Graduate Course of Instruction
Accounting

Accounting 600
Financial Accounting
This course is an introduction to American financial accounting principles based on FASB and IASB, including the measurement, processing, and communication of accounting information. Users of such accounting information include business owners, managers, creditors, prospective investors, and others interested in the financial condition of an entity and the results of its operations. Topics covered include the accounting cycle, merchandising, services, fixed assets and corporate accounting issues. Prerequisite: Admission to graduate study. 3 semester credits

Accounting 610
Intermediate Accounting
This course applies generally accepted accounting principles to the preparation of financial statements, including balance sheets, income statements, statement of cash flows, and retained earnings statements. Accounting for leases, employee benefits, deferred taxes and other specialized accounting topics will also be explored. Prerequisites: ACCT 600 and completion of all core courses or concurrent registration in final core courses. 3 semester credits

Accounting 620
Managerial and Cost Accounting
This course provides an introduction to managerial and cost accounting used by management in conducting daily operations, planning future operations, and developing overall business strategies. The objective is to gain an understanding of the role of accounting in the management process of planning, directing, controlling, and improving the organization’s objectives (goals) and to translate those objectives into a course of action. Prerequisites: ACCT 600 and completion of all core courses or concurrent registration in final core courses. 3 semester credits

Accounting 625
Auditing
This course examines laws and methods for conducting commercial audits. Ethics, attestation standards, controls and fraud detection are among the topics that will be discussed. Application of generally accepted accounting practices to the review of financial statements, as well as the responsibility of the certified public accountant to the various users of the statements will also be explored. Prerequisites: ACCT 600, ACCT 610 and completion of all core courses or concurrent registration in final core courses. 3 semester credits

Accounting 630
Advanced Financial Accounting
This course is an overview of selected accounting topics of interest to international business students. Topics include current practice in accounting for business mergers or acquisitions, accounting for stock investments in affiliated companies, an introduction to consolidated financial statements, accounting for branch operations and an introduction to accounting for state and local governmental units. Prerequisites: ACCT 600, 610 and completion of all core courses or concurrent registration in final core courses. 3 semester credits

Accounting 633
Personal Taxation
This course is an overview of the major types of personal taxes used by governments to raise revenue. Emphasis is placed on the taxation of individuals and tax planning considerations for the individual. Prerequisites: ACCT 600 and completion of all core courses or concurrent registration in final core courses. 3 semester credits

Accounting 702
Business Entity Taxation
This course is an overview of the major types of corporate and business entity taxes used by governments to raise revenue. An emphasis is placed on the tax issues of different business forms, tax management and tax planning considerations for the business entity. Prerequisites: ACCT 600, ACCT 633 and completion of all required Accounting concentration courses or concurrent registration in final required concentration courses. 3 semester credits

Accounting 704
Financial Reporting and Analysis
This course is an overview of generally accepted accounting principles underlying the content of financial statements including alternative inventory valuation methods, lease accounting, segment reporting and reporting for employee benefit plans. Students study and analyze corporate annual reports and government and not-for-profit financial statements. Prerequisites: ACCT 600, ACCT 610, ACCT 630 and completion of all required accounting concentration courses or concurrent registration in final required concentration courses. 3 semester credits

Accounting 706
International Accounting
This course examines the diverse accounting practices employed by different countries and their effects on multi-national firms’ operation, as well as efforts to standardize IASB/FASB rules. Performance evaluation in multinational enterprises, impact of differences in national accounting principles and practices, and accounting under central planning is also examined. Discussion topics include the critical problem areas such as taxation, transfer pricing, financial planning, and information systems within an international framework. Prerequisites for Accounting: ACCT 600 and completion of all required accounting concentration courses or concurrent registration in final required concentration courses. Prerequisites for International Business: ACCT 600 and completion of all core courses or concurrent registration in final required core courses. 3 semester credits
Acupuncture Practice and Techniques (APT)

ACUPUNCTURE PRACTICE AND TECHNIQUES 511
Point Location I

This course will serve as the foundation of the acupuncture point selection series. Meridian theory using concepts of the Jing Luo system, including main and secondary vessels will be reinforced. This course provides the student with the knowledge and skills to physically locate acupuncture points of the lung, large intestine, stomach and spleen, heart and small intestine, urinary bladder, kidney, and pericardium channels. Students will focus on how to locate points effectively, accurately, and quickly as preparation for clinical application as well as college and national examinations. Students will also learn the major function(s) and indication(s) of the Lung, Large Intestine, Stomach, Spleen, Heart, Small Intestine, Urinary Bladder, Kidney and Pericardium channel points. Corequisite/Prerequisite: ATD 513 Oriental Diagnosis 1, ABS 511 Anatomy 1.

1.5 lecture hours, 1 laboratory hour, 2 semester credits

ACUPUNCTURE PRACTICE AND TECHNIQUES 523
Point Location II

This is a continuation of the previous course and will focus on the Triple Warmer and Gall Bladder, Liver, Governing Vessel (“Du”), Conception Vessel (“Ren”) and extra points. Additional instruction is given in regional point selection and point combinations. Prerequisites: ATD 513 Oriental Diagnosis 1, ABS 511 Anatomy 1.

1.5 lecture hours, 1 laboratory hour, 2 semester credits

ACUPUNCTURE PRACTICE AND TECHNIQUES 512
Meridian Theory

Meridian (a.k.a. Channel) theory is the basis of diagnosis and acupuncture treatment. This course is designed to provide the necessary instruction and training for the student to be familiar with meridian theory including regular, extra and other meridian systems. Corequisite/Prerequisite: ATD 512 Oriental Theory and ATD 513 Oriental Diagnosis 1.

2 lecture hours, 2 semester credits

ACUPUNCTURE PRACTICE AND TECHNIQUES 625
Acupuncture Techniques II

This course covers functions, indications and needling methods of the Well, Spring, Stream, River, Sea, Source, Luo, Xicleft, Back Shu, Front Mu and Lower He-Sea, Eight Influential, Eight Confluent and important crossing points. Continuing practice in needling, moxibustion and cupping techniques is included. In addition, the prevention and treatment of acupuncture complications is covered. Prerequisite: ATD 614 Techniques I.

2 lecture hours, 2 laboratory hours, 3 semester credits

ACUPUNCTURE PRACTICE AND TECHNIQUES 626
Auricular & Scalp Acupuncture

This course introduces the student to various forms of microsystem acupuncture, focusing on auricular and scalp systems. The student learns the respective maps of the scalp and ear, clinical applications and treatment strategies. Corequisite/Prerequisite: APT 614 Acupuncture Techniques I.

1 lecture hour, 1 semester credit

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 511

Oriental Medical Theory

This course includes the classic theories of Chinese medicine and the effects on Oriental Medicine theories. The course includes the study of the development of Naturalism, Philosophical and Religious Taoism, Confucianism, and Buddhism and their contributions to Chinese Medicine. For each philosophy, the course examines how the philosophy views the human relationship to nature, and the human relationship to the universe. In addition, the impact of philosophy and religion on the oriental medical paradigm is explored. Prerequisite: none.

1 lecture hour, 0 laboratory hours, 1 semester credit

ACUPUNCTURE PRACTICE AND TECHNIQUES 718
Pediatric Acupuncture

The special diagnostic and treatment skills required for the treatment of patients less than 12 years of age are discussed. The balance of safety for the patient and treatment efficacy is emphasized. Prerequisite: APT 625 Acupuncture Techniques II.

1 lecture hour, 1 semester credit

ACUPUNCTURE PRACTICE AND TECHNIQUES 637
Japanese Acupuncture Techniques

This course covers the unique treatment strategies and protocols developed by Japanese acupuncturists. Prerequisite: APT 614 Acupuncture Techniques I.

1 lecture hour, 1 semester credit
Acupuncture

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 513
Oriental Diagnosis I
The basic theory and characteristics of the pathogenesis and pathogenic factors are covered including the seven emotions, disharmony of Yin and Yang, abnormalities in Qi, Blood, Spirit, Essence and Bodily fluids, and organ disharmonies are covered. Techniques in inquiry, palpation, tongue and pulse diagnosis are covered. Diagnoses incorporating the eight parameters as well as root and stem concepts are covered for each of the twelve zang-fu. Prerequisite/Co-requisite: ATD 512 Oriental Medical Theory. 2 lecture hours, 2 semester credits

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 524
Oriental Diagnosis II
This course will provide the student with further understanding of Oriental Medicine diagnosis, expanding on concepts from Oriental Diagnosis I. Traditional Chinese Medicine organ diagnoses, eight principle and febrile disease diagnoses will be stressed. In addition, treatment principles and acupuncture treatments based on these diagnostic systems will be explored. Differential diagnoses of common disease entities will be explored. Students will also continue to practice pulse and tongue diagnosis. Prerequisite: ATD 513 Oriental Diagnosis I. 2 lecture hours, 2 semester credits

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 515
Seminar 1
This course will help the student to negotiate their first year in the Acupuncture program. The student will be guided through overviews of Chinese Medicine as preparation for integrating material from the entire curriculum. The student will review and update Chinese Medical terminology as well as the range of resources and the different perspectives on this terminology and the concepts contained therein. Diagnostic practical skills such as pulse and tongue diagnosis will be reviewed in a practical group setting. In addition the student will apply concepts of information literacy and its use for analysis of case studies. Prerequisites: none. 1 lecture hour, 1 semester credit

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 529
Seminar 2
This course will be a continuation of seminar one. The student will be guided through the application and integration of concepts and skills acquired in the first and second semester curricula. The student will apply these through the use of case studies and clinical examples. The basics of applying diagnosis and generation of treatment principles will be reinforced in a collegial setting. Group activities such as case analysis, pulse and tongue analysis and grand rounds will also be reviewed with a deepening understanding of clinical applications of such. Prerequisites: ATD 515. 1 lecture hour, 1 semester credit

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 618
Seminar 3
This course will help the student gain a deeper understanding of case study skills necessary to become an AOM clinical practitioner. The student will be guided through case study, case analysis and pattern differentiation as utilized in clinical practice as preparation for integrating material from the entire curriculum into the clinical setting. Case presentations and clinical skills utilizing a problem based learning format using TCM principles and evidence-informed clinical practice skills are emphasized. The focus of the case studies for this course is mental/emotional disorders, patterns associated with emotional disorders, and the impact of emotional issues in the acupuncture clinic. In addition, the student will gain a basic understanding of the ethical and counseling issues surrounding licensed practice in the field of Traditional Chinese Medicine. Prerequisites: ATD 529. 1 lecture hour, 1 semester credit

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 711
East-West Pathology
This course compares and contrasts diagnosis and treatment between Western and Oriental diagnoses. Western medical diagnosis of these diseases is incorporated so that the student is able to collaborate with Western physicians. Major and common categories of diseases including respiratory tract, infectious, gastrointestinal, genitourinary and musculoskeletal diseases are covered. Prerequisite: ATD 513 Oriental Diagnosis I. 2 lecture hours, 2 semester credits

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 715
Oriental Internal Medicine
This course focuses on the diagnosis and oriental treatment of major illness. Treatment planning includes acupuncture, qi gong, and massage. Diagnoses cover respiratory illnesses, gastrointestinal, genitourinary, gynecological, and psychological illnesses. Root- stem, Meridian, Substance and 5 Element treatments are included. Prerequisite: ATD 513 Oriental Diagnosis I. 2 lecture hours, 2 semester credits

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 717
Advanced Tongue and Pulse Diagnosis
This course is designed to increase the diagnostic skills and clinical applications of these uniquely oriental diagnostic parameters. The student studies healthy and diseased tongues and pulses and discusses how findings in these areas change the treatment principles and strategies. Case studies from the clinical internship are used to increase both depth and breadth of skill. Prerequisite: ATD 524: Oriental Diagnosis II. 1 lecture hour, 1 semester credit

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 727
Case Studies 1
The student will be guided through case study, case analysis and pattern differentiation as utilized in clinical practice as preparation for integrating material from the entire curriculum into the clinical setting. Case presentations and clinical skills are emphasized through a problem based learning format using TCM principles as the foundation. Emphasis for this class is on cases associated with problems of fluid dynamics, meridian diagnoses and chronic pain, which are frequent chief complaints in the AOM clinical setting. Prerequisite: ATD 529 Seminar 2. 1 lecture hour, 1 semester credit

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 728
Case Study Organization and Applications
Students learn to transition from the development of pattern diagnosis to TCM treatment principles which then lead to point and modality applications. Emphasis is placed on an accurate assignment of symptoms to pattern diagnosis; logical treatment principles reflecting the priorities and totality of the patterns diagnosis; and the most efficacious acupuncture point and adjunctive modality prescriptions to help the patient achieve health. Prerequisite: ATD 524 Oriental Diagnosis II. 1 lecture hour, 1 semester credit

ASIAN MEDICINE THEORY, DIAGNOSIS AND APPLICATION 729
Acupuncture Gynecology
This course is designed to familiarize the
Acupuncture

student with oriental diagnosis and acupuncture treatments of common gynecologic conditions. Special emphasis is placed on understanding those points forbidden to needle or moxa in cases where the patient’s pregnancy status is unknown. Prerequisite: ADT 524: Oriental Diagnosis II.
1 lecture hour, 1 semester credit

WESTERN BIOMEDICINE 621
Medical Ethics
This course is designed to provide the student with a basic understanding of the ethical issues surrounding practice in any medical field. Upon completion of this course, the student will be able to identify concepts of medical and professional ethics as they apply to the practice of health care. Prerequisite: none.
1 lecture hour, 1 semester credit.

ABS 511
Anatomy 1
This course provides an in-depth study of the macroscopic human anatomy and covers the structure of the trunk and neck regions. Clinical aspects of the vascular and neurological relationships of these regions are emphasized. Instruction includes lectures and interactive media software. Prerequisite: none.
4 lecture hours, 4 semester credits

ABS 522
Anatomy 2
This course is a continuation of Anatomy 1 and covers the structure of the head and extremities. Clinical aspects of the neurological and vascular relationships of these regions is emphasized. Prerequisite: ABS 511 Anatomy 1.
4 lecture hours, 4 semester credits

ABS 515
Physiology 1
This course emphasizes the function of cellular structures which regulate homeostasis as well as their role in cell division and genetic control of protein synthesis. Emphasis is placed on the role of the cell membrane in the control of cellular events. The effects of physiology on hormones, their role in homeostasis, and the functional changes associated with homeostasis are considered. Prerequisite: none.
2 lecture hours, 2 semester credits

ABS 525
Physiology 2
This course is a study of physiology at the organ and systems level. Included is the study of the circulatory, respiratory, renal, cardiovascular, gastrointestinal and urogenital systems. Also included is the study of the endocrine system and its interrelationships with various organs and systems. There is an integration of normal physiology with pathophysiology and clinical concepts. Prerequisite: ABS 515.
2 lecture hours, 2 semester credits

WESTERN BIOMEDICINE 523
Pharmacology
This course examines the most commonly used pharmacologic agents to be encountered in the clinical setting. The general principles of pharmacology (pharmacodynamics and pharmacokinetics) are covered. Uses and side effects of antibiotics, anti-inflammatory agents, hormones and cardiac drugs are surveyed. Drug-nutrient and drug-herb interactions are discussed. Prerequisite: none.
1 lecture hour, 1 semester credit

WESTERN BIOMEDICINE 522
Research Methodology
The basic principles of clinical and laboratory research are examined with a special emphasis on the applications of acupuncture and oriental techniques in the research setting. Prerequisite: none.
1 lecture hour, 1 semester credit

ACS 611
Pathology 1
This course is a study of the pathophysiological process and how this process alters the gross, microscopic and clinical manifestations of disease. Basic pathological processes of inflammation, repair, degeneration, necrosis, immunology and neoplasia are presented. Prerequisite: ABS 525 Physiology 2.
2 lecture hours, 2 semester credits

ACS 624
Pathology 2
This course is the continuation of the pathological processes of various diseases. This course emphasizes the basis of systemic diseases of the cardiovascular, respiratory, gastrointestinal, urogenital, endocrine, hepatobiliary, renal and pancreatic systems. Prerequisite: ACS 611 Pathology 1.
4 lecture hours, 4 semester credits

ACS 612
Clinical Diagnosis 1
This course covers the techniques used for physical examination for various systems of the body. Skills taught develop an appreciation for normal variations and abnormalities associated with disease states. The student is taught to recognize the signs and symptoms of common diseases. Prerequisites: ABS 511, ABS 521, ABS 515, ABS 525.
3 lecture hours, 2 lab hours, 4 semester credits

ACS 623
Clinical Diagnosis 2
This course is a continuation of Clinical Diagnosis 1. Prerequisite: ACS 612.
3 lecture hours, 2 lab hours, 4 semester credits

ACS 724
Public Health
This course covers current environmental and public health concerns with an emphasis on the role of the acupuncturist in these issues. The course integrates health with diet, water and air pollutants, noise and substance abuse. Recognition of major communicable diseases is included. Prerequisite: ABS 525 Pathology 2.
2 lecture hours, 2 semester credits

ANT 521
Nutrition
This course provides the foundation for therapeutic nutrition. It explores the biochemistry of macronutrients as well as vitamins and minerals. Deficiencies, toxicities, therapeutic uses and appropriate doses are examined. An assessment of dietary needs and the application of therapeutic nutrition in treating individual diseases and syndromes are also taught. Prerequisites: none.
3 lecture hours, 3 semester credits.
Acupuncture

Herbal Medicine Survey (AHM)

Herbal Medicine Survey 613

Introduction to Chinese Herbal Remedies

This course introduces the student to the eastern understanding of how food influences human health. Foods and food products are surveyed according to Asian categorization. Food groups are categorized by nature, temperature, taste, element, indications and contraindications. Treatment of the major categories of organ (zang-fu) disorders using foods and food combinations are covered. Prerequisite: ADT 513 Oriental Diagnosis I.

2 lecture hours, 3 semester credits

Herbal Medicine Survey 612

Oriental Dietetics

This class introduces the student to the eastern understanding of how food influences human health. Foods and food products are surveyed according to Asian categorization. Food groups are categorized by nature, temperature, taste, element, indications and contraindications. Treatment of the major categories of organ (zang-fu) disorders using foods and food combinations are covered. Prerequisite: ADT 513 Oriental Diagnosis I.

1 lecture hour, 2 laboratory hours, 2 semester credits

Herbal Medicine Survey 521

Botanical Medicine 1

This course comprises a survey of plant and plant preparations most commonly used in Western traditions. The actions of the plant and plant products, as well as drug-herb interactions are considered. Prerequisites: ABS 515, ACS 611.

3 lecture hours, 3 semester credits

Herbal Medicine Survey 713

Patent Remedies

This course will survey 30 prominent, TCM herbal, patent formulas. Students will be introduced to the fundamental pharmacology of these formulas and subsequently, the contraindications, toxicities and potential drug interactions for these patent formulas. Safety, legal and manufacturing issues will also be highlighted. Prerequisite: AHM 612: Introduction to Chinese Herbal Remedies.

2 lecture hours, 2 semester credits

Movement, Respiration and Bodywork Studies (AMR)

MOVEMENT, RESPIRATION AND BODYWORK STUDIES 511

Taijiquan 1

This introductory course in therapeutic movement explores how musculoskeletal alignment, breathing, and mental awareness affect the meridians through practice of this traditional exercise. Prerequisite: none.

0 lecture hours, 1.5 laboratory hours, 1 semester credit.

MOVEMENT, RESPIRATION AND BODYWORK STUDIES 522

Taijiquan 2

This is a continuation of Taijiquan 1. Prerequisite: AMR 511 Tai Ji Chuan 1.

0 lecture hours, 1.5 laboratory hours, 1 semester credit.

MOVEMENT, RESPIRATION AND BODYWORK STUDIES 613

Qi Gong 1

This course teaches exercises designed to regulate specific meridians, muscles and joints as well as how to choose, integrate and teach the appropriate exercises in a clinic setting. Prerequisite: AMR 522: Taijiquan 2.

0 lecture hours, 1.5 laboratory hours, 1 semester credit.

MOVEMENT, RESPIRATION AND BODYWORK STUDIES 624

Qi Gong 2

This course is a continuation of Qi Gong 1. Prerequisite: AMR 613 Qi Gong 1.

0 lecture hours, 1.5 laboratory hours, 1 semester credit.

MOVEMENT, RESPIRATION AND BODYWORK STUDIES 627

Palpation/Massage

In this course, students integrate knowledge of anatomy with skills in palpation and massage. Introductory soft tissue technique is taught as a way to assess muscle, acupoints and meridians as well as provide a practical therapeutic treatment. Prerequisite: ABS 522 Anatomy 2.

1 lecture hour, 2 laboratory hours, 2 semester credits

MOVEMENT, RESPIRATION AND BODYWORK STUDIES 715

Oriental Massage I

The student learns Tui Na soft tissue manipulation technique as well as its history, theory, application, and indications. Treatments for back pain and conditions of the upper limb are the primary focus. Prerequisite: ATD 513 Oriental Diagnosis 1 and APM 621: Palpation/Massage.

1 lecture hour, 2 laboratory hours, 2 semester credits

MOVEMENT, RESPIRATION AND BODYWORK STUDIES 726

Oriental Massage II

This course is a continuation of Oriental Massage 1. Tui Na treatments for the lower leg and internal conditions are the primary focus. Prerequisite: AMR 715 Oriental Massage 1.

1 lecture hour, 2 laboratory hours, 2 semester credits

Counseling, Communications and Practice Management

APS 621

Psychological Assessment

The primary focus of this course is the diagnosis of the various psychiatric diseases according to the Diagnostic and Statistical Manual of Mental Disorders. Included are psychological assessment considerations and treatment modalities. Prerequisites: none.

2 lecture hours, 2 semester credits

APP 721

Practice Management

Students are taught the current procedural practices for the operation of a private practice. In addition, the practical aspects of operating a practice as a small business are discussed. Students are encouraged to begin thinking about their personal career path as a complementary medicine practitioner in private practice, group practice, hospital-based practice or as an AOM educator. Prerequisites: none.

2 lecture hours, 2 semester credits

ATD 617 Second Year Seminar 1 & ATD 618 Second Year Seminar 2 (see section above “Asian Medicine Theory, Diagnosis and Application”)

Clinical Services (ACS)

CLINICAL SERVICES 711

Preceptorship I

The students observe and administer care in established acupuncture facilities under the supervision of licensed physicians and acupuncturists. This exposure to a variety of clinical settings helps prepare the student for both private practice and integrative patient care. Prerequisite: Completion of all first year
Biomedical Engineering

BIOMEDICAL ENGINEERING 410 (BMeg 410/ELEG 410)
Biosensors
This course will provide an overview of biosensors, including their use in pharmaceutical research, diagnostic testing, and policing the environment. Topics include the fabrication, characterization, testing, and simulation. The transducer phenomenology, biosensor structure, and sensor performance will also be covered.
3 semester credits

BIOMEDICAL ENGINEERING 412 (BMeg 412/ELEG 412)
Bioelectronics
Discipline of biomedical Engineering has emerged due to integration of engineering principles and technology into medicine. This course is intended for engineers and engineering students interested in pursuing career in biomedical engineering and health related filed. This course will first introduction Applications of electrical engineering principles to biology, medicine, behavior, or health will be identified during first half of the semester. Second half of the course will focus on research, design, development and application of biosensors and Bioelectronics.
3 semester credits

BIOMEDICAL ENGINEERING 415 (BMeg 415/ELEG 415)
Bioinformatics
Biology has become target of more algorithms than any other fundamental science. This course is about designing and developing algorithms for biological problems. Students will work with popular bioinformatics algorithms not only to understand algorithms design mythologies but also to identify strengths and potential weaknesses in traditional bioinformatics algorithms.
3 semester credits

BIOMEDICAL ENGINEERING 440 (BMeg 440/MEEG 440)
Ergonomic Factors in Design
This course introduces the student to the concepts of ergonomics. Ergonomics is the study of fitting the workplace and devices to the capabilities of the human worker. Students will have an understanding of the beginning and evolution of the field of ergonomics. They will learn to recognize risk factors associated with repetitive stress disorders (e.g., carpal tunnel syndrome) and potential strain injuries as well as be familiar with the body areas affected. This course covers principles of physiology and biomechanics and how they apply to workstation and tool design.
3 semester credits

BIOMEDICAL ENGINEERING 443 (BMeg 443/ELEG 443)
Digital Signal Processing
This is an introductory course in Digital Signal Processing (DSP) for graduate Electrical and Computer Engineering students. Some time will be spent initially reviewing major concepts in signals and systems. Major topics to be covered in ELEG 443 include: time-domain analysis of discrete-time (DT) systems (convolution, difference equations), the transform, frequency analysis for DT signals and systems (DTFT, DFT, FFT), digital filter design, and selected advanced topics as time permits.
3 semester credits

BIOMEDICAL ENGINEERING 446 (BMeg 446/ELEG 446)
Introduction to MEMS
MEMS (Micro Electro Mechanical Systems) refers to devices and system with very small size in the range of microns. It is one of the most important high technologies developed in 20th century. This course covers the fundamentals of MEMS. It includes the introduction to MEMS, basic microfabrication techniques, MEMS materials and their properties, MEMS device design and simulation, working principle analysis, MEMS device fabrication sequence, MEMS packaging and assembly, signal testing, MEMS applications (inertial MEMS, MOEMS, BioMEMS, RFMEMS, etc.).
3 semester credits

BIOMEDICAL ENGINEERING 451
Introduction to BioMEMS
This course will introduce to students the fundamentals of BioMEMS, the application of MEMS (Microelectromechanical Systems) for biological applications. The topics include microfabrication, microfluidics, bio-sensors, actuators, micro/nan drug delivery systems, micro total analysis systems and lab-on-a-chip devices, and detection and measurement systems. The main focus is to understand the fundamental challenges and limitations involved in designing and fabricating various BioMEMS and BioNEMS devices.
3 semester credits

BIOMEDICAL ENGINEERING 506 (BMeg 506/MEEG 506)
Transport Phenomena in Biological Systems
This course provides understanding of the physical, chemical and biological processes
governing the movement of mass and transmission of forces throughout an organism, which are important to biomedical engineers in their understanding of biological systems. Engineering fundamentals of transport phenomena (fluid flow, heat transfer, and mass transfer) will be discussed in detail. Mathematical modeling will be used to analyze the biological transport and biochemical interactions in physiological systems, such as cardiovascular and respiratory systems. Numerical modeling will also be introduced to simulate biological processes to enhance mathematical understanding.

3 semester credits

**Biomedical Engineering 507**

**Algorithms in Bioinformatics**

This course is tailored for students both in biomedical engineering and computer science and engineering departments desiring to understand the issues concerning representing and analyzing genomic sequences, sequence of proteins, etc. The course is about applying the techniques (computational methods and systems) developed in computer science to solve problems in molecular biology such as DNA or protein sequences alignment problem, genome rearrangement problem, protein folding problems, and so on. Hidden Markov Models (HMM), Bayesian Model, clustering, decision trees are some of the examples of machine learning methods that will be covered in the course.

3 semester credits

**Biomedical Engineering 508 (BMeg 508/Meeg 508)**

**Biomechanics**

Biomechanics is the application of mechanical principles to living organisms that included bioengineering, research and analysis of mechanisms in living organisms, and application of engineering principles to and from biological systems. This course can be carried forth on from the molecular level including collagen and elastin, all the way up to the tissue and organ level. Some simple applications of Newtonian mechanics can supply approximations on each level, but precise details demand the use of continuum mechanics.

3 semester credits

**Biomedical Engineering 510 (BMeg 510/Eleg 510)**

**Medical Machines**

This course provides very good introduction and understanding of Electrical Safety, Medical electronics and Medical Machines as applicable. Students often have different background and level of understanding of technical concepts; therefore we will develop necessary background in this course in first few weeks and gradually move from basic to advance topics as listed below in “Class Topics” section. This course will further help by developing approach to design devices and safety features. Behind every invention, law or device, there is always a need, a necessity. Students go from necessity to invention in the class. Since large number of electronic equipment is being used in hospitals and medical centers for patient care and diagnosis or carry out advanced surgeries. This course will enable students to learn the basics principles of different instruments used in medical science.

3 semester credits

**Biomedical Engineering 511 (BMeg 511/MEEG 511)**

**Designs and Development of Biomedical Instrument**

This course offers the information to understand and design biomedical instruments. Biomedical instruments contains imaging and monitoring the environment, simulation and modeling, instrument testing, biosensors and diagnostics, instrument design and development, therapeutic devices, next generation instrument technology, clinical and regulatory, and etc. The in-depth descriptions of design methods for biomedical instrument will be included in the course.

3 semester credits

**Biomedical Engineering 512 (BMeg 512/MEEG 512)**

**Computational Fluid Dynamics (CFD)**

Computational fluid dynamics (CFD) is employed in a wide range of industries and disciplines, such as aerospace engineering, automotive engineering, biomedical science and engineering, chemical engineering, civil engineering, power engineering and sports engineering. Practicing engineers are constantly facing extreme challenges to solve complex fluid flow and heat transfer problems using commercial CFD software. To avoid flawed CFD simulation and results interpretation using commercial CFD packages by users with inadequate training, understanding the fundamental principles that underlie commercial CFD solvers can help the users to effectively harness the power of modern CFD for their research or design. This course is intended as an introduction to the scientific principles and practical engineering applications of CFD. It combines lectures on the CFD principles with projects of research or industrial applications. The emphasis of this course is not to teach the theory behind the CFD techniques, but to help the students apply the knowledge gained into practical use of commercial CFD software (COMSOL, ANSYS and/or STAR-CCM+). Students will apply these skills to relevant engineering applications and gain an appreciation of the limitations and advantages of CFD modeling.

3 semester credits

**Biomedical Engineering 513 (BMeg 513/ELEG 513)**

**Biomedical Image Processing**

This course is an elective course. The content of this course includes the fundamentals of Digital Image Processing and its applications in biomedical field. Sampling and quantization of signals are mentioned in order to introduce the digital images, some basic relationship between pixels are mentioned. Introduction to Fourier Transformation, Discrete Fourier Transform and Fast Fourier Transformed are explained. MATLAB programming with Image Processing Toolbox will be introduced to emphasize and rigid the understanding of students. Others important fundamental theorems, e.g., Image Enhancement, Image Segmentation, Representation and Description are also mentioned. Students are required to implement some programs using the theorems learnt in classes.

3 semester credits

**Biomedical Engineering 520 (BMeg 520/Biol 520)**

**Physiology**

The physiological and biochemical principles that control the function of the human body will be covered. Laboratory work will introduce the student to basic physiologic experimentation, interpretation and presentation of results.

3 semester credits

**Biomedical Engineering 530**

**Instrumentation and Laboratory Experience**

This course can be taken in any semester. Working with the program director, engineering or life science, the students will get permission to enter the relevant lab and formulate an experimental plan with the faculty supervisor of that lab. At the end of the lab experience the student will present their lab notebook for inspection to the lab supervisors.
Biomedical Engineering

and the program director.
3 semester credits

BIOMEDICAL ENGINEERING 535 (BMG 535/TCMG 535) Foundations of Biotech Sciences and Management
This course defines biotechnology as the application of molecular biology for useful purposes. It simulates the real world science and business environments: Information and knowledge are complex, highly specific, fragmented, diverse and vast. No one individual or group or business entity or government agency is able to cover in-depth the entire science and business continuum to succeed and create value to society at large. Value creation has three different aspects: data, information and knowledge assimilation, degree of collaboration and methodological to establish successful knowledge management and business processes. The continuum of the biotechnology industry is shaped by scientific, legal, regulatory, social, economic, technological, political, financial and commercial factors. Understanding the dynamics and linked contributions of the interdisciplinary array of factors which affect commercialization of bioscience discoveries is essential to operate in the biotechnology industry. In this course we are dissecting the biotechnology industry to isolate the key drivers and study their interactions.
3 semester credits

BIOMEDICAL ENGINEERING 540 (BMG 540/Biol 540) Advanced Cell and Molecular Biology
The general biological principles that govern all living organisms will be discussed. The structure and function of cells with emphasis on gene activity at the molecular level, DNA replication and repair, transcription, translation, recombination, translocation and mutational techniques. Techniques and experiments leading to important discoveries on DNA will be covered.
3 semester credits

BIOMEDICAL ENGINEERING 541 (BMG 541/TCMG 541) Foundations of Biotechnology and Bioentrepreneurship
In this course we are dissecting the biotechnology industry to isolate the key drivers and study their interactions. Discoveries in science and fast developments in technology combined with financial availabilities offer many entrepreneurial opportunities.
3 semester credits

BIOMEDICAL ENGINEERING 546 (BMG 546/ELEG 546) Biosignal Processing
This is an introductory course in Bio-Signal Processing (DSP) for graduate Electrical and Computer Engineering students. Sometime will be spent initially reviewing major concepts in signals and systems. Major topics to be covered in ELEG 546 include: Concepts of signal and image processing, wavelets, classification and clustering, and applications of these concepts to EEG, ECG, EMG, MRI and CT Scans.
3 semester credits

BIOMEDICAL ENGINEERING 560 (BMG 560/MEEG 560) Advanced Tissue Engineering
This course deals with specific elements of tissue engineering design and analysis. Approaches to the regeneration of three tissue systems will be analyzed utilizing engineering design. Concepts ranging from tissue development and dynamic growth conditions to ultimate tissue properties will be addressed. Students will be required to acquire understanding and expertise from analysis of primary literature and will complete group presentations on directed approaches to tissue design and engineering in three tissue systems. To ensure in-depth understanding of different aspects of tissue engineering the groups will be required to focus on one or two key aspects in each mini design module.
3 semester credits

BIOMEDICAL ENGINEERING 561 (BMG 561/ELEG 561) Fundamental Analysis of Nanomaterials
The course will give an overview on several important analytical tools for nano materials characterization. Mechanical, electrical and electronic and biological property testing of the nano materials such as carbon nanotubes, metal nanoparticles, quantum dots, nanowires conformable nanoelectronics materials, polymer nanoparticles and biomedical nanomaterials will be discussed. Process and product evaluation by physical, chemical and microscopic methods for materials in nano-regime will be highlighted. Modern materials science depends on the use of a battery of analytical methods carried normally in specialized laboratories. This course explains the fundamental principles associated with the various methods and familiarize the students with them, their range of applicability and reliability especially when materials are of nanoscopic dimension.
3 semester credits

BIOMEDICAL ENGINEERING 562 (BMG 562/ELEG 562) Nanofabrication with Soft Materials
This is an advanced level graduate course focusing on fabrication of soft materials. Nanofabrication processes and nanosystem products will be discussed. Fundamentals associated with chips fabrications and linking them toward soft materials assembly will be detailed. Emerging nanotechnology based methods for soft and green electronics, mechanical parts, MEMS, PCBs will be covered. Gene chip, label free sensory assay using micro and nanofluidics will be discussed. Transfer printing, DNA-protein interactions using the chip and several nano-scale assemblies for soft materials fabrication will be discussed.
3 semester credits

BIOMEDICAL ENGINEERING 565 (BMG 565/ELEG 565) Biomedical Materials and Engineering
This course introduces the students with the progress of biomaterials used in biomedical engineering. Starting from early civilizations biomaterials this course discusses modern advanced level biomaterials and their engineering principles associated with their biomedical use. Hip, knee Prostheses, implants, grafts, sutures, stents, catheters materials and their application in Biomedical Engineering are covered. Designed biomaterials such as silicones, polyurethane, Teflon, hydrogels, bionanocomposites are detailed. Modern Biology and biomedical engineering such as protein absorption, biospecific medical materials, nonfouling materials, healing and foreign body reaction, controlled release etc are discussed. Surface-immobilized biomolecules in patterned surfaces are explained with specific examples of the use of immobilized biomolecules, immobilized cell ligands, and immobilization methods. Recent advances in biomedical engineering from the perspectives of inkjet printing of cells and tissues for 3D-medical textiles, nanofibers and films in biomedical engineering by electrostatic spinning, bio-inspired materials through layer by layer (LBL) assembly and biogels and advanced instrumentation in biomedical engineering are updated. Artificial red blood and skin substitutes, orthopedic biomaterials applications adhesives and sealants, diagnostics, biomedicale sensors, extracorporeal artificial organs and ethical issues of biomedical engineering are discussed.
3 semester credits
Advanced Biomedical Materials and Engineering

This course will cover the advanced level understanding on the different types of biomaterials using in medical purposes and their design. Modern biology in biomedical engineering such as but not limited to protein absorption, immuno isolation, regenerative medicine etc will be covered. Ethical issues in biomedical engineering will be discussed. Cutting edge research on nanobiotechnology that extends to biosensors, 3D biomatrix, advanced diagnostic, dental composites, sealants, adhesives will be covered. Device fabrication aspect of biomedical engineering especially that are at the interface of nanotechnology and biomaterials will be thoroughly discussed.

3 semester credits

Ethical Issues in Biomedical Research

This course will be offered as a one hour discussion with a group of students in the instructor’s office keeping in mind the ethical issues dealing with Biomedical Engineering. Health concerns on handling nanobiomaterials, laws and bylaws associated with human subjects and the Food and Drug Administration’s requirements will be discussed. Hence creating an ethical awareness associated with Biomedical Engineering.

3 semester credits

Tissue Engineering

The objective of this course is to provide students a foundation for the understanding of cell based systems needed for tissue engineering. The structure-property-function relationships in normal and pathological mammalian tissues will be covered. A review of the current development of biological substitutes to restore, maintain, or improve functions that includes strategies to regenerate metabolic organs and repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs will be discussed. There are a variety of very important materials issues in tissue engineering, which will be discussed in detail. Cells adherence to the extracellular matrix materials in the body and their enormous effect on cell behavior will be detailed. The physical and chemical properties of these materials will be examined and important materials used in tissue engineering will be discussed.

3 semester credits

Team Based Research Project

This course must be taken in your last semester of course work or later. This is a team based project. Teams with members from both the life sciences and the quantitative sciences are strongly encouraged. You may have more that on advisor, but one faculty member needs to be identified as the primary advisor. Your capstone project may be based on a single project or multiple projects. Each project, however, must be experimental or simulation in nature and be interdisciplinary. The project results should be publishable in peer reviewed journals. All projects must be approved by the University’s BME program committee prior to student enrollment in the BME 620 course.

3 semester credits

Business Capstone

Integration and Application: Strategy

This is a capstone course dealing with the development and implementation of business strategy and planning within a framework of ethical decision-making, globalization and managing accelerating change. The student is tested on his/her capability to apply all prior learning to solve actual strategic management problems. The final project of this course is project-based, and shall constitute an outcome assessment of what the student has learned in the MBA program. This project, normally an extensive and comprehensive case study, will be graded by several faculty members representing different and relevant disciplines. Prerequisites: Completion of all core and required courses and completion of all Major courses or concurrent registration with final Major courses. Normally, students enroll toward the end of their MBA program.

3 semester credits, 1 semester credit, 1 semester credit

Integration and Application: Internship

This course should be taken towards the end of the student’s program of study and requires the approval of the student’s faculty advisor.

3 semester credits

Integration and Application: Thesis

Students will complete a report based on field, library and institutional research to demonstrate ability to conduct investigations in a managerial discipline. The topic of the report may concern any business issue, industry or organization and may be related to the student’s current or future employment. Prerequisites: Completion of all Major courses or concurrent registration with final Major courses. This course should be taken in the final semester of a student’s MBA program and approval of the student’s faculty advisor is required.

3 semester credits

Integration and Application: Internship

This course is reserved for a special project that cannot be done in any other course format and is intended to allow a student complete his/her MBA requirements. Students will study a topic approved by their professor and present a substantial written report regarding the topic. Prerequisite: Completion of core courses and required Major courses. Written approval to register by the supervising professor and the Assistant Dean are required. This course is normally taken towards the end of the student’s MBA program.

3 semester credits
**Business Communications**

**Business Communications 603**

**Business Written Communications**

The purpose of this course is to improve the ability of students to effectively communicate with a variety of written presentation techniques. Students will not only learn and practice grammatical principles, but also learn to present tables and graphs, and to organize and coherently structure their written reports. Prerequisites: Admission to graduate study.

3 semester credits

**Business Communications 605**

**Business Oral Communications**

The purpose of this course is to improve the ability of students to effectively communicate with a variety of oral presentation techniques. Students will not only learn and practice speech principles, but also learn to visually present tables and graphs, and to organize and coherently structure their oral communications. Prerequisites: Admission to graduate study.

3 semester credits

**Business Law**

**BUSINESS LAW 600**

**Legal Environment of Business and Ethics**

Students course focuses on how the legal environment of business impacts business decisions with broad ethical, international, and critical thinking examples throughout. Knowledge of the legal aspects of running a business will enable the student to conduct business within the legal framework and understand the ethical dimension of business decisions. Topics include: Introduction to Business Ethics and the Judicial and Legislative Process; Litigation, Alternative Dispute Resolution, and the Administrative Process; Business Crimes, Torts, and Contracts; the Constitution and Government Regulation of Business; Business Organizations; Employment and Labor Laws; Consumer Protection and Environmental Regulation; and International Law and Ethical Conflicts. Prerequisites: Admission to graduate study.

3 semester credits

**BUSINESS LAW 645**

**Employment and Labor Law**

Students study the current employment and labor law in the U.S. and the historical development of these laws from common law to existing law. The course covers a wide range of legal and regulatory topics needed for human resources management including workplace safety, family leave, equal employment and pay, wrongful discharge, privacy, harassment, and illegal workers. In addition, development of global laws and laws related to employment and labor in other countries are reviewed. Prerequisites: MGMT 600, BLAW 600 and completion of all core courses or concurrent registration in final core courses. Normally students take MGMT 611 before or concurrent with BLAW 645.

3 semester credits

**BUSINESS LAW 720**

**Business and Society: Intellectual Property and Anti-Trust Law**

This course reviews the basic principles of U.S. intellectual property law (patents, copyrights, trade secrets, trademarks and the protection of ideas), with accompanying ethical issues, and explains how international treaties (e.g. Berne Convention) have affected global trade. The course reviews select anti-trust laws in the U.S., and it analyzes to what extent parties outside the U.S., doing business in or with the U.S., are subject to American anti-trust and intellectual property laws. Prerequisites: BLAW 600 and completion of all concentration required courses or concurrent registration in final required concentration courses. Permission of Assistant Dean is required.

3 semester credits

**Chiropractic**

**AN511**

**Cell and Tissue Microscopic Anatomy and Physiology**

This course will focus on the study of the microscopic anatomy and physiology of cells and basic tissue type. A major emphasis will be placed on connective, neural and muscular tissue. A working knowledge of the microscopic structure and function of the basic tissue types will provide a framework for understanding how the organization of the tissue contributes to organ and organ system physiology.

3 lecture hours, 3 semester hours

**AN512**

**Functional Anatomy and Biomechanics I: Spine**

This course addresses the functional anatomy and biomechanics of the spinal column, ribs and pelvis. Emphasis is placed on the interrelationships between the structure and function of the spinal column and its surrounding anatomical structures. Biomechanical principles are incorporated into functional anatomy of a dynamic human musculoskeletal system. Instruction includes lecture, dissection, tutorials, prospection and models.

3 lecture hours, 3 laboratory hours, 4.5 semester hours

**AN513**

**General Anatomy I: Viscera**

This course focuses on the anatomy of the organs plus the structure of the muscles, bones and additional tissues of the walls of the human thoracic and abdominopelvic cavities. The neurological, vascular and positional relationships of these organs are discussed with emphasis on the clinical applications. Instruction includes lectures and laboratory with dissection and prospection, osseous structures and models.

3 lecture hours, 3 laboratory hours, 4.5 semester hours

**AN514**

**Clinical Embryology**

Embryology covers the gametogenesis, fertilization and structural development from the zygote to birth. This course correlates the embryological development with other courses offered in Semester I. Normal development, clinical correlations and common congenital abnormalities are presented. Emphasis is placed on the skeletal, muscular and nervous systems.

1 lecture hour, 1 semester hour

**AN525**

**General Anatomy II: Head and Neck**

This course focuses on the anatomy of the head, including the gross anatomy of the brain and special sense organs, and neck. The neurological and vascular relationships of these regions are discussed with emphasis on clinical applications. Instruction includes lectures, laboratory dissection and prospection and models. Prerequisites: AN511, AN512, AN 513, AN514.

3 lecture hours, 3 laboratory hours, 4.5 semester hours
AN526
Functional Anatomy and Biomechanics II: Extremities
This course is a regional exploration of the appendicular system. Bones, muscle attachment and function, vasculature and innervation are discussed. Emphasis is on understanding function based on attachment and innervation. Relevant clinical problems are presented. Instruction includes lecture, full dissection of pectoral girdle, pelvic girdle, and extremities, presentation of projections, study of bones and models. Prerequisite: AN513.
3 lecture hours, 3 laboratory hours, 4.5 semester hours

Biochemistry
BC511
Biochemistry, Metabolism and Nutrition: I
This course is designed to provide the student with an understanding of the biochemical principles involved in maintaining functional integrity of the body through energy and the principles involved in nutritional balance.
2 lecture hours, 2 semester hours
BC612
Biochemistry, Metabolism and Nutrition: II
This course is a continuation of BC511. Prerequisite: BC511
2 lecture hours, 2 semester hours

Business Procedures
BP721
Documentation and Insurance Protocols (Billing and Coding)
The successful student will be able to identify and discuss all of the important aspects of patient communication, medical documentation and insurance protocols/coding. In addition, the successful student will be able to identify and apply appropriate billing protocols regarding filing insurance claim forms.
1 lecture hour, 1 credit hour
BP722
Business Procedures and Marketing
This is a business procedures course that stresses the importance of ethical and legal business management procedures. The class room discussions cover strategic management, chiropractic and health care economics, marketing and image building. Successful completion will prepare the student to enter chiropractic practice.
1 lecture hour, 1 credit hour

Chiropractic Skills and Technique
TE511
Chiropractic Examination Skills I: Palpation and Biomechanics of the Spine and Pelvis
This course addresses the biomechanics and chiropractic assessment procedures of the spinal and pelvic joints. The student is introduced to the concepts of biomechanics as they relate to the kinematics and kinetics of the spine and pelvis and the structure and functioning of the tissues of the musculoskeletal system.
2 lecture hours, 2 semester hours
TE511L
Chiropractic Examination Skills I: Palpation and Biomechanics of the Spine and Pelvis - Laboratory
Clinical biomechanics and associated chiropractic assessment procedures of the spine and pelvis are presented and practiced. Emphasis is placed on the diagnostic tools of inspection as well as static and motion palpation as they pertain to the assessment of spinal/pelvic joint functioning.
3 laboratory hours, 1.5 semester hours

Starting a Chiropractic Practice and Office Management
At the completion of this course, the successful student will have a clear understanding and knowledge of the three basic choices when starting a chiropractic practice. They will also recognize their options related to selecting a business structure as well as being able to identify the type of practice they want to establish, the key factors for establishing a workable partnership, the importance of obtaining financing, finding a location, designing an office floor plan, preparing a business and budget plan, hiring and managing employees/office staff, managing patients regarding payment and collection issues and recognizing key items related to both internal and external marketing/advertising. In addition, the successful student should be able to recognize the different types of health insurance and manage care plans typically encountered in a chiropractic office as well as the importance of obtaining access into these insurance networks. Finally, the successful student should recognize the importance of the report of findings, HIPPA (Federal) guidelines and basic hospital protocols.
1 lecture hour, 1 credit hour

Chiropractic Examination Skills II: Palpation and Biomechanics of the Extremities
Clinical biomechanics and associated chiropractic assessment procedures of the upper and lower extremities and TMJ are presented and practiced. Previously learned spinal assessment procedures are reviewed and practiced. Prerequisites: TE511L, Co-Requisite AN526
3 laboratory hours, 1.5 semester hours

Chiropractic Examination Skills II: Palpation and Biomechanics of the Extremities Laboratory
Clinical biomechanics and associated chiropractic assessment procedures of the upper and lower extremities and TMJ are presented and practiced. Prerequisites: AN512, TE511 and TE522
1 lecture hour, 1 semester hour

Technique Procedures I: Introduction to Full Spine Technique Lecture
This course introduces students to full spine adjutive procedures from the cervical spine (C2) to the pelvis. The course will begin with a review of biomechanics and assessment procedures presented in palpation skills TE522 and TE511. Selected spinal conditions will be presented and discussed as they pertain to diagnosis, differential diagnosis and case management. Prerequisites: AN512, TE511 and TE522
1 lecture hour, 1 semester hour

Technique Procedures I: Introduction to Full Spine Technique Laboratory
This course introduces students to full spine adjutive procedures from the cervical spine (C2) to the pelvis. This course will begin with a review of biomechanics and assessment procedures presented in palpation skills AN512 and TE511. In addition, this course will concentrate on the psychomotor skills required to perform the specific spinal adjustments from cervical spine (C2) to the pelvis. Prerequisites: AN512, TE511L
3 laboratory hours, 1.5 semester hours
Chiropractic

TE624
Technique Procedures II: Intermediate Full Spine and Upper Extremity Adjusting
Principles of patient management and common clinical conditions of the head, neck, thoracic and upper extremity regions are presented. Evidence-based diagnostic and treatment protocols are stressed along with conservative and proper referral and co-management. Prerequisites: TE613, DX611, DX612, TE522L, DX611L, DX612L. 2 lecture hours, 2 semester hours

TE624L
Technique Procedures II: Intermediate Full Spine and Upper Extremity Adjusting Laboratory
The laboratory portion is a review and practice of new and previous techniques taught with an emphasis on skill refinement. Intermediate level spinal techniques and upper extremity techniques are presented and practiced. Prerequisite: TE613L, TE522L. 4 laboratory hours, 2 semester hours

TE625
Technique Procedures III: Soft Tissue
Students are introduced to the concepts of soft tissue diagnostic procedures and treatment procedures. These include the etiology, pathophysiology, diagnosis and treatment of soft tissue dysfunction and trauma, differential diagnosis and case management of soft tissue dysfunction and trauma, differential diagnosis and case management of soft tissue lesions are presented. Prerequisites: TE511, 511L, TE522, 522L, TE613, AN512, AN526, AN562, AN5612. 2 lecture hours, 2 semester hours

TE625L
Technique Procedures III: Soft Tissue Laboratory
The laboratory portion covers the diagnosis and treatment of muscle hypertonic states. Prerequisites: TE613L, TE522L. 2 laboratory hours, 1 semester hour

TE716
Technique Procedures IV: Intermediate Full Spine and Lower Extremity Technique
Clinical biomechanics of the lumbopelvic region and lower extremities are reviewed. Evidence-based differential diagnosis and case management of lumbopelvic and lower extremity clinical conditions common to chiropractic practice are presented and discussed. Prerequisites: TE624, TE624L. 2 lecture hours, 2 semester hours

TE716L
Technique Procedures IV: Intermediate Full Spine and Lower Extremity Technique Laboratory
Intermediate level full spine and lower extremity assessment and manipulative procedures are presented and practiced. Students continue to review and practice previous technique procedures. Prerequisite: TE624L. 4 laboratory hours, 2 semester hours

TE728
Technique Procedures VI: Advanced Chiropractic Technique I
Advanced patient assessment procedures and application of technique procedures to different patient populations are presented and discussed. Upper cervical toggle recoil, instrument adjusting and temporomandibular joint, symphysis pubis, coccyx and rib techniques are introduced. Chiropractic management of extremity conditions is presented and discussed. Prerequisite TE716. 2 lecture hours, 2 semester hours

TE728L
Technique Procedures VI: Advanced Chiropractic Technique I Laboratory
Previous patient assessment and technique procedures for the spine and extremities are demonstrated and practiced. Advanced spinal and extremity techniques are introduced and practiced. Upper cervical toggle recoil, pelvic blocking, instrument adjusting, cervical and lumbar mobilization techniques, TMJ, symphysis pubis, coccyx and rib techniques are introduced and practiced. Selected soft tissue techniques are reviewed and practiced. Prerequisite: TE716L. 4 laboratory hours, 2 semester hours

TE819
Technique Procedures VII: Advanced Chiropractic Technique II
This course is the combined lecture and laboratory review of all techniques taught at UBCC. This course also serves as a critique course for other techniques utilized in practice. Case management utilizing various chiropractic technique approaches are discussed and critically evaluated. Prerequisite: all courses Semester I-VI. 1.5 lecture hours, 3 laboratory hours, 3 semester hours

Clinical Nutrition

CN621
Clinical Nutrition I: Pathology and Assessment
This course introduces the student to diet, basic nutrition and vitamins and their clinical applications. There is an emphasis on the clinical aspects of the diet and the diseases associated with the typical American diet. Additionally, the biochemistry of carbohydrates, fats and proteins is reviewed, focusing on the use of fats, amino acids and vitamins to treat various diseases and pathological states. Prerequisites: PH612, BC612, PA611. 1 lecture hour, 1 semester hour

CN712
Clinical Nutrition II: Treatment and Management
This course is a continuation of CN621. There is a comprehensive review of minerals and their clinical application, as well as the clinical uses of fiber. The pathophysiology of obesity, Alzheimer's disease, atherosclerosis, diabetes mellitus, osteoarthritis and detoxification are discussed in length, as well as treatment protocols for each condition using nutritional supplements, herbs, diet and homeopathic medicines. Prerequisite: CN621. 2 lecture hours, 2 semester hours

Clinical Services

CS721
Clinical Services I
Students under the supervision of licensed faculty begin to administer care to patients at the UBCC Health Center. Students are introduced to the procedures and practices utilized by the health center through lectures and practical demonstrations. Students refine their skills in history taking, physical examination, radiology, technique, case management and clinical decision-making. Prerequisites: all courses in semesters I-V. 2 lecture hours, 4 clinic hours, 4 semester hours

CS812
Clinical Services II
Under supervision of licensed faculty, interns administer care to patients. All patient diagno-
Diagnosis

DX611
Diagnostic Skills I: Physical Examination
This course is designed as an introduction to the skills required to examine, diagnose and differentially diagnose the skin, eyes, ears, nose, sinuses, mouth, throat and thyroid as well as the cardiovascular, respiratory, gastrointestinal and genitourinary systems. In addition, selected topics regarding the diagnosis of the musculoskeletal system will also be covered. The student will review basic anatomy and physiology as well as anatomical structures as it relates to physical examination procedures being taught and specific organ systems being examined. The students will expand upon their knowledge and skills as it relates to history taking. The students will also learn the selection of appropriate examination and diagnostic procedures, which correspond to the patient’s history and complaint as well as recognize the importance of the review of systems and the development of a problem list. The successful student will learn how to select and use their diagnostic equipment and specific procedures for carrying out these examinations. Integration of these skills into the comprehensive management of the patient will be emphasized which will allow the student to properly develop the clinical decision-making skills necessary to demonstrate minimum clinical competency. Prerequisites: AN511, AN513, AN525
3 laboratory hours, 1.5 semester hours

DX612/612L
Diagnostic Skills II: Orthopedics and Neurology
This lecture and laboratory course emphasizes the use of evidenced-based orthopedic and neurological evaluation procedures. Students are introduced to an organized clinical thought process that prepares them to perform appropriate evaluation procedures of patients presenting with neuromusculoskeletal conditions. The entire SOAP process is taught in order to enable the student to expedite the examination process, reveal subjective and objective findings, create an accurate diagnosis and generate comprehensive record keeping. Prerequisites: AN526, TP522, PP524
2 lecture hours, 2 semester hours, 4 laboratory hours, 2 semester hours

Differential Diagnosis

DD711
Differential Diagnosis I: Internal Disorders
This course presents the diagnosis and differential diagnosis of diseases and conditions affecting the internal organs, to include the cardiovascular system, pulmonary system, gastrointestinal, genitourinary system, gyneco-

Chiropractic

Diagnosis

DX623
Diagnostic Skills II: Orthopedic and Neurology Laboratory
The laboratory portion of this course covers common diseases and conditions of the nervous system. Prerequisites: AN511, AN513, AN525, AN513
2 lecture hours, 2 semester hours

DX623L
Diagnostic Skills III: Orthopedic and Neurology Laboratory
The laboratory portion presents cases that challenge the student to consider the evaluation and management process of specific neurological conditions. Practical application of neurological and orthopedic testing prepares the student to organize their critical skills. Students, through a problem-based format, develop the clinical reasoning skills to differentiate conditions affecting the neuromusculoskeletal system. Prerequisites: AN623, PP623, PA623
4 laboratory hours, 2 semester hours

DX624
Laboratory Diagnosis
This course introduces the student to the appropriate ordering and interpretation of laboratory tests. Prerequisites: DX613, PH612, PA611
3 lecture hours, 3 semester hours

DX725
Special Populations
This course introduces the student to the health care needs of the developing child and mother from conception to birth to childhood and adolescence. Complications of pregnancy, delivery, post partum care and the chiropractic management of the obstetric patient will be discussed. The examination and conditions of the pediatric patient as well as the management of the pediatric patient is presented. Also covered is the examination of the geriatric patient, common findings of the geriatric exam and management of selected neuromusculoskeletal and non-neuromusculoskeletal conditions. Prerequisites: all courses in semesters 1-V.
3 lecture hours, 3 semester hours
**Chiropractic**

**Microbiology and Public Health**

**MB521 Clinical Microbiology I: Introduction to Infectious Diseases**
This course introduces the student to the basic concepts of microbiology with emphasis on the structure, growth, metabolism and genetics of bacteria. Host-parasite relationships of representative bacterial, fungal, viral and protozoan pathogens are examined. A survey of microbial diseases includes modes of transmission, symptoms, diagnosis, physical and chemical methods of disinfection, sterilization and treatment. Presentations include lecture, laboratory and case studies. Prerequisites: All courses - Semesters I-IV

5 lecture hours, 5 semester hours

**DD711**

**Differential Diagnosis I: Internal Disorders Laboratory**
The laboratory reviews examination procedures related to these areas and presents case studies to assist students in developing clinical reasoning skills. Prerequisites: All courses - Semesters I-IV

2 lecture hours, 2 laboratory hours, 2 semester hours

**DD722**

**Differential Diagnosis II: Neuromusculoskeletal**
This course is a presentation of the diseases and conditions affecting the neuromusculoskeletal system. Disorders affecting the spine, extremities and central and peripheral nervous system are reviewed. Neurological and orthopedic testing are covered as they relate to the differential diagnosis of these systems. Functioning of the human locomotors system and how other systems can affect this is stressed. Prerequisites: All courses, Semesters I-V

4 lecture hours, 4 semester hours

**Emergency Procedures**

**ER 711 Emergency Procedures**
Training in first aid principles is given in lectures and demonstrations dealing with the care of emergencies and accidental injuries. Treatment of wounds, fractures, poisoning, lacerations, shock, hemorrhages, heat exhaustion, drowning and burns are taught. Students are trained and receive certification in the administration of CPR.

1 lecture hours, 2 laboratory hours, 2 semester hours

**MB724 Public Health II: Community Health and Wellness**
This course teaches students about wellness and health promotion consistent with Healthy People 2020 from the US government. Students will learn health problem methods to use in practice that stress patient self care behaviors that can impact on mortality due to preventable causes, especially: cardiovascular disease, stroke, cancer and diabetes. These behaviors include diet, exercise, and smoking cessation, moderation of alcohol intake and reduction of drug usage. Prerequisite: MB623.

2 lecture hours, 2 semester hours

**MB742 Pathology**
This course is a study of the pathophysiological process and how this process alters the gross, microscopic and clinical manifestations of disease. The basic pathological process of inflammation, repair, degeneration, necrosis, immunology and neoplasia is presented. This course is also an introduction to disease of the lymphatic, bone marrow and neuromusculoskeletal system. Laboratory includes the study of gross and microscopic changes as well as clinical presentation of various diseases and functional disturbances. Prerequisites: All anatomy courses, PH521.

2 lecture hours, 1 laboratory hour, 2.5 semester hours

**MB612 Clinical Microbiology II: Infectious Diseases**
This course is a continuation of MB521. Common infectious diseases are presented from a microbiological perspective. Prerequisite: MB521, PH521.

2 lecture hours, 2 semester hours

**NS621 Neuroscience I**
This course is an overview of the general anatomy of the central nervous system. The gross anatomical structures of the brain and central nervous system are presented. Basic neurophysiology and neural cellular anatomy are discussed. The structures of the sensory, motor and special sense systems and pathways are presented. Reading and case examples are used to emphasize the neuroanatomical correlation to selected clinical scenarios. Prerequisites: AN511, AN512, AN513, AN514, AN525.

3 lecture hours, 3 semester hours

**NS612 Neuroscience II**
This course is a continuation of NS521 and will begin to emphasize the neuroscience of clinical case-based problems. The sensory and motor systems are examined in detail. An emphasis is placed on the correlation of anatomical structure to physiological function and to contrast this to clinical problems. Prerequisites: NS521, PP524, PH521, AN525.

3 lecture hours, 3 semester hours

**Pathology**

**PA611 Fundamentals of Pathology**
This course is a study of the pathophysiological process and how this process alters the gross, microscopic and clinical manifestations of disease. The basic pathological process of inflammation, repair, degeneration, necrosis, immunology and neoplasia is presented. This course is also an introduction to disease of the lymphatic, bone marrow and neuromusculoskeletal system. Laboratory includes the study of gross and microscopic changes as well as clinical presentation of various diseases and functional disturbances. Prerequisites: All anatomy courses, PH521.

2 lecture hours, 1 laboratory hour, 2.5 semester hours

**PA622 Systems of Pathology**
This course is a continuance of the study of the pathological processes of various diseases. This course emphasizes the pathological basis of systemic diseases of the cardiovascular, respiratory, gastrointestinal, urogenital, endocrine, hepatobiliary, renal and pancreatic systems. The gross microscopic and clinical manifestations of various disease processes are presented. Prerequisites: PA511, Corequisite PH512.

4 lecture hours, 1 laboratory hour, 4.5 semester hours
Physiological Therapeutics

PT711/PT711L
Physiological Therapeutics I: Modalities
This course is an introduction to the physics and clinical use of heat, cold, high volt galvanism, interferential current, low volt galvanism, ultrasound, electrical muscle stimulation, diathermy and paraffin. This student is instructed on the development of a clinical management plan utilizing adjunctive therapies. In lab, students are introduced to the use and application of modalities.

1 lecture hour, 1 semester hour/2 laboratory hours, 1 semester hour

PT722
Physiological Therapeutics II: Rehabilitation
This course covers the concepts of rehabilitation as used in the UBCC Health Center and in private practice. The course covers the rehabilitative management of injuries and clinical conditions of the spine and extremities common to the practice of chiropractic.

2 lecture hours, 2 semester hours

PT722L
Physiological Therapeutics II: Rehabilitation Laboratory
The laboratory course introduces rehabilitative treatment methods including stretching, balance training, therapeutic and spinal stabilization exercise. Prerequisite: PT711

2 laboratory hours, 1 semester hour

Physiology

PH612
Organ System Microscopic Anatomy and Physiology II
The microscopic anatomy and physiology of the cardiovascular, respiratory, urinary, digestive and reproductive systems will be studied in this class. An emphasis will be placed on the relationship of tissue organization and function of the organ systems. Laboratories in this class will utilize case studies to emphasize how an understanding of normal physiologic mechanisms is crucial to understanding pathophysiology. Prerequisites: AN511, AN513, BC511, PH521

4 lecture hours, 2 laboratory hours, 5 semester hours

PH713
Toxicology and Pharmacology
This course is the study of drugs and chemicals and how they interact with the living organism. Pharmacology is a study of the sites, absorption and metabolism of common drugs. Toxicology studies the adverse reactions of drugs and poisons. The therapeutic use and toxic side effects of various drugs, chemicals, nutritional supplements and other substances are studied. Prerequisites: PH612, PA622, NS612, BC612

2 lecture hours, 2 semester hours

Principles and Practice

PP511
Principles and Practice I: History and Philosophy
This is a course in which the history of healing is traced from its known origins through discovery of chiropractic to the present day. The basic concepts of chiropractic philosophy are discussed, as well as their current interpretation and clinical significance. Particular emphasis is placed upon chiropractic as a distinct profession in the health care community.

2 lecture hours, 2 semester hours

PP512
Principles and Practice II: Introduction to Evidence-Based Practice
Students will learn the steps involved in Evidence-Based Chiropractic practice: Creating focused clinical questions, efficiently finding and then assessing evidence for relevance and validity, applying it ethically (alongside clinical wisdom and patient preferences) to a clinical question, then reflecting upon your mastery of the process. This course will build the foundation for an ongoing commitment to inquiry which will support your future clinical decisions and patient care.

2 lecture hours, 2 semester hours

PP523
Principles and Practice III: Contemporary Chiropractic Studies
Historical and contemporary principles of the chiropractic profession are introduced and discussed. Components of the subluxation complex are presented, critically analyzed and incorporated into the science, art and philosophy of contemporary chiropractic practice. Current events regarding chiropractic and health care are presented and discussed. Prerequisite: PP511

2 lecture hours, 2 semester hours

PP624
Principles and Practice IV: Evidence-Based Practice
In this course, students will expand their knowledge of evidence-based practice. The course emphasizes asking clinical questions, searching for the scientific literature to answer those questions and critically appraising that research. Having found valid research to answer the clinical questions, students will learn how to use that information in clinical practice. Prerequisite: PP512

2 lecture hours, 2 semester hours

PP715
Principles and Practice V: Ethics
This is a risk management course that stresses the importance of ethical and legal business management procedures. Students learn risk management, jurisprudence, ethics and the informed consent process. Successful completion will prepare the student to practice as an ethical health care provider.

1 lecture hour, 1 credit hour

Psychology

PS711
Clinical Psychology
This course is designed to familiarize the student with current psychological theory and practice. The student is instructed in behavioral assessment and the recognition of psychological disorders. Interviewing and counseling techniques are presented as well as the criteria for appropriate referral of patients to providers of psychological services.

2 lecture hours, 2 semester hours
Heart and abdomen are studied on plain film manifestations of the internal organs. The chest, and abnormal clinical and radiographic manifestations affecting these conditions. Students are introduced to special imaging as it relates to further evaluation of these conditions. Prerequisite: DI521
1 lecture hour, 2 laboratory hours, 2 semester hours

CSI2
Diagnostic Imaging II: Normal Anatomy
This course is a continuation of DI521. Students continue to develop their skills of radiographic interpretation as they relate to normal anatomical structures of the various parts of the body. Emphasis is placed on the radiography of normal anatomical structures of the extremities and chest. Prerequisite: DI521
2 lecture hours, 2 laboratory hours, 2 semester hours

DI612
Diagnostic Imaging III: Bone Pathology
This course introduces students to the clinical and radiographic manifestations affecting osseous structures due to neoplasia, such as tumor-like conditions, infection and normal variants. Students are introduced to special imaging as it relates to further evaluation of these conditions. Prerequisite: DI612
1 lecture hour, 2 laboratory hours, 2 semester hours

DI623
Diagnostic Imaging IV: Arthritis and Trauma
This course further develops the students’ skills in the clinical and radiographic manifestation of osseous structures. Emphasis in this course is placed on the interpretation and recognition of disorders due to inflammatory and non-inflammatory arthritis and trauma. Special imaging as they relate to further evaluation of these conditions is presented. Prerequisite: DI623.
2 lecture hours, 2 laboratory hours, 3 semester hours

DI714
Diagnostic Imaging V: Chest and Abdomen
This course covers the interpretation of normal and abnormal clinical and radiographic manifestations of the internal organs. The chest, heart and abdomen are studied on plain film as well as special examination procedures. Prerequisite: All previous DI courses.
1 lecture hour, 2 laboratory hours, 2 semester hours

DI726
Diagnostic Imaging VI: Positioning and Physics
This course covers the mechanics of x-ray production, film processing, x-ray factors and radiation safety and protection for doctor and patient. Also covered is the placement and positioning of patients for the taking of x-ray studies. Students are introduced to the policies and procedures utilized by the UBCC Health Center.
2 lecture hours, 2 laboratory hours, 3 semester hours

RS824
Evidence Based Practice IV
Interns compare different interventions based on patients seen by the intern, as approved by their clinician. Interns perform a literature search and report the clinical questions, search terms used, data based searched, papers found and their quality. The intern determines whether a given intervention has quality evidence supporting its use. Interns submit a report summarizing findings and discuss the case with other interns. Clinicians query interns not only regarding the findings, but also how the investigation provides practical application to the patient’s care and management plan. Prerequisite: All Courses, Semesters I-VI, Corequisite: CS812
1 semester hour

Research

RS711
Evidence Based Practice I
This online learning course will utilize previously taught material and evidence-based practice methods in the creation of a comprehensive case report on a fictitious patient. An emphasis is placed on chiropractic principles and techniques as patient management strategies are created. Prerequisite: PP512, PP624
1 lecture hours, 1 semester hour

RS722
Evidence Based Practice II
This online learning course will utilize previously taught material and evidence-based practice methods in the creation of a comprehensive case report on a fictitious patient. An emphasis is placed on chiropractic principles and techniques as patient management strategies are created. Prerequisite: RS711
1 lecture hours, 1 semester hour

RS813
Evidence Based Practice III
Interns compare different interventions based on patients seen by the intern, as approved by their clinician. Interns perform a literature search and report the clinical questions, search terms used, data based searched, papers found and their quality. The intern determines whether a given intervention has quality evidence supporting its use. Interns submit a report summarizing findings and discuss the case with other interns. Clinicians query interns not only regarding the findings, but also how the investigation provides practical application to the patient’s care and management plan. Prerequisite: All Courses, Semesters I-VII, Corequisite: CS823
1.5 semester hour

Computer Engineering

Computer Engineering 408
Operating Systems
Structure and design issues in modern operating systems. Topics may include OS structure; Threads, CPU scheduling and synchronization of processes; deadlock management; main and virtual memory management; file management; file system interface; I/O structure. Prerequisite: Computer Science 102, Computer Engineering 312.
3 semester hours

Computer Engineering 446 (CPEG 446/ELEG 446)
MEMS (Micro-Electro-Mechanical Systems)
Basic micro fabrication techniques, MEMS materials and their properties, MEMS device design and simulation, MEMS packaging and assembly, signal testing and MEMS reliability analysis. MEMS industrial applications in various areas will also be discussed. Students
Computer Engineering

used ANSYS FEM software to design and simulate their behavior.

COMPUTER ENGINEERING 447
Logic Synthesis Using FPGAs
Logic design using textual design entry, VHDL Behavioral, structural and data flow descriptions. Technology-dependent vs. technology-independent design. CPLD, SRAM and antifuse technologies. Rapid prototyping and re-targeting designs. A major design project. Prerequisite: Computer Engineering 315.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 448
Introduction to VLSI Design
Design and implementation of a very large scale integrated circuits. CMOS and BiCMOS technologies, basic topological structure of ICs, clocking characteristics, resistance, capacitance and power estimation, System-level design and implementation issues. Custom layout and verification using CAD tools. Synthesis of designs from VHDL descriptions. Term project will include the design and testing of an integrated circuit. Prerequisites: Computer Engineering 315 and Electrical Engineering 348.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 448 (CPEG 458/ELEG 458)
Analog VLSI
Modeling, design and analysis of analog VLSI circuits. CMOS processing and layout, current mirrors, Opamp, comparators, S/H voltage references, switched-capacitor circuits, data converters, filters and PLLs. Students design analog VLSI layouts, extract the netlists and simulate the circuit behavior. Transistor sizing will also be discussed. EDA tools PSPICE, Mentors Graphics are used.

COMPUTER ENGINEERING 460
Introduction to Robotics
Basic Robotics, including: position and velocity sensing, actuators, control theory, robot coordinate systems, robot kinematics, differential motions, path control, dynamics, and force control. Robot sensing, simulation of manipulators, automation, and robot programming languages are also investigated. Prerequisites: Computer Science 102, Electrical Engineering 360, Math 214 or 314 or permission of instructor.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 471
Data and Computer Communications
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 472
Computer Networks
Introduction to fundamental concepts in the design and implementation of computer communication networks, their protocols, and applications. Topics to be covered include: overview of network architectures, applications (HTTP, FTP), network programming interfaces (e.g., sockets), transport (TCP, UDP), flow control, congestion control, IP, routing, IPv6, multicast, data link protocols, error detection/correction, multiple access, LAN, Ethernet, wireless networks, and network security. Prerequisite: Computer Engineering 471 or permission from instructor.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 473
Local Area Networks
Examination of wired and wireless Local and Metropolitan Area Network technologies, protocols, and the methods used for implementing LAN and MAN based enterprise intranets. The IEEE 802 media access control (MAC) protocols are examined. The 802.2 logical link control, 802.3/Ethernet, 802.3 token bus, and the 802.5 token ring protocols are analyzed, and the construction of LAN-based enterprise intranets is examined through a detailed analysis of bridging, routing, and switching techniques. High-speed LAN technologies are discussed through an examination of FDDI, Fast Ethernet, 100VG AnyLAN, ATM LAN and fibre Channel protocols along with the standards for Gigabit and 10 Gigabit Ethernet. The new and emerging wireless LAN and MAN standards are also examined. The 802.11 (WiFi) wireless LAN and 802.15 (Bluetooth) wireless PAN standards are discussed. Prerequisite: Computer Engineering 471.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 481
Mobile Communications
This course covers the basics technologies in the field of wireless and mobile communications. The following topics are covered in the course: wireless transmission, media access control, satellite systems, broadcast systems, wireless LANs, wireless ATM, network layer protocols, transport protocols and support for mobility. Pre-requisites: Computer Engineering 471 or Computer Engineering 472 or permission of instructor.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 482
Network Administration
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 489
Software Engineering
Structural development methodology for large software systems. Planning requirements, design, test, and validation. Advanced topics in software development. Prerequisite: Computer Science 102 and senior status.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 500
Graduate Co-op/Internship in Computer Engineering
By arrangement.
1-3 semester hours

COMPUTER ENGINEERING 510
Introduction to Computer Architecture
Instruction set; data path and controller design for computers. Design and analysis of a RISC processor including integer and floating point pipeline design. Cache and virtual memory design, interrupts and DMA. Prerequisite: Computer Engineering 312 or equivalent background.
3 lecture hours, 3 semester hours

COMPUTER ENGINEERING 540
Image Processing
This is a project-oriented course. Students will learn and implement FFT with applications, image enhancement, image restoration,
image compression, and image tomography. Projects will be conducted on workstations. Prerequisite: Electrical Engineering 443.

3 lecture hours; 3 semester hours

COMPUTER ENGINEERING 548 (CPEG 548/ELEG 548) Low Power VLSI Circuit Design

With the rapid development of mobile computing, low power VLSI design has become a very important issue in the VLSI industry. A variety of low-power design methods are employed to reduce power dissipation of VLSI chips. This course is designed to cover low-power design methodologies at various design levels (from system level to transistor level). The basic low-power design strategies will be introduced in the class. Students will use the learned knowledge to design low-power VLSI circuits. Upon completion of this course, students will be able to analyze the power consumption of VLSI circuits, and design low-power VLSI circuits using various strategies at different design levels. The major target is to design VLSI chips used for battery-powered systems and high-performance circuits not exceeding power limits.

3 semester hours

COMPUTER ENGINEERING 550 Advanced VLSI Design

Implementation of custom VLSI designs, digital and analog simulation, fault tolerant design, design for testability. A major project will include the implementation of a digital integrated circuit. Prerequisites: Computer Engineering 448D.

3 lecture hours; 3 semester hours

COMPUTER ENGINEERING 457 Electronic Design Using Programmable Analog Arrays

Use of design methodologies to implement analog circuits using programmable analog arrays. Introduction to design tools for circuit implementation. Laboratory experience includes design of analog filters, photoplethysmography, a non-invasive method of measuring blood pulsations, temperature measurements with PWM fan control, motor control using PID controllers, among others. Design tools include Matlab and design tools from Anadigm, Inc. (schematic capture and simulation)

COMPUTER ENGINEERING 561 Network Security

Conventional encryption and message confidentiality, public-key cryptography and message authentication. Authentication applications, electronic mail security, IP security, web security, firewalls, security in mobile network and other security systems. Prerequisites: Computer Engineering 471 or 473.

3 lecture hours; 3 semester hours

COMPUTER ENGINEERING 570 Advanced Robotics

Advanced robotics and automation topics and techniques, including: active robotic sensing, intelligent and integrated manufacturing systems, robotic inspection, observation under uncertainty, multisensor feedback control of manipulators and mobile robots, advanced simulation and monitoring of robotic systems, high level modeling and control, and other topics. Prerequisites: Computer Science 460, Computer Engineering 460 or permission of instructor.

3 lecture hours; 3 semester hours

COMPUTER ENGINEERING 584 Machine Perception

An introduction to sensing and machine vision. Vision algorithms that are usable in practical applications, sensing mechanisms and various types of sensed data representation, sense data processing and interpretation for different applications. Prerequisites: Computer Science 400, Computer Engineering 312 and Electrical Engineering 443.

3 lecture hours; 3 semester hours

COMPUTER ENGINEERING 585 Computer Vision

A project-oriented course designed to familiarize the student with the computer image display, processing, and various limitations. The processing includes edge detection, Hough transform, thinning algorithms, moment invariant methods, relaxation algorithms, among others. Prerequisite: Computer Science 400, Computer Engineering 312, Electrical Engineering 443.

3 lecture hours; 3 semester hours

COMPUTER ENGINEERING 597 A Master's Project

Lecture hours and topics to be arranged with Department Chair.
1 semester hour

COMPUTER ENGINEERING 597 B Master's Project

Lecture hours and topics to be arranged with Department Chair.
2 semester hours

COMPUTER ENGINEERING 597 C Master's Project (completion)

Lecture hours and topics to be arranged with Department Chair.
1 semester hour

COMPUTER ENGINEERING 598 Thesis in Computer Engineering

Lecture hours, semester hours and topics to be arranged with Department Chair.
3-6 semester hours

COMPUTER ENGINEERING 599 Independent Study in Computer Engineering

Independent study of advanced topics in Computer Engineering and submission of project report as required. Problem assignment to be arranged with and approved by the Department Chair.
3 semester hours

COMPUTER SCIENCE 400 Object-Oriented Programming Using C++

This course introduces the modern object oriented programming philosophy using C++ to the beginning graduate students. The emphasis is on developing the programming thought process in terms of objects and their interactions to each other. Concepts covered include data hiding, code reuse through inheritance, polymorphism, templates, exception handling, developing appropriate class hierarchy and code maintenance for large software projects. Prerequisites: Computer Science 102 or equivalent background.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 410 Java Programming

Object oriented programming, using Java, packages, interfaces, multi-threading, classes, inheritance, exceptions, interfaces, native methods, applets. Prerequisite: Computer Science 400.
3 lecture hours; 3 semester hours

COMPUTER SCIENCE 411 Advanced Object-Oriented Programming with JAVA

Covered topics include advanced features of Java, such as Database inter-connectivity (JDBC) with Servlets and JSP, remote method interface (RMI), distributed applications objects using CORBA and JNDI, Java Beans, introspection and reflection, Enterprise Java...
applications with EJB, interfacing Java to C++ with JNI, and additional advanced topics. A focus on developing components and packages. A major project is developed. Prerequisite: Computer Science 410. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 435 Unix System Programming
Introduction to shell programming and system in Unix/Linux environments. Various commands, tools, filters and specification languages are studied. System calls to deal with files, processes, pipes, three interprocess communication facilities (semaphores, shared memory, and message queue), and signals are introduced. Prerequisite: Computer Science 400. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 440 Windows Programming
This course covers Graphical User Interface (GUI), design and Windows programming using Visual C++ and Microsoft Foundation Class (MFC) library. Topics covered include windows architecture, message/event driven programming, designing Dialog based, SDI and MDI applications, Document/View architecture, Device Contexts, Database access using the MFC ODBC classes and ADO. A comprehensive project is assigned towards the end of the course, which covered important windows programming concepts. Prerequisite: Computer Science 400. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 450 Data Base Design
Database system architecture; management and analysis of files, indexing, hashing, and B+trees; the relational model and algebra; the SQL database language; database programming techniques; database design using Entity-Relationship, and extended E-R modeling; basics of normalization. Theoretical and practical issues in database design, programming, and implementations. Prerequisite: Computer Science 400. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 460 Introduction to Robotics
Basic robotics including: position and velocity sensing, actuators, control theory, robot coordinate systems, robot kinematics, differential motions, path control, dynamics and force control. Robot sensing, simulation of manipulators, automation and robot programming, languages are also investigated. Prerequisite: Computer Science 102, Math 214 or 314, or permission of instructor. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 485 Software Design Patterns
Introduce design patterns and software architectures. Combines pattern theory with examples to show why and when to use patterns and how to implement them. How to apply design patterns at the enterprise level. The use of design patterns to design and implement systems of high stability and quality. Compare and contrast patterns, including differences between Mediator and Façade. Discuss relationships between patterns. Study how patterns are collaborated within domains to solve complicated problems. 3 semester hours

COMPUTER SCIENCE 500 Graduate Co-op/Internship in Computer Science
By arrangement. 1-3 semester hours

COMPUTER SCIENCE 502 Analysis of Algorithms
A course in advanced data structures and high-level algorithms. Varied uses of recursion. Graph representations and algorithms including traversals, path finding, closure, and spanning trees. Sorting files. Weighted and balanced trees; Hashing and collision handling. Complexity and analysis of algorithms. Prerequisite: Computer Science 102 or equivalent. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 503 Operating Systems
An advanced implementation oriented course in structure and design of operating systems. Scheduling and time management, processes and operating systems primitives, Deadlock handling techniques in operating systems, Space management and internal management. Prerequisite: Computer Science 102, Computer Engineering 312, Knowledge of C/C++. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 504 Artificial Intelligence
Foundations of the theory of Artificial Intelligence. Game playing, pattern recognition, description of cognitive processes, heuristic decision procedures, general problem solvers. Learning and robotics. Discussion of the relationship with human thought process. Extensive Lisp programming. Pre-requisite: Computer Science 102 or permission of instructor. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 509 Automata Theory
Theory of automata and learning machines. Finite-state sequential machines and functions. Transition preserving functions, Generators and minimal generating sets. Input semigroup, Isomorphisms and Automorphisms. Prerequisite: Computer Science 227. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 520 Theory of Computation
Finite automata and Pushdown automata; Register machines; Recursive functions and sets; Languages, regular expressions; Context-free languages; Regular and context-free grammars; Pumping lemmas. Turing machines, Church-Turing thesis. Post-correspondence problem; Computability and complexity. Prerequisite: Computer Science 227 and knowledge of computer programming. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 545 Component Based Software Design
Modern component based software design approaches using both the Component Object Model (COM) as well as the CORBA technologies. In-depth look at the infrastructure of COM components presenting of concepts of class factories, interfaces (standard and custom), inproc and local server components, IDL, type libraries, proxy/stubs and marshalling, automation and I Dispatch interface, structured storage and ActiveX controls. The distributed form of COM referred to as DCOM and its newest form is known as COM+, which integrates the transaction, and queuing capabilities are examined. A comparison of the CORBA technology is made by explaining its architecture and remoting capabilities. Prerequisite: Computer Science 440. Prerequisite by topic: 1. Good background in C++ programming, 2. Some knowledge of Windows Programming. 3 lecture hours; 3 semester hours

COMPUTER SCIENCE 550 Multimedia Database Systems
The issues in multimedia (audio, images and video), multimedia compression, multimedia
operating systems, multimedia communications, multimedia indexing, querying and retrieving, and web database systems, which have been enormously developed recently, and are playing important roles in the areas of business, entertainment, medicine and education. The goal of this course is to give in-depth understandings to media themselves with emphasis on other issues related to DBMS, operating systems and communications.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 551 Advanced Database
Advanced study of Relational databases including indexing structure, query optimization, rule and cost-based optimization, transactions and concurrency, recovery techniques, security, distributed database, data mining and other emerging database technologies. Prerequisite: Computer Science 450.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 555 Web-Based Application Development
Introduction to fundamental issues in designing a web-based application. Review of the web technologies such as HTML, VBScript, JavaScript, DHTML, Java, XML and server-side technologies using Active Server Pages (ASP), CGI and Java Server Pages (JSP). Design issues include the creation of tiered and scalable applications by the use of COM+ components involving Microsoft Transaction Server and the Java approach of Enterprise Java Beans. Different projects are assigned to create dynamic, database-driven E-Commerce solutions involving, order tracking systems, inventory management, advertising management, creating score reports, personalizing the shopping experience and secure credit card transactions. Wireless E-Commerce applications and developing business-to-business application using XML, SOAP and Biztalk Servers. Prerequisite: Computer Science 400.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 560 Performance Evaluation and Analysis
This course covers the basic theory and practice of computer systems performance evaluation. The course focuses on three major aspects of performance analysis, measurement, simulation and analytical modeling using queuing theory. The topics will include measurement techniques, monitor tools, simulation models, stochastic processes, queuing theory and analytical modeling techniques. Prerequisite: Background in computer architecture and probability and consent of the instructor.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 561 Network Security

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 570 Advanced Robotics
Advanced robotics and automation topics and techniques, including: active robotic sensing, intelligent and integrated manufacturing systems, robotic inspection, observation under uncertainty, multisensor feedback control of manipulators and mobile robots, advanced simulation and monitoring of robotic systems, high level modeling and control, and other topics. Prerequisites: Introduction to Robotics (Computer Science 460 or Computer Engineering 460).

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 580 Introduction to Neural Networks
Introduction to neural computing, and fuzzy logic. Neural network models including feed forward, multilayered networks, back-propagation, fuzzy associative memories, self-organizing maps and adaptive resonance. Applications. Projects to implement networks designed for specific applications. Prerequisite: Proficiency in C or C++, calculus and matrix methods.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 584 Machine Perception
An introduction to sensing and machine vision. Vision algorithms that are usable in practical applications, sensing mechanisms and various types of sensed data representation, sense data processing and interpretation for different applications. Prerequisite: Computer Science 400, Computer Engineering 312.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 590 Parallel and Distributed Processing
Models of parallel computation including distributed, multiprocessor, multicomputer. Parallel programming constructs. The mutual exclusion problem, synchronization and communication methods. Multi-computer topologies and topologies and topological embedding. Classes of parallel algorithms and design approaches. Performance analysis of parallel computation, including de-tailed and high level. A major project is required. Prerequisite: Computer Science 400.

3 lecture hours; 3 semester hours

COMPUTER SCIENCE 597 A Master's Project
Lecture hours and topics to be arranged with Department Chair.

1 credit hour

COMPUTER SCIENCE 597 B Master's Project
Lecture hours and topics to be arranged with Department Chair.

2 credit hours

COMPUTER SCIENCE 597 C Master's Project (completion)
Lecture hours and topics to be arranged with Department Chair.

1 credit hour

COMPUTER SCIENCE 598 Thesis in Computer Science
Lecture hours, semester hours and topics to be arranged with Department Chair.

3-6 credit hours

COMPUTER SCIENCE 599 Independent Study in Computer Science
Independent study of advanced topics in Computer Science and submission of project report as required. Problem assignment to be arranged with and approved by the Department Chair.

3 credit hours

Computer Science & Engineering (Ph.D.)

These courses are open for students enrolled in the Ph.D. degree in Computer Science and Engineering.

COMPUTER SCIENCE & ENGINEERING 690 Independent Study
Course taken up by a student with a faculty member on a special topic that may not be broad enough to be offered as a regular
course.
3 lecture hours, 3 semester hours

COMPUTER SCIENCE & ENGINEERING 692
Special Topics in Computer Science
Course offered to allow special topics courses in the general area of Computer Science that do not fit into any of the available areas of specialization.
3 lecture hours, 3 semester hours

COMPUTER SCIENCE & ENGINEERING 693
Special Topics in Computer Engineering
Course offered to allow special topics courses in the general area of Computer Engineering that do not fit into any of the available areas of specialization.
3 lecture hours, 3 semester hours

COMPUTER SCIENCE & ENGINEERING 694
Written Comprehensive Examinations
Students taking comprehensive examinations are required to register for CSE 694.
0 lecture hours, 0 semester hours

COMPUTER SCIENCE & ENGINEERING 698
Teaching Requirement
Ph.D. students assigned teaching courses to fulfill the teaching practicum of the Ph.D. in Computer Science and Engineering are required to register CSE 698.
0 lecture hours, 3 semester hours

COMPUTER SCIENCE & ENGINEERING 699
Seminar (Oral Exam)
Seminar is a zero credit course. It involves attending the regular departmental seminars and presenting one's work in one of the seminars.
0 lecture hours, 0 semester hours

COMPUTER SCIENCE & ENGINEERING 710
Ph.D. Dissertation
The student is expected to work on the accepted topic and come up with original results. S/he has to report the results in the form of a Ph.D. dissertation. The student is encouraged to document the intermediate results in the form of technical reports. S/he is also encouraged to publish these results as they are discovered, in the international professional literature, i.e., refereed conference proceedings and journals. Proof of good work is the acceptance of the results by reputed journals. Intermediate results can also be discussed in departmental seminars. The completed dissertation must be distributed to the dissertation committee members at least two weeks before the dissertation defense.

The committee will read it and certify that the dissertation is a work of substantial merit and that it can be defended. It is the responsibility of the student that the final draft of the dissertation addresses all legitimate concerns of the committee members.

Varies from 1-12 semester hours

Counseling

COUNSELING 502
Orient to Mental Health Counsel
This course will provide an orientation to the program and the counseling profession with a primary focus on the culmination to professional licensure. This includes an overview of the profession, touching on its history, counselor roles, and relationships with other human service providers. The course will discuss the relevant content for comprehensive examinations and the requirements for professional credentialing such as NBCC certification and licensure as a Professional Counselor. Additionally, the course will provide an introduction to the University library along with resources for on-going professional development and self-care.
1 Semester hour

COUNSELING 503
Orientation in Student Affairs
The course provides an overview of Master of Science in Counseling, specifically the College Student Personnel Concentration. The course reviews competencies and expectations of the profession, professional research and writing, as well as the principles of sound practice in Student Affairs.
1 semester hour

COUNSELING 505
Helping Relationships
This course provides a definitive view of counseling including the characteristics of the counselor and the elements of the counseling process. Through experiential exercises and videotaped simulated counseling the student will attain skills such as attending, empathic listening, assessing and focusing on important client concerns, structuring the process, and facilitating change.
3-4 semester hours

COUNSELING 508
Counseling Theories
This course surveys the major theories and perspectives of counseling including the Psychoanalytic, Behavioral, Humanistic-Existential, Cognitive, Constructivist-Post Modern, and Systems approaches along with an integrated, eclectic or confluent perspective. Students gain an understanding of the role of theory, the philosophical basis of the theories, the divergent methods utilized, and the utility of each perspective.
3 semester hours

COUNSELING 512
Counseling Theories
This course surveys the major theories and perspectives of counseling including the Psychoanalytic, Behavioral, Humanistic-Existential, Cognitive, Constructivist-Post Modern, and Systems approaches along with an integrated, eclectic or confluent perspective. Students gain an understanding of the role of theory, the philosophical basis of the theories, the divergent methods utilized, and the utility of each perspective.
3 semester hours

COUNSELING 515
Clinical Skills Mental Health Counsel
The focus of this course is the skills necessary to work in a psychotherapeutic venue including treatment planning, report writing and diagnosis. The course covers description and diagnosis of the mental disorders as prescribed by the Diagnostic and Statistical Manual. Prerequisites include Counseling 505, 508, 506, 570.
3 semester hours

COUNSELING 520
Intro to Student Affairs
This course provides an overview of the purpose and functions of student affairs, including the role of the Student Affairs Professional on a college campus. Through the study of theoretical perspectives and empirical data, you learn to describe different elements and types of educational environments and understand their effect on different types of students. Students will understand and apply theories/environment interaction in a collegiate setting.
3 semester hours
Equivalent to COUN-681

COUNSELING 523 & 523H
Counseling Theories
This course surveys the major theories and perspectives of counseling including the Psychoanalytic, Behavioral, Humanistic-Existential, Cognitive, Constructivist-Post Mod-
Counseling

COUNSELING 527
Student Affairs Administration
This course is an introduction to the administration of higher education institutions in the United States. Course material includes an overview of history, purposes, formal structure, governance, finances, and administrative behavior.
3 semester hours

COUNSELING 529
Gerontological Counseling Techniques and Methods
This course presents studies related to common impairments for older persons like chronic illness, Alzheimer’s disease, substance abuse, depression and suicide, sexual dysfunction/alternatives, and problems with prescription medications are presented in detail. Counseling strategies shown to be effective with older adults, both from a developmental/wellness and impairment perspective, are included within a framework of gender and cultural considerations. Counseling strategies might include life review, family counseling, group work, art therapies, grief and loss counseling, wellness interventions, psycho-educational and social network interventions. Students are expected to practice via role plays the strategies reviewed in class.
3 semester hours

COUNSELING 529
Mid-Life Counseling
This course focuses on the mid-life client who, historically, has been neglected in theory, practice and general concern of professionals in counseling and related fields. Special problems and needs of the mid-life person are explored in the context of the human growth and development process over the total life span. Through class experiences, students will develop counseling procedures appropriate for this age group and their specific issues.
3 semester hours

COUNSELING 531
Computer Applications in Counseling and Human Resources
Hands-on experience with computer programs useful to counselors and human resource developers in a variety of work and study environments are presented in this course. Software samples relevant to a variety of counseling settings are studied and evaluated.
2 semester hours

COUNSELING 532
History and Systems of Humans
This course is an overview of human service history and current issues, social policy analysis. Skills related to advocacy and the change agent, and principles of case management.
3 semester hours

COUNSELING 533
Principles of Applied Research
This course provides a grounding in the methodology of social science research as it pertains to the human service field. It addresses the following four content areas: 1) The nature of social science research; 2) Critical analysis of social science research, 3) Simple descriptive and inferential statistics, and 4) Action research design.
3 semester hours

COUNSELING 534
Assessment in Student Affairs
This course is designed to provide an introduction to assessment in student affairs and higher learning education. Students will explore a variety of assessment methods and techniques and apply their learning through case studies and/or real world assessment. Students will learn the purpose of, and interact with, University’s Institutional Review Board.
3 semester hours

COUNSELING 540
Group Process: Appl/Theory
The course focuses on the dynamics of leadership and various membership roles. Alternative theoretical models of groups will be studied. An experiential group experience is required. Counseling 505 and 508 are prerequisites. COUN 541 is geared specifically to the needs of Human Resource professionals.
4 semester hours
Equivalent to COUN-521.

COUNSELING 545
Social and Cultural Foundation
This course examines how social and cultural factors impact on the individual and subsequently how the counselor attends to and addresses the different social forces and cultural differences in the counseling venue.
3 semester hours
Equivalent to COUN-516

COUNSELING 552
Human Development: A Lifespan
This course provides a survey of major theories and issues in the field of human development. Topics include the nature of human development; research methods in the field of human development; biological bases for human development; the social, emotional and cognitive changes that occur across the lifespan; and how human development affects, and is affected by, family life, peer relationships, schooling, gender, values, and culture.
3 semester hours
Equivalent to COUN-560

COUNSELING 555
Student Development Theory
This course is designed for graduate students in College Student Personnel. Course participants will conceptualize how college students grow and develop during the critical college years, become familiar with the major families of theories for understanding college student development and the concerns of students who are members of campus subculture, and be able to apply developmental theories in practical settings in higher education to assess problems encountered by college students and to design educational interventions.
3 semester hours

COUNSELING 562
Today’s College Student
This course will examine the diverse demographics of students of American colleges and universities, including international college students and discuss management of this culture. Students will research the literature on how college impacts students who attend as well as current trends and topics in higher education.
3 semester hours

COUNSELING 566
Personality and Psychopathology
This course can be used either as an elective or an alternative for those who do not have
the pre-requisite undergraduate preparation for the program. The course provides perspective on personality development and the development of dysfunctional psychological conditions. 3 semester hours

COUNSELING 568  
**The Counselor as Professional**  
This course serves as an orientation to the helping profession by addressing issues that impact on the provision of services such as ethics, law, certification, and professional role expectations. Completion of this course must precede internship. 3 semester hours  
*Equivalent to COUN-510*

COUNSELING 570  
**Strategies/Techniques of Coun**  
Building on basic listening skills this course focuses on developing strategies and interventions that promote therapeutic movement for the client. Techniques of the various theoretical orientations will be presented and practiced. Simulated role plays and videotaped sessions provide active opportunities to develop the skills. This course has significant out of class expectations. Prerequisites include completion of at least 9 credits and Counseling 505 and 508. 4 semester hours  
*Equivalent to COUN-524.*

COUNSELING 574  
**Practicum**  
Students participate in an exploratory field experience in selected community, agency, collegiate, or corporate settings. Departmental permission is required. Specific coursework may also be required depending upon concentration or setting. 1-3 semester hours

COUNSELING 575  
**Practicum**  
This course provides students an opportunity for supervised work experiences in a supervised work setting. Students participate in an exploratory field experience in selected community, agency, collegiate, or corporate settings. Departmental permission is required. Specific coursework may also be required depending upon concentration or setting. 2 semester hours

COUNSELING 580D  
**Special Problems of Counseling**  
These courses, used as electives, may cover specific counseling perspectives such as solution-focused or cognitive therapies, psychopharmacology or specific applications of counseling such as grief, crisis, trauma or employee assistance. 1-6 semester hours

COUNSELING 582  
**Appraisal Procedures for Coun**  
In this course students become familiar with a variety of standardized assessment instruments, learn how to evaluate them, select several tests that are appropriate for use in an area of professional responsibility related to a real or anticipated counseling situation, and interpret test results in a supervised setting. Prerequisites include Counseling 505, 508 and 610. 3 semester hours  
*Equivalent to COUN-525.*

COUNSELING 585  
**Trauma & Crisis Intervention**  
This course serves as an introduction to the counselor of the implications of the psychological trauma. Prevalence and impact will be explored as well as various treatment approaches. Minimum prerequisites: Counseling 505 and Counseling 523, Practicum Level, Post-Graduate or current Employment in the counseling field preferred. 3 semester hours

COUNSELING 587  
**Psychopharmacology**  
This course is designed to provide community counselors a working knowledge of current trends in Psychopharmacology for children and adults. The increased use of medications to treat mental health disorders in our society has led to a need for mental health workers to understand the types of medications currently used, the effects of specific treatments, and the overall impact on educational, social & personal development. 3 semester hours  
*Equivalent to COUN-561.*

COUNSELING 590  
**Master’s Project**  
This course is designed to assist the student in development of a scholarly masters project, which is the final product required for completion of the Master’s Degree in Counseling. 1-3 semester hours

COUNSELING 595  
**Addictions and Treatment**  
This course is designed to provide a practical experience for counselors learning to work with alcohol and other drug abusers and other addictions. Covered in the course will be a survey of the various psychoactive drugs and behavioral addictions along with diagnosis and treatment modalities in working with persons with addictions, and those affected by persons with addictions. Prerequisites include Counseling: 505, 508 and 540. 3 semester hours

COUNSELING 600  
**Cmhc Internship 1**  
The goal of the internship is to further develop and refine the skills established during practicum. You are eligible for the internship component of your program after completing the required coursework and approval from faculty. The internship is the heart of the master’s degree training program in Counseling at the University of Bridgeport (UB). It provides a venue within which students receive the guidance necessary for development as an entry-level counselor. Program faculties provide didactic and experiential training, which serves as the foundation for the development of skills necessary for independent work in clinical settings. Fee Assessed 1-4 semester hours

COUNSELING 601  
**Internship 1 College Stud Pers**  
The goal of the internship is to further develop and refine the skills established during practicum. You are eligible for the internship component of your program after completing the required coursework and approval from faculty. The internship is the heart of the master’s degree training program in Counseling at the University of Bridgeport (UB). It provides a venue within which students receive the guidance necessary for development as an entry-level counselor. Program faculties provide didactic and experiential training, which serves as the foundation for the development of skills necessary for independent work in clinical settings. Fee Assessed 1-3 semester hours

COUNSELING 602  
**Internship 1 – Human Services**  
The goal of the internship is to further develop and refine the skills established during practicum. You are eligible for the internship component of your program after completing...
the required coursework and approval from faculty. The internship is the heart of the master's degree training program in Counseling at the University of Bridgeport (UB). It provides a venue within which students receive the guidance necessary for development as an entry-level counselor. Program faculties provide didactic and experiential training, which serves as the foundation for the development of skills necessary for independent work in clinical settings. Fee Assessed

1-3 semester hours

COUN 605 Clinical Mental Health Coun Internship 2 (4.00 CR.)

COUN 606 Csp- Internship 2 (3.00 CR.)

COUN 607 Human Services- Internship 2 (3.00 CR.)

COUNSELING 610
Career & Lifestyle Development

This course provides an introduction to a lifespan approach to career and lifestyle development. Theories, research, and counseling strategies related to career and lifestyle issues are explored. Labor resources and information, career assessment tools, computer assisted career guidance, life roles, cultural considerations, and placement procedures are reviewed as interrelated factors to the study of career development. Counseling 505 and 512 are prerequisites.

3 semester hours

COUNSELING 615
Ethical/Legal Issues Higher Ed (3.00 CR.)

This course is designed to provide entry-level student affairs practitioners a basic understanding of the legal issues prevalent on college campuses. Students will study case law and apply their knowledge through case studies.

3 semester hours

COUNSELING 620
Leadership in Contemp Workforc

This course guides you to understand the leadership principles and practices of employee relations in today's workplace. The emphasis will be on understanding the interpersonal and leadership skills and practices needed to succeed in today's workplace, including the importance of workplace ethics, cultural diversity, managing today's work/life balance issues, and learning about the role communications plays in organizations, including the issues surrounding technology in the workplace.

3 semester hours

COUNSELING 622
Group Work Processes and Skills

A laboratory and seminar course in which students become actively involved in working with small groups. Emphasis in the supervised group and seminar sessions will focus on the leader's role as a facilitator of individual growth within the group setting. Prerequisite: Counseling 505, 523, & 524 or departmental permission.

3 semester hours

COUNSELING 623
Counseling and Consultation Skills

This course explores the role and implications of the consultative process in various settings: with co-workers, with individuals and groups, with organizations and institutions. Participants will have an opportunity to increase skills in the consultative process; to exchange experiences, problems and concepts in practice on consultation; and to increase the number of alternatives one may use in the consultative process. By experiencing and learning from an actual consulting assignment, each participant has an opportunity to be more aware of self and increase the congruence between personal and professional life.

3 semester hours

COUNSELING 624
Group Strategies and Techniques for Developing Human Potential

Advanced treatment of the application of human relations skills and strategies in a workshop setting. Each participant contracts to develop specific skills in a minimum of one approach up to a maximum of six approaches from such areas as reality therapy, transactional analysis, psychodrama, gestalt, bioenergetics, Otto's human potential or other approaches. Prerequisite: Permission of instructor.

1-6 semester hours

COUNSELING 625
Org & Admin Mental Health Syst

This course provides a comprehensive introduction to human service organizations through the perspective of managerial competencies necessary for success in the human services agencies, including human resources, supervision, managing finances, monitoring and evaluating programs and services, social advocacy and managing change. Prerequisites include Counseling 505, 512, and 540.

3 semester hours

COUNSELING 627
Life Work Plan

Upon student demand

This course provides opportunities to examine and share various career planning modules that can be used in a variety of settings. Participants will have the opportunity to experience one model in particular: Life Work Planning. The Life Work Planning experience is divided into two sections; Phase I encourages greater client self-awareness through various exercises and group interaction; Phase II provided clients with a variety of proven decision and planning tools. With these tools, clients can clarify their goals, decisions and plans; test their present direction; seek new directions; look for alternatives; and move toward action and greater control. Life Work Planning links clients' present realities with personal growth. Throughout the experience, they work alone, or in a subgroup of four or five people. The exercises and tools can be used again throughout their lives to focus attention on their position in a world of change.

3 semester hours

COUNSELING 630
Clinical Skills for Mental Health Counselors

The focus of this course is the skills necessary to work in a psychotherapeutic venue including treatment planning, report writing and diagnosis. The course covers description and diagnosis of the mental disorders as prescribed by the Diagnostic and Statistical Manual. Prerequisites include Counseling 505, 523, 510, 524, and 566. Ideally this course should be taken concurrently with the first semester of internship.

3 semester hours

COUNSELING 631
CSP CUMULATIVE EXAM

1 semester hours

COUNSELING 650
Organization and Administration of Mental Health Systems

This course provides a comprehensive introduction to human service organizations through the perspective of managerial competencies necessary for success in the human services agencies, including human resources, supervision, managing finances, monitoring and evaluating programs and services, social advocacy and managing change. Prerequisites include Counseling 505, 510, 521, and 523.

3 semester hours
Counseling • Dental Hygiene

COUNSELING 680D
Advanced Seminar in Counseling
These courses are designed to allow advanced students the opportunity to select topics for study which are both relevant to the counseling field and important to the students’ professional development.
1-6 semester hours

COUNSELING 690
Advanced Research Project
A course designed to assist the student in development of a scholarly masters project, which is the final product required for completion of the Certificate of Advanced Graduate Study (CAGS) in Counseling.
1-6 semester hours

COUNSELING 710
Cognitive Behavioral Therapy
The course is designed to teach students the basics of how to conduct Cognitive Behavior Therapy (CBT). Lectures will stress theory and case conceptualization. Exercises will address both theory and application. This course provides a more sophisticated, indepth look at CBT as it pertains to cases. Students will read two texts and case and/or biographical material. They will also participate in in-class exercises that will include operationalizing the problem, case conceptualization, treatment planning, practicing specific techniques (in the roles of therapist and client), and consider special issues for certain populations.
3 semester hours

Dental Hygiene

DENTAL HYGIENE 500
Leadership in Dental Hygiene
This course focuses on the theories, concepts, and principles of leadership skills related to personal behavior, communication, organizational and leadership styles. This course explores the opportunity to develop leadership roles appropriate to the dental hygiene profession.
3 lecture hours, 3 semester credits

DENTAL HYGIENE 501
Grant and Contract Writing
This course will provide the graduate students with an introduction to the process of grant application, award, post award management, types of grants and contracts, content and language of announcements for funding, and requirements of various funding agencies. The steps to writing a grant proposal for healthcare funding from private, state, and federal funding sources will be covered.
DENTAL HYGIENE 502
Evidence Based Research
This course is designed to prepare the student to utilize research as the foundation for clinical decision making. The practical application of evidence-based decision making to the clinical management of individual patients is explored.
DENTAL HYGIENE 503
Clinical and Didactic Educational Concepts
This course will introduce the graduate student to a procedure for developing a competency-based curriculum. The student will learn the steps in developing a lecture, module of instruction, and a course. Cognitive, affective, and psychomotor learning theories are addressed along with clinical teaching methodologies.
3 lecture hours, 3 semester credits

DENTAL HYGIENE 504
Clinical/Laboratory Teaching
This course will provide students with the practical knowledge and skills to function as a competent clinical/laboratory instructor. Psychomotor skill development and analysis, remediation of performance concerns, evaluation, and faculty calibration are areas stressed.
1 lecture hour, 4 clinical/laboratory hours, 3 semester credits

DENTAL HYGIENE 505
Didactic Student Teaching
This course will provide students with the practical knowledge and skills to function as a competent didactic instructor. Cognitive skills, development and analysis, evaluation strategies, and faculty calibration are areas stressed.
1 lecture hour, 4 laboratory hours, 3 semester credits

DENTAL HYGIENE 507
Dental Health Services Administration/Management
This course is designed to familiarize the student with the administrative concepts necessary to effectively administer dental health facilities and departments. Emphasis is placed on leadership, decision making and problem solving skills. It examines political, social, and legal systems that affect dental hygiene administration and influence its role.
3 lecture hours, 3 semester credits

DENTAL HYGIENE 508
Curriculum Development and Management
This course provides the student with the study and development of models for dental hygiene curriculum design and implementation. The development and utilization of competencies and the evidence based instruction is emphasized.
3 lecture hours, 3 semester credits

DENTAL HYGIENE 509
Dental Public Health
This course is designed to prepare students for leadership roles in dental public health settings. Administration, grant writing, consumer advocacy, epidemiology, biostatistics, the assessment, planning, implementation, and evaluation stages of programs and alternative dental hygiene care is emphasized.

DENTAL HYGIENE 510
Foundations of Healthcare Management
The focus of this course is the healthcare system in the U.S., specifically how its entities work, how they interrelate and how it differs from healthcare systems in other countries with more government controlled systems.

DENTAL HYGIENE 511
Epidemiology
This course will provide the graduate student with the skills necessary to study health states in populations and its applications in basic science, general clinical research, and public health. Students will critique the dental hygiene literature as it applies to the subject of epidemiology.

DENTAL HYGIENE 513
Seminar in Public Health Issues
This course will explore current concepts and challenges facing dental healthcare delivery through the development of collaborations across healthcare disciplines, delivering culturally and linguistically competent healthcare, and evaluating current and proposed dental healthcare workforce models. Initiatives serving the purpose of guiding national health promotion and disease prevention to improve the dental health of the U.S. Population and informing the American public on health matters will be examined.

DENTAL HYGIENE 516
Concentrated Practicum
This course provides the Graduate student with the opportunity to take an active role in the development of a practical experience at
Design Management

**Design Management 400**
Collaborative Design Studio I
Design Management is an inter-disciplinary field that combines various forms of design including graphic design and branding, interior design and architecture, industrial design, and fashion and textile design. Collaborative Design Studio I will begin to equip students with the skills they need to work with cross-functional teams. This is done through client-based design projects that originate from local Fortune 500 and other global organizations. Students will learn communication, team building, and leadership skills as they hone their design talents.

*2 semester credits*

**Design Management 401**
Collaborative Design Studio II
Building on the foundation formed in Collaborative Design Studio I, students will again be grouped in inter-disciplinary teams to complete an innovative, client-based design project. The projects for this course will focus the students’ attention on the triple bottom line: profitability, sustainability, and responsibility.

*2 semester credits*

**Design Management 500**
Collaborative Design Studio III
Collaborative Design Studio III will continue to equip students with the skills they need to work with cross-functional teams on real world, client-based assignments. Students will learn communication, team building, and leadership skills as they hone their design talents.

*2 semester credits*

**Design Management 501**
Collaborative Design Studio IV
Collaborative Design Studio IV will continue to equip students with the skills they need to work with cross-functional teams on real world, client-based assignments. Leadership skills will be given extra attention during the second year’s teamwork.

*2 semester credits*

**Design Management 410**
Design Management I
Design Management is a multifaceted, organic discipline whose exact definition can differ between organizations and Design Managers. In Design Management I, students will explore various definitions of Design Management with the goal of defining their own course of study. By reading and writing about relevant case studies, students will examine a wide variety of applications of design management. Students will be required to present their description of design management by the end of the term.

*3 semester credits*

**Design Management 411**
Design Management II
As the student’s concept of design management deepens, they will begin to explore the implications that design management has on an organization. Design Management II will describe the six core principles of the program: Marketing, Leadership, Finance, Legal, Operations, and Strategy, as well as the triple bottom line: Profitability, Responsibility, and Sustainability. Students will learn the ripple effect their design decisions have on an organization as they broaden their understanding of the filed of design management.

*3 semester credits*

**Design Management 510**
Design Management III
Students will continue to further their understanding of design management. Through relevant case studies, text readings, and lectures, students will develop a plan for the application of design management principles within their organization. The final project for this class includes an action plan for an organization where design management principles will make a meaningful impact on their triple bottom line.

*3 semester credits*

**Design Management 511**
Design Management/Thesis IV
Design Management/Thesis IV requires students to develop an idea that embraces and explores a particular aspect of design management. Students will work independently on a paper that broadens the design management field. This unique challenge demands that the students demonstrate an understanding of the six core principles of the program: Marketing, Leadership, Finance, Legal, Operations, and Strategy, while injecting their own interpretation of design management based on their experience, talent, and culture.

*3 semester credits*

**Design Management 598**
Internship/Co-op
Fairfield County and the surrounding tri-state area are rich in organizations in need of qualified design management interns. Through strategic partnerships and student initiative, internships will be established to give students first-hand experience as a design manager. Students will report on their experience and that report, coupled with his or her manager’s evaluation, will form the basis for determining the student’s grade. Internships are taken by domestic students; Co-ops are taken by international students.

*1 semester credit*

**Design Management 599**
Special Projects
Special projects and independent study give students the opportunity to explore specifics of design management as they relate to their own area of expertise. Students will be encouraged to seek out opportunities to gain practical experience in the design and design management fields. This course should include field, library, and institutional research on a specific aspect of design management. Student evaluation will be based on a report submitted by the student.

*2 semester credits*

**Marketing 600**
Marketing
This course explores the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual, organizational, and societal objectives. The underpinnings of marketing discipline will be taught through text, case studies, articles, and class discussion. Mastery of these principles will come through...
Design Management

individual and group assignments to create marketing solutions for real-world products.

3 semester credits

MANAGEMENT 600

Leadership & Management

This course will introduce students to the primary tenets of leadership and management. Successful organizations foster innovation and efficiency. Students will evaluate the dynamics related to realizing organizational progress through the effective and efficient use of talent, structure, culture, methods, and technology. In addition to the required textbooks, students will research industry journals as a way to evaluate the application of leadership and management techniques in real settings across various industries.

3 semester credits

ACCOUNTING 600

Financial Accounting

This course will provide managers with the skills necessary to read, interpret, and apply information about an organization's financial position. Managerial accounting and finance concepts will precede financial statement analysis. Topics covered include: how accounting data is generated in business operations, how financial statements are created, management of finance to maximize return on investment, and stakeholder equity. Students will participate in case work applying the principles presented in class.

3 semester credits

BUSINESS LAW 600

Legal Environment of Business & Ethics

This course focuses on how the legal environment of business impacts business decisions with broad ethical, international, and critical thinking examples throughout. Knowledge of the legal aspects of running a business will enable the student to conduct business within the legal framework and understand the ethical dimension of business decisions. Topics include: Introduction to Business Ethics and the Judicial and Legislative Process; Litigation, Alternative Dispute Resolution, and the Administrative Process; Business Crimes, Torts, and Contracts; The Constitution and Government Regulation of Business; Business Organizations; Employment and Labor Laws; Consumer Protection and Environmental Regulation; and International Law and Ethical Conflicts.

3 semester credits

INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT 600

Information Systems & Technology

Information technology has become a key component for accomplishing strategic and operational goals in organizations today. As such, organizations expect their new employees to have a basic understanding of information technologies. To accomplish organizational goals and advance one's career path, one needs to understand and apply information technologies effectively, efficiently, and creatively. The purpose of this course is to provide an introduction to information systems and technology and to familiarize students with the fundamental concepts and principles of information systems. The course is targeted for graduate students who have little or no background in information systems. Therefore, it focuses on breadth rather than depth in any specific area.

3 semester credits

MANAGEMENT 652

Small Business & Entrepreneurship

A comprehensive review of the marketing, operational, financial, product, service, and business strategy and plans that must be mastered and developed as foundation for start-up of a small business or entrepreneurial enterprise. In addition, growth of existing business through intrapreneurship is also covered. Students will develop a comprehensive business plan for a business of their choice which is acceptable to the professor.

3 semester credits

DESIGN MANAGEMENT 580X

New Product Commercialization

The objectives of this course are to understand and apply concepts and techniques of product commercialization. The course focuses on taking student-created product concepts and having student teams drive the concepts to become actual products. Product design, prototype creation, market analysis, and financial analysis all come together with the student team to create a viable product. If ideas are worthy, teams may work with the University's CTech IncUBator to actually commercialize their products. Students are strongly encouraged to find a sponsor to actually commercialize their product ideas.

3 semester credits

East Asian and Pacific Rim Studies

GLOD/EAST ASIAN AND PACIFIC RIM STUDIES 401/501

Graduate Seminar in Research Methods

This is an introductory course in qualitative and quantitative research methods. It is designed to introduce you to basic concepts and issues (statistical, analytical, and ethical) encountered in research investigation. We will discuss what research is, the tools of research, research design, and writing the research report. Included will be an introduction to a diversity of research methods, including survey, historical research, experimental methods, content analysis, and so forth. An overview of statistical means of data interpretation will also be presented, including correlation, t-tests, ANOVA, Chi-Square Test, Sign Test, regression analysis, and so forth.

3 semester hours

GLOD/EAST ASIAN AND PACIFIC RIM STUDIES 511

Issues in Economic Development

This course explores current issues in economic development including poverty and poverty alleviation, strategies to overcome poverty and underdevelopment including microfinance, the roles of multilateral financial institutions, globalization, and the Washington Consensus. The course will also explore the roles of regional arrangements and development institutions in attempts to overcome underdevelopment. The theoretical underpinning of the course lies in the many schools of thought that have produced explanations of the causes and consequences of development and underdevelopment. The course attempts to plot strategies to achieve goals of economic development.

3 semester hours

GLOD/EAST ASIAN AND PACIFIC RIM STUDIES 522

Conflict Analysis and Resolution

This course examines theories about and sources of conflict (resource allocation and shortage; ideological, religious, and cultural disagreement; power distribution; perceptions of security, etc.) to set the stage for conflict analysis and negotiation. In conflict analysis, the impact of cultural-linguistic systems on agreements and disagreements is examined. Culturally sensitive strategies of negotiation, conflict resolution, and mediation also are examined and practiced.

3 semester hours
EAST ASIAN AND PACIFIC RIM STUDIES 530

**Pacific Rim Culture and Development**

Outcomes 1 (B) and 2 (I)

This course introduces students to the challenges of socioeconomic and political development in the Pacific Rim with its sharply differing approaches to development, due to factors such as traditions which have existed in some cases for millennia and are also influenced sharply by histories of Eastern and Western colonialism and cross-cultural differences. The course introduces students to the modern models of developments which have been employed by the United States, Australia, China, Singapore, Chile, Japan, Taiwan, and Korea and will consider the lessons learned from these processes. The course will also explore the major religious and cultural trends as well as some of the historical developments that have contributed to recent East Asian economic successes.

*3 semester hours*

EAST ASIAN AND PACIFIC RIM STUDIES 542

**Challenges in Asia Pacific Political and Economic Integration**

The course will consider the unique challenges that have slowed efforts to create an East Asian and eventually an Asia Pacific Economic Community. Students will dedicate special attention to the creation and development of the Asia Pacific Economic Cooperation and to the issue of political and economic hegemony and the ongoing disputes related to territorial disputes and interpretations of history. Students will also be introduced to the legal instruments and treaties that facilitated European integration as a possible measure or eventual standard of successful integration.

*3 semester hours*

EAST ASIAN AND PACIFIC RIM STUDIES 525

**Models of Good Governance in the Asia-Pacific**

This course examines the philosophical and the political underpinnings of good governance of the Asia-Pacific region. This course will take into account the two major reference points for political philosophy in the region—Western Political Philosophy and East Asian political philosophy with special attention being given to Confucianism. Students will also consider the role of Islam and its political implications with particular attention being paid to Indonesia, Malaysia and the Moros regions of the Philippines. The course will also note the unique process of transition from authoritarian to democratic rule in Japan, Korea, Taiwan, and in the Peoples Republic of China.

*3 semester hours*

EAST ASIAN AND PACIFIC RIM STUDIES 563

**Business and Diplomacy—East Asia vs. the West**

This course will consider the differing approaches to business and diplomacy of East Asia and the West. It will consider the ways in which the two approaches differ from each other, considering elements such as “face,” direct versus indirect approaches, and the primacy of relationship versus the primacy of legal contracts. The course will be conducted based on a series of case studies and simulations where students will be asked to plan and participate in intercultural negotiations and planning.

*3 Semester Hours*

GLDP/EAST ASIAN AND PACIFIC RIM STUDIES 536

**Political Communication and Governance**

This course focuses on the relationship between media and politics and media and governance. It will also examine the issues of freedom of speech and freedom of the press, media as mouthpiece or watchdog. The course will also study how media are used in governance, how public opinion is formed, shaped, and influenced, and how political and public agenda are set.

*3 semester hours*

GLDP/EAST ASIAN AND PACIFIC RIM STUDIES 543

**Communication and National Development**

The focus of this course is on communication and national development and nation-building. Students will learn how media, communication, and information can be used to improve economic, political, and cultural conditions of people around the world. In particular, the course will look into the functions of media communication and social marketing demonstrate in reducing poverty, combating hunger, improving literacy, promoting public health care, fighting corruption, and protecting the environment among others.

*3 semester hours*

EAST ASIAN AND PACIFIC RIM STUDIES 581

**Advanced Diplomacy**

This course will build upon the skills and competencies that the student has acquired in foundational courses in the Global Development and Peace program including GLDP 522 International Conflict Negotiation as well as other foundational courses in the GLDP program in order to allow students to develop enhanced understanding and competency in the areas of diplomacy and negotiation. The course will explore the components of diplomacy, with a special focus on negotiation. It will also include settlement on issues to be negotiated, organization of negotiation agendas, the role of spokespersons, problem solving, public diplomacy; and the roles of Track I, Track One and a Half, Track II and Track III diplomacy in addressing issues.

*3 semester hours*

GLDP/EAST ASIAN AND PACIFIC RIM STUDIES 591

**Internship**

The Graduate Internship is completed once the student has completed at 21 credits in the GLDP program. It serves as the venue in which students can accomplish two important outcomes, i.e., they can apply the foreign language that they have been studying in an overseas setting (international GLDP students may do their internship in the US if they already speak a second world language in their home country rather than English) and they can intern in an agency or organization where the skills that they have acquired in the GLDP academic program can be put into practice.

*3 semester hours*

EAST ASIAN AND PACIFIC RIM STUDIES 598

**Tutorial**

The tutorial is offered at the completion of the internship of students in the Master of Arts in Global Development and Peace. The Tutorial is designed to allow students to reflect on and present on the internship experience. The tutorial invites students to reflect on the internship experience based on the student’s experiences prior to and during the tutorial as well as a broader reflection on the mission of and lessons learned from the organization where the student has interned. The tutorial also prepares students for the program’s comprehensive exam that includes both an oral and a written component. As a part of the tutorial students also assemble a portfolio of all of the significant work that they have completed during the program and a written reflection on that work. Much of the work of the tutorial is done independently of the classroom experience. Students are welcome to meet with the instructor as they progress in preparations and they are strongly encouraged to do so. (Prerequisites: Student must have completed 24 credits in...
the program including the internship).

EAST ASIAN AND PACIFIC RIM STUDIES 590

**Thesis**
The thesis represents the culmination of the MA in East Asian and Pacific Rim Studies demonstrates competency in the major as well as the track in which the student has chosen to specialize. The Thesis requires identifying a theme or topic selected by the student in consultation with the thesis advisor and this is followed by detailed research on the topic and the analysis of findings in the form of substantial written work. This is normally done within the confines of the student’s final semester of study in the program.

**Economics**

ECONOMICS 600  
**Economics**
This is a course for managers in both micro and macro economics. Topics addressed will include the prevailing patterns of economic institutions, national income analysis, international trade, prices and production; economic development, market structure and consumer decision analysis, competition, monopoly and monetary policy issues. Prerequisites: Admission to graduate study.

**Economics 710**  
**Managerial Economics**
Managerial economics deals with the application of economic theories to real-world business decisions. A course in managerial economics provides students with the fundamental analytical tools that can and should be used in marketing, finance, production, and strategic management. Managerial economic techniques seek to achieve the objectives of the business organization in the most efficient manner, while considering both explicit and implicit constraints on achieving the objectives. Some basic quantitative skills such as statistics and calculus are required. Prerequisites: ECON 600, MGMT 600, FIN 600 and completion of all core courses or concurrent registration in final core courses. This course may be taken as an elective with required Finance and Management concentration courses.

**Education**

**Note:** Teacher Leadership courses are designated with the prefix of EDMM. Specific titles are listed with the programs of study in the chapter for graduate studies in the School of Education. Consult the division faculty for detailed course descriptions.

**EDUCATION 448 C, M**  
**Directed Observation and Supervised Teaching in the Elementary or Middle School**
This is a full-time field experience in a selected elementary or middle school. This meets requirements of Connecticut’s TEAM program. Department permission is required.

**6 semester hours**

**EDUCATION 392**  
**Directed Observation and Supervised Teaching in Secondary Schools**
This is a field experience in selected secondary schools. This meets requirements of Connecticut’s TEAM program. Departmental permission is required. PRAXIS I must be passed. Department permission is required.

**6 semester hours**

**EDUCATION 440**  
**Methods and Materials in Teaching Language Arts**
This course focuses on the teaching and learning of the English language arts with an emphasis on instructional planning and assessment using current state and national standards.

**3 semester credits**

**EDC 440C**  
**Directed Observation and Supervised Teaching**
This course introduces teaching approaches, instructional materials, and contemporary thinking about science education.

**EDC 441C**  
**Concentrates on the scope and sequence, as well as appropriate activities, for the elementary level.**

**EDC 441M**  
**Concentrates on the appropriate practices for middle school, grades 4-8, with an emphasis upon interdisciplinary connections.**

**EDC 441J**  
**Concentrates on the content and methodology of mathematics for secondary students.**

**EDC 441 C—2 semester hours**

**EDC 442 M, J—3 semester hours**

**EDUCATION 442**  
**Methods and Materials in Teaching Social Studies**
This course assists students in developing competencies in unit planning, instructional strategies, and the utilization of diverse materials and technology for teaching the social studies. Students design courses of study that integrate state and national standards; contemporary thinking about the teaching of social studies is stressed.

**EDC 442C**  
**Concentrates on the activities, planning, and materials for social studies in elementary classrooms.**

**EDC 442M**  
**Concentrates on the content, practices, and planning appropriate for the middle level, grades 4-8. Interdisciplinary possibilities are examined.**

**EDC 442J**  
**Concentrates upon appropriate content, planning, and practices for 7-12 classrooms.**

**EDC 442 C—2 semester hours**

**EDC 442 M, J—3 semester hours**

**EDUCATION 443**  
**Methods and Materials in Teaching Science**
This course introduces teaching approaches, instructional materials, and contemporary thinking about science education.

**EDC 443 C**  
**Concentrates upon the practices and materials of effective science for elementary level.**

**EDC 443 M**  
**Concentrates upon the appropriate content and practices for the middle grades, 4-8. Interdisciplinary possibilities are examined.**

**EDC 443J**  
**Concentrates upon the appropriate content and practices for the secondary science curriculum.**

**EDC 443 C—2 semester hours**

**EDC 443 M, J—3 semester hours**
Education

EDUCATION 445
Methods and Materials of Teaching Business
This course focuses on various purposes of the business curriculum in a school setting. It examines the range of teaching strategies and materials for classroom practices. 3 semester hours

EDUCATION 446
Methods and Materials in Teaching a Foreign Language
This course familiarizes the student with the major purposes of the study of foreign language in the schools. It introduces the strategies and classroom activities for effective teaching. It examines appropriate materials for teaching foreign languages. 3 semester hours

EDUCATION 447
Methods and Materials of Teaching English as a Second Language
This course explores the language needs of children who are learning English as a second language. It reviews and explains effective methods and strategies for teaching such students. The most appropriate materials are identified and utilized. 3 semester hours

EDUCATION 448
Methods of Teaching Art in the Public Schools, Elementary
This course focuses on the range of methods appropriate to teaching art in elementary, middle and secondary levels. Demonstrations and hands-on practice are core experiences. 3 semester hours

EDUCATION 449
Materials and Techniques for Teaching Art in the Public Schools, Elementary
This course focuses on art and craft media, techniques and procedures for the prospective art and classroom teacher which are presently offered within the art curriculum of public schools. These include drawing and painting, printmaking, silk screening, enameling and others depending upon the background and experience of individual students. 3 semester hours

EDUCATION 450
Field Experience
This course is a structured observation in a public school. The goals of the course are to facilitate the students awareness of self, of school pupils, and of prospective teachers. The course is an elective for other majors. The number of semester hours taken should be determined with the student’s advisor. 1-6 semester hours

EDUCATION 450
Research Techniques and Report Writing
This is an introduction to the research process, to the understanding of published research, and to the application of research findings to education. The course prepares the student to write formal papers and research reports. 3 semester hours

EDUCATION 452
Philosophical Foundations of Modern Education
This is an examination of basic philosophical problems which underlie the educational questions that confront society. The aim is to provide a foundation upon which a critical understanding of fundamental questions of modern culture and education can be developed. 3 semester hours

EDUCATION 453
Diverse Students: Differentiated Instruction
This course focuses on pedagogy based on the philosophy that each student is a unique learner and that instruction should be provided that meets the needs of diverse students. Methods for addressing the needs of students’ diverse strengths, background, experiences, gender, linguistic, and learning styles will be presented. It is recommended that the course will be taken after completion of EDU 564: Education of Students with Exceptionalities. 3 semester hours

EDUCATION 454
Comparative and International Education
This is a comparative study of educational policies and practices in selected countries throughout the world. Global problems like peace, social and economic justice, and environmental quality are examined with a view to promoting global awareness in American education. 3 semester hours

EDUCATION 455
Intercultural Relations: Teaching and Learning in Multicultural Environments
This course presents an overview of theories about educational, social and cultural problems of minority culture students, about teacher perceptions and expectations, about parental involvement. The course also critically analyzes policies and practices of multicultural and bilingual education. The thrust of the course is to develop appropriate and non-biased methods of teaching all children. 3 semester hours

EDUCATION 459
Psychological Foundations In Education
This is concerned with the work of educators in general and teachers in particular. Topics include student characteristics (personality, growth, and development, adjustment, etc.) motivation, learning, measurement and evaluation, objectives, and teaching methods. 3 semester hours

EDUCATION 501
Statutory Requirements
This course addresses the topic required for Connecticut licensure in teaching, including topics in health and intergroup relations. 1 semester hour

EDUCATION 502
Clinical Experience—Internship Program
In the first semester interns will work under supervision in a learning environment, providing a variety of paraprofessional services to the schools. In the second semester the internship is designed to provide (1) a more in-depth perspective of teaching and learning through the development of a portfolio and (2) an opportunity to reflect on and document the impact of the internship experience. 6 semester hours

EDUCATION 503
Child Growth and Development
This course is an investigation of child growth and development with emphasis on the implications for school-aged children. The needs, problems, and characteristics of children from infancy to adolescence are discussed. Social, emotional, cognitive physical and language developments are stressed. 3 semester hours

EDUCATION 504
Adolescent Literature
This surveys books and periodicals emphasizing criteria for selection and evaluation, procedures for establishing a program of literature in the schools, and opportunities to explore the interpretation of literature in the classroom through drama, story telling, book reporting, and choral speaking. Educa-
Education 536C is focused on children's literature. Education 536J concentrates on adolescent literature. Education 536M concentrates on a pre-adolescent literature.

EDUC 536C – 2 semester hours
EDUC 536M/J – 3 semester hours

EDUCATION 537
Middle Grades Interdisciplinary Teaching and Teams
This course focuses on the developmental levels of the middle school student, appropriate instructional climates for middle grade classrooms, and interdisciplinary planning across subjects in English, History/Social Studies, Math, and Science.
3 semester hours

EDUCATION 540
American Culture and Education
This course addresses cultural issues related to education. Topics include multicultural issues in America and the interpretation of demography in relation to schooling. The search for national identity and educational alternatives are explored.
3 semester hours

EDUCATION 541
Classroom Management in Teaching English as a Second Language
This course focuses on classroom management as an effective tool for a positive learning environment. Planning, implementing, and maintaining management procedures are discussed.
2 semester hours

EDUCATION 542
Theory and Methods of Teaching English as a Second Language
This course addresses the foundations of second language learning theory, research, and discourse in educational settings. It also focuses on strategies for teaching dual language instruction with emphasis on a culturally responsive environment and on legal issues as they apply to teaching for English language learners.
3 semester hours

EDUCATION 543
Second Language Acquisition
This course provides an overview of the major theories of first and second language acquisition. It applies these theories to classroom pedagogy and examines the influences of parents, siblings, and peers, as well as aspects of formal and informal education. It also examines the influence of region, culture, class, and gender on language acquisition; legal and ethical issues relative to language competency are addressed.
3 semester hours

EDUCATION 545
English Language and Literature for Teachers
The purpose of this course is to give prospective teachers of English as a Second Language (ESL) a rich knowledge of literature with potential classroom applications for multicultural settings. Selection and analysis of language processes and literature for elementary and secondary-level classrooms are included.
3 semester hours

EDUCATION 546
Linguistics for Teachers
This course acquaints teachers with the major analytical frameworks in linguistics. It surveys the discipline of linguistics, the study of human languages, contrastive features, and language systems.
3 semester hours

EDUCATION 558
Evaluation of Instructional Outcomes
This course gives students an orientation to the topics, issues, and concepts in the field of educational testing and measurement. Topics include methods for evaluating instructional programs, types of instruments for collecting data, and a variety of standardized, criterion-referenced, and performance-based assessments. The construction of teacher-made tests and the interpretation of different types of test scores are included.
3 semester hours

EDUCATION 560M
Human Growth and Development, Middle
This course provides an opportunity for the study of the subject matter of human development, with a concentration upon the uniqueness of the adolescent period. Theoretical models and methods of researching human growth and development including cognition, physical, social, emotional and moral development will be studied. Genetic and environmental influences of human development will be discussed. Implications for classroom instruction in the middle grades will be explored.
3 semester hours

EDUCATION 564
Education of the Exceptional Student
The focus of this course is placed upon the instructional methods and materials for exceptional students. General management techniques and administrative procedures are considered in light of the student's special needs in order to identify and work effectively with the major categories of exceptionality, including the learning disabled, the handicapped, and the gifted, etc. Requirements of the 94-142 law are examined.
3 semester hours

EDUCATION 565
Contemporary Problems in Education I
This is a study of foundations, issues and contemporary trends in education with their application to teaching in the schools. An effort will be made to encourage teachers to develop an understanding of their own philosophy of education and how it affects their teaching.
3 semester hours

EDUCATION 566
Contemporary Problems in Education II
This independent study fulfills the Final Degree Option for the Master's degree. Students pursue an individually planned project under advisement of a faculty member. Extensive reading supports the project. May be taken as an extension of ED 500 or ED 565. 3-6 semester hours

EDUCATION 571
Diagnosis and Intervention of Reading and Language Arts Difficulties
This course examines the range of problems that cause students difficulties in literacy processes. It examines assessment instruments and strategies for intervention and instruction in Reading and Language Arts.
3 semester hours

EDUCATION 572
Advanced Diagnosis of Reading and Language Arts Difficulties
This course is for students interested in working with learners experiencing profound difficulty in reading, writing, and other literacy processes. Students learn strategies for assessing students referred for specific literacy instruction. Both individual and group diagnostic assessments are used. Students learn how to interpret testing results and make recommendations for improvement. Prerequisite: EDUC 571
2 semester hours
EDUCATION 573
Early Literacy Instruction
This course concentrates on the theories, instructional applications, and materials for the teaching, learning, and assessment of literacy processes in early childhood and up to grade 2. Topics include emergent literacy, phonological awareness, and phonic knowledge and instruction.
1 semester hour

EDUCATION 574
Developmental Reading in the Elementary School
This course focuses on the theories, instructional applications, and materials for the teaching, learning, and assessment of literacy processes in elementary classrooms. Topics include strategies in word recognition, vocabulary development, and comprehension. The developmental needs of beginning readers are emphasized.
3 semester hours

EDUCATION 575
Reading and Writing in the Content Areas
This course focuses on the teaching and learning of comprehension and composing processes and strategies for content area disciplines. Critical reading and study strategies for expository text materials are emphasized.
3 semester hours

EDUC 575M concentrates on appropriate materials, strategies, and assessments for reading and writing in middle grade settings, grades 4-8. EDU 575J concentrates on the comprehension and composing processes of students in secondary-level settings, grades 7-12.
3 semester hours

EDUCATION 576
Developmental Reading in Middle Grade Classrooms
This course focuses on the theories, instructional applications, and materials for the teaching, learning, and assessment of reading and related literacy processes in middle grade (4-8) classrooms.
3 semester hours

EDUCATION 580C
Special Problems in Elementary Education
This is intended for students interested in independent study or research of a selected topic or problem in consultation with a faculty member. By arrangement. Faculty permission required.
1-6 semester hours

EDUCATION 580J
Special Problems in Secondary Education
This is intended for students interested in independent study or research of a selected topic or problem in consulting with a faculty member. By arrangement. Faculty permission required.
1-6 semester hours

EDUCATION 580L
Special Problems in Behavioral Science Research and Computer Applications
This course is designed to enhance the efficiency and scope of one’s research through the development of specific competencies needed for computer processing. Students will be exposed to computer-assisted instruction (C.A.I.) and computer managed instruction (C.M.I.), and will develop projects that focus on computer applications. By arrangement. Lab fee required.
1-6 semester hours

EDUCATION 590
Computer Literacy
This is designed to provide the student with hands-on experience in the use and application. The student will have the opportunity to evaluate existing course work and its application as well as the writing of elementary programs in Logo and Basic. Lab fee required.
1-3 semester hours

EDUCATION 591
Software Evaluation
This is designed to have students develop software evaluation criteria for the purpose of evaluating published computer programs. The student will have an opportunity to review educational programs.
1-3 semester hours

EDUCATION 592
Technology Literacy for Educators
This course is an introductory to expose students to a variety of technologies used by and with persons with exceptionalities. Students will gain hands-on skills in designing technology-based instructional materials for students. A focus on Universal Design for Learning is a the core of this course with a goal of providing students with the ability to adapt technology, instruction, and assessment to meet a range of students needs.
3 semester hours

EDUCATION 595
Thesis Research — Masters Level
This is a culminating experience option at the Master’s level for Education students.
2-6 semester hours

EDUCATIONAL LEADERSHIP 551
Curriculum Development and Implementation
This is a study and development of models for curriculum design and implementation at all levels of schooling. Emphasis is placed on current research and practice relevant to curriculum design and the planning and monitoring of curriculum plans in educational settings. Such topics as: curriculum assumptions, goals and objectives, knowledge and content, curriculum evaluation, implementation and staff development strategies are examined.
3 semester hours

EDUCATIONAL LEADERSHIP 564
Special Education for Administration
This course builds on the foundation of ED 564, the emphasis is on the administrative aspects of Special Education programs for schools.
3 semester hours

EDUCATIONAL LEADERSHIP 601
Contemporary Educational Problems
This course will focus upon contemporary society and changing policy issues that confront managers and leaders of educational thought throughout the 21st Century. Seminal issues such as the impact of political forces upon federal, state, and local educational policies will be considered. Labor relations will be analyzed. Empowerment of teachers will be examined.
3 semester hours

EDUCATIONAL LEADERSHIP 611A
Organization, Administration, and Supervision of Reading and Language Arts Programs
This course focuses on the role of the Reading and Language Arts Consultant as an educational leader in schools and school districts and focuses on issues of organization, administration, and supervision of reading and language arts programs. Note: Students enrolled in this course must also concurrently enroll in EDLD 611 Administration: Organizing, and Staffing Educational Institutions. While EDLD 611 focuses on the broader
issues of educational leadership in schools, EDLD 611A specifically focuses on reading and language arts programs and personnel.

EDUCATIONAL LEADERSHIP 613
Leadership: Influencing People to Achieve Organizational Objectives
This is an investigation of concepts, research findings, and practices focusing on the development and change of educational organizations in relation to relevant goals and objectives. Emphasis is placed on such areas as leadership theory and behavior, organizational climate, human relations and communications within the organization, and change strategies. Theoretical concepts of leadership are integrated along with practical applications.

EDUCATIONAL LEADERSHIP 618
Public School Finance
This is a study of educational fiscal control including: budget preparation and presentation, accounting procedures, tax structures, analyses of costs, comparative data and auditing. Includes federal, state and local phases of support of educational systems. Special emphasis is given to New York and Connecticut fiscal patterns.

EDUCATIONAL LEADERSHIP 619
Public Law
This is a study of the legal basis for public education in the United States; a study of state and federal statutes providing for education. An examination is made of statutes, court decisions, and policies and practices arising out of these factors. The legal status of boards, teachers, administrators, pupils and parents is examined with special emphasis on New York and Connecticut fiscal patterns.

EDUCATIONAL LEADERSHIP 621
Evaluation of School Effectiveness
This course examines the various ways to evaluate the effectiveness of a school's performance: student achievement, faculty performance, faculty morale, provision for diverse student needs and development of student emotional growth. The course examines how data can and should affect instructional issues.

EDUCATIONAL LEADERSHIP 652
Supervision: The Evaluation and Professional Development of Educators
This is a study of concepts and strategies focusing on the evaluation of teachers and other educators for purposes of performance improvement and quality assurance. Emphasis will be placed on research findings, current practices, and the achievement of competency related to classroom observation and evaluation, the planning and implementation of professional development, and the creation of organizational climate and human relationships conducive to effective evaluation and professional growth of educators.

EDUCATIONAL LEADERSHIP 680A
Independent Study in Educational Management
Offered by arrangement.

EDUCATIONAL LEADERSHIP 681A
Internship in Educational Management
A cooperatively guided administrative experience in a school system. Prerequisite: Completion of major portion of the requirements for the Sixth Year Professional Diploma and permission of major advisor.

EDUCATIONAL LEADERSHIP 682A
Special Topics in the Management of Educational Institutions
Special department offerings including workshops, conferences, institutes focusing on new developments in the field.

EDUCATIONAL LEADERSHIP 683
Internship for the Reading and Language Arts Consultant
This course is a cooperatively guided administrative experience in the area of literacy education for those desiring to be certified as Reading and Language Arts Consultants. The internship includes a series of practicum experiences in a variety of school settings and includes research in the area of literacy education. Students gain practical field based experience through a range of tasks and situations characteristic of the position of the Reading and Language Arts Consultant in school settings.

EDUCATIONAL LEADERSHIP 680D
Continuing Doctoral Seminar
The seminar meets periodically during the academic year and for two full weeks each summer, for three consecutive summers. It provides opportunities for students to work with scholars and leaders from a variety of disciplines to broaden perspectives on educational leadership and to develop an intellectual style for dealing with educational problems.

EDUCATIONAL LEADERSHIP 801
Educational Program Development
Emerging trends, concepts and practices in the planning, design, and implementation of education programs intended to meet the individual and group needs of learners in a changing society are reinvestigated. Emphasis is placed on the roles and responsibilities of leaders in such processes as school/community educational goal setting, needs analysis, systematic program design, supervision and staff development. Students will focus on the application of new knowledge to the investigation and solution of program development in the field.

EDUCATIONAL LEADERSHIP 804
Constitutional, Legal, and Political Issues Confronting Educational Leaders
Legal questions relating to personnel, students, community, religion, finance, school property, teacher organizations, equality of opportunity and other legal and political issues with which the educational leader must be familiar in order to be effective in decision-making and organizational development are investigated. Emphasis is placed on “landmark” judicial decisions, recent statutory developments, constitutional background. Students will read, analyze, and interpret significant Supreme Court decisions regarding educational matters as well as pertinent lower federal and state court decisions. The principal of “non judicial” remedies will be explored and the appeals process will be examined in detail.

EDUCATIONAL LEADERSHIP 806 A & B
Quantitative Analysis and Evaluation Strategies
This course considers current techniques for designing, implementing and analyzing projects in education and typical models for
facilitating decision-making. The elements of personnel and program assessment within the contemporary educational system are included. Strategies focusing upon experiential learning and community contact are featured, and the student will be exposed to collection and analysis of real data and related computer simulation activities. Statistical and evaluative investigations are emphasized which are both fundamental and sufficiently sophisticated for advanced decision-making and leadership. This course is required.
6 semester hours

EDUCATIONAL LEADERSHIP 807
Management of Educational Institutions (K-12)
Participants in this course will investigate the planning and finance functions relative to the management of educational institutions. The planning component, the relationship between planning and institutional decision-making, and problems of implementing planning activities in educational contexts are considered. Finance is addressed through the treatment of budget preparation and presentation, accounting procedures, tax structures, and the role of local, state, and federal governments in support of educational system.
6 semester hours

EDUCATIONAL LEADERSHIP 808
Human Relations, Communication, and Decision Making
This course will provide educational leaders with the necessary skills and knowledge to maximize the human resources within an institution. It will develop in participants increased personal awareness, greater sensitivity to others, effective communications and appropriate strategies for change and decision making.
6 semester hours

EDUCATIONAL LEADERSHIP 810
Computer Application in Educational Leadership
This course covers creation of learning objects, including text, raster/vector graphics, animation, slideshows, conferencing components, and video for instructional Webs. Use of digital image capture equipment, including digital cameras, camcorders, and scanners. Also covers basic HTML, PDF and OCR. Final project will be integration of elements into an instructional Web.
6 semester hours

EDUCATIONAL LEADERSHIP 845
Dissertation Preparation Seminar
During the third year of the program, students participate in seminars which focus on the selection and development of a dissertation proposal. Students are ordinarily expected to complete the major portion of their work on the dissertation proposal prior to the conclusion of the formal part of the program. This course is required.
3 semester hours each term (Fall & Spring), 6 semester hours final summer

EDUCATIONAL LEADERSHIP 850
Dissertation Research and Advisement
Individual research and advisement relative to a student's dissertation topic is the “sine qua non” of this course. Doctoral candidates are required to register for Education Management 850 continuously until their dissertations have received final approval. Prerequisite: Successful completion of Comprehensive Examination.
0 semester hours

Electrical Engineering

ELECTRICAL ENGINEERING 404
Digital VLSI
The objective of this course is to teach students the CMOS transistor design in VLSI circuits. (CMOS stands for complementary metal oxide semiconductor.) Supported by CAD tools, students will learn gate level design, IC design, fabrication, and layout of digital CMOS integrated circuits. With these skills, students will also be able to interact with integrated circuit fabrication process engineers after completing this course.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 405
Statistics for Engineers
From elements of probability, probability distributions and descriptive statistics to hypothesis testing, confidence intervals, linear regression and correlation, analysis of variance and engineering applications to include quality control.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 406 (ELEG 406/CPS 406)
Soft Computing I
Modeling and solving engineering problems using computational methods. Topics include exact (provable) methods (linear and convex programming) and fast methods (heuristic search, genetic algorithm, neural networks, etc.).
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 410 (ELEG 410/BMEG 410)
Bio Sensors
This course will provide an introduction of biosensors, including their use in Pharmaceutical research, diagnostic testing, and policing the environment. Topics include the sensitivity, resolution, selectivity, dynamic range, and noise of biosensors. Other topics covered include transducer phenomenology, biosensor structure, and sensor performance.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 413 (ELEG 413/CPS 413)
Bioinformatics
The course covers algorithmic aspects of modern DNA and protein analysis. Topics include: (i) Reviews of DNA, RNA and Proteins, (ii) Genome rearrangements, (iii) Sequence Alignment and fast algorithms (BLAST), (iv) Genome expressions and DNA-microarray, (v) Phylogenic trees, (vi) Protein docking and drug discovery, etc.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 415
Fiber Optics
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 416
Fiber Optics Lab
Hands on experience with fiber optic hardware. Fiber properties, sources, detectors, splices, connectors. Design and test fiber optic transmission and receiver circuits for both analog and digital transmission. Pre-requisite: Electrical Engineering 415.
3 semester hours

ELECTRICAL ENGINEERING 417
Modern Electronics
See Electrical Engineering 348.
3 semester hours

ELECTRICAL ENGINEERING 428 (ELEG 428/BMEG 428)
Wireless Communications
Evolution of Mobile Radio Communications to cell phones and personal communications:
Electrical Engineering

2nd and 3rd and 4th generation. Concepts include cell fundamentals, path loss, fading, ghosts, modulation techniques, equalization, speech coding and networks.

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 430
Satellite/Wireless communication Systems
Detailing concepts and calculations from the entire field is enough to permit the kinds of analysis needed for major systems planning decisions. This course covers channel capacity, picture quality, signal to noise ratio, bit error rate, earth station antenna size and offers new materials on orbital mechanics and geometry. Pre-requisite: Electrical Engineering 441 or equivalent.

3 semester hours

ELECTRICAL ENGINEERING 431
Fields and Waves
Solutions of static electric and magnetic fields are derived from Maxwell's equations and Gauss's law. Approximation, including multipole modelling, are used where exact solutions to theory do not exist. Also, the computer is used to solve these problems exactly without approximations. The course also introduces time varying fields and their link to the creation and propagation of radiation.

3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 432
Microwaves
Passive and Active elements for the generation, modulation, amplification and reception of microwaves. Radar and other microwaves systems. Pre-requisite: Field Theory.

3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 433
Radar Theory and Simulation
Radar Fundamentals, Radar Cross Section, Types of Radars, Radar Detection, Waveform Analysis, SNR, Compression and Wave Propagation, Target Indicator and Tracking. The course will include extensive use of MATLAB for programming and simulation.

3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 434
Distribution Power System Design
A comprehensive study of modeling of the distribution of power system components and planning, including load characteristics, application of power transformers, design of transmission lines, distribution sub-stations, primary systems and secondary systems, voltage drop and power loss calculations, application of capacitors, harmonics on distribution systems, voltage regulation, fault calculation and protection.

3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 435
RF Communications
Spectral analysis; modulation and demodulation system analysis, including AM, FM, pulse modulation and transmission of digital information. Signal design and system considerations. Pre-requisite: Electrical Engineering 234.

3 semester hours

ELECTRICAL ENGINEERING 436
Digital Communications

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 438 (ELEG 443/BMEG 443)
Digital Signal Processing

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 441
RF Communications
Spectral analysis; modulation and demodulation system analysis, including AM, FM, pulse modulation and transmission of digital information. Signal design and system considerations. Pre-requisite: Electrical Engineering 234.

3 semester hours

ELECTRICAL ENGINEERING 442
Digital Communications

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 443 (ELEG 443/BMEG 443)
Digital Signal Processing

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 444
DC/AC Motor Drives
Application to control speed and efficiency of motors using conventional thyristors control as well as modern variable frequency drives.

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 445
MEMS (Micro-Electro-Mechanical Systems)
Basic micro fabrication techniques, MEMS materials and their properties, MEMS device design and simulation, MEMS packaging and assembly, signal testing and MEMS reliability analysis. MEMS industrial applications in various areas will also be discussed. Students used ANSYS FEM software to design and simulate their behavior.

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 446
Microelectronic Fabrication
This class covers basic microfabrication processes for semiconductor and VLSI fabrication, including photolithography, plasma and reactive ion etching, ion implantation, diffusion, oxidation, evaporation, vapor phase epitaxial growth, sputtering, and CVD. Advanced processing topics such as next generation lithography, MBE, and metal organic CVD are also introduced. The physics and chemistry of each process are introduced along with descriptions of the equipment used for the manufacture of integrated circuits. The integration of microfabrication process into CMOS, bipolar, and MEMS technologies are also discussed. The purpose of this course is to provide students with technical background and knowledge in silicon microelectronic fabrication process. Upon finishing this course, students will be familiar with the basic semiconductor and VLSI microfabrication processes.

3 lecture hours, 3 semester hours

ELECTRICAL ENGINEERING 447
Introduction to Wireless Sensor Networks
In recent years, tiny computing devices equipped with low-power radios and sensors—made possible due to advances in micro-electronics and radio technologies—have obliterated the wall between the physical world and the cyber world, spawning a virtually unlimited number of new applications—some of them beyond our wildest imaginations. Successful design of these massively distributed wireless sensor networks requires a synergistic combination of multiple aspects: from the physical layer to decision algorithms and more. This course will introduce the students to the application areas, various challenges commonly faced in this application, state-of-the-art solu-
Electrical Engineering

tion techniques and fundamental those have emerged in the recent years.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 451
Introduction to Nanotechnology
Nanotechnology is the science and engineering involving in the design, synthesis, characterization and application of materials and devices with the size in nanometer (10-9m) scale. As a newly emerged exciting high-technology, it has attracted intensive interest and heavy investments around the world. Nanotechnology is a general-purpose technology which will have significant impact on almost all industries and all areas of society. It can offer better built, longer lasting, cleaner, safer and smarter products for home, communications, medicine, transportation, agriculture and many other fields. This course will cover basic concepts in nanoscience and nanotechnology.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 453
Pattern Recognition
Operation and Design of systems that recognize patterns in data, based primarily on statistical and neural network approaches. Topics include Bayesian decision theory, Parametric likelihood estimation, Nonparametric techniques, Linear discriminant functions and Neural Networks.

ELECTRICAL ENGINEERING 454
Introduction to Audio Signal Processing
To introduce the fundamentals of speech processing and related applications. Course covers speech enhancement, speech coding, and speech recognition.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 456
Adaptive Signal Processing
This course introduces students to the field of adaptive signal processing as well as several practical aspects of adaptive systems. This course provides an in-depth analysis of various adaptation algorithms such as least mean square adaptive filters, recursive least squares algorithms, and Kalman filters etc. The subject learning is enhanced through experimentation of adaptation techniques using Matlab and/or Labview projects centered on applications such as adaptive noise interference cancellation, signal estimation detection, and system identification etc.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 458 (ELEG 458/CEPEG 458)
Analog VLSI
Modeling, design and analysis of analog VLSI circuits. CMOS processing and layout, current mirrors, Opamp, comparators, S/H voltage references, switched-capacitor circuits, data converters, filters and PLLs. Students design analog VLSI layouts, extract the netlists and simulate the circuit behavior. Transistors sizing will also be discussed. EDA tools PSPICE, Mentors Graphics are used.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 459
Audio Processing Lab
Introduction to TMS320C55x Digital signal Processor, Audio Signal Processing, Basic Principles of Audio Coding, Speech Enhancement Techniques, Quantization of Audio signals, Calculating LPC coefficient using C55x Intrinsic, Matlab Implementations of noise Reduction (NR), Mixed C55x Assembly and Intrinsic Implementations of Voice Activity Detection (VAD), Combining AEC with NR, Voice over Internet Protocol Applications, Overview of CELP Vocoder.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 460
Controls
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 461
Controls Lab
Laboratory study of feedback control systems with experiments analyzing different types of plants, transducers and control techniques; emphasis on real-time computer control.
3 lab hours; 3 semester hours

ELECTRICAL ENGINEERING 462
Advanced Controls
This is a graduate level course and aims to introduce the analysis of nonlinear system. The course will cover: the state space description of nonlinear system; the phase portrait analysis of the second order system; stability analysis of the nonlinear system based on linearization method; the Lyapunov stability theory, etc.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 463
Industrial Controls
This course covers the basics of Industrial Controls, including but not limited to relay control, ladders, counters, timers, switches, and all electrical components necessary to program the control of a large machine.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 464
PLC’s (Programmable Logic Controls)
This course will start with the basics of Boolean Algebra; it will cite the differences between PLC control and relay control and full automation of major machines and appliances; the differences in these controls will show how hard relay control is to implement and how flexible PLC control actually is; many different math functions will be analyzed and implemented in the theoretical construction of fully functioning PLC.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 466
Adaptive Controls
Adaptive Controls provides a graduate level introduction to the basic concepts, techniques, and the state-of-the-art of adaptive control systems. Upon completion of the course, students are expected to be able to conduct design, research, and development in the field. The course covers real time system identification algorithms, model reference adaptive control, pole assignment adaptive control, self-tuning and gain scheduling control systems, stochastic adaptive control, model-predictive control, and robustness issues of adaptive control systems. Prerequisites: Digital Control System (or equivalent)
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 479
Solar Energy and Solar Cells
This course offers a review of renew-able energy (solar, winds, and tides) versus bio-energy (coal, oil, natural gas). The concept of light as electromagnetic radiation and pure energy as well as the concepts of converting sunlight into thermal energy will be discussed. Students will learn the semiconductor and electronic properties of solar cells, used to convert light into electricity. Secondary solar energy sources include solar Hydrogen and concentrator technology.
3 semester hours
Electrical Engineering

ELECTRICAL ENGINEERING 481
Analog Electronics Lab
With a set of 6 experiments and simulating them using P-Spice, the goal of this course is to teach the concepts from the theory of analog electronics. The user must have solid understanding of the basic electronics and circuit theory aka Network Analysis. Prerequisite: Electrical Engineering 348, 234 or equivalent.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 482
Alternative Energy Technologies
This is a graduate level course and aims to introduce the alternative energy technologies in photovoltaic cells (PV) and fuel cells. It will cover: the physics, energy conversion efficiency, and challenges in PV cells, the principles, the stack and system design in fuel cells.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 500
Graduate Co-op/Internship in Electrical Engineering
By arrangement.
1-3 semester hours

ELECTRICAL ENGINEERING 503 (ELEG 503/MEEG 503)
Electronics Cooling
This course is designed to help students understand the thermal challenges and demands of the electronics field. Fundamentals and physics of thermodynamics, heat transfer and fluid mechanics will be introduced and shown how to apply them to the design and testing of electronic hardware. The thermal characteristics and thermal failure modes of electronic components, and reliability prediction techniques will be reviewed. Numerical simulation and commercial CFD packages will be introduced for thermal analysis. Students will have a good understanding of the heat transfer and fluid mechanics principles affecting proper thermal management of electronic components and develop skills to identify potential thermal design problems and develop reliable, cost-effective solutions.
3 semester hours

ELECTRICAL ENGINEERING 504
Wavelets and Filter Banks
This course is offered to provide students with the basic understanding of the wavelet theory along with multi-resolution signal processing tools, which can be employed effectively to solve practical signal processing and analysis problems. The first half of the course introduces wavelet transforms from an engineering point of view. The topics covered include short time Fourier transform, continuous wavelet transform, and discrete wavelet transform and filter banks. The second half of the course presents a number of interesting applications of wavelets based advanced signal processing techniques such as filter banks, multi-rate signal processing, wavelet packets and lifting algorithms in areas of image compression, signal de-noising, signal estimation, signal enhancements, and transient detection etc. Prerequisites: Basic Digital Signal Processing Course.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 543 (ELEG 543/BMEG 543)
Wavelets and Filter Banks
Centered on a set of experiments for the ADSP21061 and ADSP21065L, the goal of this course is to teach how to program the ADSP21061 and ADSP21065L using visual DSP++ and MATLAB and illustrate concepts from theory of digital signal processing. The user must have solid understanding of DSP algorithms as well as an appreciation of basic computer architecture concepts. Pre-requisite: Electrical Engineering 443 or equivalent.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 545
Medical Machines
Electrical safety is studied by full analysis of grounding and modeling of the human body under various electric shock conditions. The ECG machine (for measuring heart performance) is analyzed as both an analog and a digital machine, with emphasis on cleaning up signal problems and extending the analysis of the data recorded. Other instruments that are analyzed include the blood sugar tester, the hospital thermistor, the lung pressure machine, the anesthesia vaporizer, the pulse oximeter and various cardiac output devices. Discussion made about the minimum alveolar concentration (MAC) as it applies to anesthesia. Discussion is also made about modern hearing aids and advances in eye replacement via electrical means. Pre-requisite: Electrical Engineering 348, 234 or equivalent.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 547 (ELEG 547/BMEG 547)
Biomedical and Biometric Signal Processing
The course teaches all of the basics of image processing as applied to biometrics analysis and medical imaging.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 548 (ELEG 548/CPEG 548)
Low Power VLSI Circuit Design
With the rapid development of mobile computing, low power VLSI design has become a very important issue in the VLSI industry. A variety of low-power design methods are employed to reduce power dissipation of VLSI chips. This course is designed to cover low-power design methodologies at various design levels (from system level to transistor level). The basic low-power design strategies will be introduced in the class. Students will use the learned knowledge to design low-power VLSI circuits. Upon completion of this course, students will be able to analyze the power consumption of VLSI circuits, and design low-power VLSI circuits using various strategies at different design levels. The major target is to design VLSI chips used for battery-powered systems and high-performance circuits not exceeding power limits.
3 lecture hours; 3 semester hours
ELECTRICAL ENGINEERING 549
VLSI Testing
As VLSI continues to grow in its complexity, VLSI testing and design-for-testability are becoming more and more important issues. This course will cover VLSI testing techniques such as VLSI fault modeling (stuck-at-fault), automatic test generation, memory testing, design for testability (DFT), etc. VLSI scan testing and built-in self-test (BIST) will also be covered. Student will learn various VLSI testing strategies and how to design a testable VLSI circuit.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 550
VLSI: Digital System Design
This course will provide students with an in-depth understanding of the basic design methodologies of modern digital VLSI systems. Various perspectives of VLSI systems will be discussed, such as MOS transistor device characteristics, interconnect, time and power, clock distribution, packaging and I/O issues, VHDL system design and logic synthesis. Upon completing this course, students will have a comprehensive understanding about digital VLSI system design.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 552
Random Signal Processing
Introduces students to the theory of probability and stochastic processes. Topics include basic probability; single and multiple random variables; stochastic processes such as Gaussian processes, Markov processes; Various applications.
3 lecture hours; 3 semester hours

ELECTRICAL ENGINEERING 562 (ELEG 5623/MEEG 562)
Nanofabrication with Soft Materials
This is an advanced level graduate course focusing on fabrication of soft materials. Nanofabrication processes and nanosystem products will be discussed. Fundamentals associated with chips fabrications and linking them toward soft materials assembly will be detailed. Emerging nanotechnology based methods for soft and green electronics, mechanical parts, MEMS, PCBS will be covered. Gene chip, label free sensory assay using micro and nanofluidics will be discussed. Transfer printing, DNA-protein interactions using the chip and several nano-scale assemblies for soft materials fabrication will be discussed.
3 semester credits

ELECTRICAL ENGINEERING 596
Seminar
Lecture hours and topics to be arranged with instructor. 1 credit hour

ELECTRICAL ENGINEERING 597
Master's Project
Lecture hours and topics to be arranged with Department Chair. 3 credit hours

ELECTRICAL ENGINEERING 598
Thesis in Electrical Engineering
Lecture hours, semester hours and topics to be arranged with Department Chair. 3-6 credit hours

ELECTRICAL ENGINEERING 599
Independent Study in Electrical Engineering
Independent study of advanced topics in Electrical Engineering and submission of project report as required. Problem assignment to be arranged with and approved by the Department Chair. 3 credit hours

Finance
FINANCE 600
Financial Management
This course provides students with the opportunity to learn the basic tools and concepts of financial management. It will discuss important issues in modern finance, including the time value of money, valuation of stock and bonds, capital budgeting, risk and return tradeoff, portfolio analysis, capital asset pricing model and financing decisions. Basic accounting and statistics are essential to understanding the principles developed in this course.
Prerequisites: Admission to graduate study.
3 semester credits

FINANCE 610
International Finance
This is an introductory course about international financial management with special emphasis on multinational enterprises (MNEs). A MNE is defined broadly as one that is incorporated in one country but has operating subsidiaries, branches or affiliates located in other countries. Today, almost all large companies are multinational with the 1,000 largest MNEs accounting for about 80% of the world's industrial production. Main topics to be covered in this course include the foreign exchange market, exchange rate determination, foreign exchange risk management, and global debt and equity financing. The global financial environment such as the international monetary system and the balance of payments are also discussed. Prerequisites: FIN 600 and completion of all core courses or concurrent registration in final core courses.
3 semester credits

FINANCE 620
Investment Analysis
This course provides a framework for the analysis of individual securities such as stocks, bonds and other financial instruments. It develops a systematic framework for the construction of efficient portfolios and optimal investment strategies. It also discusses the investment environment that includes the financial markets and major financial institutions, the Federal Reserve, and the determination of interest rates. Various investment strategies used by practitioners are also discussed. Prerequisites: FIN 600 and completion of all core courses or concurrent registration in final core courses.
3 semester credits
FINANCE 625
Financial Derivatives and Risk Management
This course covers financial derivatives such as forward contracts, futures contracts, options and swaps. A derivative is a financial instrument that is derived from the value of an underlying asset. The underlying asset can be commodities, equities, bonds, foreign exchange, or indices such as a stock market index, consumer price index or even an index of weather conditions. These derivatives can not only be used for speculation and arbitrage, but more importantly, can also be used for risk management. Students will develop a working knowledge of how these derivatives are used and how they are priced. Prerequisites: FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.
3 semester credits

FINANCE 630
International Financial Management
This is an advanced course in international financial management. It will cover various aspects of financial management of multinational enterprises (MNEs), including the foreign exchange market, currency derivatives, global financial markets, international portfolio investment, cross-border direct investment, and foreign exchange and interest rate risk management. Prerequisites: FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses. Prerequisites for International Business: FIN 600 and completion of all core courses or concurrent registration in final core courses.
3 semester credits

FINANCE 640
Money and Banking
The course covers the nature and function of money and the role of depository institutions and central banks in influencing the supply of money and credit in the U.S. The course examines the changing financial environment and the influence of monetary policy on international trade, prices and the overall level of economic activity. Topics include the history of banking and financial institutions, regulation and the role of the Comptroller of the Currency and other regulators, bank operations, credit analysis, non-credit services, personal banking and the changing role of banks in the financial services environment. Prerequisites: FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.
3 semester credits

FINANCE 644
Global Financial Services Regulation
A review of current U.S. Federal laws and regulations that govern the U.S. financial services industry, including the Federal Reserve Act of 1913; the Securities Acts of 1933, 1934 and 1940; the Monetary Control Act of 1980; the Riegle-Neal Act of 1994; and the Graham-Leach-Bliley Act of 1999. In addition, this course will review international regulatory arrangements including the FSA organizations of Great Britain and Japan. Laws protecting consumers in their interaction with financial services providers will be reviewed. The roles of the SEC, state insurance commissions and other self regulatory organizations such as the NYSE will be examined. Prerequisites: FIN 600, BLAW 600 and completion of all core courses or concurrent registration in final core courses.
3 semester credits

FINANCE 650
Cases in Finance
The focus of this course is the application of managerial finance principles (from FIN 600: Financial Management) to the financial decisions made by business. The purpose is to develop study analytical ability through the discussion and analysis of finance cases. Topics covered include financial concepts and planning; valuation, rates of return and leverage; cost of capital; dividend policy; sources and uses of investment and working capital; and international finance. Prerequisites: FIN 600 and completion of all core courses or concurrent registration in final core courses. For the Global Financial Services concentration, this course should be taken as the final required Global Financial Services course.
3 semester credits

FINANCE 705
Advanced Financial Management and Policy
This course provides a general survey of the body of knowledge of corporate finance. Corporate finance is an area of finance dealing with the financial decisions corporations make and the tools and analyses used to make these decisions. The primary goal of corporate finance is to enhance corporate value and shareholder’s wealth. To achieve this goal, financial managers must make important decisions such as project evaluations and investment decisions, financing decisions and dividend decisions. A solid understanding of the financial markets is also essential. The main concepts and principles in the study of corporate finance are also applicable to the financial problems of all kinds of firms. Basic accounting and statistics are essential to understanding the principles developed in this course.
3 semester credits

Prerequisites: FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.

FINANCE 721
Management of Financial Institutions
This course covers the management of financial institutions (FI’s), including depositary institutions such as commercial banks and savings institutions, insurance companies, securities firms and investment banks, mutual funds, and finance companies. The focus is on risk measurement and management facing these FIs. The roles and operations of financial markets and various financial instruments and the impact of interest rates on the economy will also be discussed. Prerequisites: FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.
3 semester credits

FINANCE 730
Financial Analysis and Modeling
This course introduces important financial models and shows how they can be solved numerically and/or simulated using computer technology (e.g. Excel). This class covers standard financial models in the areas of corporate finance, financial statement simulation, accounting model, portfolio problems, options, portfolio insurance, duration, and immunization. It will give tools for understanding the computational intricacies in finance. Too often, finance courses stop short of making a connection between textbook finance and the problems of real-world business. This course bridges this gap between theory and practice by providing a nuts-and-bolts guide to solving common financial and accounting models with spreadsheets. Prerequisites: FIN 600 and completion of all required Finance concentration courses or
concurrent registration in final required concentration courses.

3 semester credits

FINANCE 735
Technical Analysis and Trading
This is a hands-on course that teaches principles and methods of selecting and managing stocks using professional trading software. Theoretical concepts and trading principles will be taught throughout the course and students will manage an e-portfolio in real-time with imaginary funds. Prerequisites: FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.

3 semester credits

FINANCE 760
Investment Banking
This course describes at the operation of investment banks. The structure of investment banking firms is examined and their relationship with banks and financial holding companies. The role and regulation of investment bankers in private and public offerings; international offerings; and mergers, acquisitions and other restructurings are reviewed. Also considered is the role and regulation of investment banks in the European Union and in Asia. Prerequisites: FIN 600, FIN 640 and completion of all required Global Financial Services concentration courses or concurrent registration in final required concentration courses.

3 semester credits

FINANCE 762
Insurance
The focus in the insurance course is on financial, accounting, and management principles of the insurance industry. Emphasis is on interactions between selling new business and maintaining adequate levels of surplus. Topics include how an insurance company operates; how coverage and investment decisions impact an insurer's financial position; contract premium setting, coverages and limitations; and the role of the regulators. FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.

3 semester credits

FINANCE 764
Commercial Banking
Topics include the history of banking and financial institutions, regulation and the role of the Comptroller of the Currency and other regulators, bank operations, credit analysis, non-credit services, personal banking, and the changing role of banks in a deregulated financial services environment. Particular emphasis will be on practices in international banking and the recent credit and lending problems of global banks. Prerequisites: FIN 600, FIN 640 and completion of all required Global Financial Services concentration courses or concurrent registration in final required concentration courses.

3 semester credits

FINANCE 767
Real Estate
The focus in the insurance course is on financial, accounting, and management principles of the insurance industry. Emphasis is on interactions between selling new business and maintaining adequate levels of surplus. Topics include how an insurance company operates; how coverage and investment decisions impact an insurer's financial position; contract premium setting, coverages and limitations; and the role of the regulators. FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.

3 semester credits

FINANCE 768
Financial Planning
This course will examine the interrelationship of the various investment vehicles available to meet the demands of financial planning. Topics covered include the fundamentals of financial planning, risk and insurance, tax planning, retirement planning and estate planning. FIN 600 and completion of all required Finance concentration courses or concurrent registration in final required concentration courses.

3 semester credits

FINANCE 775
Graduate Seminar in Qualitative Methods
This course is designed to introduce the student to qualitative research methods. Topics might include Content Analysis, Fieldwork and Observation, and Interviewing. The use of Grounded Theory will be examined as well as methodological issues of data collection, reduction, display, and interpretation. It is recommended that the student have a familiarity with quantitative research methods before taking this class, as this class will build on previously explored research topics.

3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 402-502
Graduate Seminar in Quantitative Methods
This course is designed to build upon the students' previous research methods experience. Assuming a familiarity with survey research as a methodology, this course will examine further quantitative research methods and procedures. Key emphasis will be placed on regression analysis and other statistical means of data interpretation, such as ANOVA, MANOVA, t-Tests, f-tests and others.

3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 411-511
Issues in Economic Development
Course Description: This course explores current issues in economic development including poverty and poverty alleviation, strategies to overcome poverty and underdevelopment including microfinance, the roles of multilateral financial institutions, globalization, and the Washington Consensus. The course will also explore the roles of regional arrangements and development institutions in attempts to overcome underdevelopment. The theoretical underpinning of the course lies in the many schools of thought that have produced explanations of the causes and consequences of development and underdevelopment. The course attempts to plot strategies to achieve goals of economic development.

3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 422-522
International Conflict Negotiation
This course examines theories about and sources of conflict (resource allocation and shortage; ideological, religious, and cultural disagreement; power distribution; perceptions of security; etc) to set the stage for conflict analysis and negotiation. In conflict analysis, the impact of cultural-linguistic systems on agreements and disagreements is examined. Culturally sensitive strategies of negotiation, conflict resolution, and mediation also are examined and practiced. Students will write several case reports on situations of conflict and also prepare a medium-length (20 pp. or so) term paper.

3 Semester Hours
GLOBAL DEVELOPMENT AND PEACE 400
- Sustainable Development
  This course will examine the critical relationship between oil supply and demand and environmental challenges and the international priorities and policy initiatives of modern states. In looking forward into the 21st century, the course will identify and assess the policy options available to major international players, including the United States and the European Union; Saudi Arabia and other major oil producing countries; Japan, China and India and other consuming countries; transnational energy companies and non-governmental organizations (NGOs). Environmental concerns will be examined and policy options will be assessed within the context of sustainable economic development.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 424
- Global Economy and Terrorism
  This course identifies the underlying conditions needed for the realization of a stable global economy and it highlights the ways in which terrorism impacts on the stability of markets and on investment and lending trends and on interest rates in affected regions and states. The course also explores the “practical” rationale for terrorism as well as terrorism’s ideological and philosophical roots as well as the actual historical trajectory of terrorist organizations and states. Through the case study method, we will review those venues where terrorism has been diffused and attempt to understand such developments and their applications to contemporary society.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 427-527
- Culture and International Development
  The course will examine development theory and the underlying cultural assumptions of Western models of socioeconomic development. It will also study the innovative non-Western models of development such as micro-credit in South Asian and the Confucian-influenced models of development in parts of East and Southeast Asia. This course will identify the ways in which Western cultural assumptions can clash with the cultural underpinnings of many less developed countries. Using the case study method, learners will identify ways in which potential clashes are anticipated based on a region’s history and its cultural underpinnings. Learners will assess the strategies currently used to address development-related challenges and, when appropriate, propose alternative strategies.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 460
- Sustainable Development
  This course will examine the critical relationship between oil supply and demand and environmental challenges and the international priorities and policy initiatives of modern states. In looking forward into the 21st century, the course will identify and assess the policy options available to major international players, including the United States and the European Union; Saudi Arabia and other major oil producing countries; Japan, China and India and other consuming countries; transnational energy companies and non-governmental organizations (NGOs). Environmental concerns will be examined and policy options will be assessed within the context of sustainable economic development.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 500
- Graduate Co-op/Internship in Global Development and Peace
  By Arrangement.  
  1-3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 521
- Inequality, Poverty and Globalization
  This course examines two key issues for the international community in an era of globalization: inequality and poverty. Various theoretical, historical and empirical approaches will be used in analyzing the causes and consequences of inequality and poverty for the developing world. Students are also encouraged to develop economic, political, cultural, and social solutions to the chronic issues of poverty and inequality in the world.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 523
- Peace and Development
  This course examines the relationship between peace and development. Security of the state, community, and the person is related to modalities of conflict — ethnic, ideological, religious — and their combined roles in retarding development. The course draws on regional examples and studies of conflict analysis, peacemaking, and the changing face of development. The course also examines strategies to overcome conflict and achieve development goals.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 524
- Political and Economic Integration
  This course explores models of integration — functionalism, customs union, political integration, and federalism. Dual legislative systems are examined as instruments of harmonization of laws, and the roles of secretariats as vehicles of transition are explored. The course considers historical and contemporary models including the Federation of the West Indies, and the European Union. The course examines shortcomings of, and successful attempts at, political and economic integration.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 525
- Global Economy and Terrorism
  This course identifies the underlying conditions needed for the realization of a stable global economy and it highlights the ways in which terrorism impacts on the stability of markets and on investment and lending trends and on interest rates in affected regions and states. The course also explores the “practical” rationale for terrorism as well as terrorism’s ideological and philosophical roots as well as the actual historical trajectory of terrorist organizations and states. Through the case study method, we will review those venues where terrorism has been diffused and attempt to understand such developments and their applications to contemporary society.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 526
- Global Communication and Mass Media
  This course examines media’s role in global communication and nation building. In particular it studies information flow, media and development, communication and telecommunication policies, transnational media corporations and their role in economic development, media and public diplomacy, international journalism, and information and public campaigns.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 527
- Global Communication and Mass Media
  This course examines media’s role in global communication and nation building. In particular it studies information flow, media and development, communication and telecommunication policies, transnational media corporations and their role in economic development, media and public diplomacy, international journalism, and information and public campaigns.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 528
- Political Economy of Migration
  This course explores the constants and variables of immigration. The course will also consider the extent to which overseas investment in less developed countries and the strengthening of regional customs unions and the WTO will affect immigration trends. Due to the gap in the quality of life in developed versus less developed countries as well as the ongoing demand for cheap, unskilled labor, the number of immigrants to the developed world continues to grow in the United States and in the European Union. This course also invites learners to assess how the growing demographic of immigrants and their children may affect voting patterns, public education, and the foreign policy priorities of the developed societies where they tend to settle.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 533
- Cultural Dimensions of Globalization
  While recognizing that a developing consensus exists on economic globalization, this course explores the broader cultural and philosophical implications of globalization. Extending beyond economic globalization to the social, political and cultural dimensions, one must indeed explore the substance of what is being “globalized” in each of these aspects of public life. This course invites learners to grapple with the question of whether or not the world is ready to implement an expanded globalization or whether a “dialogue among civilizations” is a necessary intermediary step in the process.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 537
- Global Communication and Mass Media
  This course examines media’s role in global communication and nation building. In particular it studies information flow, media and development, communication and telecommunication policies, transnational media corporations and their role in economic development, media and public diplomacy, international journalism, and information and public campaigns.  
  3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 560
- Sustainable Development
  This course focuses on issues related to sustainable development and preservation of the environment. To a significant extent, the course is reliant on the case study method. Through a geographically diverse series of case studies, the course will highlight the
challenges faced by the development process due to the unmet social and quality of life demands of growing populations in less developed countries vis-à-vis the need to preserve and maintain the environment and endangered ecosystems. Through the case study method, strategies for caring for threatened energy resources will be assessed. The course will also use the case study method to understand the challenges that exist in developing strategies of economic growth that allow for significant improvement in the quality of life of local populations as well as the protection of wetlands, endangered species, hydrologic cycles and clean water supply. 3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 591 Internship
Students will complete an eight-week cross-cultural internship with international organizations or overseas school, agency or company. A written report by the student and an assessment of the Student's performance by the agency where the student intern will be submitted as the basis of evaluation. 3 Semester Hours

GLOBAL DEVELOPMENT AND PEACE 598 Tutorial
The tutorial is offered at the completion of the internship. The tutorial invites students in the Master of Arts in Global Development and Peace program to reflect on their internship experience based on the student's experiences prior to and during the tutorial. The tutorial also prepares students for the program's comprehensive exam that includes both an oral and a written component and is conducted in the final weeks of the tutorial class. As a part of the tutorial students also assemble a portfolio of all of the major papers and projects that they have completed during the program and a written reflection on that work. Prerequisite courses: GLDP 591 and completion of at least 21 semesters hours of the GLDP program. 3 semester hours

GLOBAL DEVELOPMENT AND PEACE 599 Thesis
As a final project demonstrating competency, students are asked to write and defend a thesis. 3 semester hours

GLOBAL DEVELOPMENT AND PEACE 600 Thesis Extension
1 semester hour

The following courses taught by the School of Business also are available to Global Peace and Development students. Full course descriptions are available under the primary course listings.

MGMT 561 Economic, Regulatory, Political, Cultural and Societal Issues in Environmental and Energy Management

MGMT 560 Foundations of Environmental and Energy Management

GRADUATE STUDIES IN BUSINESS 541 / MKTG 550 Global Market Management

GRADUATE STUDIES IN BUSINESS 562 / MGMT 598 Advanced Intellectual Property Management

GRADUATE STUDIES IN BUSINESS 511 / FIN 500 International Trade and Finance

GRADUATE STUDIES IN BUSINESS 524 / FIN 525 International Financial Management

GRADUATE STUDIES IN BUSINESS 528 / FIN 543 Technical Analysis & Trading

GRADUATE STUDIES IN BUSINESS 537 / MGMT 532 Global Program and Project Management

GRADUATE STUDIES IN BUSINESS 538 / MGMT 533 Information Technology Strategy and Governance

GRADUATE STUDIES IN BUSINESS 539 / MGMT 534 Strategic Sourcing and Vendor Management

GRADUATE STUDIES IN BUSINESS 580 / MGMT 523 Leadership, Teams & Managing Change

GRADUATE STUDIES IN BUSINESS 541 / MKTG 550 Global Market Management

GRADUATE STUDIES IN BUSINESS 543 / MKTG 543 Problems in Marketing Research

GRADUATE STUDIES IN BUSINESS 548 / MKTG 530 e-Marketing

GRADUATE STUDIES IN BUSINESS 549 / MKTG 551 Product Management, Innovation and Commercialization

Global Media and Communication Studies

Global Media and Communication Studies/GLD 501 Graduate Seminar in Research Methods.
This is an introductory course in qualitative and quantitative research methods. It is designed to introduce you to basic concepts and issues (statistical, analytical, and ethical) encountered in research investigation. We will discuss what research is, the tools of research, research design, and writing the research report. Included will be an introduction to a diversity of research methods, including survey, historical research, experimental methods, content analysis, and so forth. An overview of statistical means of data interpretation also will be presented, including correlation, t-tests, ANOVA, ChiSquare Test, Sign Test, regression analysis, and so forth. 3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES GLD 522 Conflict Analysis and Resolution/International Conflict and Negotiation
This course examines theories about and sources of conflict (resource allocation and shortage; ideological, religious, and cultural disagreement; power distribution; perceptions of security; etc) to set the stage for conflict analysis and negotiation. In conflict analysis, the impact of cultural-linguistic systems on agreements and disagreements is examined. Culturally sensitive strategies of negotiation, conflict resolution, and mediation also are examined and practiced. 3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES GLD 529 Advanced Intercultural Communication
This course studies different cultures around the world. In particular, it examines value systems, gender roles, and family structures. It will also examine the relationship between culture and religion, culture and economic development, culture and media, culture and new media, and culture and human development. 3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES GLD 535 International Advertising and Public Relations
This course focuses on the theoretical and practical aspects of international advertising and public relations. In particular, it examines the characteristics, problems, and challenges...
in the areas of international advertising and public relations. It also studies how media and new media are used for advertising and public relations in an international setting. Business, economic, cultural, social, and political factors will be analyzed in the context of international advertising and public relations.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES/GLDP 537

Global Communication and Mass Media

Critical study and applications of theories and principles of global communication and mass media. Analysis of the roles traditional media, new media, and media professionals play in politics, governance, and international relations. Examination of how media systems work in different countries, how journalists cover news and events, how information flows globally, and what impact information flow creates to countries and peoples around the world.

3 semester hours

MGMT 539

International Issues

This course focuses on current international issues that affect business operations at home and abroad. Changing business environments are discussed and analyzed. Students are required to formulate new global business strategies in light of emerging international trends and events. In some cases, students may supplement their study by field trips and on-site analysis. Prerequisite: Graduate Studies in Business 440.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES/GLDP 543

Communication and National Development

The focus of this course is on communication and national development and nationbuilding. Students will learn how media, communication, information, and media technology are used and can be used to improve economic, political, and cultural conditions of people around the world. In particular, the course will look into the functions media communication, social media networking, and social marketing demonstrate in reducing poverty, combating hunger, improving literacy, promoting public health care, fighting corruption, and protecting the environment among others.

GLOBAL MEDIA AND COMMUNICATION STUDIES 546

Media Business and Management

This course examines media industry from business and management perspectives. It focuses on business concepts, media management theories, and the impact of digital media on the media industry landscape.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES 552

Advanced Web Publishing and Design

This course focuses on Web Publishing and Design methods using current Web design and graphic tools. Students will learn the techniques and tools to create Web sites and learn to maintain the Web sites for clients and consumers.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES 555

News Media and International Journalism

This course focuses on how international news is gathered and reported and how journalists should cover international news. The course also examines the issues of international news media and foreign relations.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES 557

Political Communication and Public Diplomacy

This course focuses on the relationship between media and politics and media and public diplomacy. It will also examine the issues of freedom of speech and freedom of the press, media as mouthpiece or watchdog. The course will also study how media are used in governance, how public opinion is formed, shaped, and influenced, how political and public agenda are set, and how media can be used for public diplomacy.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES 562

Media Communication Law and Legal Issues

This course examines the federal, state, and local laws that most directly affect mass communication in the United States. It will also look into the judicial systems in other countries. Issues covered will include freedom of speech, freedom of the press, libel, invasion of privacy, news gathering, source protection, copyright, and truth in advertisements.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES 572

Advanced Multimedia

This course focuses on advanced multimedia technology and techniques. Students will learn the most current tools, software, and techniques to create and edit multimedia digital videos to be used for multiple mediums and platforms.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES 591

Internship

The Graduate Internship is completed once the student has completed at 21 credits in the GMCS program. It serves as the venue in which students can accomplish two important outcomes, i.e., they can apply the foreign language that they have been studying in an overseas setting (international GMCS students may do their internship in the US if they already speak a second world language in their home country rather than English) and they can intern in an agency or organization where the skills that they have acquired in the GMCS academic program can be put into practice. New Media students will be expected to complete a project or portfolio, which demonstrates their ability to communicate cross-culturally in the New Media environment. Global Communications students will produce a project demonstrating the ability to communicate interculturally in a business, government or NGO setting.

3 semester hours

GLOBAL MEDIA AND COMMUNICATION STUDIES 599

Thesis

The thesis represents the culmination of the MA in Global Media and Communication Studies and demonstrates competency in the major as well as the track in which the student has chosen to specialize. The Thesis requires identifying a theme or topic selected by the student in consultation with the thesis adviser and this is followed by detailed research on the topic and the analysis of findings in the form of substantial written work. This is normally done within the confines of the student’s final semester of study in the program.

3 semester hours

Information Systems and Knowledge Management

INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT 600

Information Systems and Technology

Information technology has become a key component for accomplishing strategic and operational goals in organizations today. As such, organizations expect their new employees to have a basic understanding of information technologies. To accomplish organizational goals and advance one’s career path, one needs to understand and apply informa-
Knowledge Management and Business Intelligence

This course will explore various issues of creating, storing, sharing and applying knowledge in organizational environments. The course introduces guiding theories and concepts of knowledge management and examines various tools used in the processes. Then the course also explores business and management topics in knowledge management, including general issues in evaluating informal systems like knowledge management systems and the relationship of knowledge management to the work, etc. Prerequisites: ITKM 600 and completion of all core courses or concurrent registration in final core courses.

3 semester credits

Electronic and Mobile Business

The goal of this course is to prepare current and future executives, managers, and strategists to be leaders and create value in the New Economy — to gain understanding and insight on how the functions of management and marketing in the New Economy have changed as well as how new technology and media forms have created a radically different business environment. The course examines the impact of the evolving virtual worlds of Internet and mobile commerce on the strategy of traditional “brick-and-mortar” companies. Up-to-date information will be utilized from current publications to provide the student with the ability to work in the new wireless world. This new business frontier requires most firms to significantly change their business strategy and presents unprecedented new opportunities for fast acting entrepreneurs. Prerequisites: Completion of all required Information Technology and Knowledge Management or Marketing required concentration courses or concurrent registration in final required concentration courses.

3 semester credits

Decision Support Systems

Decision Support Systems (DSS) are interactive computer based systems that help decision makers understand and use data,
models, and other analytical tools to evaluate their options. The course will focus on several aspects of DSS. Topics covered include Data-Driven systems, Model-Driven systems and Communications-Driven systems that help groups solve problems and Knowledge-Driven systems, and Document-Driven systems (expert systems). This course will enhance the student’s ability to understand the design and development of DSS with Web technology. Prerequisites: Completion of all required Information Technology and Knowledge Management required concentration courses or concurrent registration in final required concentration courses. Prerequisites for Operations: MGMT 650 and completion of required Operations concentration courses or concurrent registration in final required concentration courses.

3 semester credits

INFORMATION SYSTEMS
AND KNOWLEDGE MANAGEMENT 760
Information Technology Security
This course covers the fundamentals of information technology security including threat and risk management, impact analysis and mitigation strategies. It identifies the major causes of threats (e.g., natural and man-made) and develops contingency and disaster prevention and recovery plans. It discusses information technology continuity plans and strategies. It deals with physical, cyber and personnel security. It also defines the overall responsibilities for the protection of an organization’s information technology assets. Prerequisites: Completion of all required Information Technology and Knowledge Management required concentration courses or concurrent registration in final required concentration courses. Otherwise, permission of Assistant Dean is required.

3 semester credits

INFORMATION SYSTEMS
AND KNOWLEDGE MANAGEMENT 762
Enterprise Information Systems
This course will examine the role of information systems in business and how they provide the information required by management. Modular, best of breed, and other systems strategies and configurations, as well as their managerial implications will be examined. The course is case-based and provides the student hands-on experience learning and utilizing Sage Software’s MAS200 ERP system to complete case problems. Other enterprise systems will be discussed as well, including SAP and Oracle. Prerequisites: Completion of all required Information Technology and Knowledge Management required concentration courses or concurrent registration in final required concentration courses. Otherwise, permission of Assistant Dean is required.

3 semester credits

Management

MANAGEMENT 600
Leadership and Management
The purpose of this course is to introduce students to the primary tenets of leadership and management. Successful organizations foster both innovation and efficiency. Students will evaluate the different dynamics related to realizing organizational progress through the effective and efficient use of talent, structure, culture, methods, and technology. In addition to the required textbooks, students will be required to research industry journals as a way to evaluate the application of leadership and management techniques in real settings across various industries. Prerequisites: Admission to graduate study.

3 semester credits

MANAGEMENT 610
Organizational Behavior
This course permits students to examine both the theory and practice of interpersonal, team and organizational behavior. Individual and small group projects develop and illustrate principles of relationships, communications, role assignment, leadership and conflict management in organizations. Experiential designs permit learning through group participation, case analysis and individual problem solving. Prerequisites: MGMT 600 and completion of all core courses or concurrent registration in final core courses.

3 semester credits

MANAGEMENT 611
Human Resources Management
This course is an in-depth survey of current theory, research and practice in the management of human resources in organizations. Job design, recruitment, selection, performance feedback, goal-setting, training, employee rights, safety, compensation and benefits issues are reviewed within the context of their application in the United States as a world standard for such practices, with comparisons to customs and practices in the international arena. Intensive research into current human resource topics is required. Prerequisites: MGMT 600, MGMT 610 and completion of all core courses or concurrent registration in final core courses.

3 semester credits

MANAGEMENT 620
Global Program and Project Management
This course focuses on the managerial aspects of how to effectively manage, plan and execute programs/projects with a focus on high quality deliverables arriving on time, within budget, within scope and to the customer’s satisfaction. Areas covered will include program and project management life cycle phases, executive sponsorship, portfolio investment management selection and prioritization, requirements, scope and project charters, planning, development, estimating, staffing, leadership, scheduling, risk management, change management, project metrics, vendor integration and management and other related topics. This course is based on current and emerging best practices and principles. Project Management certification requirements and real world case studies are discussed. Prerequisites: MGMT 600, MGMT 610 and completion of all core courses or concurrent registration in final core courses.

3 semester credits

MANAGEMENT 640
Assessment
This course focuses on workplace assessment related to recruitment, placement, and workplace training. Performance appraisal is emphasized including employee development, development of objectives and process, monitoring, retention and separation. The understanding of selection and assessment instruments and methodology are studied as well as the statistical analysis required for psychometric assessment. Prerequisites: MGMT 600, MGMT 610 and completion of all core courses or concurrent registration in final core courses. Normally students take MGMT 611 before MGMT 612.

3 semester credits

MANAGEMENT 650
Foundations of Business Process and Operations Management
The student is introduced to process management methods which are fundamental to delivery of products and services. Topics covered include capacity analysis and plan-
Management

This course is intended for students in their organizational support. Prerequisite: MGMT 652.

MANAGEMENT 654
Small Business and Entrepreneurship
This course focuses on the development of the entrepreneurial spirit and develops specific skills to fulfill plans that develop from that creative and persevering spirit. Many different aspects of entrepreneurial ability will be emphasized including a strong work ethic, leadership, team building and the development of business relationships. The course also covers the growth of an existing business through entrepreneurship. Students will conceive, develop and present a comprehensive business plan intended to obtain external financial support or internal organizational support. Prerequisites for Small Business and Entrepreneurship Major: MGMT 600 and completion of all core courses or concurrent registration in final core courses. Prerequisites for Management Major: MGMT 600 and completion of required major courses or concurrent registration in final required major courses.

3 semester credits

MANAGEMENT 656
Small Business Practicum II: Management, Operations and Marketing
The course is a hands-on course that provides the concepts and practical tools needed to start a small business. The course offers instruction in accounting concepts specific to small businesses experience with accounting software. Understanding of financing opportunities including bank loans and venture capital will enable the student to obtain financing for a small business. Students will also study basic financial management principles relevant to small business. The course also focuses on setting up the legal structure for the business by enabling the student to choose the appropriate organizational form and to study the regulatory and employment laws specific to small businesses. Prerequisite: MGMT 654
This course is intended for students in their next to last semester of study.

3 semester credits

MANAGEMENT 712
Organizational Development
The course is a hands-on course that provides the concepts and practical tools needed to start a small business. The course offers instruction in accounting concepts specific to small businesses experience with accounting software. Understanding of financing opportunities including bank loans and venture capital will enable the student to obtain financing for a small business. Students will also study basic financial management principles relevant to small business. The course also focuses on setting up the legal structure for the business by enabling the student to choose the appropriate organizational form and to study the regulatory and employment laws specific to small businesses. Prerequisites: MGMT 610 and completion of all required Management Major courses or concurrent registration in final required major courses.

3 semester credits

MANAGEMENT 722
Conflict & Negotiation
The development of conflict-management and negotiating skills are taught in this course with particular emphasis on achieving effective and efficient outcomes within a global and multicultural context. Experiential exercises, readings and discussions will demonstrate various strategies for a broad range of negotiating scenarios, e.g., buyer-seller, management-labor, personal salary increase, etc. Prerequisites for Management Major or Human Resources Management Major: MGMT 600 and MKTG 600 and completion of all required major courses or concurrent registration in final required Major courses. Course is cross-listed with MKTG 722.

3 semester credits

MANAGEMENT 723
Leadership, Teams and Managing Change
This course focuses on the development of leadership skills important in the effective management of change. Through role-playing exercises, videotapes, diagnostic tools, seminar discussion, selected readings, and a group project, students will learn theory and build interpersonal skills necessary for providing leadership in diverse multicultural groups and organizations. The course will address the managerial issues present in organizations undergoing accelerating change and adopting a culture of creativity. Creating and sustaining high performance multi-cultural and interdisciplinary traditional and virtual teams is covered. Prerequisites for Management Major or Human Resources Management Major: MGMT 610 and completion of all required major courses or concurrent registration in final required major courses.

3 semester credits

MANAGEMENT 725
Counseling
The course surveys counseling theory, counseling strategies, and appraisal procedures. The purpose is to enable the human resources manager to identify potential employee problems such as addiction, mid-life issues, and psychological disorders. This training will facilitate the ability of the manager to refer employees for professional counseling and intervention. There will also be emphasis on resolving workplace interpersonal conflicts. Prerequisite: MGMT 610 and completion of all required Human Resources Management Major courses or concurrent registration in final required major courses.

3 semester credits

MANAGEMENT 733
Strategic Information Systems
The primary objective of the course is to develop an understanding of the need to construct Operations and Information Systems
Strategies that support corporate level strategies and simultaneously coordinate with other functional level strategies. An emphasis will be placed on cross-functional decision making in Finance, Operations and Marketing. The central focus of the course will be operations strategy aligning with current information systems and technologies. Information systems strategy decisions will be discussed as they relate to operations and the integration of operations with other functional areas. Prerequisites: Completion of Management or Information Technology or Knowledge Management required major courses or concurrent registration in final required major courses. 3 semester credits

**MANAGEMENT 734**

**Strategic Sourcing and Vendor Management**

This course covers the rewards and risks of outsourcing and vendor management and identifies where outsourcing should be used and not used. The objectives of the course are to help students understand how to plan, direct, manage and more effectively participate in outsourcing initiatives in terms of the feasibility of outsourcing (offshore, near-shore, rural-shore, best shore), vendor selection, contract negotiation, vendor management and evaluation, risk assessment and terminating outsourcing deals. Prerequisites for Management Major or Operations Major: MGMT 610, MGMT 650 and completion of required major courses or concurrent registration in final required major courses. Students may take MGMT 742 or MGMT 744 but not both. 3 semester credits

**MANAGEMENT 740**

**Advanced Business Process and Operations Management**

Students in this course apply the methods from MGMT 650 to projects of their own design and choosing, employing systems designed for application to process management issues. Emphasis is put on quantitative problem-solving and decision-making processes applied by the professional manager for the improvement of product or service development quality and customer satisfaction. Business process improvement techniques such as lean and Six Sigma will be covered. Prerequisites for Management Major or Operations Major: MGMT 610, MGMT 650 and completion of required major courses or concurrent registration in final required major courses. 3 semester credits

**MANAGEMENT 742**

**Strategic Sourcing and Vendor Management**

This course examines the somewhat recent economic evolution from a primarily manufacturing model to a more information driven economy with an emphasis on the impact of these changes on professional careers. Students will review and assess the primary attributes of IT, such as data management and software as a way to evaluate the potential role of technology in administering professional activities. In the final module, students will develop a personal strategy by reflecting on their individual attributes as a way to further develop their unique talents in the workplace. Prerequisites for Management Major and Operations Major: MGMT 610, MGMT 650 and completion of required major courses or concurrent registration in final major required courses. Students may take MGMT 742 or MGMT 744 but not both. 3 semester credits

**MANAGEMENT 744**

**Society and Technology**

This course examines the complicated relationship between society and technology. The coursework will review the role technology has played in human development in areas, such as commerce, the environment, politics, warfare, health, and wealth distribution. Students will evaluate the holistic impact of these applications with an emphasis on moral issues, such as balancing the need for progress with the need for social justice. Students will also explore the possibilities and challenges related to emerging technological innovation. Prerequisites for Management Major or Operations Major: MGMT 610, MGMT 650 and completion of major required courses or concurrent registration in final major required courses. Students may take MGMT 742 or MGMT 744 but not both. 3 semester credits

**MANAGEMENT 750**

**Foundations of Doing Business in China**

The course provides the fundamental knowledge of how to do business in China. It covers the economic, financial (tax), political, cultural, regulatory, infrastructure, environmental, marketing, trade, labor force and education system, demographic and technology issues, trends and practices. It identifies the various trade agreements and their implications in doing business in China or with Chinese organizations. It also exposes students to U.S. federal, state and local government resources available to help establish business and trade relationships in China. Prerequisites for Management Major and Operations Major: MGMT 610 and completion of major required courses or concurrent registration in final major required courses. 3 semester credits

**MANAGEMENT 751**

**Foundations of Doing Business in India**

The course provides the fundamental knowledge of how to do business in India. It covers the economic, financial (tax), political, cultural, regulatory, infrastructure, environmental, marketing, trade, labor force and education system, demographic and technology issues, trends and practices. It identifies the various trade agreements and their implications in doing business in India or with Indian organizations. It also exposes students to U.S. federal, state and local government resources available to help establish business and trade relationships in India. Prerequisite: Completion of International Business Major required courses or concurrent registration in final major required courses. 3 semester credits

**MANAGEMENT 760**

**Foundations of Healthcare Management and Administration**

This course focuses on a systematic exploration of the health care system in the United States, government interactions and regulations, delivery systems, healthcare insurance and financing, health care providers, innovations in healthcare services and alternative strategies. Prerequisite: Completion of required Management required Major courses or concurrent registration in final required major courses. 3 semester credits

**MANAGEMENT 771**

**Foundations of Service Management and Engineering**

With the rapid growth of the services industry, this course integrates topics from economics, engineering, law, technology and organizational theory to deal with how firms change over time to become more service oriented or become service business and the mechanisms and tools by which they seek innovation and competitive advantage in the service sector. The services life cycle is reviewed. In addition, enabling technologies and how different
disciplines help to answer questions about how business services combine, evolve, standardize and mature are covered. Prerequisites for Management Major or Operations Major: MGMT 610, MGMT 650 and completion of required major courses or concurrent registration in final required major courses.
3 semester credits

MANAGEMENT 779
Foundations of Service Management and Engineering
This course focuses on current internationalal issues that affect business operations at home and abroad. Changing business environments are discussed and analyzed. Students are required to formulate new global business strategies in light of emerging international trends and events. In some cases students may supplement their study by field trips and on-site analysis. Prerequisite for International Business Major: Completion of required major courses or concurrent registration in final required major courses.
3 semester credits

Marketing credits

MARKETING 600
Marketing
The course will explore the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods, and services, to create exchanges that satisfy individual, organizational, and societal objectives. The underpinnings of the marketing discipline will be taught through text, case, articles and class discussion. Mastery of these principles will come through a variety of individual and group assignments to create marketing solutions for real-world products. Prerequisite: Admission to graduate study.
3 semester credits

MARKETING 610
Business Research
Students will study the basic concepts and tools of business research. The purpose is to give students an understanding of basic research that will enable them to utilize and conduct research for any business area. Consequently, there is a focus on scientific method principles including sampling, survey instruments, experimental design, scientific procedures, statistical analysis, and analyzing results both quantitatively and qualitatively. Effective methods for organization and reporting of research results are studied and put to practice by the student. The use of secondary sources, data bases and library research techniques will be presented. Prerequisite: STAT 600 and completion of all core courses or concurrent registration with final core courses.
3 semester credits

MARKETING 612
Customer Analysis
This course will take up special topics in customer behavior utilizing knowledge not only from research on consumer behavior but from a variety of disciplines including psychology, sociology and anthropology. The leading models of customer behavior in both industrial and consumer settings will be analyzed. The qualitative and quantitative marketing research tools necessary to understand buyer behavior dynamics in any market will be stressed. Prerequisite: MKTG 600 and completion of all core courses or concurrent registration in final core courses.
3 semester credits

MARKETING 620
Strategy and Advanced Marketing Concepts
This course focuses on advanced topics in strategy, marketing research, promotion, pricing, supply chain management and product development and management. The focus on strategy will enable the student to develop competitive advantage through the enhancement of customer value. The course explores specific topics in marketing beyond those learned in the introductory marketing course. The purpose is to provide all students with an in depth understanding of the marketing concepts through lecture, case analysis and team projects. Prerequisite: MKTG 600, MKTG 612 and completion of all core courses or concurrent registration in final core courses.
3 semester credits

MARKETING 650
Global Market Management
This course analyzes strategy, planning, implementation and control for market entry and development. Topics include social, political and economic changes affecting marketing opportunity; focused versus dispersed marketing efforts; marketing in developed and undeveloped countries; and marketing systems required for the various strategic alternatives. The focus will be on creating competitive advantage in the global marketing environment. Prerequisite for Marketing Major: MKTG 600, MKTG 610 and completion of all required Marketing Major courses or concurrent registration in final required Major courses. Prerequisite for International Business Major: MKTG 600 and completion of all core courses or concurrent registration in final core courses.
3 semester credits

MARKETING 710
Marketing Research
This is an advanced course in marketing research theory and application. The purpose is to provide the student with an in-depth understanding through the application of research concepts with hands-on projects. The student will design and implement survey and experimental designs. Advanced approaches to sampling target populations, designing survey instruments, utilizing the best statistical analysis, and analyzing resultant data both quantitatively and qualitatively are explored in this course. Effective methods for organization and reporting of research results are studied and put to practice by the student. Prerequisite: MKTG 610 and completion of all required Marketing Major courses or concurrent registration in final required Major courses.
3 semester credits

MARKETING 720
Electronic and Mobile Business
The goal of this course is to prepare current and future executives, managers, and strategists to be leaders and create value in the New Economy – to gain understanding and insight on how the functions of management and marketing in the New Economy have changed as well as how new technology and media forms have created a radically different business environment. The course examines the impact of the evolving virtual worlds of Internet and mobile commerce on the strategy of traditional “brick-and-mortar” companies. Up-to-date information will be utilized from current publications to provide the student with the ability to work in the new wireless world. This new business frontier requires most firms to significantly change their business strategy and presents unprecedented new opportunities for fast acting entrepreneurs. Prerequisites for Information Technology and Knowledge Manage-
ment: MKTG 600, ITKM 600, and completion of all required Information Technology and Knowledge Management Major courses or concurrent registration in final required Major courses. Prerequisites for Marketing: MKTG 600, ITKM 600, and completion of all required Marketing Major courses or concurrent registration in final required Major courses. Course is cross-listed with ITKM 720. 3 semester credits

MARKETING 722
Conflict and Negotiation
The development of conflict-management and negotiating skills are taught in this course with particular emphasis on achieving effective and efficient outcomes within a global and multicultural context. Experiential exercises, readings and discussions will demonstrate various strategies for a broad range of negotiating scenarios, e.g., buyer-seller, management-labor, personal salary increase, etc. Prerequisites for Marketing Major: MGMT 600 and MKTG 600 and completion of all required Marketing Major courses or concurrent registration in final required Major courses. Course is cross-listed with MGMT 722. 3 semester credits

MARKETING 725
Data Mining and Data-Driven Marketing
This course enables the student to use data to make marketing management decisions. The student will learn to use statistical tools and analytical techniques to transform data into useful information that will result in the development of segmentation, targeting and positioning of marketing mixes that create additional customer value and enhance organization competitiveness. Hands-on experience with the tools and techniques will be valuable to students as they pursue a marketing career. Prerequisites: MKTG 610, MKTG 612 and completion of all required Marketing Major courses or concurrent registration in final required Major courses. 3 semester credits

MARKETING 729
Game Theory and Strategy
The course examines the theoretical and applied value of game theory for businesses. The purpose is to enable the student to understand the strategy and tactics relevant to many different power relationships. It utilizes the 2 by 2 game matrix to understand the interdependence of outcomes and the domain of possible types of relationships. Buyer-seller relationships and competitive strategies will be analyzed. Prerequisite: MKTG 610 and completion of all required Marketing Major courses or concurrent registration in final required Major courses. 3 semester credits

MARKETING 740
Customer Relationship Management
This course emphasizes the long term organizational value of developing relationships with customers. The first focus is on the use of data to provide increased value for the firm. Students will understand how to create value for the customer with a systematic analysis of customer needs. The second focus is on the nature of interpersonal relationships in a business setting that develops long lasting business relationships. Prerequisite: MKTG 610, MKTG 612 and completion of all required Marketing Major courses or concurrent registration in final required Major courses. 3 semester credits

MARKETING 747
Personal Sales and Sales Management
The purpose of this course is to develop the student’s ability to engage in real world professional sales and sales management. The foundation of personal sales is to be able to communicate effectively in both one-on-one sales situations and in group presentation situations. Psychological theory related to persuasion and interpersonal relationships will be used to provide the foundation for specific sales techniques. Practical experience in persuading, prospecting, negotiating, referring, closing the transaction, and responding to buyer concerns will be utilized. The course will also focus on the management of a sales force including methods of compensation, motivation, hiring and retaining sales people, and the legal and ethical aspects of selling. Prerequisite: MKTG 610, MKTG 612 and completion of all required Marketing Major courses or concurrent registration in final required Major courses. 3 semester credits

MARKETING 752
Services Marketing
The course addresses the unique problems of marketing intangibles in the broad spectrum of service industries which are an increasing part of U.S. and world industry. The course focuses on the development, implementation and control of strategy, systems and people for effective service operations. The course uses case studies, additional readings and lecture to enable the student to pursue a career in the services industry. Prerequisite: MKTG 600, MKTG 610 and completion of all required International Business Major courses or concurrent registration in final required major courses. 3 semester credits

MARKETING 754
Supply chain Management and Logistics
The course focuses on the management of material and goods outside of the factory. A variety of topics will be pursued including country sourcing, forecasting, distribution system design, order fulfillment, channel relationships, inventory deployment, and procurement. Students will understand the problems associated with supply chain integration within an organization and between organizations. The impact of the internet and the dynamically changing technology including virtual chains and logistics will be exam-
Marketing • Mathematics • Mechanical Engineering

Mathematics credits

MATHEMATICS 401
Advanced Analysis for Scientists and Engineers I
Partial differential equations, Bessel functions, Legendre polynomials. Fourier series, boundary and initial value problems, topics in vector analysis, tensor analysis. Prerequisite: Math 301 (Differential Equations). One semester of advanced calculus strongly recommended.
3 semester hours

MATHEMATICS 402
Advanced Analysis for Scientists and Engineers II
Functions of a complex variable, conformal mapping, calculus of residues, operators. Prerequisite: Math 301 (Differential Equations). One semester of advanced calculus, or permission of the instructor.
3 semester hours

MATHEMATICS 403
Functions of a Complex Variable I
The general theory of functions of a complex variable. Complex algebra, analytic functions and their mappings, complex integration, infinite series, Taylor and Laurent expansion, isolated singularities, residue theory. Prerequisite: One year of advanced calculus.
3 semester hours

MATHEMATICS 404
Functions of a Complex Variable II
Continuation of Mathematics 403. Additional topics include insofar as time permits, harmonic functions, conformal mapping and applications, normal families. Riemann mapping theorem, analytic continuation, Riemann surfaces, infinite products, entire functions. Prerequisite: Math 403.
3 semester hours

MATHEMATICS 407
Introduction to Modern Analysis
Metric Spaces, sequences and series, continuity differentiation, Riemann-Stieltjes integral, functions of several variables.
3 semester hours

MATHEMATICS 411 & 412
Introduction to Applied Mathematics 1 & 2
Introduction to Hilbert Space, Fourier Series, calculus of variations, boundary value problems, Green's functions and integral equations.
3 semester hours

MATHEMATICS 414
Numerical Analysis
Interpolation, numerical differentiation and integration, numerical solution of differential equations, least squares, error analysis. Prerequisite: Math 215 (Calculus and Analytic Geometry III) or equivalent. Math 301 (Differential Equations) strongly recommended.
3 semester hours

MATHEMATICS 415
Advanced Numerical Analysis
Convergence, numerical stability, round off error, truncation error arising from the approximation of differential and integral equations.
3 semester hours

MATHEMATICS 423
Mathematical Statistics I
Probability theory, discrete and continuous distributions, transformations, moment generating functions, characteristic functions, central limit theorem, sampling distributions. Prerequisite: Math 215 (Calculus and Analytic Geometry III) or equivalent.
3 semester hours

MATHEMATICS 424
Mathematical Statistics II
Continuation of Mathematics 423. Additional topics include estimation, testing of hypothesis, confidence intervals, regression, and analysis of variance. Prerequisite: Math 423 or Math 323.
3 semester hours

MATHEMATICS 431
Introduction to Topology and its Application
Elements of point set theory; introduction to topological spaces including metric spaces; separation and count ability axioms; connectedness; compactness; completeness. Prerequisite: One year of advanced calculus.
3 semester hours; offered as needed

MATHEMATICS 451
Linear Algebra and Matrix Theory I
Linear vector spaces, bases, dimension, inner product, norm, orthogonality. Linear transformations, matrices, matrix algebra, Hamilton-Cayley Theorem, eigenvalues and eigenvectors, rank. Prerequisite: Math 391 (Modern Algebra) or equivalent.
3 semester hours

MATHEMATICS 453
Modern Algebra I
Groups, rings, fields, ideals, polynomials. Prerequisite: Math 391 (Modern Algebra) or equivalent.
3 semester hours

MATHEMATICS 454
Modern Algebra II
Continuation of Math 453. Modules, field extensions, Galois theory, real fields, special topics. Prerequisite: Math 453.
3 semester hours

MATHEMATICS 480
Selected Topics in Mathematics
Current topics in applied mathematics topics will be selected from specific disciplines as a focus for intense study. Current topics in Physics, Chemistry, Biology and Computer Science will be offered on a semester basis. The course may be repeated as long as topical focus changes.
3 semester hours

Mechanical Engineering

MECHANICAL ENGINEERING 407
Modern Materials and Advanced Manufacturing Technologies
This course focuses on the study of modern industrial materials and the process of developing creative solutions through conceptual analysis and synthesis on different advanced and automated manufacturing processes. The course will help students to learn the emerging topics in the material and manufacturing industries. The topics cover the study on today's popular industrial materials, material selections and industrial applications, and their related manufacturing techniques in US industry. Topics also include the introduction of quality control (QC) process that is important to the production with the high quality. The course has two class projects which will guide and help students to learn the ways of preparing for professional research and keep track of the latest technologies in modern materials, advanced and automated manufacturing processes. Pre-requisites: Engineering 111, Mechanical Engineering 223.
3 lecture hours; 3 semester hours
MECHANICAL ENGINEERING 410
Advanced Fluid Dynamics
Advanced topics in applied fluid mechanics. Review of continuity, momentum, and energy equations for viscous, incompressible fluid; voracity and circulation concepts and theorems. Selected topics from the following areas: Complex potential, conformal mapping and applications. Airfoil and wing theory. Boundary layer theory; similarity solutions for laminar flows, integral techniques for turbulent flows. Compression and expansion waves in compressible flows; oblique shock waves, Prandtl-Meyer flow. Propagating waves and applications; shock tube, transients in duct systems. Pre-requisites: Undergraduate Fluid Mechanics, Mechanical Engineering 309.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 421
Computer Aided Engineering Design
This course applies 3-D CAD system e.g., Pro E to industrial product and system design. These CAD systems are very practical and powerful 3-D CAD tools and they have been widely used in the industry. The first half of the class focuses on learning fundamentals of the 3-D system, its popular applications and its related techniques. The special topics of design concept are also included. The second half covers several practical projects. Students will combine the design techniques with the real project and use 3-D tools to design the product or part of industrial system. All projects will be presented by students in class. Pre-requisites: Engineering 111, Physics 111.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 422
Advanced Computer Aided Project Design
This advanced course focuses on some hot and very practical topics in today’s industrial design applications. Also, some useful knowledge, such as PLC (Program Logic Control), calculation and selection of industrial motors, fundamentals of automation, sensor technology, and selection of material on different industrial applications are included. Several more complicated projects in this class will help students learn how to manage the different engineering projects and understand all related design issues which will improve the future production and manufacturing process. Pro-E will be used as a 3-D CAD tool to design these advanced engineering projects. All projects should be presented by students in the class. Pre-requisites: Mechanical Engineering 421.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 423
Computer Aided Manufacturing (CAM) and NC Machining
This course applies manufacturing and various numerical controlled software for designing computer-aided manufacturing and NC machining systems, processes and algorithms. This course is heavy in implementation of various manufacturing technologies and programming of NC machines. Pre-requisites: Engineering 111, Physics 111, Mechanical Engineering 421.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 424
Advanced CAM & Automation.
This course teaches students to simulate advanced manufacturing processes by learning high level functions in Pro-Engineer/Pro-Manufacturing software package. This course will cover the topics of some advanced and special manufacturing technologies, including laser cutting & welding, water jet cutting & cleaning, and plasma cutting & welding. Automation related topics will also be introduced, including the analysis and application of PLC control systems in manufacturing facilities and modern production systems. Several advanced and real projects will help students to be proficient in using this CAD/CAM package and learn more of US industrial & engineering knowledge through the instructor’s lectures & guidance and also the students’ self-motivated work.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 425
Electronics Cooling
This course is designed to help students understand the thermal challenges and demands of the electronics field. Fundamentals and physics of thermodynamics, heat transfer and fluid mechanics will be introduced and shown how to apply them to the design and testing of electronic hardware. The thermal characteristics and thermal failure modes of electronic components, and reliability prediction techniques will be reviewed. Numerical simulation and commercial CFD packages will be introduced for thermal analysis. Students will have a good understanding of the heat transfer and fluid mechanics principles affecting proper thermal management of electronic components and develop skills to identify potential thermal design problems and develop reliable, cost-effective solutions.
3 semester hours

MECHANICAL ENGINEERING 430
Design & Innovation
The objective of this course is to convey a sense of Design and Innovation in the development of products. To accomplish this the class shall review a number of case studies and participate in the design of a project. In addition to the semester project we shall discuss a number of topics of concern to Design and Engineering through illustrated talks (slides/tapes) and when available with guest designers and engineers. Pre-requisites: Engineering 111, Engineering 300.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 440
Ergonomic Factors in Design
This course introduces the student to the concepts of ergonomics. Ergonomics is the study of fitting the workplace and devises to the capabilities of the human worker. Students will have an understanding of the beginnings and evolution of the field of ergonomics. They will learn to recognize risk factors associated with repetitive stress disorders (e.g., carpal tunnel syndrome) and potential strain/strain injuries as well as be familiar with the body areas affected. This course covers principles of physiology and biomechanics and how they apply to workstation and tool design. Pre-requisites: Engineering 111.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 452
Advanced Vibrations
Brief review of systems with one and two degrees of freedom. Rayleigh’s method. Application of Lagrangian and matrix methods to discrete systems with many degrees of freedom; normal mode theory; vibrations of finite continua; solution methods and mathematical properties. Numerical and computer methods. Sensitivity analysis. Applications to machines and structures. Pre-requisites: Mechanical Engineering 315 or equivalent.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 453
Finite Element Methods in Mechanical Engineering
Formulation of finite element characteristics using energy methods. Convergence criteria. 326
Consistent load and mass matrices. In-plane and axisymmetric analysis using simple and higher-order triangular and quadrilateral elements. Finite element analysis of plate-bend ing problems. Isoparametric concepts and formulation; applications to two-and three-dimensional stress analysis. Topics from the following areas will be chosen as time al lows: buckling and vibration studies using discrete element techniques; finite element applications in fluid flow and heat transfer. Prerequisite: Mechanical Engineering 450 or permission of instructor. Pre-requisites: Basic Structural Mechanics, Math 214, Math 215, Engineering 111 or consent of instructor. 3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 454
Advanced Dynamics
Orthogonal coordinate systems and their transformations. Particle kinematics in inertial and noninertial rotating coordinate systems. Dynamics of systems of particles and rigid bodies. Virtual work and generalized coordinates. Lagrange’s equations and Hamilton’s principle for holonomic and non-holonomic systems with applications. Lagrange multipliers. Prerequisites: Undergraduate Dynamics, Mathematics 301. 3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 456
Mechanics of Composite Materials
Introduction to the mechanics of laminated filamentary composites. Prediction of stiffness and strength of laminated plates. Applications. Prerequisites: Undergraduate Strength of Materials, Mechanical Engineering 223. 3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 458
Fatigue and Fracture Mechanics
Brittle fracture of structures, elastic stress analysis of cracked components, static and dynamic failures, plane stress and plane strain, elastic-plastic fracture mechanics, fatigue crack growth and life prediction under constant and variable amplitude loading, environmental effects. Term work is mainly design problems and is computer oriented. Pre-requisites: Undergraduate Strength of Materials, Mechanical Engineering 223. 3 lecture hours; 3 semester hours; 1 design semester hour

MECHANICAL ENGINEERING 463
Advanced Heat Transfer
Topics in conduction, convection and radiation heat transfer. Numerical methods, phase change, boundary layer principles, gas and solar radiation, combined heat and mass transfer. Prerequisite: Mathematics 301, Physics 209, Mechanical Engineering 208. 3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 479
CNC Machine Control and Milling
This course introduces the CNC milling machine to students. Included are machine and shop safety, CNC coding, material selection, machine maintenance, proper use of the coolant systems and tools. Routine machine procedures and implementation are covered in preparation for several machine operations to develop student skills. 3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 490
Intellectual Property and Technology
This course is designed for graduate students who have an undergraduate degree in Engineering. Computer Science, Mathematics, Physics, Biology, Industrial Design, etc. Students need not have any familiarity with United States law but they must be prepared to read extensively under the instructor’s guidance, statutes and cases decided by the Federal and State courts. Pre-requisites: Undergraduate degree in Engineering or Sciences. 3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 500
Graduate Co-op/Internship in Mechanical Engineering
By arrangement. 1-3 semester hours

MECHANICAL ENGINEERING 512
Computational Fluid Dynamics (CFD)
Computational fluid dynamics (CFD) is employed in a wide range of industries and disciplines, such as aerospace engineering, automotive engineering, biomedical science and engineering, chemical engineering, civil engineering, power engineering and sports engineering. Practicing engineers are constantly facing extreme challenges to solve complex fluid flow and heat transfer problems using commercial CFD software. To avoid flawed CFD simulation and results interpretation using commercial CFD packages by users with inadequate training, understanding the fundamental principles that underlie commercial CFD solvers can help the users to effectively harness the power of modern CFD for their research or design. This course is intended as an introduction to the scientific principles and practical engineering applications of CFD. It combines lectures on the CFD principles with projects of research or industrial applications. The emphasis of this course is not to teach the theory behind the CFD techniques, but to help the students apply the knowledge gained into practical use of commercial CFD software (COMSOL, ANSYS and/or STAR-CCM+). Students will apply these skills to relevant engineering applications and gain an appreciation of the limitations and advantages of CFD modeling. 3 semester hours

MECHANICAL ENGINEERING 523
Advanced Composite Materials
Composite materials are ideal for structural applications where high strength-to-weight and stiffness-to-weight ratios are required. Aircraft and spacecraft are typical weight sensitive structures in which composite materials are cost-effective. Usually, composite materials consist of two separate components, the matrix and the filler. The matrix is the component that holds the filler together and the filler makes the material strong. Most aerospace-application composites have strong, stiff long fibers as the fillers. The fiber makes the material behaves differently in different directions. This anisotropic behavior introduces complication in the analysis of the composite material. The course introduces the student to the basic concepts of the mechanical behavior of composite materials. Specific topics include the stress-strain relation for a lamina, micro-mechanics of composite materials, bending, buckling, and vibration of composite plates with various laminations, fatigue, fracture mechanics, and joints of composite structures. 3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 530 (MEEG 530/TCMG 530)
Foundations of Manufacturing Management
The objectives of the course are to understand and apply concepts and techniques in manufacturing management. The course includes the management of people (both traditional and high performance systems and teams), lean manufacturing techniques as used on the factory floor, and recent concepts such as Factory Physics. The course focuses on those issues that are important in supervising and managing a modern manufacturing operation. Prerequisites: graduate standing. 3 semester hours
MECHANICAL ENGINEERING 546 (MEEG 546/TCMG 546)
Engineering Economics and Management
The course covers the concepts and methods that will assist engineering and technology managers and professionals to make alternative investment and funding decisions regarding projects, programs, products, business expansion and other alternatives using the financial calculations involving time value of money (IRR, ROI, NPV), uncertainty and risk. Topics include engineering and related financial evaluation techniques and formulas, choosing among alternatives, sensitivity analysis, economic analysis, opportunity costs, depreciation, amortization, probability, cost estimating and systems and others. Prerequisites: TCMG 484.
3 semester hours

MECHANICAL ENGINEERING 562
(MEEG 562/BMEG 562/ELEG 562)
Nanofabrication with Soft Materials
This is an advanced level graduate course focusing on fabrication of soft materials. Nanofabrication processes and nanosystem products will be discussed. Fundamentals associated with chips fabrications and linking them toward soft materials assembly will be detailed. Emerging nanotechnology based methods for soft and green electronics, mechanical parts, MEMS, PCBS will be covered. Gene chip, label free sensory assay using micro and nanofluidics will be discussed. Transfer printing, DNA-protein interactions using the chip and several nano-scale assemblies for soft materials fabrication will be discussed.
3 semester credits

MECHANICAL ENGINEERING 570
Welding Engineering
Welding is the most common method of joining materials and has been widely used in industries. This course is intended to provide knowledge of welding engineering and its application in developing and designing safe and durable welded structures.
3 semester hours

MECHANICAL ENGINEERING 572
Production Technology and Techniques
This course will focus on the process of developing creative solutions to issues in production technology and techniques. The topics cover the concepts of production layout, production processes, quality assurance and control, principles of manufacturing processes, and technology’s role in assisting manufacturing processes in today’s US industries. Two formal projects are assigned regarding the latest technologies in production that are used to support business products. The target of this class is to help students obtain a basic knowledge in production technologies and techniques, and help students get ready to face the challenging industrial and engineering job market. Prerequisites: Engineering 111, Engineering 300.
3 semester hours

MECHANICAL ENGINEERING 573
Supply Chain Management
The goal of this course is to cover not only high-level supply chain strategy and concepts, but also to give students a solid understanding of the analytical tools, to understand supply chain design, planning, and operation driven the performance of a firm. It also conveys how supply chain drivers used on a conceptual level during supply chain design and operation leading to performance improvement.
3 credits with 14 sessions

MECHANICAL ENGINEERING 574
Principles of Logistics
This course presents materials management, logistics theory and concepts in today’s manufacturing and commercial environments. It integrates all of the functional areas of the business as well as incorporating logistics into corporate operation. They are examined in light of how they interrelate with other functions for the firms. Pre-requisites: Engineering 111, Engineering 300.
3 semester hours

MECHANICAL ENGINEERING 575
Manufacturing Strategy
This course provides the necessary strategic perspective for manufacturing managers’ sights and sustaining manufacturing excellence in the competitive manufacturing environment. The strategic perspective of manufacturing forms that the approach places these issues within the rightful context. It emphasizes the essential requirement to link with other functions in order to determine the best strategies for the business as a whole.
3 lecture hours; 3 semester hours

MECHANICAL ENGINEERING 597 A
Master’s Project
Lecture hours and topics to be arranged with Department Chair.
1 credit hour

MECHANICAL ENGINEERING 597 B
Master’s Project
Lecture hours and topics to be arranged with Department Chair.
2 credit hours

MECHANICAL ENGINEERING 597 C
Master’s Project (completion)
Lecture hours and topics to be arranged with Department Chair.
1 credit hour

MECHANICAL ENGINEERING 598
Thesis in Mechanical Engineering
Lecture hours, semester hours and topics to be arranged.
3-6 semester hours

MECHANICAL ENGINEERING 599
Independent Study in Mechanical Engineering
Independent study of advanced topics in Mechanical Engineering and submission of project report as required. Problem assignment to be arranged with and approved by the Department Chair.
3 semester hours

Basic Sciences

BASIC SCIENCES 511
Anatomy I
This course provides an in depth study of the macroscopic human anatomy and it covers the structure of the trunk and posterior neck. Clinical aspects of the vascular and neurological relationships of these regions will be emphasized. Instruction includes lectures and laboratories with the dissection of human cadavers and the study of bones, models and interactive multimedia software.
4 lecture hours, 3 laboratory hours; 5.5 semester credits

BASIC SCIENCES 512
Histology
This course is the study of the normal microscopic anatomy of the body and its relationship to function at the cellular, tissue, and organ level. Included is the study of the microstructure of epithelia, connective tissue, muscle, nervous system, digestive system, circulatory, reproductive systems and the endocrine system. Where indicated, there is an integration of normal histology with physi-
Naturopathic Medicine

BASIC SCIENCES 513
**Embryology**

This course covers the developmental process of humans from conception to birth including the formation of tissues, organs and systems of the body, integrating histology and anatomy.

1 lecture hours; 1 semester credits

BASIC SCIENCES 514
**Biochemistry I**

The biochemistry I lecture/lab series introduces the student to the fundamentals of protein structure, DNA replication, gene expression, transcription, and translation. Laboratory exercises require the student to apply information acquired in lecture to basic science and clinically oriented problems that are frequently encountered in practice.

2 lecture hours; 1 laboratory hour; 2 semester credits

BASIC SCIENCES 515
**Physiology I**

This course is the study of physiology at the molecular and cellular level. Included is the study of the function of all major tissues and organ systems. Clinical concepts and correlations are discussed.

3 lecture hours; 2 laboratory hours; 4 semester credits

BASIC SCIENCES 521
**Anatomy II**

This course is a continuation of Anatomy I and it covers the structure of the head, anterior neck and extremities. Clinical aspects of the neuro logical and vascular relationships of these regions will be emphasized. Instruction includes lectures and laboratories with the dissection of human cadavers and the study of bones, models and interactive multimedia software. Prerequisites: NBS511, NBS512, NBS513

4 lecture hours; 3 laboratory hours; 5 semester credits

BASIC SCIENCES 522
**Microbiology**

This course covers a comprehensive overview of structure, function, growth and genetics of microorganisms. Host-parasite relationships of representative bacterial, viral, fungal and parasitic agents of human diseases are examined. An organism approach is used to survey microbial and parasitic diseases, with emphasis on modes of transmission, mechanisms of virulence, symptoms, diagnosis, treatment and prevention of associated diseases. Presentations include lecture and case studies.

2 lecture hours; 2 laboratory hours; 4 semester credits

BASIC SCIENCES 524
**Biochemistry II**

The biochemistry II lecture/lab series introduces the student to the fundamentals of bioenergetics. Laboratory exercises require the student to apply information acquired in lecture to basic science and clinically oriented problems that are frequently encountered in practice.

2 lecture hours; 1 laboratory hour; 2.5 semester credits

BASIC SCIENCES 525
**Physiology II**

This course is a study of the physiology at the organ and systems level and its interrelationships. Included is the study of the circulatory, endocrine, respiratory, renal, gastrointestinal, urogenital and nervous system. There is an integration of normal and pathological physiology and clinical concepts. Prerequisites: NBS512, NBS514, NBS515

3 lecture hours; 2 laboratory hours; 4 semester credits

BASIC SCIENCES 526
**Neuroscience**

This course covers the anatomy and physiology of the central nervous system and of the cranial nerves. The organization of cortical and subcortical motor and sensory systems including the basal ganglia, cerebellum, and the brainstem is covered as well as higher cortical functions and parcellation of function in the cerebral cortex. Prerequisite: NBS511, NBS512

2 lecture hours; 2 semester credits
Prerequisite: NNT611.
2 lecture hours; 2 semester credits

NUTRITION 711
Nutrition II
This course builds on previous nutrition courses, biochemistry, and research methods to focus on how to safely and effectively use vitamins, minerals, amino acids and other nutrients to improve health and address disease. Drug-nutrient interactions, nutrient-nutrient interactions, and food-nutrient interactions are learned, as well as how to apply nutraceutical principles to therapeutic prescription of nutrients.
Prerequisites NNT621, NCS621
2 lecture hours; 2 semester credits

NUTRITION 721
Nutrition IV
This course builds on previous nutrition courses and focuses on the use of food as medicine and therapeutic diets and clinical nutrition. Students will be expected to synthesize knowledge from biochemistry and basic nutrition for application to clinical conditions and lifespan issues. This class also explores current research and trends in nutrition and socioeconomic and cultural aspects related to food and diet therapy.
Prerequisite: NNT711.
2 lecture hours; 2 semester credits

Clinical Sciences

CLINICAL SCIENCES 524A
Public Health/Epidemiology I
This course covers the current environmental and public health concerns and issues. The course integrates health with diet, air and water pollutants, noise, and substance abuse, compares community hygiene and industrial hygiene, defines epidemiology, and recognizes major communicable and non-communicable diseases.
1.5 lecture hours, 1.5 semester credits

ClinicAl sciences 611
Pathology I
This lecture/lab series introduces the student to the fundamental basis of disease by studying pathophysiology on both cellular and genetic scales. Such studies include cell death and adaptation, inflammation, tissue regeneration and fibrosis, hemodynamic disorders, neoplasia, genetic diseases, and infectious disease. Each pathophysiologic process studied is placed in a clinical context by reviewing associated physical, radiographic, gross, and microscopic findings. Laboratory exercises require the student to apply information acquired in lecture to various clinical scenarios that are more frequently encountered in practice. The course concludes with the beginning of the study of diseases by organ system. Prerequisites: NBS512, NBS513, NBS521, NBS522, NBS524, NBS525, NBS526
3 lecture hours, 2 laboratory hours; 4 semester credits

CLINICAL SCIENCES 612
Clinical Diagnosis I
This course applies the knowledge of pathophysiology, physical exam, and laboratory testing to develop the skills necessary to determine appropriate diagnoses for patients manifesting the signs and symptoms of disease. The material is covered for each organ system with an emphasis on the integration of information from multiple systems. Prerequisites: NBS512, NBS513, BS521, BS522, BS524, BS525, BS526
5 lecture hours, 5 semester credits

CLINICAL SCIENCES 612L
Physical Examination Lab I
This laboratory course begins the development of the skills required to conduct specialized and complete physical examinations. The course begins with learning to take a complete patient medical history. The student will learn the selection of appropriate examination and diagnostic procedures that correspond to the patient’s history and complaints. This course is offered in conjunction with the courses in Laboratory and Clinical Diagnosis. The integration of the skills gained in these courses begins the process of developing the clinical decision-making ability required of a naturopathic physician. Lab Fee Co-requisite NCS612
2 laboratory hours; 1 semester credit

CLINICAL SCIENCES 613
Laboratory Diagnosis I
This course covers the principle laboratory tests used to evaluate and diagnose disease states. The student will learn the selection of appropriate laboratory and diagnostic procedures that correspond to the patient’s history and complaint. The student will also expand upon their knowledge base from previous courses in physiology and biochemistry in learning about and understanding the rationale behind common laboratory procedures, including serum chemistries, CBC, and urine studies. Co-requisite NCS612
2 lecture hours; 2 semester credits

CLINICAL SCIENCES 613L
Laboratory Diagnosis Lab I
In this course students will learn to do in-office laboratory procedures including venipuncture. Co-requisite: NCS 613.
1 laboratory hour, 0.5 semester credit

CLINICAL SCIENCES 614B
Public Health/Epidemiology
This course is a continuation of Public Health/Epidemiology I. Prerequisites: NBS522, NCS552A
1.5 lecture hours, 1.5 semester credits

CLINICAL SCIENCES 616
Immunology
This course covers specific and non-specific components of the human immune system and the role played by each in protection from microbes and non-living agents. Hypersensitivity reactions, immunodeficiency, autoimmune diseases, immune responses to cancer and psychoneuro-immunology are also discussed. Prerequisites: NBS525, NBS522
2 lecture hours; 2 semester credits

CLINICAL SCIENCES 617
Medical Genetics
This course covers the basis, the diagnosis, and the transmission of chromosomal and genetic disorders. The role of genetics and disease and the prenatal diagnosis of genetic and chromosomal abnormalities will be discussed. Special emphasis will be placed on preparing the students to recognize potential genetic abnormalities in a clinical setting, on methodologies to educate and inform patients on the genetic basis of their particular disease and on the resources available for additional testing, treatment or counseling. Prerequisites: NBS515, NBS521, NBS525
1 lecture hour, 1 semester credit

CLINICAL SCIENCES 619
Diagnostic Imaging I
This course covers radiographic anatomy, and imaging techniques. A basic introduction to imaging, including radiography, computer tomography (CT), magnetic resonance imaging (MRI), ultrasound, and bone scan (scintigraphy) is discussed. The basic concepts of these techniques and their use in diagnosis
are discussed. This course will also cover basic radiographic anatomy of the skeletal system and viscera. Co-requisites: NCS611.

2 lecture hours, 2 semester credits

CLINICAL SCIENCES 621
Pathology II
The pathology II lecture/lab series is a continuation from Pathology I of the study of diseases in each organ system and considering effects on multiple organ systems. Each pathophysiologic process studied is placed in a clinical context by reviewing associated physical, radiographic, gross, and microscopic findings. Pathology laboratory exercises require the student to apply information acquired in lecture to various clinical scenarios which are more frequently encountered in practice. Prerequisite: NCS611.

3 lecture hours, 2 laboratory hours; 4 semester credits

CLINICAL SCIENCES 622
Clinical Diagnosis II
This course is a continuation of Clinical Diagnosis I. Prerequisite: NCS612.

5 lecture hours, 5 semester credits

CLINICAL SCIENCES 622L
Physical Examination Lab II
This course is a continuation of Physical Examination I. Students will complete the process of learning physical examination skills for all systems of the human body. Co-requisite NCS622.

2 laboratory hours, 1 semester credit

CLINICAL SCIENCES 623
Laboratory Diagnosis II
This course is a continuation of Laboratory Diagnosis I. Co-requisite NCS622.

2 lecture hours; 2 semester credits

CLINICAL SCIENCES 623L
Laboratory Diagnosis Lab II
This course is a continuation of Laboratory Diagnosis Lab II. Co-requisite: NCS 623.

1 laboratory hours, 0.5 semester credit

CLINICAL SCIENCES 722
Diagnostic Imaging II
This course is a continuation of Diagnostic Imaging I with progressive emphasis on the use of imaging techniques to diagnose disease. Prerequisite: NGS 711.

2 lecture hours, 2 semester credits

CLINICAL SCIENCES 714 AND 723
Clinical Forum I and II
These courses explore the clinical applications of the basic sciences and the clinical courses taught concurrently in this semester. Case presentations and clinical skills are emphasized through a problem based learning format using naturopathic principles as the foundation.

2 laboratory hours; 1 semester credit each

CLINICAL SCIENCES 715
Emergency Procedures
This course will familiarize the students with emergency situations and procedures that may be seen in the Emergency Department or private practice. The student will learn to discern emergent presentations by review of clinical scenarios and be able to elicit a proper history and physical exam to properly refer or treat the patient in the confines of their scope of practice.

2 lecture hours, 2 semester credits

CLINICAL SCIENCES 721
Pharmacology I
Dose response relationships, pharmacokinetics, pharmacodynamics, pharmacogenetics, drug toxicity, signal transduction and second messengers are covered. Drug interactions, indications/contraindications, food/herb interactions are discussed. The pharmacology and toxicology of the drugs of the nervous, respiratory and cardiovascular systems will be examined. Prerequisites: BS515, 525, 514, 524

2 lecture hours; 2 semester credits

CLINICAL SCIENCES 811
Pharmacology II
This course, a continuation from Pharmacology I, examines the most common pharmaceutical agents in clinical practice and the ones most likely to be encountered in a clinical setting in general practice. It reviews antibiotics, antimicrobials, both steroidal and non-steroidal, anti-inflammatory agents, chemotherapeutic agents, hormones, and commonly prescribed medications. Prerequisite: CS721.

2 lecture hours, 2 semester credits

CLINICAL SCIENCES 812
Environmental Medicine
This course covers the health effects of pollutants in the home, workplace as well as in the air, water, earth, and food supply. Diagnosis and treatment of health conditions caused by these pollutants is covered with special emphasis on treating the chemically sensitive patient or those with environmental illness. Prerequisites: CS 621, 622

1.5 lecture hours; 1.5 semester credits

Naturopathic Obstetrics

NATUROPATHIC OBSTETRICS 811
Obstetrics
This course addresses itself to health care appropriate to the special circumstances of pregnancy. Topics covered include diagnosis of pregnancy, pre-natal care, therapeutics for early pregnancy, management of minor complaints of pregnancy, infertility, an overview of normal fetal development, labor and birth, and the post-partum care of mothers and infants. Prerequisites: CS622, CS623.

2 lecture hours, 2 semester credits

Naturopathic Practice/Organ Systems

NATUROPATHIC PRACTICE 714
Gynecology
This course synthesizes concepts of female anatomy, physiology, and pathophysiology and applies them to clinical conditions. Physical exam, laboratory and diagnostic evaluation, and clinical diagnosis are presented for major clinical conditions. Naturopathic treatment of commonly encountered gynecological issues is included. Prerequisite: CS611,612, 621, 622.

2 lecture hours, 2 semester credits

NATUROPATHIC PRACTICE 721
Pediatrics
Upon completion of this course the student will be able to recognize and diagnose the conditions of the pediatric patient encountered in a general naturopathic practice. Naturopathic therapy and management of these disorders are discussed along with the appropriate use of referral. Prerequisites: CS 611, 612, 613, 621, 622, 623.

2 lecture hours, 2 semester credits

NATUROPATHIC PRACTICE 722
Cardiology
This course covers the pathophysiology, advanced diagnosis and treatment of cardiovascular diseases. Both conventional and naturopathic therapies are covered, and upon completion students will be able to understand and apply this knowledge to the care of patients with cardiac disease and
know when to refer for specialized diagnosis and treatment. Prerequisites: CS 611, 612, 613, 621, 622, 623.
2 lecture hours; 2 semester credits

NATUROPATHIC PRACTICE 725L
Gynecology Lab
Physical examination practicum relevant to gynecology, including breast and pelvic exams. Prerequisite NNP714.
1 laboratory credit; 0.5 semester credit

NATUROPATHIC PRACTICE 713
Gastroenterology
This course examines the digestive tract and associated organs, and disorders associated with it. Physical examination, imaging, and laboratory techniques necessary to understand and diagnose these disorders are discussed along with their naturopathic treatment. Prerequisites: CS 611, 612, 613, 621, 622, 623.
2 lecture hours; 2 semester credits

NATUROPATHIC PRACTICE 825
Minor Surgery
Minor surgical procedures as defined by the scope of practice for naturopathic physicians are taught. The course covers common minor surgery office procedures such as suturing techniques, wound care, local anesthesia, and bandaging techniques. Topics also include recognizing and treating infection, burns, and conditions requiring referral for surgical intervention. Prerequisites: CS622.
1.5 lecture hours, 1 laboratory hour; 2 semester credits

NATUROPATHIC PRACTICE 811
Eye, Ear, Nose and Throat
The diagnosis and naturopathic and allopathic treatment of diseases of the eyes, ears, nose, and throat are discussed. Upon completion of this course students will be able to diagnose common and important diseases, know when to refer patients for specialty diagnosis and treatment, and will be able to apply naturopathic principles and modalities in case management. Prerequisites: CS 611, 612, 613, 621, 622, 623.
1 lecture hour; 1 laboratory hour; 1.5 semester credits

NATUROPATHIC PRACTICE 812
Endocrinology
This course covers the diagnosis and naturopathic and conventional management of diseases and imbalances of the endocrine system. Upon completion, students will be able to recognize and diagnose hormonal disorders, know when to refer patients for specialty diagnosis and treatment, and be able to apply naturopathic principles and modalities in endocrine case management. Prerequisites: CS 611, 612, 613, 621, 622, 623.
1.5 lecture hours; 1.5 semester credits

NATUROPATHIC PRACTICE 813
Neurology
This course constitutes a review of the neurological exam with emphasis on diagnosis of neurological conditions. It will include naturopathic treatment and management of diseases of the nervous system as they are discussed. Prerequisites: CS 611, 612, 613, 621, 622, 623; BS 525.
1.5 lecture hours, 1.5 semester credits

NATUROPATHIC PRACTICE 821
Geriatrics
This course covers the aging process and the new field of anti-Aging medicine. Conventional geriatrics topics are discussed as well as topics on geriatric illnesses and their Naturopathic interventions. Prerequisites: CS 611, 612, 613, 621, 622, 623.
1 lecture hour, 1 semester credit

NATUROPATHIC PRACTICE 814
Urology/Proctology
This course covers disorders of the urinary system, male genitalia, and the anal-rectal region. Diagnosis and conventional and naturopathic management of cases are covered. Prerequisites: CS 611, 612, 613, 621, 622, 623.
1.5 lecture hours, 1.5 semester credits

NATUROPATHIC PRACTICE 823
Oncology
This course covers the diagnostic, prognostic and preventative and epidemiological information for common cancers. Various theories of cancer are discussed as well as both conventional and non-conventional treatments. Case studies are used to help cement the concepts covered in relation to various malignancies. At the conclusion of this course students will be prepared to screen for common cancers and co-manage patients with cancer. Prerequisites: CS 611, 612, 613, 621, 622, 623.
1.5 lecture hours, 1.5 semester credits

NATUROPATHIC PRACTICE 824
Dermatology
The diagnosis and treatment of diseases, which manifest in skin lesions are discussed. Naturopathic treatment and prevention are taught. Prerequisites: CS 611, 612, 613, 621, 622, 623.
1.5 lecture hours. 1.5 semester credits

NATUROPATHIC PRACTICE 511
History of Naturopathic Medicine
This course will examine the historical, socioeconomic, and political foundations of Naturopathic Medicine and its eclectic blend of healing arts and fundamental roots; Botanical Medicine, Nature Cure, Physical medicine, Hydrotherapy, Homeopathy, Energy Medicine, and Ancient Healing systems from around the globe.
2 lecture hours; 2 semester credits

PRINCIPLES AND PRACTICE 512
Philosophy of Naturopathic Medicine I
This course will explore the philosophical foundations of naturopathic medicine, which form the basis for therapeutic intervention. Vitalistic medicine in the United States of America as an influence on the creation of the naturopathic profession will be discussed. The overall emphasis of the course will be on the philosophical principles that define the empirical “natural laws” which describe the phenomenon of healing. The relationship of naturopathic principles to medical science is included.
1 lecture hour; 1 semester credit

PRINCIPLES AND PRACTICE 522
Philosophy of Naturopathic Medicine II
Nature acts powerfully through healing mechanisms in the body and mind to maintain and restore health. Students will receive a more in-depth utilization of naturopathic methods and medicinal substances, which work in harmony with the human system, thus facilitating long-lasting health and recovery. In addition to employing various natural medicines, students will gain an important perspective of the vital force and its role in the healing process, when used in conjunction with naturopathic principles. Prerequisite: PP512.
1 lecture hour; 1 semester credit

PRINCIPLES AND PRACTICE 811
Practice Management I
Students are taught the current procedural practices for the operation of a private practice. In addition, the practical aspects of operating a practice as a small business are discussed. Students are encouraged to begin
thinking about their personal career path in naturopathic medicine. Prerequisites: GS 611, 612, 613, 621, 622, 623.

2 lecture hours, 2 semester credits

**PRINCIPLES AND PRACTICE 821**

**Medical Jurisprudence and Ethics**

This course covers the basics of law as it applies to medical practice. Informed consent, confidentiality and professional liability are discussed. Naturopathic licensing laws in various jurisdictions are contrasted and compared along with an in depth review of the practice act in Connecticut. Prerequisite: PS712.

1.5 lecture hours, 1.5 semester credits

**Oriental Medicine**

**ORIENTAL MEDICINE 611**

**Oriental Medicine I: Fundamentals**

This course introduces the fundamental philosophy, diagnostic techniques and therapeutic techniques of Oriental medicine and Traditional Chinese Medicine ("TCM"). The purpose of the course is to allow the student to integrate the basic philosophical concepts of Oriental Medicine into naturopathic practice. This includes applying TCM principles and oriental medical philosophy to the human body; having a basic appreciation for relationships between the Oriental zangfu ("organs"); and having a fundamental understanding of the Oriental modes of diagnosis, as found in the “Four Examinations” and “Eight Principles” including pulse, tongue, facial, palpation, and questioning techniques. The basic tenets of clean needle technique and safe needle insertion as they relate to acupuncture and moxibustion will also be covered. Prerequisites: BS521, BS525.

2 lecture hours, 2 laboratory hours

**ORIENTAL MEDICINE 621**

**Oriental Medicine II**

This course is a continuation of Oriental Medicine I. Prerequisite: OM 611

2 lecture hours, 2 semester hours

Further study in OM may be taken through the Acupuncture Institute. Refer to the catalog section on Acupuncture.

**Physical Medicine**

**PHYSICAL MEDICINE 522**

**Living Anatomy: Palpation**

This laboratory course introduces how to locate and palpate the bony landmarks, attachments/orbits, and the superficial musculature of the entire body. It is an adjunct to the Anatomy courses and a precursor to the courses in physical medicine.

1.5 laboratory hours; 0.75 semester credits

**PHYSICAL MEDICINE 521**

**Hydrotherapy**

This course introduces students to the physiological principles the clinical application of the therapeutic use of water, heat, and cold. In the laboratory portion of this course students learn procedures by administering and receiving treatments and determining appropriate applications. Prerequisites: BS521.

0.5 lecture hour; 1.5 laboratory hours; 1.25 semester credits

**PHYSICAL MEDICINE 612**

**Physiological Therapeutics**

This course covers the physics, clinical, and contraindications of the use of heat, cold, high-volt galvanism, interferential current, low-volt galvanism, ultrasound, electrical muscle stimulation, diathermy, and paraffin. Upon completion, students will be able to use these modalities both individually and in conjunction with other therapies in the treatment of musculoskeletal and other disorders. Prerequisites: BS 511, 515, 521, 525.

1 lecture hour; 2 laboratory hours; 2 semester credits

**PHYSICAL MEDICINE 621**

**Orthopedic Assessment**

Students in this course will learn to diagnose orthopedic injuries and diseases. Those conditions that can be safely treated in a general practice setting are distinguished from those requiring referral to a specialist. Prerequisite: BS 511, 515, 521, 525.

1 lecture hour; 2 laboratory hours; 2 semester credits

**PHYSICAL MEDICINE 711**

**Naturopathic Manipulative Therapeutics I**

This course will be a basic presentation of manipulation of the axial spine. Lecture will include discussion of the neurological rational for manipulation, as well as, various methods of manipulation both force and non-force techniques. Soft tissues techniques such as Post-Isometric Relaxation Technique and Positional Release Technique will be discussed and taught in lab. Palpation, neurological and orthopedic evaluation will be performed prior to any manipulative procedures. Prerequisites: PM 621

2 lecture hours; 4 laboratory hours; 4 semester credits

**PHYSICAL MEDICINE 721**

**Naturopathic Manipulative Therapeutics II**

This course will extend NPM711 by introducing principles and biomechanics of extremities as well as gait analysis. Non-force techniques such as Sacral-Occipital Technique(SOT) and Cranial-Sacral Techniques will be reviewed. Prerequisites: PM711.

2 lecture hours; 4 laboratory hours; 4 semester credits

**PHYSICAL MEDICINE 821**

**Therapeutic Exercise/Sports Medicine**

This course provides an overview of exercise as a preventative and therapeutic tool. Students will learn to perform a fitness assessment and describe and monitor exercise programs for persons with a variety of common disease conditions as well as treatments for sports injuries. Prerequisite: PM 721

2 lecture hours; 2 semester credits

**Psychology**

**PSYCHOLOGY 511**

**Mind-Body Medicine I**

This course introduces the concept of the role of stress in the development of disease and explores energetic models of healing and the scientific basis of mind-body medicine. The focus is on learning, experiencing, and practicing mind-body techniques for stress reduction and self-assessment.

1 lecture hour; 0.5 laboratory hour; 1.25 semester credits

**PSYCHOLOGY 521**

**Counseling Skills I**

This course provides an introduction to developing the naturopathic practitioner/patient relationship via the development of communication skills. Professional issues such as ethics, confidentiality, trust, appro-
Naturopathic Medicine

appropriate boundaries, and relationship building are included. Specific communication skills related to effective patient interviewing are practiced experimentally using exercises in class. Students practice the skills of attending, empathy, active listening, and focusing on important client concerns to identify and begin collaborative goal setting.

1 lecture hour; 1 laboratory hour; 1.5 semester credits

PSYCHOLOGY 621
Psychological Assessment
This course covers the diagnosis of psychiatric disorders according to the Diagnostic and Statistical Manual of Mental Disorders IV. Included is the development of the DSM, psychological assessment considerations, referral options, and treatment modalities including psychotherapeutic, psychotropic, and alternative interventions. Special attention is paid to addictions and eating disorders. Prerequisite: PS521.

2 lecture hours; 2 semester credits

PSYCHOLOGY 711
Counseling Skills II
This course introduces current holistic counseling theories and inventions through lectures, assignments, readings, and experiential exercises. Counseling skills with reference to actual cases are explored using problem-based learning methods. Students will demonstrate basic interviewing techniques and strategies for engaging and motivating the client through reciprocal dialogue during the developmental stages of a counseling relationship. This course emphasizes the basic counseling skills required of a physician in daily practice, in addition to the special circumstances of bereavement, crisis management, and chronic and terminal illness. Prerequisites: PS521, 621.

1 lecture hour; 1 laboratory hour; 1.5 semester credits

PSYCHOLOGY 712
Mind-Body Medicine II
This course covers key issues in the relationship between a physician and client. It includes an examination of ethical issues, confidentiality, and development of trust, setting appropriate boundaries, and dealing with patients with life-threatening illnesses. Prerequisites: PS521, 621.

2 lecture hours; 2 semester credits

Research

RESEARCH 511
Research Methodology/Statistics
This course introduces students to biomedical research principles, epidemiology, biostatistics, and accessing the medical literature with an emphasis on complementary and alternative medicine research.

1.5 lecture hours; 1.5 semester credits

PSYCHOLOGY 711
Thesis I
In this course the student performs a literature search in a naturopathic area of interest and presents a proposal for a Senior Paper (literature survey only) or a Senior Research Paper (also includes original research) that must be approved by the Research Committee.

1 lecture hour; 1 semester credit

RESEARCH 811
Thesis II
With the advice and guidance of the faculty research advisor, the student completes a Senior Paper in conformity with the guidelines adopted by the Research Committee. Prerequisite: RS711.

1 lecture hour; 1 semester credit

Clinical Education

CLINICAL EDUCATION 621
Clinical Entry
This course provides an introduction to clinic policy, procedures and requirements, including standard operation procedures, and the roles and responsibilities of the student clinician as stated in the current Clinic Student Handbook. There is an overview of case management issues, charting and lab procedures. The class prepares students for entry into the clinic. Prerequisite: Completion of all year 1 & 2-year courses concurrent with the completion of this course.

1 semester hour; 1 semester credit

Cardio-Pulmonary Resuscitation (CPR) - Prior to entering the clinic, it is the student's responsibility to obtain certification in CPR for the Health Care Professional. A list of training sites will be available.

CLINICAL EDUCATION 712
Clinical Education I
Students begin to gain practical clinical skills by working under the supervision of licensed naturopathic physicians and other healthcare providers in the Clinic and in Preceptorships. Students learn primarily through observation and are given limited responsibility in the clinical setting during this semester. Performance objectives are focused on basic clinical procedures. Prerequisite: NCE 621 and Clinic Entrance Exam. Course runs May – Dec.

16 laboratory hours; 8 semester credits

CLINICAL EDUCATION 722
Clinical Education II
This is a continuation of the clinical training begun in Clinical Education I and includes the ongoing development of clinical skills and case management under supervision of licensed physicians. Students gradually assume increased responsibility as secondary caregivers under the supervision of licensed physicians. Prerequisite: NCE 712 Course runs Jan – May.

16 laboratory hours; 8 semester credits

CLINICAL EDUCATION 812
Clinical Education III
Interns assume the role of primary care giver under the direct supervision of a licensed physician. Physical examination, diagnostic assessment and treatment skills are honed while specific performance objectives of clinical training are met. Minimum summer hours requirements must be met. Prerequisite: NCE 722 Course runs May – Dec.

20 laboratory hours; 10 semester credits

CLINICAL EDUCATION 822
Clinical Education IV
In this final semester of clinical training students examine, diagnose and treat patients in preparation for providing primary care as a naturopathic physician. 144 Preceptor hours must be completed. Prerequisite: NCE 812. Course runs Jan – May.

20 laboratory hours; 10 semester credits

Elective courses

CLINICAL SCIENCES 822E
Practicum in IV Therapy (Elective)
The student will learn the indications and contraindications for various IV therapies in the naturopathic practice. Preparation and administration (including osmolality) of various IV solutions using proper aseptic techniques will be emphasized. Lectures will be followed by hands-on in-class experience.
The course covers the basic and clinical aspects of nutrient homeostasis with emphasis on vitamin and mineral metabolism at the cellular and tissue level. Lectures will include specific functions, requirements, sources, assay methods, and effects of deficiencies and excesses of vitamins and minerals. Prerequisite: Nutrition 560A and 560B.

**3 semester hours**

**NUTRITION 560E**

**Assessment of Nutritional Status**

Clinical and laboratory procedures for evaluation of nutrient status, including blood and other tissue analyses, principles of functional assessment, dietary records, questionnaires, case histories, physical examinations, and anthropometric methods are covered extensively. Prerequisite: Nutr 560A and 560B.

**3 semester hours**

**NUTRITION 560D**

**Clinical Biochemistry**

The course encapsulates the biochemistry of disorders arising from acid/base imbalance and the abnormal metabolism of the carbohydrates, lipids, proteins, amino acids, nucleic acids, bile pigments, vitamins and hormones. Inherited disorders of metabolism, the role of enzyme performance in prognosis of biochemical dysfunctions and the meaning and interpretations of clinical laboratory findings both traditional and functional are discussed. Prerequisite: Nutr 560A, B, C and E.

**3 semester hours**

**NUTRITION 560G**

**Lifelong Healing with Food**

This course will focus on the general knowledge and skills needed to educate nutrition clients about food to facilitate healing. It will teach the landscape of the US food system, menu and recipe planning, multiple food theories, fat and medical diets. Cultural and behavioral perspectives on nutrition will be addressed. Pre-requisite Nutr 560 A B C and E.

**4 semester hours**

**NUTRITION 560H**

**Developmental Nutrition**

Nutritional considerations and health-related concerns throughout the life cycle are explored. Pregnancy, lactation, fetal, infancy, childhood, and adolescent growth and development are addressed in detail, in this context. Also considered is the etiology of nutrition-related disorders of adulthood and the elderly. Prerequisites Nutr 560A, B, C ,D and E.

**3 semester hours**

**NUTRITION 560I**

**Functional Medicine Nutrition**

This course will teach advanced biochemical assessment using critical analysis of client history with clinical testing from a functional medicine perspective. Functional lab testing will be evaluated in detail with case studies. Topics will be relevant to preventative as well as therapeutic nutrition care. Prerequisites Nutr 560A, B, C, D, E, G.

**3 semester hours**

**NUTRITION 560F**

**Nutritional Therapeutics**

This course will include an understanding of the mechanism of action of various nutritional interventions, as well as the role it can play in helping to restore wellness. Students will become familiar with common pharmaceutical treatments, and become aware of possible drug-nutrient interactions, as well as drug-induced nutrient depletions. Students will learn how to incorporate nutrition in a complimentary role with conventional treatments. This course will emphasize the importance of incorporating evidence based medicine into nutritional therapeutic decisions. Prerequisites Nutr 560A,B,C,D,E,G,H I.

**4 semester hours**

**NUTRITION 560M**

**Evidence Based Nutrition.** *(Must be taken in online format)*

The course describes the analytical approaches for searching and interpreting clinical research data reported in the literature using evidence based practice with emphasis on the application of those data in clinical practice. Biological variation, experimental design, data and fact differences, matching analysis to design, integrity in analysis, and bias in design and analysis are considered in detail. Prerequisites Nutr 560A,B, C,and E.

**3 semester hours**

**NUTRITION 560K**

**Virtual Clinic** *(Must be taken in online format)*

This final semester course will incorporate critical thinking and scientific knowledge as you complete 4 monthly modules on clinical management online with different instructors. You will learn key skills in assessment, clinical test analysis, designing treatment.
Nutrition • Physician Assistant

plans for specific common health conditions, weight loss strategies and how to effectively start and grow your nutrition practice. Synchronous data technology will be used to help you learn real-time with your classmates and instructors. Prerequisites Nutr 500A,B,C,D,E,G,F,H , I and M.

4 semester hours

NUTRITION 560P

Botanical Medicine

A study of the use of herbs in nutritional practice. Lectures include the mechanism of action, pharmacological/toxicological properties, clinical applications, product standardization, and recommended dosage of individual herbs. Prerequisites Nutr 500A,B,C,D,E,G,F,H , I and M.

3 semester hours

ELECTIVE COURSES*

THESE COURSES ARE NOT REQUIRED / ALL ARE OPTIONAL AND IN ADDITION TO REQUIRED COURSES.

NUTRITION 560O

Research in Nutrition

The independent research project is an option in the Human Nutrition program in place of an elective course. The project can take the form of a literature-based study or an original research project. All work must be done by the student. The topic must be approved by the faculty advisor. The project must be completed within one semester following the completion of the core curriculum.

3 semester hours

NUTRITION 560L

Nutrition and Cancer

This course will provide an understanding of the etiology for cancer from a functional medicine paradigm and current allopathic assessment and treatment options and how to implement nutritional therapy to assist cancer patients undergoing treatment. This course will also teach complementary supplementation strategies, and understanding of the role of diet and lifestyle in prevention of primary and secondary cancer and the establishment of communication skills to enhance collaboration with oncologists.

3 semester hours

NUTRITION 560T

Nutrition and Autism

This course will establish a foundational understanding of what Autism Spectrum Disorder (ASD) is by defining the different conditions within the spectrum, and reviewing the known causes, symptoms, and trends and to acquire a foundational knowledge of the dietary modifications designed to facilitate healing and improve cognitive outcomes and increase overall health and well-being. Course will cover introduction to other biomedical treatments and testing available for ASD.

3 Semester hours

Physician Assistant (MSPA)

PHYSICIAN ASSISTANT 505

Information Literacy

This course provides students with the basic terminology, concepts and methods of research in order to be able to locate, evaluate and apply current evidence to clinical practice.

3 credits

PHYSICIAN ASSISTANT 511

Anatomy I with Lab

This course is designed to provide an introduction to the functional anatomy of the human body. Students will have the opportunity to locate, identify, and dissect all major muscular, nervous, vascular, bony, and soft tissue structures using cadaveric specimens.

4 credits

PHYSICIAN ASSISTANT 512

Anatomy II with Lab

This course builds on Anatomy I investigating the functional anatomy of the human body by offering students the opportunity to locate, identify, and dissect all major muscular, nervous, vascular, bony, and soft tissue structures using cadaveric specimens.

4 credits

PHYSICIAN ASSISTANT 521

Physiology/Biochemistry I

This course offers a fundamental and integrative approach to human physiology with emphasis on the study of the body’s functional system from a medical perspective.

3 credits

PHYSICIAN ASSISTANT 522

Physiology/Biochemistry II

This course builds on Physiology I to offer a fundamental and integrated approach to human physiology with emphasis on the study of the body’s functional system from a medical perspective.

3 credits

PHYSICIAN ASSISTANT 526

Pathophysiology

This course is designed to provide the basic pathophysiological understanding of diseases and the resulting clinical presentation.

3 credits

PHYSICIAN ASSISTANT 531

Introduction to Clinical Lab and Microbiology

This course will provide the student with advanced microbiology, virology and immunology to understand the complexities of infectious disease. Emphasis will be placed on clinically relevant pathogens, isolation and aseptic techniques, identification and treatment.

3 credits

PHYSICIAN ASSISTANT 541

Clinical Genetics

This course familiarizes students with concepts of cellular and molecular biology; different types of mutations and their effects; inheritance patterns; genetic testing techniques; counseling referrals and key resources with an emphasis on accurately creating and interpreting the pedigree in regards to disease identification and/or susceptibility, therapeutic options and future clinical applications of genetics in primary care.

2 credits

PHYSICIAN ASSISTANT 551

History and Physical Exam I with Lab

This on-going course focuses on developing the skills of obtaining a comprehensive history and a problem focused history; performing a comprehensive screening exam and an appropriate problem focused exam; the ability to integrate and interpret the findings from these to create a foundation for further clinical evaluation. Emphasis is placed on identifying normal versus abnormal findings and on accurate and appropriate documentation.

3 credits
Physician Assistant

PHYSICIAN ASSISTANT 552
History and Physical Exam II with Lab
This on-going course builds on H&P I in developing skills of obtaining a comprehensive history and a problem focused history; performing a comprehensive screening exam and an appropriate problem focused exam; the ability to integrate and interpret the findings from any of these to create a foundation for further clinical evaluation. Emphasis is placed on identifying normal versus abnormal findings and on accurate and appropriate documentation.
3 credits

PHYSICIAN ASSISTANT 553
History and Physical Exam III with Lab
This on-going course builds on H&P I and II in developing skills of obtaining a comprehensive history and a problem focused history; performing a comprehensive screening exam and an appropriate problem focused exam; the ability to integrate and interpret the findings from any of these to create a foundation for further clinical evaluation. Emphasis is placed on identifying normal versus abnormal findings and on accurate and appropriate documentation.
4 credits

PHYSICIAN ASSISTANT 556
Patient Education and Counseling
This course is a practical, evidence based approach to educate and counsel patients in order to improve lifestyle, increase adherence and reduce medical errors.
2 credits

PHYSICIAN ASSISTANT 561
Health, Wellness and Nutrition Throughout the Lifespan
This course will emphasize disease prevention, health promotion during various stages of life with emphasis on the pediatric and geriatric population.
2 credits

PHYSICIAN ASSISTANT 571
Clinical Pharmacology I
This course introduces the student to the basic principles of pharmacology, including mechanisms of action; absorption, distribution, metabolism, and excretion; pharmacokinetics; interactions with other drugs and with food; problems with special populations (prenatal, neonatal, elderly); rational drug usage for clinical disorders (therapeutics); clinical measures; and toxicology.
3 credits

PHYSICIAN ASSISTANT 572
Clinical Pharmacology II
This course builds on Clinical Pharmacology I with more advanced principles of pharmacology, including mechanisms of action; absorption, distribution, metabolism, and excretion; pharmacokinetics; interactions with other drugs and with food; problems with special populations (prenatal, neonatal, elderly); rational drug usage for clinical disorders (therapeutics); clinical measures; and toxicology.
3 credits

PHYSICIAN ASSISTANT 602
Information Literacy and Medical Writing
This course builds on Information Literacy I by integrating and applying those skills by requiring students to write in various scientific and medical formats.
2 credits

PHYSICIAN ASSISTANT 603
Medical Ethics
This course presents the student with the four topic method of evaluation of Ethical issues. Each student will look at the ethical issue presented looking at Medical indications, patient preferences, quality of life and contextual features to provide a response to the ethical dilemma. The course will provide a foundation for the student to work through ethical dilemmas provided by the professor. During this course the student will identify and evaluate ethical issues of their own and touch upon options and solutions and provide the student with the ability to employ those methods throughout their career.
2 credits

PHYSICIAN ASSISTANT 604
Professional Practice and Policy
This course incorporates the history, development, certification, licensure, reimbursement and key organizations of the PA profession as well as the role of the PA in public health and state and federal policy making.
2 credits

PHYSICIAN ASSISTANT 608
Global Health
This course offers the student the opportunity to investigate the impact of health issues in other countries and the interactive affect on all populations in terms of epidemiology, disease, disasters, economics, health initiatives, ethics and policy.
2 credits

PHYSICIAN ASSISTANT 611
Clinical Medicine I with Lab
This ongoing body systems based course integrates all the skills and learning from the curriculum as related to medical problems encountered in the primary care setting. Emphasis is on the integration of anatomy, physiology, pathophysiology, microbiology, history and exam findings and diagnostic procedures in order to formulate a differential diagnosis; on ordering and interpreting diagnostic tests in order to develop a working diagnosis; and on developing and implementing treatment plans including as needed therapeutic procedures, pharmacology, referral and patient education and counseling.
4 credits

PHYSICIAN ASSISTANT 612
Clinical Medicine II with Lab
This ongoing body systems based course integrates all the skills and learning from the curriculum as related to medical problems encountered in the primary care setting. Emphasis is on the integration of anatomy, physiology, pathophysiology, microbiology, history and exam findings and diagnostic procedures in order to formulate a differential diagnosis; on ordering and interpreting diagnostic tests in order to develop a working diagnosis; and on developing and implementing treatment plans including as needed therapeutic procedures, pharmacology, referral and patient education and counseling.
8 credits

PHYSICIAN ASSISTANT 613
Clinical Medicine III with Lab
This ongoing body systems based course integrates all the skills and learning from the curriculum as related to medical problems encountered in the primary care setting. Emphasis is on the integration of anatomy, physiology, pathophysiology, microbiology, history and exam findings and diagnostic procedures in order to formulate a differential diagnosis; on ordering and interpreting diagnostic tests in order to develop a working diagnosis; and on developing and implementing treatment plans including as needed therapeutic procedures, pharmacology, referral and patient education and counseling.
8 credits

PHYSICIAN ASSISTANT 620
Fundamentals of Surgery
This course presents the fundamentals of the
Physician Assistant • Statistics

This ongoing course utilizes a variety of techniques designed to supplement and integrate content from all didactic courses, including but not limited to: small group interaction; problem based learning; case based learning; simulation lab; reflective discussion and literature critique.

2 credits

Physician Assistant 632
Integrative Medicine and Practice I
This ongoing course exposes students to the philosophies, concepts, techniques and practice of a variety of alternative and complementary medicine.

1 credit

Physician Assistant 633
Integrative Medicine and Practice II
This ongoing course exposes students to the philosophies, concepts, techniques and practice of a variety of alternative and complementary medicine.

2 credits

Physician Assistant 642
Medical Seminar
This ongoing course utilizes a variety of techniques designed to supplement and integrate content from all didactic courses, including but not limited to: small group interaction; problem based learning; case based learning; simulation lab; reflective discussion and literature critique.

2 credits

Physician Assistant 643
Medical Seminar II
This ongoing course utilizes a variety of techniques designed to supplement and integrate content from all didactic courses, including but not limited to: small group interaction; problem based learning; case based learning; simulation lab; reflective discussion and literature critique.

2 credits

Physician Assistant 644
Medical Seminar III
This ongoing course utilizes a variety of techniques designed to supplement and integrate content from all didactic courses, including but not limited to: small group interaction; problem based learning; case based learning; simulation lab; reflective discussion and literature critique.

2 credits

Physician Assistant 645
Medical Seminar
This is a continuation of the didactic course. During this course, presented in the supervised clinical experience period, topics in Clinical Medicine, Integrative Medicine, Global Health and Medical Ethics are presented.

2 credits

Physician Assistant 646
Medical Seminar
This is a continuation of the didactic course. During this course, presented in the supervised clinical experience period, topics in Clinical Medicine, Integrative Medicine, Global Health and Medical Ethics are presented.

2 credits

Clinical Clerkships: Core Clinical Clerkships are Internal Medicine, Family Practice, Pediatrics, Obstetrics and Gynecology, Emergency Medicine, Psychiatry and Surgery

Physician Assistant 651
Clinical Clerkship I
One of the core supervised clinical clerkships for the Physician Assistant student.

4 credits

Physician Assistant 652
Clinical Clerkship II
One of the core supervised clinical clerkships for the Physician Assistant student.

4 credits

Physician Assistant 653
Clinical Clerkship III
One of the core supervised clinical clerkships for the Physician Assistant student.

4 credits

Physician Assistant 654
Clinical Clerkship IV
One of the core supervised clinical clerkships for the Physician Assistant student.

4 credits

Physician Assistant 655
Clinical Clerkship V
One of the core supervised clinical clerkships for the Physician Assistant student.

4 credits

Physician Assistant 666
Clinical Clerkship VI
One of the core supervised clinical clerkships for the Physician Assistant student.

4 credits

Physician Assistant 667
Clinical Clerkship VII
One of the core supervised clinical clerkships for the Physician Assistant student.

4 credits

Physician Assistant 699
Capstone Project
This is the capstone research project where the student is required to complete and submit their research paper of publishable quality to the faculty.

2 credits

Physician Assistant 670
Clinical Clerkship VIII
An elective specialty supervised clinical experiences for the Physician Assistant student.

4 credits

Physician Assistant 680
Clinical Clerkship IX
An elective specialty supervised clinical experiences for the Physician Assistant student.

3 credits

*All students are required to complete all of the seven core supervised clinical clerkships. The clinical clerkship sequence will be individually assigned to students.

Statistics

Statistics 600
Statistics and Quantitative Analysis
This course is an introduction to basic statistical methodology and its applications to business decisions. Topics include probabilities, discrete and continuous probability distributions, probability sampling techniques, sampling distributions, interval estimation and hypothesis testing. The basics of specific statistical tests will be presented including chi square, correlation, multiple regression and analysis of variance. Students will use software packages to perform statistical analysis. Prerequisite: Admission to graduate study. 3 semester hours
Technology Management

Technology Management 400
Marketing, Entrepreneurial and Innovation Issues and Practices in Management
This course focuses on strategic marketing, entrepreneurial, intrapreneurial and innovation issues, opportunities and best practices in helping organizations grow in a complex global environment. Which have emerged in the last few years such as the growing importance of strategic marketing, voice of the customer, customer service and innovation in helping companies grow as well as achieve and sustain competitive advantage. The business impact of new technologies which enable marketing and innovation are covered.

The course also examines the principles of entrepreneurship and intrapreneurship in developing new products, services and processes. In addition to individual assignments, students are assigned to team projects to develop product or service market plans either for start-up businesses or within the context of a corporate venture. Prerequisite: Admissions to graduate studies.

3 lecture hours; 3 semester hours

Technology Management 410
Survey of Technology
The course provides an introduction into managing engineering and technology projects and surveys, the history, current and emerging technologies in the areas of: health/medicine and biotechnology; materials, energy, environment; electronics, computing and the Internet; nanotechnology; transportation; structures, transit; infrastructure; security, manufacturing, systems processes and aerospace.

3 lecture hours; 3 semester hours

Technology Management 495
Contemporary Issues in Communications and Research
The course is designed to help students improve their communications (e.g. oral, written, and formal presentation) skills and research methods and techniques used in business, technology and engineering disciplines.

3 lecture hours; 3 semester hours

Technology Management 500
Graduate Co-Op/Internship in Technology Management
Students will work for a company in a role that is appropriate for an MS - TM graduate, or near graduation. Through this experience students will apply management principles and theory in a practical setting. The student will write a paper summarizing the tasks and accomplishments encountered within the organization, as well as make managerial recommendations for improvement of the company, or division in which s/he was employed. Prerequisite: Final semester of study and the Director, TM Program approval.

1-3 semester hours

Technology Management 505 (TCMG 505/MGMT 555)
Global Program and Project Management
This course focuses on the managerial aspects of how to more effectively manage, plan and execute programs/projects with a focus on high quality deliverables arriving on time, within budget, within scope and to the customer’s satisfaction. Areas covered will include program and project management life cycle phases, executive sponsorship, portfolio investment management selection and prioritization, requirements, scope and project charters, planning, development, estimating, staffing, leadership, scheduling, risk management, change management, project metrics, vendor integration and management and other related topics. This course is based on current and emerging best practices and principles. It will also discuss PM certification requirements and provide real world case studies. Prerequisite: TCMG 494.

3 lecture hours; 3 semester hours

Technology Management 506 (TCMG 506)
Advanced Program and Project Management
This is an advanced course in Global Program and Project Management. It covers the Project Management Institute’s Knowledge and Process areas and prepares students to take various PMI Project Management Certification. Prerequisite: TCMG 505.

3 semester hours

Technology Management 507 (TCMG 507/MKTG 508)
Foundations of Project Management
This course covers new product development, innovation and commercialization, as well as the product management life cycle. Topics covered include the feasibility and investment prioritization of new products or product enhancements, raising capital for new product development, market and customer needs analysis, make versus buy alternatives and product launch and commercialization issues and considerations, including promotion, pricing, distribution, competition, pre and post sales support, systems and infrastructure support, customer service and related areas. Students will work on individual and team projects that will include the development of a new product market/business plan. Prerequisite: TCMG 400.

3 lecture hours; 3 semester hours

Technology Management 512 (TCMG 512/MGMT 590)
Intellectual Property Management
Protection of a business’ intellectual property assets can make the difference between success and failure. This course will discuss the strategies and methods available for protection of intellectual property in the global environment. Students will work through the American patent, copyright and trademark processes, including how to prepare and file applications for each. Students completing this course should be able to pass the Patent Agent exam. Global business issues, such as protection of ideas in an off-shoring arrangement, IP co-development and other issues, will also be addressed. Prerequisite: TCMG 490 or Director, TM program approval.

3 lecture hours; 3 semester hours

Technology Management 520 (TCMG 520)
Information Systems Development & Design
A course in the analysis, design, and development of business systems. Students will learn a variety of development models and tools available for systems development, deployment and management. The role of all systems constituents is addressed through discussion of the specification, decision-makina, and review of designs, documentation, program specifications, and system improvement. Course level and content is suitable for managerial as well as the more technically oriented. Prerequisites: ITIS 400 or Director, TM program approval.

3 lecture hours; 3 semester hours

Technology Management 523 (TCMG 523/MGMT 523)
Leadership, Teams & Managing Change
This course focuses on the development of leadership skills important in the effective management of change. Through role-playing exercises, videotapes, diagnostic tools, seminar discussion, selected readings, and a group project, students will learn theory and build interpersonal skills necessary for providing leadership in diverse multicultural groups and organizations. The course will address the managerial issues present in organizations undergoing accelerating change and adopting a culture of creativity. Creat-
managing high performance multicultural and interdisciplinary traditional and virtual teams is covered. Prerequisite: Admissions to graduate studies. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 524
Statistical Quality Control Techniques
This course presents a comprehensive summary of methods for managing quality and continuous process improvements. The course objective is to develop an operational familiarity with contemporary methods found to be effective. Topics covered include statistical process control, quality function deployment, concurrent design, the house of quality, the Taguchi method, Six Sigma, lean and others. It also covers continuous process improvement methodologies and techniques. This course is intended for those students who do not plan to specialize in quality management. Prerequisite: Admissions to graduate studies. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 525 (TCMG525)
Finance and Accounting for Managers
This course provides managers with the skills required to read, interpret and apply information about an organization's financial position. Managerial accounting and financial concepts will be presented, followed by financial statement analysis. Topics presented from a managerial perspective will include how accounting data is generated during business operations, how financial statements are created and analyzed, management of finance to maximize return on investment and stakeholder equity and other related topics. Students will be required to participate in case work applying the principles presented in the class. Prerequisite: Admissions to graduate studies. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 530 (TCMG 530/MEEG 530)
Foundations of Manufacturing Management
The objectives of the course are to understand and apply concepts and techniques in manufacturing management. The course includes the management of people (both traditional and high performance systems and teams), lean manufacturing techniques as used on the factory floor, and recent concepts such as Factory Physics. The course focuses on those issues that are important in supervising and managing a modern manufacturing operation. Prerequisites: graduate standing. 3 semester hours

TECHNOLOGY MANAGEMENT 532 (TCMG 532/MKTG 550)
Global Market Management
Strategy planning, implementation and control for market entry and development. Topics include social, political and economic changes affecting marketing opportunity; focused versus dispersed marketing efforts; marketing in developed and undeveloped countries; and marketing systems required for the various strategic alternatives. Prerequisite: TCMG 400. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 533 (TCMG 533)
Information Technology Strategy and Governance
This course covers information technology plans, strategy, business/IT alignment, governance, environmental, ethical, economic, regulatory, compliance and technical issues and trends with a focus on planning, organizing, justifying, controlling, implementing and integrating concepts and real world experiences. It discusses business and IT balanced scorecards, metrics and key performance indicators. Current and emerging best business and technology strategy and governance best practice frameworks such as COBIT, CMMI, PMBOK, Kano, VOC, QDF, ITIM, Prince2, ITIL, select ISO standards and others will be covered with emphasis on lessons learned, critical success factors and pragmatic solutions. Individual and team projects and case studies are integrated into the course. Prerequisite: ITIS 400 or Director, TM program approval. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 534 (TCMG 534/MGMT 535)
Strategic Sourcing and Vendor Management
This course covers the rewards and risks of outsourcing and vendor management and identifies where outsourcing should be used and not used. The objectives of the course are to help students understand how to plan, direct, manage and more effectively participate in outsourcing initiatives in terms of the feasibility of outsourcing (off-shore, near-shore, rural-shore, best shore), vendor selection, contract negotiation, vendor management and evaluation, risk assessment and terminating outsourcing deals. Prerequisite: TCMG 523 and TCMG 505 or Director, TM program approval. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 535 (TCMG 535/BMEG 535)
Foundations of Bio Tech Sciences and Management
This course covers the comprehensive scope of knowledge of major issues and technologies in the bio technology field. This includes regulatory, robotic, imaging, cybernetics, bioinformatics, genetics, ethics and related areas. Individual and team projects will be assigned. Prerequisite: Admissions to graduate studies. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 540
Advanced Simulation and Modeling Techniques
The purpose of this course is to provide an in depth coverage of the use of simulation and modeling as an analysis tool for the study of production and distribution processes. The course aims to develop a sense of critical thinking, learning and problem solving. Topics include: problem formulation, data collection and analysis, random variable generation, and statistical analysis of output. Utilizes a major simulation language, SIMAN. 3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 546 (TCMG 540/MEEG 540)
Simulation and Modeling Techniques
The course covers the concepts and methods that will assist engineering and technology managers and professionals to make alternative investment and funding decisions regarding projects, programs, products, business expansion and other alternatives using the financial calculations involving time value of money (IRR, ROI, NPV), uncertainty and risk. Topics include engineering and related financial evaluation techniques and formulas, choosing among alternatives, sensitivity analysis, economic analysis, opportunity costs, depreciation, amortization, probability, cost estimating and systems and others. Prerequisites: TCMG 484. 3 semester hours

TECHNOLOGY MANAGEMENT 556 (TCMG 556/MKTG 552)
Services Marketing
The course addresses the unique problems of marketing intangibles in the broad spectrum of service industries. The course focuses on the development, implementation and control of strategy, systems and people for effective service operations. This is a case study course. Prerequisite: TCMG 400. 3 semester hours; 3 semester hours
Technology Management

TECHNOLOGY MANAGEMENT 557 (TCMG 557/ITIS 557)
Infrastructure Systems
This course covers the fundamentals of data networking, including signaling, routing and technologies underlying the explosive growth of e- and m-commerce. The managerial issues relevant to network utilization, security and service delivery will be addressed as the underlying communications technologies are discussed. Prerequisite: ITIS 400.
3 semester hours; 3 semester hours

TECHNOLOGY MANAGEMENT 560 (TCMG 560)
Foundations of Environmental and Energy Management
This course covers the assessment of current and potential environmental and energy management issues, opportunities and threats. Key issues such as global warming, pollution, global energy supply and demand needs will be discussed. Alternative energy sources are reviewed, including examination of energy technologies in each fuel cycle stage for fossil (oil, gas, synthetic), solar, biomass, wind, hydro, nuclear, and geothermal energy types, along with storage, transmission, and conservation issues. Prerequisite: Admission to graduate studies.
3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 561 (TCMG 561)
Economic, Regulatory, Cultural, and Societal Issues in Environment and Energy Management
The course will focus on a review of the environmental and energy management safety, hazard identification and disaster prevention policies, laws, concepts and issues. U.S. and international laws, regulations and standards will also be covered. The course will provide the student with a better understanding of how the complexity of this topic impacts economic, political, cultural and societal and opportunities in environment and energy management. Prerequisite: TCMG 560.
3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 570 (TCMG 570/MGMT 570)
Foundation of Health Care Management and Administration
This course focuses on a systematic exploration of the health care system in the United States, government interactions and regulations, delivery systems, healthcare insurance and financing, health care providers, innovations in healthcare services and alternative strategies. Prerequisite: TCMG 523.
3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 571 (TCMG 571/MGMT 571)
Foundations of Service Management and Engineering
With the rapid growth of the services industry, this course integrates topics from economics, engineering, law, technology and organizational theory to deal with how firms change over time to become more service oriented or become service business and the mechanisms and tools by which they seek innovation and competitive advantage in the service sector. The services life cycle is reviewed. In addition, enabling technologies and how different disciplines help to answer questions about how business services combine, evolve, standardize and mature are covered. Prerequisite: Admissions to graduate studies.
3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 572 (TCMG 572/MEEG 572)
Production Technology and Techniques
This course will introduce up-to-date technology, techniques and systems of the global manufacturing industry. American manufacturing situation would be analyzed and Japanese manufacturing success is also explored. Comprehensive and readable description of manufacturing practice is researched.
3 semester hours

TECHNOLOGY MANAGEMENT 573 (TCMG 573/MEEG 573)
Supply Chain Management
The goal of this course is to cover not only high-level supply chain strategy and concepts, but also to give students a solid understanding of the analytical tools, to understand supply chain design, planning and operation and high it impacts the performance of a firm. It also conveys how supply chain drivers used on a conceptual level during supply chain design and operation lead to performance improvements. Prerequisite: Admissions to graduate studies.
3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 574 (TCMG 574/MEEG 574)
Principles of Logistics and Materials Management
This course presents materials management, logistics theory and concepts in today’s manufacturing and commercial environments. It integrates all of the functional areas of the business as well as incorporating logistics into corporate operation. They are examined in light of how they interrelate with other functions for the firms. Prerequisite: ENGR 111, ENGR 300 and Admissions to graduate studies.
3 lecture hours; 3 semester hours

TECHNOLOGY MANAGEMENT 575
Technology Business Strategy (Capstone Course)
This course is a capstone course dealing with the development and implementation of a business strategy and plan within a framework of ethical decision-making, globalization and managing accelerating change. It tests the capability of the student to apply all prior learning to solve actual strategic management problems.
3-6 semester hours

TECHNOLOGY MANAGEMENT 597A
Master’s Project
A capstone course dealing with the development and implementation of business strategy and plan within a framework of ethical decision-making, globalization and managing accelerating change. It tests the capability of the student to apply and integrate all prior graduate learning to solve actual strategic management problems, develop a business plan and conduct organizational performance and governance assessments. The final project of this course is project-based and shall constitute, therefore, an outcome assessment of what the student has learned in the MS-TM program. Prerequisite: Final semester for completion the of MS - TM Program.
3-6 semester hours

TECHNOLOGY MANAGEMENT 597 C
Masters Project (Completion)
Topics to be arranged. Prerequisite: Approval of the Director, TM Program.
1 semester hour

TECHNOLOGY MANAGEMENT 598
Thesis in Technology Management
Completion of a report based on field, library and institutional research to demonstrate ability to conduct investigations in a technology management discipline. Approval of the Director, TM Program.
3 – 6 semester hours

TECHNOLOGY MANAGEMENT 599
Independent Study in Technology Management
This course is reserved for a special project that cannot be done any other way and to help a student complete the MS when no other alternative is available. Prerequisite: Approval of the Director, TM Program.
3 semester hours

TECHNOLOGY MANAGEMENT 645
Technology New Venture Creation
This course is for graduate students interested-
ed in starting a technology venture, joining a small firm intent upon rapid growth, or pursuing a career in consulting, venture capital, or the management of a technology business or venture for larger companies. The course will provide an opportunity to identify and analyze new business and technology venture issues and opportunities. Select topics covered include: evaluating market opportunities, designing profitable business models, producing a solid business plan, raising capital (multiple rounds), protecting intellectual property and exit strategies such as a merger, the sale of the company or an initial public offerings (IPO). Prerequisites: TCMG 400.

3 semester hours

Traditional Chinese Medicine

Acupuncture Practice and Techniques (APT):
The nine (9) acupuncture courses introduce students to the theoretical and practical information of acupuncture therapy. The student becomes proficient in the clinical applications of acupuncture, moxibustion, cupping, electrical stimulation, and bleeding techniques. The student learns to identify acupuncture points by anatomical location, palpation, and proportional measurement. The classification, function and indications for each acupuncture point are discussed and demonstrated. In addition to the twelve bilateral channels, two midline vessels and six other extra meridians, forbidden and contraindication of points are discussed. In addition, extra points, auricular and other meridian systems. Corequisites: APT 511 and APT 523: Point Location I and II.

APT 511
Point Location I
This course will serve as the foundation of the acupuncture point selection series. Meridian theory using concepts of the Jing Luo system, including main and secondary vessels will be reinforced. This course provides the student with the knowledge and skills to physically locate acupuncture points of the lung, large intestine, stomach and spleen, heart and small intestine, urinary bladder, kidney, and pericardium channels. Students will focus on how to locate points effectively, accurately, and quickly as preparation for clinical application as well as college and national examinations. Students will also learn the major function(s) and indication(s) of the Lung, Large Intestine, Stomach, Spleen, Heart, Small Intestine, Urinary Bladder, Kidney and Pericardium channel points. Co-requisite/Prerequisite: ATD 513 Oriental Diagnosis I, ABS 511 Anatomy I.

1.5 lecture hours, 1 laboratory hour, 2 semester credits.

APT 523
Point Location II
This is a continuation of the previous course and will focus on the Triple Warmer, Gall Bladder, Liver, Governing Vessel ("Du"), Conception Vessel ("Ren") and extra points. Additional instruction is given in regional point selection and point combinations. Prerequisites: ATD 515 Oriental Diagnosis I, ABS 511 Anatomy I.

1.5 lecture hours, 1 laboratory hour, 2 semester credits.

APT 512
Meridian Theory
Meridian (a.k.a. Channel) theory is the basis of diagnosis and acupuncture treatment. This course is designed to provide the necessary instruction and training for the student to be familiar with meridian theory including regular, extra and other meridian systems. Corequisite/Prerequisite: ATD 512 Oriental Theory and ATD 513 Oriental Diagnosis I.

2 lecture hours, 2 semester credits.

AWB 521
Clean Needle Technique
This course prepares the student for emergency situations both in and out of the office. CCAOM Clean Needle Technique and a review of Occupational Safety and Health Administration (OSHA) standards are presented. In addition the student will practice safe and proper needling, moxibustion, electrical stimulation and cupping techniques. Allopathic treatments along with natural remedies for common complications of acupuncture and related therapies are discussed. CPR certification in emergency procedures is achieved. Prerequisites: none.

2 lecture hours, 2 semester credits.

APT 614
Acupuncture Techniques I
This course covers the basic principles of acupuncture treatment for diseases involved with different pathogenic factors, tissues and organs. Special point selection based on Root-Branch, Origin-End, Path of Qi, Five Element and Eight Parameter diagnoses are covered. Indications and contraindications of moxibustion, scalp acupuncture and electrical acupuncture stimulation are covered. Prerequisites: APT 511 and APT 523: Point Location I and II.

2 lecture hours, 2 laboratory hours, 3 semester credits.

APT 625
Acupuncture Techniques II
This course covers functions, indications and needling methods of the Well, Spring, Stream, River, Sea, Source, Luo, Xicleft, Back Shu, Front Mu and Lower He-Sea, Eight Influential, Eight Confluent and important crossing points. Continuing practice in needling, moxibustion and cupping techniques is included. In addition, the prevention and treatment of acupuncture complications is covered. Prerequisite: APT 614 Techniques I.

2 lecture hours, 2 laboratory hours, 3 semester credits.

APT 626
Auricular & Scalp Acupuncture
This course introduces the student to various forms of microsystem acupuncture, focusing on auricular and scalp systems. The student learns the respective maps of the scalp and ear, clinical applications and treatment strategies. Corequisite/Prerequisite: APT 614 Acupuncture Techniques I.

1 lecture hour, 1 semester credit.

APT 718
Pediatric Acupuncture
The special diagnostic and treatment skills required for the treatment of patients less than 12 years of age are discussed. The balance of safety for the patient and treatment efficacy is emphasized. Prerequisite: APT 625 Acupuncture Techniques II.

1 lecture hour, 1 semester credit.

APT 637
Japanese Acupuncture Techniques
This course covers the unique treatment strategies and protocols developed by Japanese acupuncture masters. Prerequisite: APT 614 Acupuncture Techniques I.

1 lecture hour, 1 semester credit.
Asian Medicine Theory, Diagnosis and Application (ATD):

The twelve (12) oriental medicine theory and diagnosis courses are designed to provide the student with an understanding of the scope, philosophy, theory and conceptual frame work of oriental medicine and how acupuncture specifically affects the body within the oriental treatment paradigms. Emphasis is placed on Traditional Chinese Medicine (TCM) diagnoses and effective treatment strategies.

ATD 511
Oriental History and Philosophy
The student studies the different eras of Chinese history and the effects on Oriental Medicine theories. This course includes the study of the development of Naturalism, Philosophical and Religious Taoism, Confucianism, and Buddhism and their contributions to Chinese Medicine. For each philosophy, the course examines how the philosophy views the human relationship to nature, and the human relationship to the universe. In addition, the impact of philosophy and religion on the oriental medical paradigm is explored. Prerequisite: none. 1 lecture hour, 0 laboratory hours, 1 semester credit.

ATD 512
Oriental Medical Theory
This course includes the classic theories of yin and yang and the Five phases that are fundamental to understanding the Oriental medical relationship between humans and the universe. Normal physiology is studied through the fundamental substances (Qi, Blood, Essence, Spirit and bodily fluids), and organs. The basic theory of illness and diagnosis using four examinations (sight, listening and smelling, palpation, and asking) and Eight parameters are covered. Prerequisites: Anatomy and Physiology. 2 lecture hours, 2 semester credits.

ATD 513
Oriental Diagnosis I
The basic theory and characteristics of the pathogenesis and pathogenic factors are covered including the seven emotions, disharmony of Yin and Yang, abnormalities in Qi, Blood, Spirit, Essence and Bodily fluids, and organ disharmonies are covered. Techniques in inquiry, palpation, tongue and pulse diagnosis are covered. Diagnoses incorporating the eight parameters as well as root and stem concepts are covered for each of the twelve zang-fu. Prerequisite/Co-requisite: ATD 512 Oriental Medical Theory. 2 lecture hours, 2 semester credits.

ATD 524
Oriental Diagnosis II
This course will provide the student with further understanding of Oriental Medicine diagnosis, expanding on concepts from Oriental Diagnosis I. Traditional Chinese Medicine organ diagnoses, eight principle and febrile disease diagnoses will be stressed. In addition, treatment principles and acupuncture treatments based on these diagnostic systems will be explored. Differential diagnoses of common disease entities will be explored. Students will also continue to practice pulse and tongue diagnosis. Prerequisite: ATD 513 Oriental Diagnosis I. 2 lecture hours, 2 semester credits.

ATD 515
Seminar 1
This course will help the student to negotiate their first year in the Acupuncture program. The student will be guided through overviews of Chinese Medicine as preparation for integrating material from the entire curriculum. The student will review and update Chinese Medical terminology as well as the range of resources and the different perspectives on this terminology and the concepts contained therein. Diagnostic practical skills such as pulse and tongue diagnosis will be reviewed in a practical group setting. In addition the student will apply concepts of information literacy and its use case studies. Prerequisites: none. 1.5 lecture hours, 1.5 semester credits.

ATD 529
Seminar 2
This course will be a continuation of seminar one. The student will be guided through the application and integration of concepts and skills acquired in the first and second semester curricula. The student will apply these through the use of case studies and clinical examples. The basics of applying diagnosis and generation of treatment principles will be reinforced in a collegial setting. Group activities such as case analysis, pulse and tongue analysis and grand rounds will also be reviewed with a deepening understanding of clinical applications of such. Prerequisites: ATD 515. 1.5 lecture hours, 1.5 semester credits.

ATD 618
Seminar 3
This course will help the student gain a deeper understanding of case study skills necessary to become an AOM clinical practitioner. The student will be guided through case study, case analysis and pattern differentiation as utilized in clinical practice as preparation for integrating material from the entire curriculum into the clinical setting. Case presentations and clinical skills utilizing a problem based learning format using TCM principles and evidence-informed clinical practice skills are emphasized. The foci of the case studies for this course are on mental/emotional disorders, patterns associated with emotional disorders, and the impact of emotional issues in the acupuncture clinic. In addition, the student will gain a basic understanding of the ethical and counseling issues surrounding licensed practice in the field of Traditional Chinese Medicine. Prerequisites: ATD 529. 1.5 lecture hours, 1.5 semester credits.

ATD 711
East-West Pathology
This course compares and contrasts diagnosis and treatment between Western and Oriental diagnoses. Western medical diagnosis of these diseases is incorporated so that the student is able to collaborate with western physicians. Major and common categories of diseases including respiratory tract, infectious, gastrointestinal, genitourinary and musculoskeletal diseases are covered. Prerequisite: ATD 513 Oriental Diagnosis I. 2 lecture hours, 2 semester credits.

ATD 715
Oriental Internal Medicine
This course focuses on the diagnosis and oriental treatment of major illness. Treatment planning includes acupuncture, qi gong, and massage. Diagnoses cover respiratory illnesses, gastrointestinal, genitourinary, gynecological, and psychological illnesses. Root-stem, Meridian, Substance and 5 Element treatments are included. Prerequisite: ATD 513 Oriental Diagnosis I. 2 lecture hours, 2 semester credits.

ATD 717
Advanced Tongue and Pulse Diagnosis
This course is designed to increase the diagnostic skills and clinical applications of these uniquely oriental diagnostic parameters. The student studies healthy and diseased tongues and pulses and discusses how findings in
Traditional Chinese Medicine

these areas change the treatment principles and strategies. Case studies from the clinical education are used to increase both depth and breadth of skill. Prerequisite: ADT 524: Oriental Diagnosis II.

1 lecture hour; 1 semester credit.

ATD 727
Case Studies 1
The student will be guided through case study, case analysis and pattern differentiation as utilized in clinical practice as preparation for integrating material from the entire curriculum into the clinical setting. Case presentations and clinical skills are emphasized through a problem based learning format using TCM principles as the foundation. Emphasis for this class is on cases associated with problems of fluid dynamics and chronic pain, which are frequent chief complaints in the AOM clinical setting. Prerequisite: ATD 529 Seminar 2.

1 lecture hour; 1 semester credit.

ATD 728
Case Study Organization and Applications.
Students learn to transition from the development of pattern diagnosis to TCM treatment principles which then lead to point and modality applications. Emphasis is placed on an accurate assignment of symptoms to pattern diagnosis; logical treatment principles reflecting the priorities and totality of the patterns diagnosis; and the most efficacious acupuncture point and adjunctive modality prescriptions to help the patient achieve health. Prerequisite: ATD 529 Seminar 2.

1 lecture hour; 1 semester credit.

ATD 729
Acupuncture Gynecology
This course is designed to familiarize the student with oriental diagnosis and acupuncture treatments of common gynecologic conditions. Special emphasis is placed on understanding those points forbidden to needle or moxa in cases where the patient's pregnancy status is unknown. Prerequisite: ADT 524: Oriental Diagnosis II.

1 lecture hour; 1 semester credit.

Western Biomedicine (AWB)
The twelve (12) western biomedical courses are designed to train the student fully about western medical terms, history taking, physical exam and diagnostic skills. The student learns how to make the appropriate referral and consultation, as well as the clinical relevance of laboratory and diagnostic tests and procedures.

AB 51
Anatomy 1
This course provides an in-depth study of the microanatomy and covers the structure of the trunk and neck regions. Clinical aspects of the vascular and neurological relationships of these regions are emphasized. Instruction includes lectures and interactive media software. Prerequisite: none.

4 lecture hours, 4 semester credits.

AB 522
Anatomy 2
This course is a continuation of Anatomy 1 and covers the structure of the head and extremities. Clinical aspects of the neurological and vascular relationships of these regions is emphasized. Prerequisite: AB 511 Anatomy 1.

4 lecture hours, 4 semester credits.

AB 515
Physiology 1
This course emphasizes the function of cellular structures which regulate homeostasis as well as their role in cell division and genetic control of protein synthesis. Emphasis is placed on the role of the cell membrane in the control of cellular events. The effects of physiology on hormones, their role in homeostasis, and the functional changes associated with homeostasis are considered. Prerequisite: none.

2 lecture hours, 2 semester credits.

AB 525
Physiology 2
This course is a study of physiology at the organ and systems level. Included is the study of the circulatory, respiratory, renal, cardiovascular, gastrointestinal and urogenital systems. Also included is the study of the endocrine system and its interrelationships with various organs and systems. There is an integration of normal physiology with pathophysiology and clinical concepts. Prerequisite: AB 515.

2 lecture hours, 2 semester credits.

AWB 523
Pharmacology
This course examines the most commonly used pharmacologic agents to be encountered in the clinical setting. The general principles of pharmacology (pharmacodynamics and pharmacokinetics) are covered. Uses and side effects of antibiotics, anti-inflammatory agents, hormones and cardiac drugs are surveyed. Drug-nutrient and drug-herb interactions are discussed. Prerequisite: none.

1 lecture hour; 1 semester credit.

AWB 521
Medical Ethics
This course is designed to provide the student with a basic understanding of the ethical issues surrounding practice in any medical field. Upon completion of this course, the student will be able to identify concepts of medical and professional ethics as they apply to the practice of health care. Prerequisites: none.

1 lecture credit, 1 semester credit.

ACS 511
Evidence Informed Practices
The basic principles of clinical and laboratory research are examined with a special emphasis on the applications of acupuncture and oriental techniques in the research setting. Application of research to case evaluation will be emphasized. Prerequisites: none.

1 lecture credit, 1 semester credit.

ACS 611
Pathology 1
This course is a study of the pathophysiologic process and how this process alters the gross, microscopic and clinical manifestations of disease. Basic pathological processes of inflammation, repair, degeneration, necrosis, immunology and neoplasia are presented. Prerequisite: AB 525 Physiology 2.

2 lecture hours, 2 semester credits.

ACS 624
Pathology 2
This course is the continuation of the pathologic processes of various diseases. This course emphasizes the basis of systemic diseases of the cardiovascular, respiratory, gastrointestinal, urogenital, endocrine, hepatobiliary, renal and pancreatic systems. Prerequisite: ACS 611 Pathology 1.

4 lecture hours, 4 semester credits.

ACS 612
Clinical Diagnosis 1
This course covers the techniques used for physical examination for various systems of the body. Skills taught develop an appreciation for normal variations and abnormalities associated with disease states. The student is taught to recognize the signs and symptoms of common diseases. Prerequisites: AB 511, AB 521, AB 515, AB 252.

3 lecture hours, 2 labs hours, 4 semester credits.
This course will indicate Chinese Herbal Syndromes and channel obstruction syndromes (pain syndromes). This course will examine in detail at least 20 different TCM formulae and 35 different individual herbs in the TCM materia medica. In the course of this presentation: a) an explanation of the Traditional Chinese Medicine pathomechanism for various pain complaints associated with bi syndromes and channel obstruction syndromes will be provided; b) the mechanisms through which the Chief, Deputy, Assistant & Envoy Herbs within the formula treat based on treatment principles will be provided; c) possible interactions and contraindications between commonly utilized drugs for obstruction syndromes & Chinese Herbal Formulae will be provided; d) Summaries of the most up-to-date and significant evidence-based research on both Chinese Herbal Patent Remedies & conventional care will be examined. Prerequisites: ATD 524 Oriental Diagnosis II.

ACH 512

Chinese Herb Formulae for Common Ailments

This course will cover frequently prescribed Chinese Herbal Formulae for the ten most commonly encountered diseases in a TCM ambulatory practice. At least 20 formulae and 35 discrete herbs will be covered in depth. In the course of this presentation: a) an explanation of the Traditional Chinese Medicine pathomechanism for discrete diseases will be provided; b) the mechanisms through which the Chief, Deputy, Assistant & Envoy Herbs within the formula treat the disease will be provided; c) possible interactions and contraindications between conventional/drug treatments & Chinese Herbal Patent Formulae will be provided; and d) Summaries of the most up-to-date and significant evidence-based research on both Chinese herbal formulae & conventional care will be examined. Prerequisites: ATD 524 Oriental Diagnosis II.

ACH 523

Chinese Herbal Theories & Triple Burner Theories

This course will describe and analyze the twenty major categories that Chinese Herbal Formulae are categorized into for the Qi, Blood & Body Fluids, Zang-Fu & Channel Theory Paradigms in the modern TCM Materia Medica. Within these categories, the fundamental treatment strategies that these formulae employ, the role that individual herbs within the formulae play to accomplish the treatment strategy, and the accessibility of patent formulae for these formulae will be explored. At least 20 herbal formulae and 35 different herbs will be explored in depth including: a) an explanation of the Traditional Chinese Medicine pathomechanism for various complaints will be provided; b) the mechanisms through which the Chief, Deputy, Assistant & Envoy Herbs within the formula treat based on treatment principles will be provided; c) possible interactions and contraindications between commonly utilized drugs for obstruction syndromes & Chinese Herbal Formulae will be provided; d) Summaries of the most up-to-date and significant evidence-based research on both Chinese Herbal Patent Remedies & conventional care will be examined. Additional description, analysis, and application will be included for the San Jiao diagnostic paradigm. Prerequisites: ACH 512

ACH 524

Chinese Herbs for Exogenous Disease Patterns

This course will cover frequently prescribed Chinese Herbal Formulae for the ten most commonly encountered diseases in a TCM ambulatory practice. At least 20 formulae and 35 different herbs will be covered in depth including: a) an explanation of the Traditional Chinese Medicine pathomechanism for various complaints will be provided; b) the mechanisms through which the Chief, Deputy, Assistant & Envoy Herbs within the formula treat based on treatment principles will be provided; c) possible interactions and contraindications between commonly utilized drugs for obstruction syndromes & Chinese Herbal Formulae will be provided; and d) Summaries of the most up-to-date and significant evidence-based research on both Chinese herbal formulae & conventional care will be examined. Prerequisites: ACH 512

ACH 635

Clinical Application of Herbs 1

This course will amplify and reiterate content from ACH 511, ACH 512, ACH 523 and ACH 524. The student will explore the traditional Chinese Medicine Materia Medica in depth and learn to discriminate between herb categories, their general applications and associated Treatment Principles and individual, unique applications, signs and symptoms. The student will explore at least 100 herbs includi-
Traditional Chinese Medicine

ing reiterating and amplifying content from the previous courses. This course will focus on Herbs that Release the Exterior, Herbs that Clear Heat, Downward Draining Herbs, Herbs that Drain Dampness and Herbs that Dispel Wind-Dampness. This course will serve as partial basis for the following formulae courses. Prerequisites: ACH 511, ACH 512, ACH 523 and ACH 524. The student will explore the traditional Chinese Medicine Materia Medica in depth and learn to discriminate between herb categories, their general applications and associated Treatment Principles and individual, unique applications, signs and symptoms. The student will explore at least 100 herbs including reiterating and amplifying content from the previous courses. This course will focus on Herbs that Warm the Interior and Expel Cold, Herbs that Tonify the Qi, Herbs that Tonify the Blood, Herbs that Tonify the Yang, Herbs that Tonify the Yin, Herbs that Stabilize and Bind, Substances that Anchor, Settle and Calm the Spirit, Aromatic Substances that Open the Orifices, Substances that Extinguish Wind and Stop Tremors, Herbs that Expel Parasites and Substances for External Application. This course will serve as partial basis for the formulae courses. Prerequisites: ACH 617 2 lecture credits, 36 hours.

ACH 617

Clinical Application of Herbs 2
This course will amplify and reiterate content from ACH 511, ACH 512, ACH 523 and ACH 524. The student will explore the traditional Chinese Medicine Materia Medica in depth and learn to discriminate between herb categories, their general applications and associated Treatment Principles and individual, unique applications, signs and symptoms. The student will explore at least 100 herbs including reiterating and amplifying content from the previous courses. This course will focus on Herbs that Transform Phlegm and Stop Coughing, Herbs that Relieve Food Stagnation, Herbs that Regulate Qi, Herbs that Regulate the Blood, and Herbs that Invigorate the Blood. This course will serve as partial basis for the formulae courses. Prerequisites: ACH 655 2 lecture credits, 36 hours.

ACH 655

Clinical Application of Herbs 3
This course will amplify and reiterate content from ACH 511, ACH 512, ACH 523 and ACH 524. The student will explore the traditional Chinese Medicine Materia Medica in depth and learn to discriminate between herb categories, their general applications and associated Treatment Principles and individual, unique applications, signs and symptoms. The student will explore at least 100 herbs including reiterating and amplifying content from the previous courses. This course will focus on Herbs that Tonify, Stabilize and Bind, Nourish the Heart and Calm the Shen, Open the Orifices and expel Parasites. The student will learn the name, actions, indications, cautions and contraindications of the classical base formulae according to the traditional categorization based on treatment principles. In addition the student will explore the traditional structure of herbal formulae as a preamble to formula modification (general, assistant, etc.). External formulae for pain syndromes will be addressed as well as special preparation (“pao-zhi”). Prerequisites: ACH 619 2 lecture credits, 36 hours.

ACH 619

Chinese Formulae 2
This course will be a continuation and amplification of the previous herbal curriculum (ACH 511, ACH 512, ACH 523, ACH 524) with an emphasis on herbal formulae. The student will explore at least 80 formulae including reiterating and expanding content from previous courses. This course will focus on Formulae that Warm and Disperse Cold, Promote the Movement of Qi, Invigorate Blood, Clear Heat and Stop Bleeding, Transform Phlegm and Reduce Food Stagnation. The student will learn the name, actions, indications, cautions and contraindications of the classical base formulae according to the traditional categorization based on treatment principles. In addition the student will explore the traditional structure of herbal formulae as a preamble to formula modification (general, assistant, etc.). Prerequisites: ACH 636 2 lecture credits, 36 hours.

ACH 636

Chinese Formulae 3
This course will be a continuation and amplification of the previous herbal curriculum (ACH 511, ACH 512, ACH 523, ACH 524) with an emphasis on herbal formulae. The student will explore at least 80 formulae including reiterating and expanding content from previous courses. This course will focus on Formulae that Tonify, Stabilize and Bind, Nourish the Heart and Calm the Shen, Open the Orifices and expel Parasites. The student will learn the name, actions, indications, cautions and contraindications of the classical base formulae according to the traditional categorization based on treatment principles. In addition the student will explore the traditional structure of herbal formulae as a preamble to formula modification (general, assistant, etc.). External formulae for pain syndromes will be addressed as well as special preparation (“pao-zhi”). Prerequisites: ACH 619 2 lecture credits, 36 hours.

ACH 619

Herbal Medicine Survey (AHM)

The four (5) courses in herbal medicine and dietetics give the student a basic introduction to Chinese pharmacy and dispensary practices, common OTC North American botanicals, the ethical consideration of utilizing sparse resources, and TCM clinical diet therapies. Information in the western botanical and pharmacy classes provides clear information regarding indications, contraindications and drug-herb interactions. The ethical and ecological impacts of TCM materia medica on the health of the individual and the world are explored. In addition, the two courses in dietetics and nutrition help the student understand the role of nutrition in patients’ health. (Note that the course in western nutrition is listed under Western Biomedicine: ANT 521 Nutrition.)

AHM 634

Dispensary Management

This course will develop knowledge and skills related to TCM dispensary management. Students will learn how to support the clinical and health promotion work of the peripheral dispensary by keeping all needed support systems running well. Prerequisites: none 1 lecture credit, 18 hours.

AHM 635

Pharmacognosy and Pharmacology of Chinese Herbs

Chinese material medical are often prescribed in complex formulae. Understanding the chemistry, interactions, extraction methodology, and drug interactions allows AOM practitioners better insights to possible adverse effects, from drug-herb interactions, herb toxicities to lack of expected (or any) outcomes from prescribed formulae. Several recorded incidents of adverse reactions have occurred to Chinese herbs over the past 12 years. In most cases, the incidents have involved multiple patients consuming the same or similar substance, rather than isolated case reports.
Traditional Chinese Medicine

It is important to review the unique aspects of Chinese medicine which are of relevance to understanding these issues. Prerequisites: ACH 523 Chinese Herbal Theories & Triple Burner theories.
1 lecture credit, 18 hours.

AHM 616
Ethical and ecological considerations of Chinese materia medica
The traditional practice of using endangered species (plant and animal) is controversial within TCM. Comprehensive Chinese herbal textbooks often discuss substances derived from endangered species, emphasizing alternatives. Poaching and black market issues with animal products, particularly tiger bone, rhinoceros horn, seahorse and bear bile have all raised ethical and ecological concerns in the use of Traditional Chinese formulations. In this course, we will discuss the ethical and ecological impacts of TCM materia medica on the health of the individual and the world. Prerequisites: none
1 lecture credit, 18 hours.

AHM 613
Oriental Diabetology
This class introduces the student to the eastern understanding of how food influences human health. Foods and food products are surveyed according to Asian categorization. Food groups are categorized by nature, temperature, taste, element, indications and contraindications. Treatment of the major categories of organ (zang-fu) disorders using foods and food combinations are covered. Prerequisite: ADT 513 Oriental Diagnosis I.
2 lecture hours, 2 semester credits.

AHM 521
Botanical Medicine I
This course comprises a survey of plant and plant preparations most commonly used in Western traditions. The actions of the plant and plant products, as well as drug-herb interactions are considered. Prerequisites: ABS 513, ACS 611.
3 lecture hours, 3 semester credits

Movement, Respiration and Bodywork Studies (AMR)
The seven (7) movement and respiration courses are designed to enhance the student’s personal and energetic development. The student will be exposed to a wide variety of Asian movement practices that can be used to maintain their own and their patients’ health care needs. In addition to the movement studies, two courses in soft tissue treatment techniques are offered.

AMR 511 Taijiquan 1
This introductory course in therapeutic movement explores how musculoskeletal alignment, breathing, and mental awareness affect the meridians through practice of this traditional exercise. Prerequisite: none.
0 lecture hours, 1.5 laboratory hours, 1 semester credit.

AMR 512 Taijiquan 2
This is a continuation of Taijiquan 1. Prerequisite: AMR 511 Tai Ji Chuan 1.
0 lecture hours, 1.5 laboratory hours, 1 semester credit.

AMR 613 Qigong 1
This course teaches exercises designed to regulate specific meridians, muscles and joints as well as how to choose, integrate and teach the appropriate exercises in a clinic setting. Prerequisite: AMR 522: Taijiquan 2.
0 lecture hours, 1.5 laboratory hours, 1 semester credit.

AMR 624 Qigong 2
This course is a continuation of Qigong 1. Prerequisite: AMR 613 Qi Gong 1.
0 lecture hours, 1.5 laboratory hours, 1 semester credit.

AMR 627 Palpation/Massage
In this course, students integrate knowledge of anatomy with skills in palpation and massage. Introductory soft tissue technique is taught as a way to assess muscle, acupoints and meridians as well as provide a practical therapeutic treatment. Prerequisite: AMR 522 Anatomy 2.
1 lecture hour, 2 laboratory hours, 2 semester credits.

AMR 715 Oriental Diagnosis I
The student learns Tui Na soft tissue manipulation technique as well as its history, theory, application, and indications. Treatments for back pain and conditions of the upper limb are the primary focus. Prerequisite: ATD 513 Oriental Diagnosis I and APM 621: Palpation/Massage.
1 lecture hour, 2 laboratory hours, 2 semester credits.

AMR 726 Oriental Massage II
This course is a continuation of Oriental Massage I. Tui Na treatments for the lower leg and internal conditions are the primary focus. Prerequisite: AMR 715 Oriental Massage I.
1 lecture hour, 2 laboratory hours, 2 semester credits.

Counseling, Communications and Practice management
The two (2) specific courses in this area enhance the students’ clinical skills, both in terms of diagnosing addressing patients’ psychological health and in the area of best business practices. In addition, the courses of AWB 621 Medical Ethics, ACS 511 Evidence informed Clinical Practices, and ATD 618 Seminar 3 (cross listed in the ATD section) help students learn the fundamental skills needed for private practice, ethical and legal considerations in health care and special considerations for practice in integrated care settings.

APS 621 Psychological Assessment
The primary focus of this course is the diagnosis of the various psychiatric diseases according to the Diagnostic and Statistical Manual of Mental Disorders. Included are psychological assessment considerations and treatment modalities. Prerequisites: none.
2 lecture hours, 2 semester credits.

APP 721 Practice Management
Students are taught the current procedural practices for the operation of a private practice. In addition, the practical aspects of operating a practice as a small business are discussed. Students are encouraged to begin thinking about their personal career path as a complementary medicine practitioner in private practice, group practice, hospital-based practice or as an AOM educator. Prerequisites: none.
2 lecture hours, 2 semester credits.

ATD 617 Seminar 3
(see section above “Asian Medicine Theory, Diagnosis and Application”)
Clinical Services (ACS)

The five (5) acupuncture clinical services courses and four (4) Chinese Herbology clinical services (for a total of nine – 9 – clinical experience courses) are designed to allow the student to develop clinical, interpersonal communication and decision-making skills. In addition, students learn professional conduct, efficiency and confidence in dealing with patients on a regular basis. From inception through the end of clinical training, the student has the opportunity to observe and work with advanced TCM practitioners as well as other health care professionals. This allows the student to understand how and when to make appropriate referrals. Clinical rotations are available in the UBAI on-campus clinic as well as in community and hospital outreach clinical sites. By the end of clinical training, each student will have seen a minimum of 575 patient visits and will have completed 1190 hours of clinical training (830 hours in the acupuncture/general clinical care; 360 in the herbology clinic).

ACS 671 Preceptorship I
The students observe and administer care in established acupuncture facilities under the supervision of licensed physicians and acupuncturists. This exposure to a variety of clinical settings helps prepare the student for both private practice and integrative patient care. Prerequisite: Completion of all first year courses. 0 lecture hours, 4 laboratory hours, 2 semester credits, 75 clock hours total.

ACS 711 Preceptorship II
This is a continuation of ACS 671. Students increase their clinical skills working under a variety of health care professionals, all of whom must have the appropriate credentials to practice in the field of acupuncture. Prerequisite: ACS 671. 0 lecture hours, 4 laboratory hours, 2 semester credits, 75 clock hours total.

ACS 631 Clinical Education I
Under the supervision of licensed faculty members, the interns start by observing patients for 30 clinic hours, then move into the area of direct patient care. All patient diagnoses and management plans are reviewed and approved by a clinic faculty member prior to the initiation of patient care. The student will begin to practice clean needle technique, removal and disposal of needles. The student will acquire proficiency in tongue and pulse diagnosis. Prerequisite: Pass Clinical Entrance Exam. 0 lecture hours, 12 laboratory hours, 8 semester credits, 245 clock hours total.

ACS 712 Clinical Education II
Students continue to administer care to patients under the supervision of licensed faculty. Students are monitored as to their progress toward completing the qualitative and quantitative requirements necessary for the successful completion of the program. Eligibility for the rotation is successful completion of the previous clinical rotation. Prerequisite: ACS 631 Clinical Education I. 0 lecture hours, 12 laboratory hours, 8 semester credits, 215 clock hours total.

ACS 723 Clinical Education III
Students continue to administer care to patients under the supervision of licensed faculty. Students are monitored as to their progress toward completing the qualitative and quantitative requirements necessary for the successful completion of the program. Eligibility for the rotation is successful completion of the previous clinical training rotation. Prerequisite: ACS 712 Clinical Education 2. 0 lecture hours, 12 laboratory hours, 8 semester credits, 220 clock hours total.

Clinical Education (ACC)
The four (4) Chinese Herbology clinical services are designed to allow the student to develop clinical, interpersonal communication and decision-making skills. From inception through the end of clinical training, the student has the opportunity to observe and work with advanced TCM practitioners. Clinical rotations are available in the UBAI on-campus clinic as well as in community outreach clinical sites. By the end of clinical training, each student will have seen a minimum of 200 patient visits and will have completed 360 hours in the herbology clinic.

ACC 611 Chinese Herbal Clinic 1
Under the supervision of licensed faculty members, the interns start by observing patients for 20 clinic hours, then move into the area of direct patient care. All patient diagnoses and management plans are reviewed and approved by a clinic faculty member prior to the initiation of patient care. The student will begin to prescribe individual herbs and formulae for patient care. The student will acquire proficiency in TCM diagnostic techniques, as well as in understanding when specific herbs or formulae may not be prescribed based upon possible herb-drug interactions. Prerequisite: Pass Clinical Entrance Exam. 0 lecture hours, 12 laboratory hours, 8 semester credits, 215 clock hours total.

ACC 723 Chinese Herbal Clinic 2A
Students continue to administer Chinese herbal care to patients under the supervision of licensed faculty. Students are monitored as to their progress toward completing the qualitative and quantitative requirements necessary for the successful completion of the program. Eligibility for the rotation is successful completion of the previous clinical rotation. Prerequisite: ACC 611 Chinese Herbal Clinic 1. 0 lecture hours, 2 laboratory hours, 65 clock hours total.

ACC 724 Chinese Herbal Clinic 2B
Students continue to administer Chinese herbal care to patients under the supervision of licensed faculty. Students are monitored as to their progress toward completing the qualitative and quantitative requirements necessary for the successful completion of the program. Eligibility for the rotation is successful completion of the previous clinical rotation. Prerequisite: ACC 611 Chinese Herbal Clinic 1. Pre/Co-Requisite ACC 632 Chinese Herbal Clinic 2A. 0 lecture hours, 2 laboratory hours, 65 clock hours total.

ACC 724 Chinese Herbal Clinic 3
Students continue to administer care to patients under the supervision of licensed faculty. Students will integrate herbal therapies with dietary advice and qi enhancement techniques. Students are monitored as to their progress toward completing the qualitative and quantitative requirements necessary for the successful completion of the program. Eligibility for the rotation is successful completion of the previous clinical rotation. Prerequisite: ACC 723 Chinese Herbal Clinic 2B. 0 lecture hours, 3 laboratory hours, 100 clock hours total.