Internet in Business
BC	5628	Perfecting the Presentation
MAN	6202	Cross-cultural Management

## ELECTIVES

Students can choose from the following electives or from the courses offered in the M.B.A. department, or other departments, with the approval of the Chairman of the Graduate School.

BC	5562	Creating Business Solutions with Telecommunications Technologies
BC	5625	Advanced Oral and Written Business Communication
MAN	5631	Ethics in Business and the Professions, and in Global Operations

## **COURSE DESCRIPTIONS**

### **BC 5331 Dynamics of Person-to-Person Communication (4)**

The course explores important principles of effective interpersonal communication. It helps to discover and use the various modes of communication in developing and maintaining relationships. The course provides students with the background for understanding communication at the workplace and it provides them with the skills needed to improve individual communication.

### **BC 5441 Team Effectiveness (4)**

Discover the qualities and characteristics of effective teams by studying theories of team communication, stages of team development and strategies to increase productivity. The course explores the concept of teamwork and the ability of teams to work together and to accomplish tasks. It also provides techniques to transform groups into working, successful teams.

### **BC 5562 Creating Business Solutions with Telecommunications Technologies (4)**

The course gives an understanding of engineering techniques, including queuing/traffic theory, and an appreciation of the tradeoffs of various kinds of network design used to solve a variety of business problems. It familiarizes students with how to conduct an internal market study, how to prepare a Request for Proposal (RFP) and how to analyze vendor responses.

### **BC 5592 Using the Internet in Business (4)**

This course focuses on the application of the Internet to business. A case study approach is employed to illustrate real life examples of how and why business enterprises are using the Internet to add value. Though students are expected to use the Internet for class assignments, the discussion will center on broader organizational, financial and communication topics. Specific topics that are covered include marketing and sales, customer service, human factors, financial decisions and transactions, organizational communication, and change in the relationship to new technologies.

### **BC 5625 Advanced Oral and Written Business Communication (4)**

More beyond basic oral and written skills to a deeper understanding of communication patterns. Practice identifying different types of audiences to build competence in targeting oral and written communication for increased effectiveness.

### **BC 5628 Perfecting the Presentation (4)**

This course helps students to learn the conceptual and practical tools necessary for preparing, organizing and presenting polished and professional presentations. The course is intended to develop excellent public speaking and written report skills and is intended to give both the relative novice and the experienced presenter new skills and techniques to perfect their encounter with the public.

### **MAN 5631 Ethics in Business and the Professions, and in Global Operations (4)**

Basic concepts and theories for analysis of moral issues arising in business and professional practice; personal and organizational code of ethics; ethical dilemmas with an understanding of the social, economic and political contexts; ethical issues of the global electronic communication issues.

### **MAN 6202 Cross-cultural Management (4)**

Cross-cultural management is a topic that is receiving increasing attention as a result of growing diversity in the workplace. This course will focus on cultural differences in effective management styles and introduce methods for preparing employees for overseas assignments.

# **MASTER OF ARTS IN POLITICS AND POLICY-MAKING**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

The mission of the program is to provide students through online and/or open learning programs with the core skills and knowledge of politics, international relations and policy-making. The unique location of AUA in Greece, with its proximity to Southern Europe, the Balkans and the Middle East, offers students exposure to exclusive political, regional, European and world developments. It helps students develop a critical understanding of the methods and epistemologies of political science, the art and science of policy-making and the field of international relations.

## **PREREQUISITES**

A B.A. degree in Political or Social Sciences; or extra non-credit courses in political science.

To receive an M.A. in Politics and Policy-making, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

## **GRADUATION REQUIREMENTS**

Students must complete 40 credit hours with the following distribution:

- 1) The successful completion of the 5 core courses within one selected area of specialization.
- 2) The successful completion of 2-3 electives for a total of 8-12 credit hours.
- 3) Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## **MASTER'S THESIS REQUIREMENTS**

Students must fulfill the following requirements:

- 1) Have a GPA of 3.00 or above.
- 2) Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- 3) Complete and defend a Master's thesis that is equivalent for 8-12 credit hours.
- 4) The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis, which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in political science or a policy-making field, and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and produce a professional report which constitutes their original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- 5) The student has to defend the thesis to a three-person committee, which includes two instructors from the same field and one from another department.

## SPECIALIZATIONS OFFERED

- Comparative Politics: the objective of this specialization is to train students in comparative political development in Western Europe, Eastern Europe, the Balkans, the Middle East, East and South Asia, and Latin America; it also examines theories of development, underdevelopment, and democratization.
- Political Theory: this specialization is focused on the study of major political theorists from the Ancient Greeks until the present. Issues discussed include natural laws and rights, justice, and human nature and political institutions.
- International Relations (IR): this specialization focuses on the history and theories of international relations, on contemporary issues and approaches to IR in addition to looking at conflict in these relations.
- Policy-making: the objective of this specialization is to train students on how the processes of policy-making develop. It examines the different approaches used for policy-making, and decision-making in addition to focusing on specific areas such as social policies and economic policies.

## CORE COURSES

Students must select one of the specialization areas mentioned above. The core courses for the **Comparative Politics** specialization are:

PSC	5600	Comparative Politics
PSC	5615	State, Ethnicity and Religions in the Balkans
PSC	5700	Politics and the Study of Democracy
PSC	6500	Politics and Culture in the European Union
PSC	6657	Problems in Comparative Political Analysis
PSC	6842	North-South Relations and Comparative Development Issues

The core courses for the **International Relations** specialization are:

PSC	5510	Contemporary International Relations
PSC	5511	Approaches to the Study of International Relations
PSC	6510	Research Methods in International Relations
PSC	6610	Ethics and International Relations
PSC	6710	Conflict in International Relations

The core courses for the **Policy-making** specialization are:

PSC	5310	Policy Analysis and Decision-making
PSC	5410	Policy-making in the European Union
PSC	5660	Politics and Economic Policy-making
PSC	6300	Social Policy
PSC	6400	Migration policies

The core courses for the **Political Theory** specialization are:

PSC	5210	Approaches to Classical and Modern Political Theory
PSC	5350	Multiculturalism and Politics in the Age of Globalization
PSC	6250	Political Violence and Terrorism

## **ELECTIVES**

Students may take any of the following courses to complete their graduation requirements.

PSC	5610	The New Eastern Europe
PSC	5720	Contemporary Political Development of China
PSC	6300	Social Policy
PSC	6301	Environmental Policy
PSC	6755	State and Civil Society in the Middle East

## COURSE DESCRIPTIONS

### **PSC 5210 Approaches to Classical and Modern Political Theory (4)**

Focuses on the nature, functions, and goals of political organization. Among other works Plato's Republic, Aristotle's Politics, Machiavelli's The Prince, Hobbes' The Leviathan, Locke's Second Treatise on Government, Rousseau's The Social Contract, Mill's On Liberty and Marx's The Communist Manifesto will be examined. The principal objective is to show how political thinking deals with tensions and congruencies between human nature and institutions, the meaning of society, happiness, legitimacy, power, and authority.

### **PSC 5310 Policy Analysis and Decision-making (4)**

Seminar in analytical concepts and rational policy-making models applies to each of several issue areas: education, welfare, health care, economy, and the environment in the United States and Europe.

### **PSC 5350 Multiculturalism and Politics in the Age of Globalization (4)**

Explores how and why general democratic theory, key political institutions, non-governmental pressure groups, the corporate world and socio-political attitudes generate or attempt to eliminate injustice, prejudice, and discrimination. Problems of racism, sexism, classicism, ageism, religion-ethnic conflicts, and ideas for a rightful world will be investigated with regard to globalization.

### **PSC 5410 Policy-making in the European Union (4)**

This course equips students to better understand the workings of the European Union and its different directorates, departments and units. It exposes students to the details of the policy-making processes, the procedures, regulations, and relations among member states decision-makers which have consequences on the political, social and economic fields of these countries.

### **PSC 5510 Contemporary International Relations (4)**

This course examines the main theoretical literature of the international relations field. Issues discussed include arms races and military security through international political economy, global environmental concerns, population dynamics, questions of development, and the role of new international actors such as multinational corporations and the UN. Students learn the fundamental terms and themes of the discipline.

### **PSC 5511 Approaches to the Study of International Relations (4)**

This course continues the discussion of contemporary approaches to the study of international relations. It presents new theories used to analyze the field such as feminism and postmodernism. It also incorporates the local level of analysis with the global level and focuses on contemporary issues such as the security arrangements and global social movements. It compares historical, descriptive, normative, and scientific approaches. It also surveys a variety of theories on international conflict of international integration.

### **PSC 5600 Comparative Politics (4)**

The course prepares students for the comparative analysis of political entities on any level. It discusses the political approaches to the study of comparative politics. Students become acquainted with the key writings that have been used to analyze comparative politics. Case studies from different areas of the world are used to present the basic concepts.



**PSC 5660 Politics and Economic Policy-making (4)**

Political systems and institutions influence the policy-making processes of fiscal policies, budgets and public finance. Globalization has also affected the role of the important players and their contribution to the formulation of fiscal policies.

**PSC 5610 The New Eastern European (4)**

Domestic and foreign policies of Eastern European states, their relations with the former Soviet Union and with each other. Analysis of the formation and subsequent implosion of the Soviet sphere in Europe. The collapse of communism in Poland, Germany, Czechoslovakia, Hungary, Romania, and Bulgaria and its impact on the Soviet crisis, the Western alliance, and international relations.

**PSC 5615 State, Ethnicity and Religions in the Balkans (4)**

The Balkan countries have been characterized in the 20<sup>th</sup> century by their violent ethnic disputes and wars. These disputes and wars can be explained by the multiplicity of ethnicities, religions and races living in the Balkans or by their geo-political location. The course explores all these interpretations and discusses the role of Greece in the region.

**PSC 5700 Politics and the Study of Democracy (4)**

History of democracy as an idea and how it has developed from ancient Greece until this day. Concepts of democracy by different schools of thought have influenced the developments in the political arena. The role of parliaments, the media, civil society and the idea of social pluralism are also to be analyzed.

**PSC 5720 Contemporary Political Development of China (4)**

An in-depth examination of politics in post-Mao China, this course focuses on several critical issues and uses various conceptual frameworks to understand why the reform process broke down and examines prospects for the future.

**PSC 6250 Political Violence and Terrorism (4)**

This course is designed to examine in terms of theories, attitudes, strategies and consequences various forms of political violence, such as assassinations, terrorism by sub-national and transnational organizations, state terror, mass killing, and so called ethnic cleansing.

**PSC 6300 Social Policy (4)**

The study of social policy is focused on the ways that society and polity respond to specific social needs. It deals with how society's organizations and institutions respond to issues of social welfare, health care, unemployment, disabilities and gender differences in order to improve the quality of life and standards of living.

**PSC 6301 Environmental Policy (4)**

The purpose of this course is to map, examine and analyze various issues concerning the formulation of environmental policy. Environmental policies are becoming more central on the global, intergovernmental and local levels. The course will examine the responses of political institutions, society and nongovernmental organizations to issues concerning the environment.

**PSC 6400 Migration Policy (4)**

Globalization has affected labor markets and the movement of people from less developed countries compared with Western countries. Despite the initial acceptance of many of these countries to foreign laborers, the influx of workers and economic crises has led these states or supra states to change their migration policies. This course will analyze these changes and the impact of new policies on receiving and sending societies.

**PSC 6500 Politics and Culture in the European Union (4)**

This course examines the impact of cultural differences on political systems and institutions of the European Union. It explores the interaction among the member states from the cultural perspective and how political changes might reflect on cultural variables.

**PSC 6510 Research Methods in International Relations (4)**

This course acquaints students with the wide range of techniques available for investigating international relations. Through innovative assignments, use of the Internet, and database analysis, students are exposed to useful approaches to understanding international relations.

**PSC 6610 Ethics and International Relations (4)**

Seminar examining and employing important approaches of international ethics to understand selected normative controversies of contemporary world politics. Is my country always right? Can war be justified? Is terrorism always wrong? What is the place of human rights in foreign policy?

**PSC 6657 Problems in Comparative Political Analysis (4)**

Focuses on the problem of nationalism. Distinguishes between and compares types of nationalism, examines their origins, and analyzes their political, social, and economic implications using as examples England, France, Germany, Russia, and the United States. Particular emphasis will be placed on the possible role of national consciousness as a stimulus of radical political change. Also discussed is the extent to which various nationals may be affected by economic trends such as globalization and the emergence of supra-national identities.

**PSC 6710 Conflict in International Relations (4)**

The primary goal of international conflict resolution is to use means other than violence to settle both inter-state and intra-state disputes, and to transform the relationships of disputing parties such that violence is not likely in the future. The theory is drawn from many disciplines, including law and many of the social sciences. Research focuses on understanding the dynamics of conflict in the international system as it manifests at the interpersonal, intergroup, and intergovernmental levels. It also involves analysis of what kinds of interventions are most effective at preventing, settling and resolving such conflicts. This course will provide an in-depth look at the theories of conflict and the theories of conflict resolution that address such conflicts. It will also explore some of the major theoretical debates in the field.

**PSC 6755 State and Civil Society in the Middle East (4)**

This course examines the reasons for the fluctuation in the relationship between states and civil societies in the Middle East. It examines the debate on whether there are active civil societies in the Middle East or whether there are political movements only triggered by the aim to express a political stance.

**PSC 6842 North-South Relations and Comparative Development Issues (4)**

A course designed for students interested in the analysis of differences between the North and South from the perspective of development studies. It discusses the practical problems and controversies in development and the different approaches used to overcome these shortcomings.

# **MASTER OF ARTS IN MARITIME LAW AND INTERNATIONAL BUSINESS LAW**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

The Master of Arts in International and Maritime Law deals through online and/or open learning programs with teaching, research and consultant skills in Maritime Law, International Law of the Sea and related areas.

The mission of this degree program includes:

- ☐ Promoting teaching and research in all aspects of maritime law and the law of the sea
- ☐ Providing the legal profession and academia, law students, the marine and shipping industries with detailed information and specialist expertise related to developments in and the application of maritime law

## **PREREQUISITES**

A B.A. degree in law; or extra non-credit courses in political science. To receive an M.A. in International and Maritime Law, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

## **GRADUATION REQUIREMENTS**

Students must complete 40 credit hours with the following distribution:

- ☐ The successful completion of the 5 core courses within one selected area of specialization.
- ☐ The successful completion of 2-3 electives for a total of 8-12 credit hours.
- ☐ Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.

## **MASTER'S THESIS REQUIREMENTS**

Students must fulfill the following requirements:

- ☐ Have a GPA of 3.00 or above.
- ☐ Complete and defend a master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- ☐ Complete and defend a master's thesis that is equivalent for 8-12 credit hours.
- ☐ The master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis, which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in political science or a policy-making field, and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and produce a professional report which constitutes their original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- ☐ The student has to defend the thesis to a three-person committee, which includes two instructors from the same field and one from another department.

## **CORE COURSES FOR SPECIALIZATIONS OFFERED**

IML 5001	Admiralty Law	4
IML 5011	Carriage of Goods	4
IML 5111	International Law of the Sea	4
IML 5510	International Contracts	4
IML 6001	Marine Insurance Law	4
IML 6111	Law of Contract	4
IML 6211	Environmental Law	4
IML 6220	Competition Law in the EU	4
IML 6432	Public Law	4
IML 6990	International Arbitrage	4
IML 6911	Charter Elective Parties	4
IML 6029	Collision Law and Limitation of Liability	4
IML 6144	Tugs and Towage	4
IML 6995	Advanced Study in Maritime Law	4

## **COURSE DESCRIPTIONS**

### **IML 5001 Admiralty Law (4)**

This course considers those matters within the jurisdiction of the Admiralty Court and the special considerations and rules which apply to them together with some of those particular areas of law, as opposed to the “dry” areas covered in the units on Carriage of Goods by Sea and Marine Insurance, including acquisitions and transfer of interest in ships; ship mortgages; collisions; salvage; and marine pollution.

### **IML 5011 Carriage of Goods (4)**

The English law on this subject is of international importance due to the widespread practice of adopting English law and jurisdiction in sales and carriage contracts. The unit studies the two main types of contract for the carriage of goods by sea. The course considers the problems of identifying the relevant contracting parties in bills of lading contracts and the difficulties of suing in contract where the parties frequently have no express contract with the ship-owners and have to rely on statutory or judicial implication of contract. The application of the mandatory Hague-Visby Rules, to bill of lading contracts is also considered, as well as the ways in which the carrier's independent contractors can rely on them when sued non-contractually. In relation to charter parties, the unit considers how problems posed by specialized clauses dealing with the effects of delay, damage to vessel and cargo and remedies in the event of non-performance by either party have been resolved. The unit also examines contracts of carriage by road and the applicable mandatory code.

### **IML 5111 International Law of the Sea (4)**

This course examines the history and evolution of law of the sea, and in particular, the legal regime of the 1982 UN Convention. In particular, it examines the various zones within which maritime jurisdiction are exercised: the territorial sea, the contiguous zone, the exclusive zone, the continental shelf, the high seas and the deep sea bed. It explores and explains the legal regulation of a range of activities such as passage and resource exploration and exploitation, whilst at the same time considering the range of political factors that have shaped the development of the law. Particular attention is paid to the construction of baselines and to the delimitation of maritime zones in state practice and before the International Court of Justice. The regulation of fishing and the principles bearing upon the exercise of jurisdiction at sea are also focused upon. Moreover, the unit discusses the dispute settlement mechanisms and the linkages of the law of the sea with other normative systems and regimes, such as the WTO and the UN Charter, in particular Chapter VII, as well as the implications of the Proliferation Security Initiative and the “war against terror” on the freedom of navigation.

### **IML 5510 International Contracts (4)**

This course addresses the issues raised when business is transacted across national boundaries from the perspective of English law. In the paradigm situation (where A, who is domiciled in country X, contracts with B, who is domiciled in country Y) the following questions become relevant if a dispute arises between the parties: can A proceed – either by way of litigation or arbitration – against B in country X? Which law should the court or arbitral tribunal apply? Can A enforce the judgment or award in country Y? Jurisdiction, choice of law, enforcement of foreign judgments and international arbitration are considered in the context of both the common law and rules derived from international conventions.

**IML 6001 Marine Insurance Law (4)**

The object or effect of the law, particularly in commercial situations, is to distribute risk of loss or damage. Generally these risks can be covered by insurance. This course covers the basic range of circumstances in which risks to parties, cargo and ships involved in international trade can be covered and the circumstances in which an indemnity for losses suffered can be recovered. This requires a general understanding of the principles of insurance law as well as familiarity with the special requirements of marine insurance law and practice.

**IML 6029 Collision Law & Limitation of Liability (4)**

This course presents the general principles of maritime collision law, including causation, legal presumptions, the effect of statutory violations, apportionment of fault, damages, special evidentiary rules and an overview of navigation Rules of the Road and their interpretation. The course then provides an in-depth study of limitation of liability from a practical point of view. After study of the theory of limitation of liability, the assertion of this right will be considered in detail, as well as the content of the limitation fund and how it is distributed.

**IML 6111 Law of Contract (4)**

This course covers the formation of contracts, their contents, vitiating factors, discharge, and remedies. Topics covered include: agreement (offer and acceptance); consideration and promissory estoppel; intention to create legal relations; terms; qualifications on liability; illegitimate pressure; misrepresentation; mistake; frustration; performance and breach; remedies.

**IML 6144 Tugs and Towage (4)**

This course examines the development of domestic towage law, insurance in connection with towage and carriage, exculpatory clauses and towage contracts, duties of tugs, tows and fleeters, and collisions involving tugs and tows.

**IML 6211 Environmental Law (4)**

This course examines the legal techniques available to protect the environment in the context of our rapidly developing understanding of sustainability as a global environmental issue and key concepts such as the precautionary principle. Through an examination of both regulatory and market based approaches, the effectiveness of current domestic, European and international techniques is considered. From a consideration of these common themes the unit then explores particular environmental issues. The focus is upon European Community and domestic responses, but placed in their international law context.

**IML 6220 Competition Law of the European Union (4)**

This course provides an overall view of EC competition law and policy. The unit aims to be practical as well as theoretical, so that students understand how EC competition law applies to common business practices and transactions and how it affects the conduct of firms and the agreements and arrangements into which they enter. The unit covers the objectives and economics of competition law; agreements between undertakings; control of firms with market power; concerted practices and oligopolies; merger control; and extra-territoriality and globalization.

**IML 6432 Public Law (4)**

Emphasizes legal relations of states inter se. Topics include the resolution of disputes between states; the legality of the threat and use of force; individual responsibility; the conflict between domestic and international law; obligations of nationals; and international organizations.

**IML 6911 Charter Elective Parties (4)**

This course examines the process of “fixing” a charter party from the initial negotiation to execution, and the contractual relationship of all parties including brokers, agents, charters, owners, suppliers, receivers and the vessel. The course also examines the duties of owners and charterers under time and voyage charter parties and reviews the legal basis for disputes under both U.S. and English law.

**IML 6990 International Arbitrage (4)**

This course addresses the needs for professional approaches in this context. Therefore, the objective of this course is to give adequate basic knowledge of critical aspects of the making and maintenance of international commercial agreements. It will train future managers responsible for such contracts in identifying relevant problem areas ahead of time and relate them to the strategic alternatives open to the firm. It will also deal with issues concerning international arbitration.

**IML 6995 Advanced Study in Maritime Law (4)**

Initial consideration of peculiarly American Admiralty jurisdiction and practice, after which a survey of substantive rules of the general maritime law respected by shipping and trading nations is essayed. Carriage of goods by water (including bills of lading, charter parties, and general average), collisions, salvage, and seafarers' personal injuries are treated as discrete subjects with warranties of seaworthiness, applicability of multilateral treaties, harmonizing effects of worldwide London insurance markets, and modern English precedent being recurring themes.

# **MASTER OF ARTS IN PSYCHOLOGY**

## **COORDINATOR:**

## **MISSION OF THE PROGRAM**

Psychology contributes to a general understanding of human behavior through online and/or open learning programs. It is a science, a set of procedures for systematically observing facts about behavior and for organizing these facts into generalizations of laws that seek to explain why human beings and other animals act as they do. In addition, psychology is a means of promoting human welfare, a body of information that can be applied to help solve a variety of individual and group problems.

The psychology curriculum offers an eight-course program of study leading to an M.A. in Psychology. The program provides the flexibility to pursue a variety of areas in psychology, building on a common foundation of scientific methodologies. Exploration of the application of psychology to various behavioral, cognitive, and societal issues is the strength of the program. Most graduate-level courses offered by the department are open to M.A. students and all faculty are available for academic supervision. Faculty is actively engaged in psychological research, which provides ample opportunity for students to participate in ongoing projects.

## **PREREQUISITES**

A B.A. degree in Psychology; or extra non-credit courses in political science.

To receive an M.A. in Psychology, students must take the following non-credit seminars during the first semester:

CIS	5000	Computer Basics
EN	5000	Academic Writing
MA	5000	Mathematics Basics
RM	5000	Research Methodology

## **GRADUATION REQUIREMENTS**

Students must complete 40 credit hours as follows:

- ☐ The successful completion of the 5-6 core courses within one selected area of specialization.
- ☐ The successful completion of 2-3 electives for a total of 8-12 credit hours.
- ☐ Submission of a thesis of 15,000 - 30,000 words equivalent to 8-12 credit hours.



## MASTER'S THESIS REQUIREMENTS

Students must fulfill the following requirements:

- ☐ Have a GPA of 3.00 or above.
- ☐ Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the supervisor).
- ☐ Complete and defend a Master's thesis that is equivalent to 8-12 credit hours.
- ☐ The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of a graduate study. Students are expected to prepare a thesis, which integrates the knowledge they acquired with original research. They are expected to choose a topic that captures the latest developments in psychology and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and produce a professional report which constitutes their original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
- ☐ The student has to defend the thesis to a three-person committee, which includes two instructors from the same field and one from another department.

The following three tracks are offered:

### General

**Personality Theory/Social Psychology**

**Experimental/Biological Psychology**

### Course Requirements

PSY 5550	Psychological Research
PSY 5505	Advanced Personality Theory
PSY 5514	Industrial/Organizational Psychology
PSY 5533	Cognitive Behavior Therapy
PSY 5540	Advanced Social Psychology
PSY 5551	Psychotherapy: Theory and Research
PSY 5560	Advanced Child Psychology
PSY 6333	Topics in Psychology (Personality Theory/Social Psychology)

### Two courses from the following:

PSY 5501	Physiological Psychology
PSY 5513	Neuro-pharmacology: The Biochemistry of Behavior
PSY 5518	Advanced Human Neuro-psychology
PSY 6530	Conditioning and Learning
PSY 6675	Advanced Memory and Cognition
PSY 6697	Topics in Psychology (Experimental/Biological Psychology)
PSY 6618	Topics in Neuropsychological Assessment

## **COURSE DESCRIPTIONS**

### **PSY 5501 Physiological Psychology (4)**

This course examines a wide range of brain-behavior relationships with specific emphasis on aspects of psychological development and clinical practice. The long-term effects of childhood trauma; the effects of head injury; and the neurological aspects of disorders such as autism, schizophrenia, and depression are also discussed.

### **PSY 5505 Advanced Personality Theory (4)**

Course surveys major theoretical approaches to the study of personality. Applying theories of personality structure, students examine topics such as human nature, motivation, development, learning, and change. Instruction examines traditional personality models, including psychoanalytic, and behavioral, and more recent models, such as transactional, analytic, gestalt, and cognitive.

### **PSY 5513 Neuro-pharmacology: The Biochemistry of Behavior (4)**

This course examines the field of behavioral pharmacology: the systematic study of the effects of drugs on behavior and the way in which behavioral principles can help in understanding how drugs work. The focus is on the neurophysiological mechanisms of action of various psychoactive drugs and on the various neurotransmitter systems within the nervous system. Prerequisite: Consent of instructor.

### **PSY 5514 Industrial and Organizational Psychology (4)**

Examination of application of psychological principles and methods to problems commonly encountered in business and industry.

### **PSY 5518 Advanced Human Neuropsychology (4)**

This course introduces to you the basic principles of Neuropsychology. The objectives of the course are: (1) to introduce basic concepts of neurophysiology and functional neuroanatomy, (2) to review models describing different cognitive functions discussed in this course, and (3) to introduce the concept of brain-behavior connection via reviewing the neuro-anatomical and neuropsychological mechanisms underlying some common brain disorders. Students will each do an independent empirical research project.

### **PSY 5533 Cognitive Behavior Therapy (4)**

This course covers therapeutic situations. Outlining problems such as personality disorders, anxiety, emotional disturbances, and depression to the many psychological problems connected with physical sickness.

### **PSY 5540 Advanced Social Psychology (4)**

This course examines social factors that influence individual behavior. Integrative theoretical perspectives and emerging programs of research within the discipline are given specific consideration. Readings include a variety of original sources.

### **PSY 5550 Psychological Research (4)**

Principles of psychological test construction: norms, reliability, validity, item analysis; ethical issues in psychological testing; survey of intelligence, aptitude, achievement, personality, interest, and clinical measures.

### **PSY 5551 Psychotherapy: Theory and Research (4)**

This course will focus on the construct of mindfulness and its application to psychotherapy. An experiential and academic understanding of mindfulness will be emphasized. The experiential component will involve training in meditation and mindfulness practices. The academic component will involve rigorous examination of current research on the applications of mindfulness in health care, as well as exploration of current theories of mindfulness and its applications to clinical work. The intention of the course is to help students better understand the construct of mindfulness and how it can be applied in clinical practice as a technique for clients, a theoretical frame for therapists, and as a means of enhancing therapist skills.

**PSY 5560 Advanced Child Psychology (4)**

Students will gain in-depth practical experience in the comprehensive assessment of infants, children, and adolescents. A variety of individual testing instruments will be reviewed, including those used to evaluate cognitive, social-emotional, behavioral and executive functioning. Alternative methods of assessment, such as transdisciplinary play-based assessment, dynamic assessment, and curriculum-based measurement, as well as techniques and instruments specifically designed for the evaluation of Autism and other disabled populations, will be emphasized.

**PSY 6333 Topics in Psychology (Personality Theory/Social Psychology) (4)**

Selected topics reflecting interest in specialized areas. Announced in advance.

**PSY 6530 Conditioning and Learning (4)**

This course focuses on behavioral principles and their applications to diverse populations. Both classical and operant conditioning is reviewed with a heavy emphasis on operant. Candidates will learn behavioral principles and procedures to increase, reduce, or promote the generalizations and maintenance of behavior. This is a course that relates to fieldwork and previous courses.

**PSY 6618 Topics in Neuropsychological Assessment (4)**

This course emphasizes clinical application of neuropsychological research knowledge for assessment. Classroom presentations and discussion will emphasize evaluation of clinical and case materials. It will cover such issues as conceptual and procedural issues in neuropsychological assessment, neuropsychological assessment approaches and methods, empirical findings in selected disorders, and the neuropsychologist's role in prognosis estimation, treatment planning, and rehabilitation.

**PSY 6675 Advanced Memory and Cognition (4)**

This seminar-style course examines the major psychological issues related to cognition. Topics covered include attentional processes, memory, language, knowledge representations, decision making, problem solving, and cognitive neuroscience. By combining reading assignments in the textbook and current research articles, in-class discussions explore the relationship between empirical evidence and theoretical explanations of cognitive processes. This course includes a specific focus on the practical applications of cognitive theories and research.

**PSY 6697 Topics in Psychology (Experimental/Biological Psychology) (4)**

Selected topics reflecting interest in specialized areas. Announced in advance.

# **MASTER OF ARTS IN POST ROMAN-MIDDLE EASTERN STUDIES**

## **COORDINATOR:**

### **MISSION OF THE PROGRAM**

The Master of Arts in Post Roman-Middle Eastern Studies through online and/or open learning programs deals with teaching, research and consultant skills in the Middle Eastern region of the Roman Empire.

The near and Middle Eastern region remained under the rule of the Roman Empire until the Ottomans seized the already weakened Eastern Roman Empire and conquered Constantinople in 1453. After the rule of the Roman Empire, the political power in the near and Middle Eastern region was solidified for the second time in the period of the Ottoman rule. Five centuries of the Ottoman Rule in the Balkans and Anatolia, and four centuries in the near and Middle East created an Ottoman legacy that marked the political and economic transformation of the region after the First World War (WWI). The Ottomans conquered the Balkans - Eastern Europe- and capital of the Byzantine -Eastern Roman Empire- by the middle of the 15th century and the Mamluk State of Syria and Egypt by the second decade of the 16th century.

Conquering Constantinople provided Ottomans not only to obtain economically and strategically the most important centre of the eastern Mediterranean, but also to inherit profound political, ideological and commercial tradition of the Byzantine Empire. Moreover, consolidation of the Ottoman power in the Arab lands (Syria, Egypt and Iraq) also had two crucial meanings for the Ottoman Empire: it became the defender of the faith -Islam- and protector of the common holy cities of the three world religions, basically, Mecca, Medina, and Jerusalem. As a result of the changing economic and political balance among European states, Russia and dissolving Ottoman Empire, the near and Middle East partitioned into various states at the end of the WWI.

Growing Arab nationalism of the early 20th century, resistance to the European colonialism and Palestinian and Israeli conflict became the main debate in the post Second World War years. As far as colonialism and Western penetration into the region is considered, the recent invasion of Afghanistan and Iraq by the American State led to the one of the most contentious discussions about political, social-cultural, administrative and economic history and future of the region. That is to say, the controversial discussion of democracy and economic development in the near and Middle East had a prominent place in social sciences since 2001, namely after the 9/11. Understanding the language, social, political and economic structure and institutions of the region could help us make sense of this region and produce economic, political and social-cultural programs to calm down social and political tension and direct the region towards democratic development. All these factors make an academic study of the Middle East rewarding for those who work in government agencies and international organizations and who want to work in sectors that deal with the Middle East.

Post-Roman Middle Eastern Studies Program (PR-MESP) IS an interdisciplinary and comparative study of the histories and cultures of the Middle East from the Post-Roman era until present. It is a two-year masters program with focus on historical transformations in

Middle Eastern politics, society and economics. Students concentrating in historical transformations in state and society will study Ottoman historical heritage as well as major transformations in politics, political ideologies and economic and social issues in a comparative perspective.

Training or knowledge in one of the main Middle Eastern languages (Arabic, Persian, Modern Hebrew or Turkish) is necessary. This program provides students with a comparative and international perspective in the modern Middle East and a view of how this region fits into the world community politically, historically, and economically. PR-MESP offers courses in collaboration with the department of history and political science. PR-MESP offers history courses that range from the general history of the region to such topics as the expansion of Islam, Ottoman history, political and economic institutions, history and development of the Middle East, the modern Middle East, and the Arab-Israeli conflict, and advanced reading seminars. The Department of Political Science of the university offers basic courses about international relations, multiculturalism, democracy, and state and civil society in the Middle East. The Department of History of AUA also offers general courses on European Civilization, Roman World, 20th Century World History, Theories of History, Diplomatic History and Methodology in History. This program is intended for students preparing for a non-academic career and officers in diplomacy, government service, business, or the media.

### **PREREQUISITES**

PR-MESP is a two-year program. To receive an M.A. in PR-MESP, students should fulfil the following requirements:

#### **First Year:**

- \* Language training in one of the Middle Eastern languages in order to use first hand sources.
- \* Course work: **one must course** about general history of European Civilization and World History in the 20th century (offered by the department of History), **one must course** on Ottoman History, **two courses** about history, politics, economy, and social structure of the Middle East and its Ottoman past, which for purposes of this program is defined to include the entire Arab world, as well as Iran, Israel, and Turkey.

#### **Second Year:**

- \* Second year language course in advanced level to use first hand sources in MA thesis.
- \* Course work: European Diplomatic History (offered by the department of history), two Middle Eastern Related courses according to interest of the student. (Courses about Western political thought, international relations are offered by the department of political science).
- \* A seminar course related to the topic of the thesis.

Students present a thesis by the end of the academic year at their second year of study and made an oral defence of it. The curriculum is adjustable to the individual needs of students who are considering careers in diplomacy, business, the media, or international public and private agencies as related to the Near and Middle East.

## **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 Diplomatics (4)**

History and development of the field of archival research. Archives and archival sources in Turkey. Development of the field of Ottoman diplomatics. 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 I-II (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 II (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 II. 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. War and Politics in the Modern Middle East (4)**

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. Modernity and the Middle East (4)**

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 Nationalisms and Nation-States in the Middle East (4)**

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.



# **MASTER OF ARTS IN TEACHING**

## **A. Master of Arts in TESOL**

## **B. Master in Education in Organizational Leadership**

## **A. Master of Arts in TESOL**

### **COORDINATORS:**

### **MISSION OF THE PROGRAM**

The demand for English teachers to speakers of other languages has markedly increased as changing national systems and global concerns have created an interdependent world. The American University of Athens TESOL program is distinctive in its focus on experiential learning through online and/or open learning programs – students plan lessons, observe classes, and design tests for English language classes. Faculty draws on their extensive teaching experience, research, and interaction with other cultures to provide pragmatic lessons and advice to TESOL students.

### **PREREQUISITES**

To receive an M.A. in TESOL, students must take the following non-credit seminars during the first semester:

CIS 5000	Computer Basics
EN 5000	Academic Writing
MA 5000	Mathematics Basics
RM 5000	Research Methodology

### **GRADUATION REQUIREMENTS**

Students must complete 40 credit hours with the following distribution:

1. The successful completion of 5 core courses for a total of 20 credit hours.
2. The successful completion of 2-3 electives for a total of 8-12 credit hours.
3. Submission of a thesis of 35-40 pages equivalent to 8-12 credit hours.

## MASTER'S THESIS REQUIREMENTS

Students must fulfil the following requirements:

1. Complete at least eight credits of graduate coursework with an overall GPA of 3.00 or above and no more than two class grades below "B".
2. Complete and defend a Master's thesis proposal by a two-person committee (the Chairman and the Supervisor).
3. Complete and defend a Master's thesis that counts for 8-12 credit hours.
4. The Master's thesis must demonstrate the student's ability to effectively communicate in writing the results of graduate study. Students are expected to prepare a thesis which integrates the knowledge they have acquired with original research. They are expected to choose a topic that captures the latest developments in the TESOL field and to carry out primary and secondary data collection in this area, use scientific methods for analysis of data and produce a professional report which constitutes original work. Students work on this project under the close supervision of assigned professors depending on the area of specialization.
5. The student must defend the thesis to a three-person committee, which includes two instructors from the same field and one from another department.

## CORE COURSES

TESL 5500	Principles of Linguistics
TESL 5501	English Language Teaching I
TESL 5502	English Language Teaching II
TESL 5503	Structure of English
TESL 6620	English Language Teaching III

## ELECTIVES

Students can choose from the following electives or from the courses offered in other departments, with the approval of the Chairman of the Graduate School.

TESL 5522	Second Language Acquisition
TESL 5528	Bilingual Education
TESL 5531	Language and Cross-Cultural Communication
TESL 5541	Teaching Pronunciation
TESL 5554	Technology for Language Learning and Teaching

## **COURSE DESCRIPTIONS**

### **TESL 5500 Principles of Linguistics (4)**

This course examines the ways in which the analysis of language reveals a speaker's unconscious knowledge, serving as a "window on the mind." It looks at data from language use, language learning, and language choice in order to discover the underlying principles of language: structures of words (morphology), sounds (phonology), sentences (syntax), and meaning (semantics), as well as their use in context (sociolinguistics) and representation in the mind (psycholinguistics). We will collect, examine, and analyze data from English and a wide variety of other languages.

### **TESL 5501 English Language Teaching I (4)**

The primary purpose of this course is to help students prepare themselves to teach English as a second language by reflecting on broad questions about the school setting, curriculum, and assessment. They will examine, analyze, and explore ways to put into practice traditional and current methods as well as address the four skill areas of speaking, listening, reading, and writing all in the context of the international standards for ESL.

### **TESL 5502 English Language Teaching II (4)**

This course will explore strategies for teaching ESL learners in formal and informal educational settings. Students will be introduced to foundational theories and current research on the social and academic factors that influence ESL learners learning experiences.

### **TESL 5503 Structure of English (4)**

This course describes how English sentences are constructed and you will develop the skills necessary to analyze sentence structure. In doing so, you will use some of the tools and methods of modern linguistics. Native speakers' competence includes knowledge about how to pronounce words and sentences (phonology), how to break down a complex word like "supercalifragilisticexpialidocious" into its component parts (morphology), and how to relate words and sentences to their meanings (semantics). This course directs our attention to syntax.

### **TESL 5522 Second Language Acquisition (4)**

This course examines how people do and do not learn a second language. The major theories of second language acquisition will be reviewed, and their implications for the second language classroom will be discussed. The primary goals of this course are (a) to familiarize you with major theoretical issues in second/foreign language learning in formal and informal situations; (b) to provide you with opportunities to observe and reflect on language learning situations and second language learners; (c) to help you become more skilful at making appropriate teaching decisions that will nurture language learning among culturally and linguistically diverse students.

### **TESL 5528 Bilingual Education (4)**

This course focuses on the sociolinguistic and psycholinguistic properties of bilingualism, legal history, and educational foundations of bilingual education. Bilingual education will be compared to other approaches. An emphasis is placed on the implications of bilingualism for ESL and/or literacy teachers.

### **TESL 5531 Language and Cross-Cultural Communication (4)**

This course looks at the acquisition and use of non-native languages from a cross-cultural perspective. Introduction to research on how non-native speakers learn the sociolinguistic and pragmatic rules of the target language and how inappropriate use of such rules often

results in miscommunication between native and non-native speakers. It develops effective pedagogical techniques in teaching communicative competence to ESL learners.

**TESL 5541 Teaching Pronunciation (4)**

This course is designed to help students deliver effective pronunciation instruction to children and adults learning English as a Second Language. Students will gain a foundation in the scientific study of speech, including but not limited to phonology and articulation. Students will also learn how to spot hearing problems because learners cannot replicate sounds that they do not hear. Students will learn a variety of pronunciation strategies that they can use with pupils and students of different ages.

**TESL 5554 Technology for Language Learning and Teaching (4)**

This course explores the role of technology in second language learning and teaching. It examines attributes of effective technology-enhanced language learning environments and their relationship to second language acquisition theories and constructs. It focuses on research and practices for using technology to support communicative language teaching, content-area instruction, the development of listening, speaking, reading and writing skills, inquiry-based learning and the development of learning communities.

**TESL 6620 English Language Teaching III (4)**

This final course serves as a bridge between previous TESOL coursework and actual, situated teaching. Therefore, one focus of the course is to help students learn (through reflection) who they are as teachers and to gain practice in thinking about the wide range of considerations and decisions that make teaching the very complex and extremely situated process it is. The second focus is to review current trends in classroom practice to provide student teachers with practical classroom teaching tools.

## **B. Master of Education in Organizational Leadership**

### **COORDINATOR:**

### **I. Program Description**

The field of education today is going through critical period of transition from the conventional methods of teaching and learning to now innovative learning environments enhanced by technology. The educational organization now needs new leaders who are conversant with both the traditional and non-traditional educational methods. The organizational leadership needs strong skills of leading the organization while bringing the necessary change that has positive effect on the learning outcome.

Master in Education in Organizational Leadership program is designed for students and professionals preparing to work at a leadership position in the school systems and be the leader that will bring the necessary change to address the changing demands of education today.

The program is designed to provide students with strong background in organizational management principles with emphasis on leadership theories. This program also provides financial management courses which allow organizational leaders to implement the technological enhancements within the educational system. This program will provide an in-depth understanding of digital tools for class-room and online instructions, design of curriculum and assessments, also dealing with the ethical issues. The leader should also have tools for research methods for making data-driven decisions that lead to success based on evidence not heuristics.

The organizational leader also need to have good understanding of human resource management, management information systems that will allow collection and integration of learning paradigm to deal with the current and emerging issue of educational leadership.

The students will also engage in a cap-stone internship project related to organizational leadership enabling hands on experience to address organizational leadership problem.

### **II. Curriculum Structure**

The semester I courses are designed to provide in-depth background in the basic skills related to research methods, curriculum design and technology integration along with introduction to educational ethics.

The second semester courses focus on Organizational Management and Leadership, Budgeting and Finance, Emerging Technology for Educational Leaders. The third semester courses deal with management of Human Resources, Information Systems, Current topics and the Cap-Stone project. The fourth and last semester deals with the Thesis of the specified topic that the Dean will approve.

### **III. Delivery of Program**

The M.Ed. – Organizational Leadership Program consists of 44 credits which are delivered in four semester (12 months) accelerated program. The program starts with a 1 credit introductory online seminar delivered through online conferencing software. Then the courses are delivered with eight week cycle comprising two courses. The students go through six cycles of two courses each to complete 36 credits. The semester is 4 months long where student finish 4 courses in each semester with 13 credits in semester 1 and 12 credits each in semester 2 and semester 3.

## IV. Program Design, Courses, and Delivery Schedule

(Developed by Synaptic Global Learning)

<b>Semester I</b>		
MED 601	Introductory Seminar (SBL training/Team building)	1 Credit
MED 501	Educational Research Methods	3 Credits
MED 502	Organizational Management of Leaders	3 Credits
MED 503	Assessment and Evaluation for Educational Leadership	3 Credits
MED 504	Emerging Technologies for Educational Leadership	3 Credits
<b>Total Credits Semester I</b>		<b>13 Credits</b>
<b>Semester II</b>		
MED 611	Management Principle and Practices for Educational Leaders	3 Credits
MED 612	Visionary Leadership for Educational Leaders in Problem Solving	3 Credits
MED 602	Financial Management for Educational Leaders	3 Credits
MED 603	Digital Tools for Educational Leaders	3 Credits
<b>Total Credits Semester II</b>		<b>12 Credits</b>
<b>Semester III</b>		
MED 710	Human Resource Development for Leaders	3 Credits
MED 712	Current Topics in Organizational Leadership	3 Credits
MED 705	Management Information Systems for Leaders	3 Credits
MED 900	Educational Leadership Internship	3 Credits
<b>Total Credits Semester III</b>		<b>12 Credits</b>
<b>Semester IV</b>		
MED 999	Thesis	7 Credits
<b>Total Credits Semester IV</b>		<b>7 Credits</b>
<b>Total Credits Program</b>		<b>44 Credits</b>

## **COURSE DESCRIPTIONS**

### **MED 501 Educational Research Methods (4)**

This course details the research process and shows how research is used in management decision-making. The research methodologies will help the student to apply them in a managerial role. Students learn how to write a research proposal, determine the appropriate research strategy for their research, collect data and analyze the results using a variety of methods. They also learn the various formats in which to present the results. The course is very relevant in today's economy where the administrators learn these research methodologies to implement in the educational field. The focus of this course is to make students adept in research where they can become efficient in problem solving and learn how to use the techniques to further understand management issues. Students will also have opportunity to learn how to present research results in written and oral presentations format.

### **MED 502 Organizational Management for School Leaders (4)**

This concept model is designed to improve organizational effectiveness. The goal of this evolving discipline is to bring to the forefront for the students the importance of a process and functioning of an effective organization. The student is made familiar with the process that is involved in the development of an effective and collaborative manager. A manager is faced with many situations and is affected by many factors such as social, political and environmental. As a collaborative leader, the manager combines the collective skills of the human resources in the workplace. They build a coalition within the structural framework of the organization, motivating and mobilizing the employees. This critical role functions as a bridge between individual conceptual philosophy and organizational goals leading to effective organizational development and behaviour. This course will allow students in the education system to develop leadership qualities by understanding various group dynamics and organizational behaviour across cultures.

### **MED 503 Assessment and Evaluations for Educational Leadership (4)**

Assessment and evaluation of the distance learning programs is an important element to ascertain successful delivery and implementation. The courses evaluations lead to an understanding of the pedagogical effectiveness of the course, while the assessments allow determination of the learner's performance. The techniques, such as formative, summarize and diagnostic evaluations, are used for determining the success of the distance learning program. The pre-test, diagnostic test and exams are used to assess the competency of the learner to master the concepts. The multi-dimensional pedagogical effectiveness index is a methodology that allows evaluation of the blended learning method for distance learning. Students will learn collection and usage of student data and developing assessments. This course enables students to understand cornerstone of collection, analyzing and reporting data. The course will allow students to understand emerging trends in technology by gaining knowledge about assessment and evaluation leading to better management processes in educational system.

### **MED 504 Emerging Technologies for Educational Leadership (4)**

Since the early development of Internet followed by the burst of World Wide Web the technologies available for eTeaching has grown enormously. The Universities and Colleges today increasingly use learning management systems (LMS), learning content management systems (LCMS), database driven content repositories, rich multimedia learning objects, animations, simulations, virtual reality, 3-D visualization. The delivery of educational content can be done on CD-ROM, DVD, eBook, WWW, Smart Phones (iPhone, G1, Blackberry) and a host of new Ultra Thin PCs.

The eTeachers can now use multimedia creation tools, such as, adobe Photoshop, WYSIWIG HTML editors such as dreamweaver, illuminate, captivate, flash animations etc. and put there learning objects on LMS, such as, Blackboard, Angel, Moodle, Sakai, Desire2Learn etc.

Now eTeachers can also use Web 2.0 for creating course Wiki, Blogs, Chats, Discussion Boards, Instant Messaging, You Tube, Face book as means of creating online electronic communities of learners. Streaming server now allow deployment of video, audio and flash animations, to be incorporated in to the online courses. This course will allow students to explore various technology tools and applications with emphasis on Ethical Frameworks and Emerging technologies. There is growth of games in education with single player game to massively multiplayer online games (MMOG).

#### **MED 602 Financial Management for Educational Leaders (4)**

Financial Management for Educational Leaders is an introductory course designed to acquaint the graduate student with current issues which are important for financial managers, providing application and opportunity in career advancement. The elements of financial management are explored in a mathematical framework, enabling the student to develop competencies in areas such as determining break-even points, working capital management, calculating the time value of money, financial and investment analysis and long term financing. While the course focuses on corporation finance, many of the concepts can be applied to personal finance and investment matters. The course is designed to familiarize students with Financial Planning and Projecting cash flows and estimating Risks. The knowledge about valuation of Stocks, Bonds and Rates of Return are very useful in the business environment. This course will allow the students to understand the financial sector better and become leaders in the business world

#### **MED 603 Digital Tools for Educational Leaders (4)**

Digital Tools for Educational Leaders course is focused on the twentieth century which not only brought us the dawn of the Information Age, but also continues to bring us rapid changes in information technology. There is no indication that this rapid rate of change will be slowing— it may even be increasing. As we begin the 21st century, computer literacy will undoubtedly become prerequisite for whatever career a student chooses. The goal of the O'Leary Series is to assist students in attaining the necessary skills to efficiently use these applications. Equally important is our goal to provide a foundation for students to readily and easily learn to use future versions of this software. We do this by providing detailed step-by step instructions combined with careful selection and presentation of essential concepts. This course also discusses all the Office applications including Office Word, Office Excel, Office Access, PowerPoint, Outlook, and Word and coupled with advanced applications necessary for excelling in business environment.

#### **MED 611 Foundations of Management for Educational Leaders (4)**

Designed to provide with fundamental knowledge in the field of management, this course introduces students to concepts and methods used in managing organizations. The course is a study of the functions of managerial processes in an organizational context. In each session we will explore different aspects of management theories and their application(s) to the practical problems facing us as managers and employees. This will enable students to grasp the central issues and challenges that are associated with the management of an organization.

#### **MED 612 Visionary Leadership for Educational Leaders in Problem Solving (4)**

Visionary Leadership for Educational Leaders is an applied book that combines behaviour theory with business practice. Each concept teaches central concepts and skills in an important area of leadership development, and then provides exercises and self-evaluations to apply that knowledge. In this way, this course actively involves the students in the active learning process. This book introduces principles and skills of leadership in a way that is



appropriate for both new and experienced leaders, and it is suitable for students and everyday people who must influence others to get things done. This course also discusses Leadership Variables, Leadership Principles and Importance of Ethics. It enables students to understand people, their behaviours in business environment and encourages to evaluate through creating effective performance management.

#### **MED 705      Management Information Technology for Leaders (4)**

This course provides an understanding of how information technology may be efficiently and effectively used in the business environment. This course presents an overview of hardware, software, networks, database systems, and data analysis and decision support systems. The course describes the integration of hardware, software, data, procedures and personnel that are required for managing information systems. The impact of constantly changing information technology upon the organization and its management is analyzed. This course also discusses Network and Database Management leading to Computer security and transaction. The courses go in-depth with Enterprise integration and managing Electronic businesses. A lot of emphasis is given to the teamwork, business and strategic decisions. The most important topics are for the organizing school and educational businesses and various systems with emphasis on Information Management. Education leaders of today need to be conversant with the tools that allow effective management of school and colleges with the information technology.

#### **MED 712      Current Topics in Organizational Leadership (4)**

Current Topics in Organizational Leadership offers varying perspectives on important issues and provides students with balanced and fair coverage of a topic to form their own opinion or to support their research. This course will cover topics from New approaches to Organizational leadership to role of Social Responsibility in Organizations. Each issue question is relevant to the topic and guides students through various topics on Discussion around Organizational culture and how Globalizations affects all the organizations. This course also focuses on Operational issues in Organizational leadership giving students the opportunity to understand in greater details about the leadership qualities. This course also discusses Strategic planning and various organizations in the future.

#### **MMG 740      Human Resources Planning for Educational Leaders (4)**

Today's strategic and legal environment, along with the changing nature of the workforce, presents special challenges for organizations in effectively managing their human resource. The human resource department needs to be able to formulate human resource policies that enable an organization to strategically compete in today's global environment. Toward that end, the human resource manager must successfully acquire, develop, compensate and manage the human resource. The special interests of various groups, including the employees, unions and government organizations, must be considered in the development of effective human resource policies. Through subject-area knowledge and experiential exercises, this course enables students to gain an in-depth understanding of the issues relating to the human resource and to develop strategies to effectively manage them. This course will allow students to understand Work Analysis and design with emphasis on Human Resource Planning and Recruitment. The course also goes in detail about Training and Career development with focus on Managing Employment Relationship. It is also important to understand about Employee Health and Safety which this course addresses with focus on leadership qualities for Human Resources. The educational leaders must understand the management of human resources that includes faculty, administrators, support staff and students.

#### **MED 900      Educational Leadership Capstone Project (4)**

This course is designed for students to work on an independent research projects based on most current topics in the area of organizational leadership for educational institutes. The capstone project requires students to review all courses that they have done in the program

and choose a topic area that they wish to develop their advanced skills and create a work product that they can use for further studies or for prospective employers as a sample of their work.

In the Capstone Project students will be required to develop and present their research topic and defend their proposal to their capstone faculty. The project will include research question and topic of study, literature search, proposed hypothesis for proposed outcome, methodology and data collection for the proposed research issue, data analysis with discussion on results and finally conclusions drawn from the study.

The students will work under the supervision of capstone project faculty, but will have to develop and execute the research project independently. The capstone faculty may provide a list of potential current organizational leadership project titles as suggested topics for students to choose from. However, student will be free to choose and defend their own project topic and research question. At the end of the course each student will be required to present their project in front of fallow students and peers on a videoconferencing session and defend their results.



**THE AMERICAN UNIVERSITY  
OF ATHENS**

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