

**Graduate Council Curriculum Subcommittee**  
**February 15, 2008**  
**12:30 p.m., 243 MH**

**Agenda**

1. Welcome and call to order
2. Reactivation and course revisions to the Systems Engineering Management (SEM) track, ECS
3. Addition of a graduate certificate in Systems Engineering, ECS
4. Addition of a graduate certificate in Software Engineering for Web-based Application, ECS
5. Track additions and curriculum revisions to the Criminal Justice master's program, HPA
6. Course revisions to the Health Services Administration track, HPA
7. Renaming of the Physical Education program to Sport and Fitness, ED
8. Review of courses and special topics
9. Announcements and adjournment. Next meeting: February 26, 12:30, MH 243.

November 27, 2007

To: Dr. Jamal Nayfeh, CECS  
From: Chuck Reilly, IEMS  
Subj: Proposed Systems Engineering Certificate Program

*C. A. Reilly*

At this time, IEMS is proposing a new 12-credit-hour certificate program in Systems Engineering. Concurrently, IEMS is proposing a restructuring of the Systems Engineering and Management M.S. Track to a Systems Engineering Track. No new courses are needed for either of these programs, and existing resources are sufficient to offer both programs.

Based on inquiries by prospective students interested in the Systems Engineering (and Management) M.S. Track and interest in formal systems engineering education expressed by engineers with companies such as IBM and Northrop Grumman, it is clear that there is significant need and demand for academic programs in systems engineering. The certificate program that is proposed here is intended to help meet the expressed demand and need for systems engineering education.

The curriculum for the certificate program in Systems Engineering consists of the four core courses for the revised Systems Engineering M.S. Track:

- ESI 5219 Engineering Statistics (3 credit hours)
- ESI 5306 Operations Research (3 credit hours)
- ESI 5531 Discrete Systems Simulation (3 credit hours)
- ESI 6551C Systems Engineering (3 credit hours)

Admission to this program would be open to all applicants who have a B.S. degree in any engineering discipline. Persons with an undergraduate GPA below 2.5 are not encouraged to apply for this program.

Students admitted to this program must comply with all UCF policies and regulation for certificate programs. Certificate program students who are admitted to the Systems Engineering MS Track will be able to transfer all of the credit hours from the certificate program to the MS program.

November 27, 2007

To: Dr. Jamal Nayfeh, CECS  
From: Chuck Reilly, IEMS  
Subj: Revision to Systems Engineering (and Management) MS Track



In 2004, IEMS proposed the offering of a new MS track that was tailored to the needs of engineering and management professionals affiliated with the Kennedy Space Center (KSC). This lockstep, 36-hour, non-thesis-only track, Systems Engineering and Management, has been available exclusively to students enrolled in live sections at KSC and not to students on UCF's main campus or to distributed learning students.

A new cohort of students was expected to begin the program at KSC each fall. For several reasons, most notably changes in employers' policies on reimbursement for educational expenses, there were not enough interested students in Fall 2006 to support a new cohort. A new cohort was not recruited for Fall 2007, and the department informed the Graduate Council that a decision on the future of the track would be made this semester after the arrival of our new chair, Dr. Karwowski.

IEMS believes a strong need remains for systems engineering education throughout the Central Florida region (including at KSC) and beyond, as recent communications with prospective applicants affirm. Consequently, the department wishes to offer the (renamed) Systems Engineering Track to all interested students on the main campus and through distributed education rather than through live, face-to-face instruction at a single restricted-access site. Additionally, IEMS wishes to restructure the Systems Engineering and Management Track from its present lockstep mode to better meet the needs and academic goals of a larger, more diverse student population.

The changes proposed herein do not require any additional resources. Rather, it is expected that the availability of a track that is expected to be quite popular will increase the enrollment of MS students in courses that would otherwise be offered anyway.

The changes proposed for the MS track in Systems Engineering are summarized as follows:

- Restructure the Systems Engineering and Management curriculum from a lockstep, 36-hour, non-thesis-only track to a 30-hour Systems Engineering curriculum with both thesis and non-thesis options.

- All students are required to take 4 core courses (12 credit hours).
  - ESI 5219 Engineering Statistics
  - ESI 5306 Operations Research
  - ESI 5531 Discrete Systems Simulation
  - ESI 6551C Systems Engineering
- All students are required to take 3 restricted elective courses (9 credit hours) from the following list of pre-approved courses.
  - EIN 5117 Management Information Systems
  - EIN 5140 Project Engineering
  - EIN 5248C Ergonomics
  - EIN 5317 Training System Design
  - EIN 5368C Integrated Factory Automation Systems
  - EIN 5392C Manufacturing Systems Engineering
  - EIN 5607C Computer Control of Manufacturing Systems
  - EIN 6182 Engineering Management
  - EIN 6215 Systems Safety Engineering and Management
  - EIN 6258 Human-Computer Interaction
  - EIN 6279C Biomechanics
  - EIN 6336 Production and Inventory Control
  - EIN 6357 Advanced Engineering Economics
  - EIN 6459 Concurrent Engineering
  - EIN 6528 Simulation-based Life Cycle Engineering
  - EIN 6645 Real-Time Simulation Agents
  - EIN 6647 Intelligent Simulation
  - EIN 6649C Intelligent Tutoring Training System Design
  - ESI 5227 Total Quality Improvement
  - ESI 5236 Reliability Engineering
  - ESI 6224 Quality Management
  - ESI 6225 Quality Design and Control
  - ESI 6247 Experimental Design and Taguchi Methods
  - ESI 6336 Queueing Systems
  - ESI 6358 Decision Analysis
  - ESI 6418 Linear Programming and Extensions
  - ESI 6532 Object Oriented Simulation
  - EEL 5173 Linear Systems Theory
  - EEL 5625 Applied Control Systems
  - EEL 5630 Digital Control Systems
  - EEL 6255 Advanced Power Systems Analysis
  - CEN 5016 Software Engineering
  - TTE 6270 Intelligent Transportation Systems
  - TTE 6625 Mass Transportation Systems
- All students are required to take 9 credit hours of electives that are approved by the IEMS Graduate Coordinator.
  - Students electing the thesis option would include 6 credit hours of thesis research (EIN 6971) and three hours of course work on their programs of study.

- Independent study and directed research hours may not be included in a student's program of study.
- At least 21 hours on a student's program of study must have the EIN and/or ESI prefix.
- All students enrolled in this track must meet all UCF and CECS requirements, including the requirement that at least one-half of the hours on the program study be 6000-level or beyond.

IEMS wishes to include these changes in the 2008-2009 Graduate Catalog and to begin to offer this track immediately, that is, Spring 2008, to interested students. Depending on the restricted elective courses and the elective courses included in a student's program of study, this track can be completed entirely through the Florida Engineering Education Delivery System (FEEDS).

The proposed catalog description of the Systems Engineering Track begins on the next page.

# Systems Engineering Track

The Systems Engineering Track is intended for engineers of all engineering disciplines. The program will focus on a systems view of engineering problems related to the management of complex industrial, military, government, and social systems. The program is flexible by design to accommodate engineers of varied backgrounds, interests, and goals.

**This program can be taken entirely through the Florida Engineering Education Delivery System (FEEDS).**

## Required Courses – 12 Credit Hours

- ESI 5219 Engineering Statistics (3 credit hours)
- ESI 5306 Operations Research (3 credit hours)
- ESI 5531 Discrete Systems Simulation (3 credit hours)
- ESI 6551C Systems Engineering (3 credit hours)

## Restricted Electives – 9 Credit Hours

Select three of the following courses:

- EIN 5117 Management Information Systems (3 credit hours)
- EIN 5140 Project Engineering (3 credit hours)
- EIN 5248C Ergonomics (3 credit hours)
- EIN 5317 Training System Design (3 credit hours)
- EIN 5368C Integrated Factory Automation Systems (3 credit hours)
- EIN 5392C Manufacturing Systems Engineering (3 credit hours)
- EIN 5607C Computer Control of Manufacturing Systems (3 credit hours)
- EIN 6182 Engineering Management (3 credit hours)
- EIN 6215 Systems Safety Engineering and Management (3 credit hours)
- EIN 6258 Human-Computer Interaction (3 credit hours)
- EIN 6279C Biomechanics (3 credit hours)
- EIN 6336 Production and Inventory Control (3 credit hours)
- EIN 6357 Advanced Engineering Economics (3 credit hours)
- EIN 6459 Concurrent Engineering (3 credit hours)
- EIN 6528 Simulation-based Life Cycle Engineering (3 credit hours)
- EIN 6645 Real-Time Simulation Agents (3 credit hours)
- EIN 6647 Intelligent Simulation (3 credit hours)
- EIN 6649C Intelligent Tutoring Training System Design (3 credit hours)
- ESI 5227 Total Quality Improvement (3 credit hours)
- ESI 5236 Reliability Engineering (3 credit hours)
- ESI 6224 Quality Management (3 credit hours)
- ESI 6225 Quality Design and Control (3 credit hours)

- ESI 6247 Experimental Design and Taguchi Methods (3 credit hours)
- ESI 6336 Queueing Systems (3 credit hours)
- ESI 6358 Decision Analysis (3 credit hours)
- ESI 6418 Linear Programming and Extensions (3 credit hours)
- ESI 6532 Object Oriented Simulation (3 credit hours)
- EEL 5173 Linear Systems Theory (3 credit hours)
- EEL 5625 Applied Control Systems (3 credit hours)
- EEL 5630 Digital Control Systems (3 credit hours)
- EEL 6255 Advanced Power Systems Analysis (3 credit hours)
- CEN 5016 Software Engineering (3 credit hours)
- TTE 6270 Intelligent Transportation Systems (3 credit hours)
- TTE 6625 Mass Transportation Systems (3 credit hours)

### **Thesis Option – 9 Credit Hours**

- EIN 6971 Thesis (6 credit hours)
- Elective (3 credit hours), subject to approval by the IEMS Graduate Coordinator and to the requirement that at least one-half of the credit hours on a student's program of study must be 6000-level or beyond.

### **Non-thesis Option – 9 Credit Hours**

- Electives, subject to approval by the IEMS Graduate Coordinator and to the requirement that at least one-half of the credit hours on a student's program of study must be 6000-level or beyond.

**University of Central Florida**  
**Proposal for**  
**A Graduate Certificate program in Software Engineering for Web-based Applications**

**Submitted by: Dr. David Workman, Associate Professor**  
**School of Electrical Engineering and Computer Science**  
**HEC-306, (407)823-2344**  
[workman@cs.ucf.edu](mailto:workman@cs.ucf.edu)

**Date: January 28, 2008**

**Purpose and Goals**

The School of Electrical Engineering and Computer Science (EECS) in the College of Engineering and Computer Science is proposing an 18-hour Graduate Certificate in *Software Engineering for Web-based Applications*. The purpose of this program is to provide software engineering professionals or other professionals in the computing industry an opportunity to advance their professional skills, training and education while obtaining graduate credit in the area of software development for Internet applications.

Participants in the proposed program will acquire the knowledge and skills relating to the latest technologies, tools and methodologies used to develop sophisticated Internet-based software applications. Those completing the certificate program will be able to design, implement, install and maintain the software applications necessary to start and securely operate a web-based or network-oriented business. The target size of businesses using these applications ranges from a single-proprietor small business to a large-scale distributed commercial enterprise. Since almost all web-based businesses depend on the use of proprietary databases, the design of database systems and their access and maintenance from web applications will be a key focus of this certificate program.

In addition to training professionals who practice software engineering, it is a goal of this program to also produce future instructors and teachers with the technical training and education necessary to teach other professionals in this discipline. Thus, the program will be self-sustaining in terms of creating an adjunct and instructor pool capable of supporting our undergraduate courses in Information Technology.

Finally, we view this certificate program as an initial and intermediate step toward a future professional Masters degree in software engineering. While the certificate program will be comprehensive in terms covering the state of practice for the relatively narrow domain of software engineering for web-applications development, it is not broad enough to qualify for a Masters degree in software engineering. Through our Industrial Affiliates and by surveying local industrial partners we hope to follow up next year with a proposal for a Masters degree program building on and relating to our certificate program.

## **Needs Assessment and Target Audience**

For more than a decade, the demand for Internet applications developers has grown continuously and rapidly. Small businesses expand their customer base and are able to offer new services by moving to the Internet. Large businesses are able to improve their efficiency by leveraging the ubiquity, convenience and low cost of the Internet. These continuing trends coupled with proliferation of hand-held personal computing devices – another market that continues to grow – has created an insatiable demand for CS, IT, and Engineering graduates with mature knowledge and skills in distributed computing and Internet-based software development.

Satisfying the demands and needs identified above is difficult to achieve within the constraints defined by established and traditional degree programs in Computer Science, Information Technology and Computer Engineering. Curriculums are difficult to change and take at least a year or more to implement successfully. Existing faculty may not have the background, experience or incentive to teach technology courses outside their discipline or area of research. In addition, degree programs do not have any “slack” in the list of required courses students must take – if new courses are required, old ones must be deleted or moved to restricted electives. Moreover, mainstream academic curriculums must focus and concentrate on more fundamental knowledge and skills rather than on specific technologies that may come and go with the vagaries of social change and the economic swings that form in their wake. Thus, there is simply “no room” available in our undergraduate degree programs to add the set of courses required to achieve a professional level of knowledge and skill necessary to meet the burgeoning demands and challenges of Internet software applications development. Thus, this certificate program will fulfill an important need of technology education implementation.

The constituents of our proposed certificate program will come primarily from two sources. First, there is significant interest among baccalaureates in Computer Science and Information Technology whom are seeking entry-level professional positions in the software industry. Graduates in these degree programs, while already broadly prepared for database and web application development, can obtain a competitive edge, more career flexibility, and the potential for higher salaries by having the knowledge of and skills using state of practice technologies specific to Internet-based applications design and development. We anticipate between 10-25% of our current CS and IT graduates will enroll in this certificate program to give themselves an edge in seeking employment.

The second sector of our potential constituency includes practicing software engineers and technical software project managers that need additional knowledge and training to stay abreast of current and emerging tools, languages, methods and practices for Internet-based applications development. For many of these people, four or five years post graduation, their undergraduate degree programs simply did not address these technologies because, (a) they were immature and not fundamental enough, or (b) they simply did not exist a few years ago! We see the proposed certificate program (and future Masters degree) as the perfect vehicle(s) and mechanism(s) for dynamically adjusting educational and training needs of professionals to the changing demands of Internet based computing and software engineering, in general, for the foreseeable future.

Finally, to remain competitive with other well-known and respected Universities and to satisfy the need for flexibility and convenience required by potential professional participants, we plan

to offer and deliver courses in the proposed program as FEEDS courses and thereby minimizing the amount of in-class participation necessary. If in-class participation is necessary, then we plan to restrict scheduling of these sessions to weekends or evenings as appropriate.

**Projected Enrollment and Scheduling**

Estimated annual enrollment in the certificate program is 35 - 45. This number has three components, one from new baccalaureate students from CS and IT (93 and 67, respectively, for 2006-07 graduates), the second is subscribers from industry, and thirdly, these new courses will qualify as electives for PhD and MS students in Computer Science and Computer Engineering. We expect, conservatively, the same number of subscribers from industry that we do from new graduates, and we estimate 10% from CS graduates and 16% from IT graduates. Recently, SAIC, a close Industrial Affiliate, conducted a survey of some 50 employees and 34 responded that they would be interested in enrolling in the proposed certificate program. Based on this response, we may have underestimated the number of subscribers from local industry.

Our objective is to enable subscribers to complete the program in three semesters carrying a maximum load of two courses per semester. Thus, we plan to schedule at least two courses every semester in Fall, Spring, Summer terms. To give some flexibility in access to the electives, it may be necessary to offer at least one elective every semester in addition to the [required courses](#). This will allow students to complete the program in one calendar year. A sample schedule provided below. Clearly some students may take longer if they have not had pre-requisites for some of the courses. Courses will be scheduled primarily on weekends – this will be particularly true for face-to-face sessions (for example, exams). Lectures will be recorded and available to students via their WebCT accounts.

<b>Fall</b>	<b>Spring</b>	<b>Summer</b>
Web Authoring Tools (5xxx)	Database Interface Dev. (6xxx)	Web App. Testing (5xxx)
HCI Design (5xxx)	Designing Secure Transactions in Web Apps (5xxx)	Web Arch. & Design (6xxx)
(Some Elective)	(Some Elective)	(Some Elective)

## **Faculty Resources and Qualifications**

Faculty supporting this certificate program will be drawn from the regular tenure-earning or tenured faculty and full-time Lecturers in the Computer Science, Information Technology and Computer Engineering programs. In addition, we will utilize instructors from industry who have had at least 5 years experience practicing the discipline and hold at least a Masters degree in Computer Science or Engineering. Initially, we have identified the following cadre of people who will actively participate in delivering courses or administering the program.

**Dr. David A. Workman**, Associate Professor, Computer Science

**Dr. Ronald DeMara**, Professor, Computer Engineering

**Dr. Gary T. Leavens**, Professor, Computer Science

**Dr. Sheau Lang**, Associate Professor, Information Technology

**Dr. Mark Llewellyn**, PhD in CS from UCF, Lecturer in Computer Science and Information Technology at UCF.

**Dr. Euripedes Montagne**, PhD in CS from UCF, Lecturer in Computer Science at UCF.

**Dr. Denver Williams**, PhD in CS from UCF, TBD, 15 years experience in software engineering.

**Dr. Piotr Windyga**, PhD in CS, Visiting Lecturer in Information Technology.

In addition to those listed above, we would like to include among the faculty approved for teaching courses in this certificate program, for which they are technically qualified, the following people (their resumes are attached with this proposal):

**Mark Kilby, Certified Scrummaster (CSM) for Gestalt LLC; MSCS and MSEE.**

**Andrew Eisler, Instructor, IT Program, School of EECS, UCF.**

**Jeff Dearmin, IBM Senior IT Specialist, IBM Corporation, Orlando, FL.**

Although the above people do not have Ph.D. degrees in Engineering or Computer Science, they all have at least the equivalent of a Masters degree in their field and have designed the content for almost all the courses listed in this curriculum.

## **Funding and Financial Support**

This program will be revenue neutral. Working through Continuing Education we plan to implement this program using an industrial seminar model. Tuition/Fees paid by students will cover operating costs, course materials, instructor compensation, and overhead monies that will be returned to the College and the School to defray administrative costs.

## **Administration**

Initially, Dr. David Workman will administer the program, but administration and advising will be shared by Dr. DeMara and Dr. Lang as required.

## **Admission Criteria**

In addition to satisfying general University Graduate admission requirements, participants in the proposed certificate program must have a baccalaureate degree in a related discipline from an accredited institution and must have approval of the program administrator.

### **Curriculum Requirements – 18 Semester Hours**

There are five required courses (15 cr). Students may chose any one of the elective courses to complete the 18 credit requirement. All courses must be completed with at least a 3.0 GPA including at most one course with a grade below B (3.0) and no courses below C (2.0). Each of these courses is new (except for ISM 6485) and will be submitted for approval and inclusion in the Graduate Catalog following approval of this certificate program.

### **Required Courses (15 Semester Hrs)**

1. **(CIS: 5xxx)** Web Application Authoring Tools  
*Instructors: Dearmin, Windyga, Eisler*
2. **(CIS: 6xxx)** Database Interface Development (ASP.NET, VB.NET and PHP)  
*Instructors: Dearmin, Eisler*
3. **(CIS: 5xxx)** Designing Secure Transactions in Web Applications  
*Instructors: Williams, Dearmin, Kilby*
4. **(CIS: 5xxx)** Web Application Testing  
*Instructors: Windyga, Kilby*
5. **(CIS: 6xxx)** Web Application Architecture and Design  
*Instructors: Williams, Kilby*

### **Elective Courses( 3 Semester Hrs )**

6. **(CIS: 5xxx)** Web Server and Configuration Maintenance  
*Instructors: Eisler, Dearmin*
7. **(CIS: 5xxx)** Human-Computer Interface (HCI) Design for Web Applications  
*Instructors: Eisler, Dearmin*
8. **(CIS: 5xxx)** Capacity planning and Performance Analysis of Web Services  
*Instructors: Montagne*
9. **(CIS: 6xxx)** Planning and Estimating Web Applications Development  
*Instructors: Kilby, Windyga*
10. **(ISM 6485)** Electronic Commerce  
*Instructors: College of Business Administration*

## Course Descriptions (Required)

### 1. (CIS: 5xxx )Web Authoring Tools (3 credits)

An in-depth interaction with web-based tools including web page design and implementation, image design and preparation, and web-based animation and implementation. Programs will be required for hands-on, Internet-based projects as well as those using a college-based server for students to post their work to.

**Prerequisites:** Experience with basic web page development.

**Recommended texts:** *Adobe Dreamweaver CS3 Classroom in a Book*, Adobe Press; *Adobe Flash CS3 Professional Classroom in a Book*, Adobe Press. Another alternative would be the Course Technology (publisher) series on Intro to Dreamweaver, Flash and Fireworks texts.

### 2. (CIS: 6xxx )Database Interface Development (3 credits)

Examines the theory and principles of databases and their use. Design and implementation of traditional and nontraditional applications of database systems will be reviewed. Emphasis will be placed on current issues, future directions and research issues. Programming assignments using asp.net required.

The application of database concepts to management information systems. Design objectives, methods, costs, and benefits associated with the use of a database management system. Tools and techniques for the management of large amounts of data. Database design, performance, and administration. File organization and access methods. The architectures of database systems, data models for database systems (network, hierarchical, relational, and object-oriented model), client-server database applications, distributed databases, and object-oriented databases.

**Prerequisite:** A basic database class that involved relational database concepts and theory; ability to use the SQL programming language.

**Recommended text:** David Kroenke (2006), *Database Processing: Fundamentals, Design, and Implementation*, 10<sup>th</sup> edition, Prentice Hall.

### 3. (CIS: 5xxx) Designing Secure Transactions for Web Applications. (3 credits)

Introduces various tools and interaction techniques used to design and implement secure on-line purchasing of goods. Content includes the use of PayPal and how to design your own interface for paying bills on-line and other electronic funds transaction applications.

**Pre-requisites:** TBD

**Recommended Texts:** TBD.

#### 4. (CIS: 5xxx )Web Application Testing

To understand the recent growth and changes in software standards and development; to master the basic techniques and tools for software testing; to learn how to make well-informed choices and develop creative solutions toward software validation and verification; to gain an understanding of software testing management and process issues; to learn to write code that's clearer, more robust, and easier to extend and maintain; to learn how to conduct risk analysis, and measure test effectiveness to maximize the efficiency of testing efforts; to gain the knowledge needed to improve product quality and to reduce timescales, effort, and cost.

##### **Texts:**

[1] *Software Testing and Continuous Quality Improvement*, 2nd edition

by William E. Lewis, Gunasekaran Veerapillai; Auerbach Publications (2004); ISBN: 0849325242.

[2] *Lessons Learned in Software Testing*

by Cem Kaner, James Bach, Bret Pettichord; Wiley (2001); ISBN: 0471081124

##### **Reference:**

*Managing the Testing Process*, 2nd edition

by Rex Black; Wiley (2002);ISBN: 0471223980

#### 5. (CIS: 6xxx) Web Application Architecture and Design

The objective of this course is to emphasize the design and development of object-oriented web based software. This includes:

- developing an understanding of the role of using a use case driven approach in system design and development;
- developing an understanding of the role of using an architectural approach to system design and development;
- developing an understanding of design patterns in the development of software systems;
- developing and appreciation of using some of the recent frameworks and tools for building object oriented software (Spring, Hibernate, Tomcat, JBoss AS, Eclipse, EJB-3).

**Pre-requisites:** Background in Java is assumed.

##### **Text:**

*Core J2EE Patterns*, Alur, Crupi, and Malks, 2003, 2<sup>nd</sup> Edition, Sun Microsystems Press

*EJB 3 in Action*, Panda, Rahman, Lane, 2007, Manning

*Spring in Action*, Walls, *Sping in Action*, 2007, 2<sup>nd</sup> Edition, Manning

## Course Descriptions (Electives)

### 7. (CIS: 5xxx )Human Computer Interface (HCI) Design for Web Applications (3 credits)

Focuses on the dynamics of human-computer interaction. Provides a broad and comprehensive overview of HCI as a sub-area of computer science and implements a user-centered design approaches to computer systems including Internet and web-based environments. Areas to be addressed include the user interface and software design strategies and methodologies. Student will design, evaluate, implement and test user interfaces using appropriate computer science concepts and methodologies using current programming language environments.

**Prerequisite:** Experience with object-oriented programming (e.g. Java) concepts and logic.

**Recommended text(s):**

(a) Ben Schneiderman (2003), *Leonardo's Laptop, Human Needs and the New Computing Technologies*, MIT Press.

(c) Schneiderman & Plaisant (2005), *Designing the User Interface*, Addison Wesley.

### 8. (CIS: 6xxx )Planning and Estimating Web Applications Development (3 credits)

Introduces the use of agile estimating and planning techniques for Web application development. This course will cover iterative techniques used in multiple agile methodologies (Scrum, XP, etc.) for planning and estimating applications with rapidly changing requirements.

**Prerequisite:** Experience with object-oriented programming concepts and logic.

**Suggested Text:** Mike Cohn (2005), *Agile Estimating and Planning* (Robert C. Martin Series) (Paperback), Prentice Hall.

**Possible Course Topics:**

Agile Manifesto (<http://www.agilemanifesto.org>) and what it mean for estimating and planning in highly volatile projects.

Leveraging Teams in Agile Projects

Timeboxes and the Iron Triangle

Defining a Vision, Roadmap, and Releases

Planning Architecture and Technology Decisions

Developing and Managing a Product Backlog vs. a Gantt Chart

Developing an Iteration Plan for Rapid Feedback

Analysis Spikes – Planning for the Unknown

Defining Iteration Acceptance Criteria for Release and Iterations

Traceability in Agile Projects

Variations: Scrum, Extreme Programming. Crystal Methodologies, Feature Driven Development

Agile Planning in Large or Distributed Teams

**9. (CIS: 5xxx) Capacity planning and Performance Analysis of Web Services (3 credits)**

Web performance problems, basic performance concepts, quantitative models for web performance, performance issues relating to Web Services, planning the capacity of Web Services, understanding and characterizing the workload, system level performance models, Web performance modeling, workload forecasting. Measuring performance.

**Prerequisite:** Fundamental knowledge of operating system and networks.

**Recommended text:** Daniel Menasce and Virgilio Almeida (2002), *Capacity Planning for Web Services: Metrics, Models, and Methods*, Prentice Hall.

**10. (ISM 6485) Electronic Commerce (3 credits)**

This course will provide an understanding of electronic commerce, including an overview of the infrastructure and technologies, comparative analysis of markets, e-commerce applications, and website development.

**Pre-requisite:** MS/MIS Technical Foundation Core and CBA master's program of Study BA-Management Inform. System. Occasional.

**Proposal to Articulate Two Tracks within the  
Criminal Justice  
Master's Degree Program**

**Submitted by**

**Joseph B. Sanborn, Jr.  
Coordinator, Criminal Justice Master's Degree Program**

**&**

**Robert H. Langworthy  
Chair, Department of Criminal Justice and Legal Studies**

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# **Proposal to Articulate Two Tracks within the Criminal Justice Master's Degree Program**

## **The Existing Master's Degree Program**

The proposed changes to the Criminal Justice MS program are designed to accomplish two objectives. The first is to articulate two programmatic tracks, Professional and Research, that have been only implicit in the past. The second objective is to provide a more structured curriculum that will ensure a more complete track-specific base of academic experience. These objectives are accomplished by enhancing the core requirements in the Professional Track (from four courses to seven, three of which are new courses) and creating two additional courses for the Research Track (which now has six core courses instead of four).

The current curriculum includes 12 credit hours of core courses and 18 credit hours of general electives. These requirements are listed below.

### **Current Core Courses—12 Credit Hours**

- CCJ 5015 Nature of Crime (3 credit hours)
- CCJ 5456 Administration of Justice (3 credit hours)
- CCJ 6704 Research Methods in Criminal Justice (3 credit hours)
- CCJ 6706 Quantitative Methods and Computer Utilization (3 credit hours)

### **General Electives —18 Credit Hours**

## **Proposed Two-Tracks in Criminal Justice**

The proposed Professional Track in Criminal Justice would strengthen the focus for students interested in working in the field of criminal justice. The core would consist of seven courses (including three new courses) focused primarily on the operation of the criminal justice system. The proposed Proseminar in Criminal Justice course will also serve as the capstone course for the research track.

### **Proposed Core Courses---Professional Track---21 Credit Hours**

- CCJ 5015 Nature of Crime (3 credit hours)
- CCJ 5456 Administration of Justice (3 credit hours)
- CCJ 6704 Research Methods in Criminal Justice (3 credit hours)
- CCJ 6106 Policy Analysis in Criminal Justice (3 credit hours)
- *CCJ 6XXX Criminal Justice Organizations (3 credit hours)*
- *PLA 6XXX Administrative Law for Criminal Justice Professionals (3 credit hours)*
- *CCJ 6XXX Proseminar in Criminal Justice (3 credit hours)*

### **Restricted Electives---Professional Track---6 Credit Hours**

Pick Two from:

- CCJ 5105 Foundations of Law Enforcement
- CCJ 5020 Foundations of Corrections
- CCJ 6938 Criminal Courts
- CCJ 6217 Law and Social Control
- CJJ 6020 Juvenile Justice

### **General Electives---Professional Track---9 Credit Hours**

Graduate coursework chosen after consultation with the program coordinator

The proposed Research Track in criminal justice would strengthen the focus for students interested in pursuing doctoral level work in criminal justice. The core would consist of six courses (including two new courses) focused primarily on the research and analysis of the field of criminal justice. The proposed Advanced Research Methods course will also serve as a capstone course for this track.

### **Proposed Core Courses---Research Track---18 Credit Hours**

- CCJ 5015 Nature of Crime (3 credit hours)
- CCJ 5456 Administration of Justice (3 credit hours)
- CCJ 6704 Research Methods in Criminal Justice (3 credit hours)
- CCJ 6706 Quantitative Methods and Computer Utilization (3 credit hours)
- *CCJ 6XXX Advanced Quantitative Methods in Criminal Justice (3 credit hours)*
- *CCJ 6XXX Advanced Research Methods in Criminal Justice (3 credit hours)*

### **Restricted Electives---Research Track---3 Credit Hours**

Pick One from:

- CCJ 5105 Foundations of Law Enforcement
- CCJ 5020 Foundations of Corrections
- CCJ 6938 Criminal Courts
- CCJ 6217 Law and Social Control
- CJJ 6020 Juvenile Justice

### **General Electives---Research Track---9 Credit Hours**

Graduate coursework chosen after consultation with the program coordinator

## **Faculty Resources**

The following faculty members of the Department of Criminal Justice and Legal Studies are already supporting students in the criminal justice specialty area of the Public Affairs Doctoral Program. They will continue to support students in the explicit Criminal Justice Track.

Kenneth Adams, Ph.D.	Professor (joint appointment with Public Affairs)
Brandon Applegate, Ph.D.	Associate Professor
Robert Bohm, Ph.D.	Professor
Pamala Griset, Ph.D.	Associate Professor
Stephen Holmes, Ph.D.	Associate Professor
Robert Langworthy, Ph.D.	Professor
Mark Lanier, Ph.D.	Associate Professor
Karol Lucken, Ph.D.	Associate Professor
Sue Mahan, Ph.D.	Associate Professor
Bernard J. McCarthy, Ph.D.	Professor (on leave of absence)
Stephanie Myers, Ph.D.	Assistant Professor
Eugene Paoline, Ph.D.	Associate Professor
K. Michael Reynolds, Ph.D.	Associate Professor
Lee Ross, Ph.D.	Associate Professor
Joseph Sanborn, Ph.D.	Associate Professor
Raymond Surette, Ph.D.	Professor
R. Cory Watkins, Ph.D.	Associate Professor
Ross Wolf, Ph.D.	Assistant Professor

## Appendix A

### Graduate Catalog Content

#### Description

The Master of Science in Criminal Justice offers two tracks of study: the Professional Track; and the Research Track. Both tracks focus on the traditional issues such as management, administration and criminal justice theory. The Professional Track is designed to meet the needs of students preparing for careers in criminal justice. The Research Track is designed for students intent on pursuing doctoral study in criminal justice.

#### Degrees Offered

Master of Science in Criminal Justice

- Professional Track
- Research Track

#### Admission

For information on general UCF graduate admissions requirements that apply to all prospective students, please visit the Admissions and Registration ( <http://www.graduate.ucf.edu/currentGradCatalog/content/Admissions/> ) section of the Graduate Catalog. Applicants must apply online ( <http://www.graduate.ucf.edu/gradonlineapp/> ). Please be sure to submit all requested material by the established deadline(s).

In addition to the general admission requirements, applicants must provide:

- Official Transcripts of a bachelor's degree from a regionally accredited college or university, with a GPA of at least 3.0 on a 4.0 scale for the last 60 attempted semester hours of credit earned for the bachelor's degree;
- Competitive scores from a Graduate Record Exam (GRE) taken within the last five years.  
Competitive is usually greater than 700 (combined Quantitative and Verbal sections) for the Professional Track  
Competitive is usually greater than 1000 (combined Quantitative and Verbal sections) for the Research Track
- Statement of career goals, indicating how the Criminal Justice M.S. degree will enhance the applicant's career goals.
- A resume (no longer than two pages).

For applicants from countries where English is not the official language, or for an applicant whose bachelor's degree is not from an accredited non-U.S. institution, an official score of at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) is required.

Applicants not meeting the minimum standards may be considered as candidates for provisional admittance. However, only students with complete applications (final transcript, GRE, resume and personal statement) will be reviewed under this special admission category.

Students should be aware that admission to any graduate program is granted on a competitive basis. There may be cases where students meeting minimum requirements are denied admission based on such factors as program capacity or academic discretion.

### **Application Due Dates**

All application materials must be submitted by the appropriate deadline listed below. All students applying for fellowships must apply by the Fall Priority deadline date.

#### U.S. Applicants

Program(s)	Fall Priority Jan 15	Fall Jul 15	Spring Dec 1	Summer Apr 15
Master of Science in Criminal Justice				

#### International Applicants

Program(s)	Fall Priority Jan 15	Fall Jan 15	Spring Jul 1	Summer Nov 1
Master of Science in Criminal Justice				

#### International Transfer Applicants

Program(s)	Fall Priority Jan 15	Fall Mar 1	Spring Sep 1	Summer Dec 15
Master of Science in Criminal Justice				

### **Master of Science in Criminal Justice**

#### **Professional Track**

The Professional Track emphasizes criminal justice research, theory, policy and organizational administration. It is a 36 credit-hour program designed to prepare future criminal justice organizational leaders to be consumers of research and to equip them to summarize and present organizational information.

Each student completes a core of 7 courses (21 credit hours), 2 courses from restricted electives (6 credits), and 3 courses from graduate level general electives (9 credits). With the consent of the graduate director, senior scholars or post-baccalaureate students may apply up to nine hours of criminal justice graduate course work taken at UCF toward the Master of Science degree. However, transfer work at the graduate level from other universities is limited to 6 hours. Only courses where the student earned a grade of “B” or above will be accepted for transfer regardless of source as long as it was earned from an accredited university or college.

#### **Minimum Hours Required for M.S. Professional Track—36 Credit Hours**

Core Requirements—21 Credit Hours

CCJ 5015 The Nature of Crime (3 credit hours)

CCJ 5456 The Administration of Justice (3 credit hours)

CCJ 5704 Research Methods in Criminal Justice (3 credit hours)

CCJ 6106 Policy Analysis in Criminal Justice (3 credit hours)

CCJ 6xxx Criminal Justice Organizations (3 credit hours)

PLA 6xxx Administrative Law for Criminal Justice Professionals (3 credit hours)

CCJ 6xxx Proseminar in Criminal Justice (3 credit hours)

### **Restricted Electives (pick 2 courses) 6 Credit Hours**

CJC 5020 Foundations of Corrections (3 credit hours)  
CCJ 5105 Foundations of Law Enforcement (3 credit hours)  
CJJ 6020 The Juvenile Justice System (3 credit hours)  
CCJ 6217 Law and Social Control (3 credit hours)  
CCJ 6205 American Criminal Courts

**General Graduate Electives 9 Credit Hours** Students need to consult an adviser for approval of electives prior to enrolling.

**Note:** Students should obtain the most recent information for courses offered each term at myUCF ( <https://my.ucf.edu/> ).

### **Professional Track Program of Study and Exit Requirements**

Students must complete 36 hours of course work with at least a 3.0 overall grade point average in their course work of study. Internal program policies prohibit the substitution of additional course work into the program of study due to poor academic performance. Further, university guidelines stipulate that 50 percent (or 18 hours) of their 36-hour program of study must consist of classes taken at the 6000 level or higher. Students are encouraged to meet with a program adviser (or their graduate director) before enrolling in courses.

Students should also be aware that department rules prohibit the counting of more than 6 credit hours of special courses in their program of study. This includes seminars (CCJ 5931 or CCJ 5934), Study Abroad (CCJ 5957), Criminal Justice Practicum (CCJ 6946), and Independent Study (CCJ 6908). Students may also request the transfer of up to 6 credits of graduate course work from another department into their program of study. They are required to get the graduate coordinators approval prior to taking the course for assurance of its transfer. Residency requirements hold that each student must have taken at least 30 credit hours in criminal justice at UCF.

A final written examination is required of all students completing the Professional Track. This requirement will be satisfied by successful completion of the capstone course (CCJ 6xxx, Proseminar in Criminal Justice).

### **Program Options**

Students who wish special certification may choose from the following:

- Graduate Certificate in Crime Analysis (9 credits)
- Graduate Certificate in Corrections Leadership (12 credits)
- Graduate Certificate in Juvenile Justice Leadership (12 credits)
- Graduate Certificate in Police Leadership (12 credits)

For details about coursework required for specific certificates see certificate requirements. With careful planning the requirements for each of the certificates can be met by completion of core courses and free electives.

### **Research Track**

The Research Track emphasizes criminal justice theory, research, and policy. It is a 30 credit-hour program designed to emphasize research activity and independent inquiry, while simultaneously providing fundamental course work. This degree is especially recommended for those students seeking an interim degree prior to pursuing the Ph.D.

Each student in the research track will complete a 6 course core (18 credit hours), select 1 additional course from restricted electives (3 credit hours), and 9 additional graduate level credit hours of free electives. With the consent of the graduate director, senior scholar or post-baccalaureate students may apply up to nine hours of criminal justice graduate course work taken at UCF toward the Master of Science degree. However, transfer work at the graduate level from other universities is limited to 6 hours. Only courses where the student earned a grade of “B” or above will be accepted for transfer regardless of source as long as it was earned from an accredited university or college.

### **Minimum Hours Required for M.S. Research Track—30 Credit Hours**

Core Requirements—18 Credit Hours

CCJ 5015 The Nature of Crime (3 credit hours)

CCJ 5456 The Administration of Justice (3 credit hours)

CCJ 5704 Research Methods in Criminal Justice (3 credit hours)

CCJ 6XXX Advanced Research Methods in Criminal Justice (3 credit hours)

CCJ 6706 Quantitative Methods and Computer Utilization in Criminal Justice (3 credit hours)

CCJ 6xxx Advanced Quantitative Methods in Criminal Justice

### **Restricted Electives (pick 1 courses) 3 Credit Hours**

CJC 5020 Foundations of Corrections (3 credit hours)

CCJ 5105 Foundations of Law Enforcement (3 credit hours)

CJJ 6020 The Juvenile Justice System (3 credit hours)

CCJ 6217 Law and Social Control (3 credit hours)

CCJ 6205 American Criminal Courts

**General Graduate Electives 9 Credit Hours** Students need to consult an adviser for approval of electives prior to enrolling.

**Note:** Students should obtain the most recent information for courses offered each term at myUCF ( <https://my.ucf.edu/> ).

### **Research Track Program of Study and Exit Requirements**

Students must complete 30 hours of course work with at least a 3.0 overall grade point average in their course work of study. Internal program policies prohibit the substitution of additional course work into the program of study due to poor academic performance. Further, university guidelines stipulate that 50 percent (or 15 hours) of their 30-hour program of study must consist of classes taken at the 6000 level or higher. Students are encouraged to meet with a program adviser (or their graduate director) before enrolling in courses.

Students should also be aware that department rules prohibit the counting of more than 6 credit hours of special courses in their program of study. This includes seminars (CCJ 5931 or CCJ 5934), Study Abroad (CCJ 5957), Criminal Justice Practicum (CCJ 6946), and Independent Study (CCJ 6908). Students may also request the transfer of up to 6 credits of graduate course work from another department into their program of study. They are required to get the graduate coordinators approval prior to taking the course for assurance of its transfer. Residency requirements hold that each student must have taken at least 24 credit hours in criminal justice at UCF.

A research proposal is required of all students completing the Doctoral Track. This requirement will be satisfied by successful completion of the capstone course (CCJ 6XXX Research Capstone in Criminal Justice (3 credit hours).

### **Program Options**

Students who wish special certification may choose from the following:

- Graduate Certificate in Crime Analysis (9 credits)
- Graduate Certificate in Corrections Leadership (12 credits)
- Graduate Certificate in Juvenile Justice Leadership (12 credits)
- Graduate Certificate in Police Leadership (12 credits)

For details about coursework required for specific certificates see certificate requirements. With careful planning the requirements for each of the certificates can be met by completion of core courses and free electives.

### **Financial Support**

Graduate students may receive financial assistance through fellowships, assistantships, tuition support, or loans. For more information, see Financing Grad School, which describes the types of financial assistance available at UCF and provides general guidance in planning your graduate finances. The Financial Information section of the Graduate Catalog is another key resource.

Key points about financial support:

- If you are interested in financial assistance, you are strongly encouraged to apply for admission early. A complete application for admission, including all supporting documents, must be received by the priority date listed for your program under "Admissions."
- You must be admitted to a graduate program before the university can consider awarding financial assistance to you.
- If you want to be considered for loans and other need-based financial assistance, review the UCF Student Financial Assistance website at <http://finaid.ucf.edu> ( <http://finaid.ucf.edu/> ) and complete the FAFSA (Free Application for Federal Student Aid) form, which is available online at <http://www.fafsa.ed.gov>. Apply early and allow up to six weeks for the FAFSA form to be processed.
- UCF Graduate Studies awards university graduate fellowships, with most decisions based on nominations from the colleges and programs. To be eligible for a fellowship, students must be accepted as a graduate student in a degree program and be enrolled full-time. University graduate fellowships are awarded based on academic merit and therefore are not affected by FAFSA determination of need.
- Please note that select fellowships do require students to fill out a fellowship application (either a university fellowship application, an external fellowship application, or a college or school fellowship application). For university fellowship applications, see Financing Grad School.
- For information on assistantships (including teaching, research, and general graduate assistantships) or tuition support, contact the graduate program director of your major.

#### Contact Info

Joseph Sanborn, Associate Professor

Phone Number: 407-823-3738

[cjgrad@mail.ucf.edu](mailto:cjgrad@mail.ucf.edu)

## Health Services Administration Track

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Health Services Administration involves managing one or more of the administrative aspects of a health services organization. It encompasses the business management side of health care, including human resources, marketing, sales, accounting, information systems, planning, and facility management. Health care is America's fastest-growing service industry, and health care executives are in demand to administer the acute and long-term care needs of an aging population and to serve as consultants to businesses and industrial organizations.

Students are admitted to the Health Services Administration Track in the fall and spring semesters. Full- and part-time plans of study are available for both fall and spring admission cycles. After acceptance, all students must meet with their academic adviser to plan a program of study.

### Minimum Hours Required for M.S.—~~48~~51 Credit Hours

#### Recommended Prerequisite Courses—9 Credit Hours

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Completion of undergraduate course work including knowledge of the U.S. health care systems, finance, economics, and personal computers is required. These recommended courses may be taken after admission to the program.

- HSA 3170 Health Care Finance or equivalent (3 credit hours) or HSA 5177 Foundations of Healthcare Finance (3 credit hours)
- HSA 3430 Health Care Economics or equivalent (3 credit hours)
- HSA 4702 Health Sciences Research Methods or equivalent (3 credit hours)

#### Required Courses—45 Credit Hours

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- HSA 5198 Health Care Decision Sciences and Knowledge Management (3 credit hours)
- HSA 6108 Health Care Organization and Management II (3 credit hours)
- HSA 6119 Health Care Organization and Management (3 credit hours)
- HSA 6128 Health Care Services Management (3 credit hours)
- HSA 6155 Health Economics and Policy (3 credit hours)
- HSA 6185 Health Care Human Resources (3 credit hours)
- HSA 6385 Health Care Quality Management (3 credit hours)
- HSA 6925 Capstone in HSA (3 credit hours; see description below)
- HSA 6946 Internship (3 credit hours)\*
- HSC 6636 Issues and Trends in the Health Professions (3 credit hours)
- HSC 6911 Scientific Inquiry in the Health Profession (3 credit hours)
- PHC 6000 Epidemiology (3 credit hours)
- PHC 6146 Health Planning and Policy (3 credit hours)
- PHC 6160 Health Care Finance (3 credit hours)
- PHC 6164 Health Care Finance II (3 credit hours)
- PHC 6420 Case Studies in Health Law (3 credit hours)

\* Students with three or more years of relevant work experience as defined by the Director may substitute a second elective for the Internship course.

#### Elective Courses—3 Credit Hours

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Choose one course from the following list:

- HSC 6656 Health Care Ethics (3 credit hours)
- [HSA 6112 International Health Care](#)
- [HSA 6511 Health Care Leadership](#)
- PUP 6607 Politics of Health Care (3 credit hours)
- NGR 5660 Health Disparities: Issues and Strategies (3 credit hours)
- ENC 5237 Writing for the Business Professional (3 credit hours)
- GEY 5624 Gerontology: An Interdisciplinary Approach (3 credit hours)
- Or an alternative graduate-level course at the discretion of the Program Director

### **Comprehensive Examination Experience**

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A final written examination experience is required of all students in the program. This requirement will be met through successful completion of the capstone course (HSA 6925). To successfully pass this course, students must earn a grade of "A" or "B."

Independent learning is demonstrated throughout the curriculum through the process of inquiry and dialogue. Tangible research projects, scholarly papers, internships, or our capstone experience also contribute to the self-development of our students. The research study and final report will focus on reviewing and analyzing contemporary research in a student's particular specialization within the profession in order to help students acquire knowledge and skills pertaining to research-based best practices in that specialization area.

### **Program Options**

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The HSA Program is attractive to working professionals with its flexibility in course offerings and times and locations of courses. Students have the ability to choose from among four campuses to complete their degree: Palm Bay, Cocoa, Daytona Beach, and Orlando. Some courses may be offered via the web, during evening hours, and often on weekends.

## **Masters of Arts in Sport and Fitness**

### **A Proposal to the Graduate Curriculum and Standards Committee**

**TO: CED Graduate Curriculum and Standards Committee**

**FROM: Department of Child, Family and Community Sciences (CFCS)**

**RE: Name and Curriculum Change – From the M.A. in Physical Education with a Sports and Fitness Track to the M.A. in Sport and Fitness with Tracks in Health/Wellness & Applied Exercise Physiology, and Sport Leadership & Coaching**

**Date: January, 14, 2008**

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**Sport and Fitness Program Graduate Faculty:** Dr. Debby Mitchell, Dr. Thomas Fisher, Dr. Michael Kehoe, Dr. Edward (Ted) Kian, and Dr. Jeff Duke

#### **Overview**

The Dept. of Child, Family and Community Sciences proposes changing the name of the existing M.A. in Physical Education with a Sports and Fitness track to an M.A. in Sport and Fitness. The only current track with students enrolled under the M.A. in Physical Education is the Sports and Fitness track. The other track for the current M.A. in Physical Education that is entitled “Teaching Physical Education” has no students currently enrolled and no courses are offered in that area. The graduate Sports and Fitness track has a direct channel of students from the undergraduate program in Sports and Fitness.

Currently, the M.A. in PE with a Sports and Fitness track has four separate specializations: Coaching, Sports Leadership, Health/Wellness, Applied Exercise Physiology. CFCS proposes splitting the revised program into two tracks: Health/Wellness & Applied Exercise Physiology, and Sport Leadership & Coaching.

The purpose of this re-design is to give graduate students a more focused and centered curriculum, particularly since the Sport Leadership & Coaching specializations fit well together but have little relation to wellness and exercise science courses. In reality, current graduate students take courses from a variety of areas, since the department only offers one course per term in each division, with coaching and sport leadership occasionally not offered during specific terms. CFCS hopes to increase offerings per term in both tracks as the program enrollment increases, which we expect will happen after we can provide a more suitable curriculum to fulfill the needs of area high school coaches. But right now the department has only one true coaching course in the curriculum.

## Summary of Proposed Changes from Existing Degree Plan

1. Degree Name: Change degree name from M.A. in Physical Education with a Sports and Fitness track to an M.A. in Sport and Fitness.
2. Tracks and Specializations:
  - a. Reduce from four specializations to two distinct tracks: 1) Health/Wellness & Applied Exercise Physiology and 2) Sport Leadership & Coaching.
3. Revise core for the Sport Leadership & Coaching specialization to provide more courses applicable for students wishing to become coaches and athletic directors (the full plan of study is listed at the end of this document). Specifically:
  - a. Create new course: **PET 5XXX Critical Issues: Ethics in Coaching and Sport** (proposed syllabus and course action form is attached). This course, which has a similar offering at the undergraduate level in the Sports and Fitness program, will be one of the most important for all students in the Coaching and Sport Leadership specialization due to the number of potentially ethical dilemmas faced by coaches and athletic directors on a regular basis. Seats not taken by students in the Sport Leadership and Coaching specialization will be available to students from the Health/Wellness & Applied Exercise Physiology specialization.
  - b. Create new course: **PET 5XXX Motivational Aspects of Coaching** (proposed syllabus and course action form is attached). This course, which has a similar offering at the undergraduate level, will be of particular benefit to students interested in coaching. Motivational aspects will be discussed as they related to athletes of various age groups, skill level, experience level, and gender.
  - c. Create new course: **PET 6XXX Race and Gender in Coaching and Sport Leadership** (proposed syllabus and course action form is attached). This course, which was taught as a special topics course in fall, 2007, is a must for students at our major metropolitan university, many of whom will go on to coach and work in multi-cultural settings.

## Development History

In large part due to the success of the undergraduate program that has been based on the South Lake campus but will be offered on the main campus as well in 2008-09, the Sport and Fitness program has grown considerably in recent years. Between the South Lake branch and main campus, Sport and Fitness has eight full-time faculty members. Three of those faculty – Dr. Debby Mitchell, Dr. Thomas Fisher and Dr. Edward (Ted) Kian – are based on the main campus and focus much of their teaching and administrative focus on the graduate program. Furthermore, Dr. Jeff Duke, a coaching expert who teaches coaching courses for the undergraduate program based in South Lake, has agreed to teach two graduate courses for the revised Sport Leadership & Coaching specialization on the main campus. All graduate courses have been and will continue to be offered exclusively on the main campus. In addition, program faculty are currently in search of an associate/assistant tenure-line to join the main campus faculty in 2008-09. Funding for this position has been approved by Provost Hickey and the hire will transpire regardless of further university budget cuts due to the growth of the Sport and Fitness program. A strong pool of roughly 70 applied for the faculty position.

The undergraduate program has more than 270 full-time students enrolled, while the M.A. program has approximately 65 full-time or part-time students.

The undergraduate program had concentrations of Coaching and Fitness, but will expand to include five specializations beginning in 2008-09: 1) Coaching; 2) Fitness Training; 3) Physical Activity & Movement for Children, 4) Physical Human Performance; and 5) Recreation. The graduate program includes certificate programs in Coaching, Health/Wellness, Sports Leadership and Exercise Physiology.

### **Rationale**

With more students enrolled and a clearer pipeline set to come from undergraduate students on the main campus, the graduate Sport and Fitness program is now ready to provide a more focused program of study, which will also help in recruiting students from the undergraduate program. Currently, graduate Sport and Fitness students take courses from all four specializations, several of which have little relation to each other. Moreover, only one course is offered from each of the four current specializations each term and only one true coaching course is in the curriculum. Thus, we are not offering a curriculum suitable to our biggest potential target market – area high school coaches. After the split, we expect 40-45 students from the current graduate enrollment of 65 students to specialize in Health/Wellness & Applied Exercise Physiology. However, if these changes are approved, the Sport and Fitness faculty anticipate an immediate influx of area high school coaches into the program. The Sport and Fitness faculty project having roughly 40-55 students enrolled in each specialization within three years.

In the central Florida area alone, there are more than 1,000 high school coaches and athletic directors. The revised curriculum and addition of new courses will make this program much more attractive to area coaches and provide a better, more focused curriculum for students in both specializations. Graduate certificate programs will continue to be offered in all four areas: Health/Wellness, Applied Exercise Physiology, Sport Leadership, and Coaching.

### **Modalities**

Students who enroll in the same term in the Sport and Fitness program and have the same specialization will not all move through the core as a cohort. Nearly all of our students work either full- or part-time, most in interscholastic and intercollegiate athletes. Many of our students' work schedules vary by term and sport season. Some students may take only one or zero courses in one term, but then take a full load in the next term. We anticipate significantly increasing our number of part-time students after the curriculum becomes more suitable and beneficial to high school coaches.

We plan to offer the core course for each specialization (Introduction to Sports Administration for the Sport Leadership & Coaching specialization, and Exercise and Health for the Health/Wellness & Applied Exercise Physiology specialization) once per year as mixed mode courses that are taught predominantly online.

In addition, three Health/Wellness & Applied Exercise Physiology specialization courses will be offered through mixed mode (M) instruction: Health Methods: Teaching Strategies and Interventions, Wellness Development in Children, Personal Organizational Wellness. Three Sport Leadership & Coaching specialization courses will also be offered through mixed mode (M) instruction: Financial Issues in Sports and Fitness, Legal Issues in Sports and Fitness Programs, Leadership and Management in Sports programs.

See the old catalog (2007-08) below as well as the proposed catalog copy (2008-09).

**Master of Arts in Physical Education  
Sports and Fitness Track  
Current Catalog Copy 2007-08 (old)**

The Sports and Fitness track of the Master of Arts in Physical Education offers students the opportunity to develop knowledge and skills to work in areas such as coaching or fitness. It is very common for physical educators to coach in youth, school, and recreational programs as well as work in the fitness industry teaching in YMCAs, fitness and wellness centers. A research report is required at the completion of studies.

**Note:** Graduate Certificate programs are available in Coaching, Sports Leadership, and Health and Wellness.

**Minimum Hours Required for the M.A.—33 Credit Hours**

**Area A: Core —9 Credit Hours**

- PET 6416 Administrative Principles of Sport and Physical Education (3 credit hours)
- EDF 6481 Fundamentals of Graduate Research in Education (3 credit hours)
- PET 6910 Problem Analysis—Review of Literature (3 credit hours)

**Area B: Specialization—24 Credit Hours**

**Note:** Specialization courses are available in four different areas of concentration (Coaching, Sports Leadership, Health/Wellness, and Applied Physiology). Students may select courses from any of these areas with adviser's consent. Selected courses from other programs or colleges may also be substituted with adviser's consent.

**Coaching**

- PET 5355 Exercise and Health (3 credit hours)
- PET 5635 Advanced Human Injuries (3 credit hours)
- PET 5766 Advanced Coaching Theory (3 credit hours)
- PET 6217 Peak Performance in Sports (3 credit hours)
- PET 6391 Training and Conditioning Techniques for Coaches (3 credit hours)

**Sports Leadership**

- PET 5465 Financial Issues in Sports and Fitness (3 credit hours)
- PET 5466 Marketing and Promoting Sports and Fitness Programs (3 credit hours)
- PET 6406 Planning and Operating Facilities for Sports and Fitness Programs (3 credit hours)
- PET 6476 Leadership and Management in Sports and Fitness Programs (3 credit hours)
- PET 6478 Legal Issues in Sports and Fitness Programs (3 credit hours)

## **Health/Wellness**

- HSC 5317 Health Methods: Teaching Strategies and Interventions (3 credit hours)
- PET 6088 Wellness Development in Children (3 credit hours)
- PET 6089 Personal and Organizational Wellness (3 credit hours)
- PET 6330 Kinesiology (3 credit hours)
- PET 6505 Wellness Technology in Physical Education (3 credit hours)

## **Applied Exercise Physiology**

- PET 6362 Exercise, Nutrition and Weight Control (3 credit hours)
- PET 6357C Environmental Perturbation and Human Performance (3 credit hours)
- PET 6381 Physiology of Neuromuscular Mechanisms (3 credit hours)
- PET 6388 Cardiovascular Physiology (3 credit hours)
- PET 6690 Exercise Testing and Prescription for Special Populations (3 credit hours)

## **Additional Specialization Course Options**

- PET 6909 Research Report (3-6 credit hours)
- PET 6946 Practicum, Clinical Practice (3 credit hours)

## **Additional Program Graduation Requirements**

- Comprehensive Examination

**M.A. In Sport and Fitness**  
**Proposed Catalog Copy 2008-09 (new)**

The Master of Arts in Sport and Fitness offers students the opportunity to develop knowledge and skills to work in areas such as coaching, athletic leadership, health clubs, and youth community centers. It is very common for sport and fitness graduates to coach in youth, school, and recreational programs as well as work in the fitness industry teaching in YMCAs, fitness and wellness centers. A research report is required at the completion of studies.

**Note:** Graduate Certificate programs are available in Coaching, Sports Leadership, and Health and Wellness.

**Minimum Hours Required for the M.A.—33 Credit Hours**

**Area A: Core —9 Credit Hours**

- EDF 6481 Fundamentals of Graduate Research in Education (3 credit hours)
  - PET 6910 Problem Analysis – Review of Literature (3 credit hours)
- (and one of the two following courses)
- PET 5355 Exercise and Health (3 credit hours) (for Health/Wellness & Applied Exercise Physiology specialization)
  - SPM 5155 Introduction to Sports Administration (3 credit hours) (for Sport Leadership & Coaching specialization)

**Area B: Specialization—24 Credit Hours**

**Note:** Specialization courses are available in two different areas of concentration (Health/Wellness & Applied Physiology, or Coaching & Sports Leadership). Students may select any combination courses from any of these areas with an advisor's consent. Selected courses from other programs or colleges may also be substituted with an advisor's approval.

**Health/Wellness & Applied Exercise Physiology (Advisor – Dr. Thomas Fisher)**

(Note: Students take 24 credit hours from the list below, but may also substitute course from the Sport Leadership & Coaching specialization).

- HSC 5317 Health Methods: Teaching Strategies and Interventions (3 credit hours)
- PET 5635 Advanced Human Injuries (3 credit hours)
- PET 6088 Wellness Development in Children (3 credit hours)
- PET 6089 Personal and Organizational Wellness (3 credit hours)
- PET 6217 Peak Performance in Sports (3 credit hours)
- PET 6263 Exercise, Nutrition & Weight Control (3 credit hours)
- PET 6330 Kinesiology (3 credit hours)
- PET 6357 Environmental Perturbation and Human Performance (3 credit hours)
- PET 6381 Physiology of Neuromuscular Mechanisms (3 credit hours)
- PET 6388 Cardiovascular Physiology (3 credit hours)

- PET 6505 Wellness Technology in Physical Education (3 credit hours)
- PET 6690 Exercise Testing and Prescription for Special Populations (3 credit hours)

### **Sport Leadership & Coaching (Advisors – Dr. Edward (Ted) Kian & Dr. Jeff Duke)**

(Note: Students take eight courses from the list below, but may also substitute courses in from the Health/Wellness & Applied Exercise Physiology specialization).

- PET 5766 Advanced Coaching Theory (3 credit hours)
- PET 5XXX Critical Issues: Ethics in Coaching and Sport (3 credit hours)
- PET 5XXX Motivational Aspects of Coaching (3 credit hours)
- PET 6391 Training and Conditioning Techniques for Coaches (3 credit hours)
- PET 6XXX Race and Gender in Coaching and Sport Leadership (3 credit hours)
- SPM 5506 Financial Issues in Sports and Fitness (3 credit hours)
- SPM 5308 Marketing and Promoting Sports and Fitness Programs (3 credit hours)
- SPM 6106 Planning and Operating Facilities for Sports and Fitness Programs (3 credit hours)
- SPM 6158 Leadership and Management in Sports Programs (3 credit hours)
- SPM 6726 Legal Issues in Sports and Fitness Programs (3 credit hours)

### **Additional Specialization Course Options**

- PET 6909 Research Report (3-6 credit hours)
- PET 6946 Practicum, Clinical Practice (3 credit hours)

### **Additional Program Graduation Requirements**

- Comprehensive Examination

### **Tentative Schedule for Core Courses with Mode of Delivery**

**L** = Courses taught through face-to-face lectures.

**M** = Courses taught through a mixed mode.

**W** = Courses taught fully via the World Wide Web.

Fall: EDF 6481 Fundamentals of Graduate Research in Education (3 credit hours) L, M, W  
Fall: PET 6910 Problem Analysis – Review of Literature (3 credit hours) M  
Fall: PET 5355 Exercise and Health (3 credit hours) (for Health/Wellness & Applied Exercise Physiology specialization) M  
Fall: SPM 5155 Introduction to Sports Administration (3 credit hours) (for Sport Leadership & Coaching specialization) M

Spring: EDF 6481 Fundamentals of Graduate Research in Education (3 credit hours) L, M, W  
Spring: PET 6910 Problem Analysis – Review of Literature (3 credit hours) M

Summer: EDF 6481 Fundamentals of Graduate Research in Education (3 credit hours) L, M, W  
Summer: PET 6910 Problem Analysis – Review of Literature (3 credit hours) M

### **Tentative Schedule of Offerings of Specialization Courses with Mode of Delivery**

**L** = Courses taught through face-to-face lectures.

**M** = Courses taught through a mixed mode.

**W** = Courses taught fully via the World Wide Web.

#### **Health/Wellness & Applied Exercise Physiology (Advisor – Dr. Thomas Fisher)**

(Note: Students take 24 credit hours from the list below, but may also substitute course from the Sport Leadership & Coaching specialization).

Fall Even Year:

PET 6263 Exercise, Nutrition & Weight Control (3 credit hours) L

PET 5635 Advanced Human Injuries (3 credit hours) M

Spring Even Year:

PET 6690 Exercise Testing and Prescription for Special Populations (3 credit hours) L

PET 6217 Peak Performance in Sports (3 credit hours) L

Summer Even Year:

PET 6357 Environmental Perturbation and Human Performance (3 credit hours) L

Fall Odd Year:

PET 6388 Cardiovascular Physiology (3 credit hours) L

PET 6330 Kinesiology (3 credit hours) M

Spring Odd Year:

PET 6381 Physiology of Neuromuscular Mechanisms (3 credit hours) L

PET 6690 Exercise Testing and Prescription for Special Populations (3 credit hours) L

Summer Odd Year:

PET 6088 Wellness Development in Children (3 credit hours) M

**Sport Leadership & Coaching (Advisors – Dr. Edward (Ted) Kian & Dr. Jeff Duke)**

(Note: Students take eight courses from the list below, but may also substitute courses in from the Health/Wellness & Applied Exercise Physiology specialization).

Fall Even Year:

PET 5766 Advanced Coaching Theory (3 credit hours) L

SPM 5506 Financial Issues in Sports and Fitness (3 credit hours) M

Spring Even Year:

PET 6391 Training and Conditioning Techniques for Coaches (3 credit hours) L

SPM 5308 Marketing and Promoting Sports and Fitness Programs (3 credit hours) L

Summer Even Year:

SPM 6106 Planning and Operating Facilities for Sports and Fitness Programs (3 credit hours) M

Fall Odd Year:

PET 5XXX Critical Issues: Ethics in Coaching and Sport (3 credit hours) L

SPM 6726 Legal Issues in Sports and Fitness Programs (3 credit hours) M

Spring Odd Year:

PET 5XXX Motivational Aspects of Coaching (3 credit hours) L

PET 6XXX Race and Gender in Coaching and Sport Leadership (3 credit hours) L

Summer Odd Year:

SPM 6158 Leadership and Management in Sports Programs (3 credit hours) M

**Graduate Council Curriculum Subcommittee**  
**Course Agenda 02-15-08** (hold over from 01-30-08 Meeting)

**College of Education Special Topics**

**EDH 6938 Sect 01 ED-Ed Research, Tech & Lead 3(3,0)**

**ST: Retention Strategies in Colleges and Universities:** Analyzing educational and political ramifications of college attrition, with focus on variation in retention practices and strategies.

30 character abbreviation: **ST: Retention Strategies Coll**

**EDF 6938 Sect 01 ED-Educational Studies 1(1,0)**

**ST: Understanding Mentoring: Building Student Connections:** PR: Students must be BCC staff and CI. Provides faculty with strategies, tactics, and tools to improve interactivity to distance learning.

30 character abbreviation: **ST: Underst Mentoring: Buildin**

**Engineering & Computer Science Course Action Additions**

**CAP 5XXX ECS-Computer Science 3(3,0)**

**AI for Game Programming:** PR: CS Foundation Exam or EEL 4851C or C.I. Surveys cutting-edge AI techniques for video games and board games and contrasts them with more traditional approaches.

30 character abbreviation: **AI for Game Programming**

**CAP 6XXX ECS-Computer Science 3(3,0)**

**Complex Adaptive Systems:** PR: Graduate standing or C.I. This course is an introduction to the field of complex adaptive systems and will cover basic definitions, theoretical background, and empirical analyses.

30 character abbreviation: **Complex Adaptive Systems**

**COP 6XXX ECS-Computer Science 3(3,0)**

**Network Optimization:** Recent advances in theory and computational techniques for optimal design and analysis of large networks for computers communications, and transportation including Internet and WWW complex networks

30 character abbreviation: **Network Optimization**

**EEL 5XXXC ECS-Electrical & Computer Eng 4(3,3)**

**Microwave Engineering:** PR: EEL 3470 or C.I. Transmission line theory, Smith charts, S-parameters, simple impedance matching circuits, wave guides, resonators, basic microwave measurements.

Materials & Supply Fee addition proposed: \$0.00

30 character abbreviation: **Microwave Engineering**

**EEL 6XXX ECS-Electrical & Computer Eng 3(3,0)**

**CMOS Analog and Digital Integrated Circuit Design:** PR: EEL 4309C or C.I. The objective of this class is to teach the graduate students the principle and techniques of CMOS IC design for high performance, low power, and RF applications.  
30 character abbreviation: **CMOS Analog & Dig Intergr Circ**

**EEL 6XXX ECS-Electrical & Computer Eng 3(3,0)**  
**Cooperative Control of Networked Autonomous Systems:** PR: EEL 5173 or C.I. Fundamentals of cooperative control theory for autonomous vehicles and agents, with emphasis on consensus, effects of intermittent and delayed communication/sensing network, and cooperative control designs.  
30 character abbreviation: **Cooperative Control of Systems**

**EEL 6XXX ECS-Electrical & Computer Eng 3(3,0)**  
**Semiconductor Material and Device Characterization:** PR: EEL 3306 or C.I. Semiconductor materials, resistivity, mobility, doping, carrier lifetime, defects, contact resistance, threshold voltage, interface charges, channel length of MOS devices, optical and surface characterization  
30 character abbreviation: **Semicondct MatrI & Device Char**

### **College of Education Course Action Additions**

**EDF 6XXX ED-Educational Studies 3(3,0)**  
**Teacher Leadership for Educational Equity and Social Justice:** PR: Graduate status. Analyzes interrelationship of identity differences with educational and social policy, contexts, and practice, with attention to Florida schools' equity data.  
30 character abbreviation: **Teach Ldrshp Educ Equity & Soc**

**EDG 6XXX ED-Educational Studies 3(3,0)**  
**Seminar in Teacher Leadership:** PR: Graduate status. Develops knowledge and skills to critically analyze educational contexts and to advance student achievement through collaborative leadership in continuous school improvement.  
30 character abbreviation: **Seminar in Teacher Leadership**

**TABLED : Continue to table. Review at same time as Art Education track.**

**ARE 7XXX ED-Teaching & Learning Princ 3(3,0)**  
**Advanced Research Seminar in Art Education:** PR: Doctoral standing, admission to the PhD or EdD in Education, or C.I. Identify and review landmark research relevant to art education research. Emphasis is placed on examining the nature of past and present research in art education, various methods of conducting art education research, and how research can translate into practical classroom application. May be used in the degree program a maximum of 2 times only when course content is different.  
30 character abbreviation: **Adv Res Seminar in Art Educ**

**TABLED : Continue to table. Review at same time as Art Education track.**

**ARE 7XXX ED-Teaching & Learning Princ 3(3,0)**

**Assessment Seminar in Art Education:** PR: Doctoral standing, admission to the PhD or EdD in Education, or C.I. This course will examine the nature of past and present assessment research in art education, various methods of conducting this research, and how it can translate into application and contribute to the knowledge base in the field.

30 character abbreviation: **Assess Seminar in Art Educ**

**TABLED : Continue to table. Review at same time as Art Education track.**

**ARE 7XXX ED-Teaching & Learning Princ 3(3,0)**

**Internship Seminar in Art Education:** PR: Doctoral standing, admission to the PhD or EdD in Education, or C.I. Doctoral Internship is "hands on experience" in pre K-16 or as a community based art educator under supervision of a certified classroom teacher. The purpose of this course is for candidates to assume the roles and responsibilities of a classroom teacher.

30 character abbreviation: **Intrn Seminar in Art Education**

**SCE 7XXX ED-Teaching & Learning Princ 3(3,0)**

**Assessment in Science Teaching, Learning and Research:** PR: Doctoral standing, admission to the PhD or EdD program, and CI. This course will examine current instruments/tools used in science assessment covering standardized science testing and authentic and performance-based science assessments.

30 character abbreviation: **Assess Sci Teach Learn & Res**

**SCE 7XXX ED-Teaching & Learning Princ 3(3,0)**

**Design of Post Secondary Science Curriculum:** PR: Doctoral standing, admission to the PhD program or EdD, and CI. Successful completion of ESE 6235 or an approved equivalent. This course will examine issues of curriculum theory, research, and practice at the post-secondary level situated in science education.

30 character abbreviation: **Design Post Sec Science Curr**

### **Health & Public Affairs Course Action Additions**

**CCJ 6XXX HPA-Criminal Justice/Legal St 3(3,0)**

**Advanced Research Methods in Criminal Justice:** PR: Graduate Standing or C.I. This course exposes students to the application of research methods in criminal justice. This course serves as the capstone experience for the Research Track.

30 character abbreviation: **Adv Research Methods in CJ**

**CCJ 6XXX HPA-Criminal Justice/Legal St 3(3,0)**

**Proseminar in Criminal Justice:** PR: Graduate Standing or C.I. This course is the capstone experience for the Criminal Justice Professional track. The course reviews and integrates the six other courses in the core curriculum.

30 character abbreviation: **Proseminar in Criminal Justice**

### **Engineering & Computer Science Course Action Deletions**

**EEL 6786 ECS-Electrical & Computer Eng 3(3,0)**

**Advanced Networking Hardware Design:** PR: EEL 4781, EEL 4768C, or C.I. Advanced design techniques, specifically for packet-switched networks (wired, wireless, or optical).

### **Engineering & Computer Science Course Action Revisions**

**CAP 5512 Evolutionary Computation 3(3,0)**

PR: CAP 4630 or C.I.

This course covers the field of evolutionary computation, focusing on the theory and application of genetic algorithms.

**CAP 6637 ~~Affective Computing with Artificial Intelligence~~ 3(3,0)  
Activity and Plan Recognition**

PR: CAP 5636, 5415 or CAP 5610 or CAP 5512 or C.I.

~~Improve understanding of functional role of affect. Integrate emotion recognition techniques. Synthesize emotion and expression of emotion for autonomous agents. Understand affective computing social implications.~~

Classical and probabilistic techniques for plan and activity recognition with a focus on graphical models

30 character abbreviation: **Activity and Plan Recognition**

**CAP 6671 ~~Intelligent Systems~~ 3(3,0)**

**Intelligent Systems: Robots, Agents, and Humans**

PR: CAP 5640, 5610 or C.I.

~~Study of computer systems exhibiting intelligent attributes, particularly learning; basic concepts related to characteristics, capabilities, design, and principles of operation; discussion of relevant philosophical/social issues.~~

Study of systems that exhibit intelligent attributes. Includes practical techniques for designing intelligent agents capable of planning, learning, and cooperation. Discussion of psychological/social issues.

30 character abbreviation: **Robots, Agents, and Humans**

**CGS 5132 ~~Computer Forensics II: Network Security, Intrusion Detection, & Forensic Analysis~~ 3(3,0)**

**CAP 6XXX Computer Forensics II**

PR: CGS 5134, 5131 or C.I.

Computer network protocols and security, protocols and security models, cryptography, network intrusion detection and prevention, digital evidence collection and evaluation, and legal issues involved in network forensics analysis. forensics, wireless security and forensics

30 character abbreviation: **Computer Forensics II**

**Tabled : Two courses with the same name and course description. New information : Keep this course per feedback from School of EI Engr and Computer Science.**

**CDA 5106 ~~Advanced Computer Architecture I~~ 3(3,0)  
Advanced Computer Architecture**

PR: CDA 4150G, 4150C or EEL 4768C.

~~Instruction set architectures, processor implementation, memory hierarchy, pipelining, computer arithmetic, vector processing, and I/O.~~

~~Modern processor design, instruction-level parallelism, thread-level parallelism, data-level parallelism, memory hierarchy, and I/O.~~

30 character abbreviation: **Adv Computer Architecture**

**Tabled : Two courses with the same name and course description. New information : Keep this course per feedback from School of EI Engr and Computer Science.**

**CDA 6107 Parallel Computer Architecture 3(3,0)**

PR: CDA 4150C, recommended: CDA 5106, graduate standing. PR: EEL 5708 or CDA 5106.

~~Principles and trade-offs in the design of parallel architectures, shared-memory, message-passing, dataflow, data-parallel machines, cache coherence protocols, consistence models, and interconnection networks.~~

~~Principles and trade-offs in the design of parallel architectures, shared-memory, message-passing, dataflow, data-parallel machines, cache coherence protocols, and consistence models.~~

**CDA 6520 ~~Computer Networks Design and Distributive Processing~~ 3(3,0)  
Advanced Computer Networks**

PR: CDA 5501 and COP 5611, or C.I.

~~Computer communications networks design considerations, network operating system, distributive processing.~~

~~Recent advances in computer networks, overlay and multihomed networks, routing and multicasting, Internet friendly protocols, congestion control, QoS-differentiated services, cellular networks.~~

30 character abbreviation: **Advanced Computer Networks**

**COP 5021 Program Analysis 3(3,0)**

PR: COP 4020 and COT 4210, 4210 or C.I.

~~Syntactic and Semantic Static analysis of programs. Theoretical and practical limitations, attribute evaluation, data flow analysis, program optimization, intermediate representations code-generation, abstract interpretation, type and effect systems. Tools to automate analysis. program analysis.~~

**~~EEL 6065 Formal Approaches to Specification of Software-Intensive Systems~~  
3(3,0)**

**COP 6XXX Formal Specification of Software Systems**

PR: Graduate standing or C.I.; and PR: Discrete math and matrix algebra (equivalent to STA 3032, EGN 3420, and EEL 4832); and EEL 5881 or EEL 5860. COT 3100C, MAD 2104, or MHF 3302) or C.I.

Issues and current research in formal specification and verification of software-intensive systems. mathematical models and formalisms. Projects, presentations, analysis of literature.

30 character abbreviation: **Specification of Software**



**EEL 6812 Introduction to Neural Networks 3(3,0)**

PR: EEL 5825 or C.I.

~~Artificial neural network theory, models, and architectures. Neurobiological basis, learning theory, applications, and hardware implementation issues.~~

Preliminaries of Neural Networks, Simple Layer Perceptrons, Multi-Layer Perceptrons, Kohonen Neural Networks, Radial Basis Function Neural Networks, Adaptive Resonance Theory Neural Networks, and Support Vector Machines.

**EEL 6875 Engineering of Artificial Intelligence Systems 3(3,0)**

**Autonomous Agents**

PR: ~~EEL 5874 or C.I. 4872 or CAP 4630 or C.I.~~

~~Introduction to the engineering of knowledge-based automated reasoning systems including the use of representation languages and object-oriented techniques. It is based on LISP.~~

Agent architectures, including behavioral, decision theoretic and logic (BDI) based. Multi-agent systems, agent communication languages. Negotiation, argumentation, coalition formation. Project oriented.

30 character abbreviation: **Autonomous Agents**

**EEL 6876 Current Topics in Artificial Intelligence in Engineering Systems 3(3,0)**

**Current Topics in Artificial Intelligence**

PR: ~~EEL 6875 or C.I. 4872 or CAP 4630 or C.I.~~

~~including artificial intelligence, relevant to engineering systems including causal modeling, qualitative reasoning, temporal reasoning, and inductive reasoning. Review of the state-of-the-art research in literature. selected current topics in artificial intelligence. Includes extensive review of current literature and class discussion~~

30 character abbreviation: **Curr Topics in Artif Intell**

**EEL 6878 Modeling and Artificial Intelligence 3(3,0)**

PR: ~~EEL 6875 or C.I. 4872 or CAP 4630 or C.I.~~

~~Introduction to various applications of artificial intelligence techniques as they affect the engineering aspects of computer-based simulation, modeling, and training. The course will be taught as a seminar, making significant use of the current research literature. Topics include Intelligent Tutoring Systems, Situational Awareness, Intelligent Instructor Support, and Qualitative Modeling.~~

Introduction to artificial intelligence techniques applied to computer-based modeling, simulation, and training. The course makes significant use of the current research literature.

**EEL 5762 Performance Analysis of Computer and Communication Systems 3(3,0)**

**EEL 6XXX**

PR: ~~EEL 4767C, STA 3032. 4767C and STA 3032 or C.I.~~

Stochastic modeling and discrete-event simulation; Markov chains; networks of queues; SemiMarkov models; application to multiprocessor systems, switching and multi-user communications.

**~~EEL 5425C~~ RF and Microwave Measurement Techniques 4(3,3)**

**EEL 6XXXC**

PR: EEL 4436C or EEL 5482 or EEL ~~5555C~~. 5555C or C.I.

RF& Microwave components in wireless systems, i.e. antennas, passive components, active circuits, as well as noise, modulation are characterized by measurement and designed/verified by EM/circuit software.

Materials & Supply Fee: \$30.00