MSIE in Healthcare Systems Engineering

UCF

INDUSTRIAL ENGINEERING & MANAGEMENT SYSTEMS
MASTER OF SCIENCE IN HEALTHCARE SYSTEMS ENGINEERING

Earn your MS degree online in two years

COURSE OF STUDY
HSC 6636 Issues in the Health Professions
EIN 6551 Systems Engineering
EIN 6587 Advanced Engineering Economics
EIN 6177 Management Information Systems
EIS 5370 Risk Assessment & Management
EIS 5219 Engineering Statistics
EIS 5551 Discrete Systems Simulation
EIN 6609 IE Analytics in Healthcare
EIS 6224 Quality Management
EIN 5140 Project Engineering (Capstone)

QUICK FACTS
- Fully online degree
- 2 year completion
- 7% week classes
- Admission three times per year
  • Fall - June 15
  • Spring - November 15
  • Summer - March 15
- Requires 30 credit hours (40 courses)
- No GRE requirement
- Wide range of professional and research opportunities

UCFOnline
ucfonline.com/HSE

Our healthcare systems are changing – globally, nationally, regionally, and locally – and much of that change is happening without the support of systems engineers who understand the issues associated with massive systemic change involving a diversity of people and organizations. Many healthcare professionals have significant expertise in their respective healthcare occupations, but often lack expertise in continuously improving the design of systems, processes, or products. A May 2014 study¹ recommended that “the United States build a healthcare workforce that is equipped with essential systems engineering competencies that will enable system redesign.”

The deadline to apply for Fall 2016 is June 15

PROGRAM OVERVIEW
This web-based online masters program in Healthcare Systems Engineering is designed to attract students with a variety of educational backgrounds and keen interest in working in the healthcare field. It provides existing healthcare practitioners, and individuals with an engineering background who are interested in joining the rapidly expanding field of healthcare systems, with models and tools such as quantitative analysis, systems modeling, and computer simulation for effective decision-making in healthcare organizations and systems.

Translating a specific design into an organizational or physical reality in the most effective manner, and with highest possible quality, is the focus of the Industrial Engineering and Management Systems field. This program is tailored to meet the needs of a broad range of working professionals interested in leading healthcare systems engineering and management initiatives. It is the first program of its kind, with no other university currently offering a similar program fully online.

¹ Better Health Care And Lower Cost: Accelerating Improvement Through Systems Engineering, May 2014, President's Council of Advisors on Science and Technology (PCAST)
Overarching Questions

• How do we engineer a more effective healthcare system that promotes individual and population health with maximal quality at minimal intervention, risk, and cost?

• What do industrial engineers need to know, and be able to do, to enable that engineering to occur across healthcare systems from individual patients and providers up to social-scale institutions?
Program Themes

• Analyze the healthcare system as a distributed logistics, transportation, facilities, and services network in which patients and medical care are brought together across points in the system at multiple levels of scale and detail.

• Describe the healthcare system as a vertical integration serving a cradle-to-grave horizontal market with parallel systems involving the actual clinical treatment of patients vs. the maintenance of health records.

• Analyze the direct and emergent system impacts of shifts taking place across the healthcare sector, and the changing economics of the globalizing healthcare system.
Highlights

• Curriculum is a set list of 10 courses, with no electives planned at this time
• **30 credits** in two years
• All courses are **on-line only** for 7½ week sessions
• All courses emphasize healthcare-specific areas of interest and concern
• Five classes per year: Fall-A, Fall-B, Spring-A, Spring-B, and Summer
• New students admitted in **Fall-A** and **Spring-A** terms only, expanding over time as program scales
Current Activities

• Marketing
  – Outreach to prospective students and organizations
  – Web-based marketing based on keywords of interest
  – Publications, postings, and webinars through professional societies: HIMSS, IIE, INCOSE

March 1 – April 29
9,526 page views
177 unique info forms
313 OSS inquiries
8 info session signups
Facebook:
  404,557 impressions
  57,583 people reached
  15,218 clicks
  3.811% click through
Current Activities

• Marketing
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• Curriculum & Pedagogy
  – Adapting courses to the on-line environment
  – Adapting courses to the 7½ week timeframe
  – Broadening courses to include healthcare perspective

• Classes start August 21st
MSIE in Healthcare Systems Engineering
HSE Program Management PMAP

- **Establish CECS & IEMS Requirements**
  - Program goals & objectives
  - NVA

- **Communicate & Coordinate across UCF**
  - Faculty advisors
  - UCF department & faculty stakeholders

- **Establish Community Support**
  - Community advisers
  - Community stakeholders

- **Establish Infrastructure & Partnerships**
  - Canvas tools
  - Marketing partnership
  - Infrastructure & partnership resources

- **Manage Program**
  - Program metrics

System of Internal Controls
Community & faculty engagement

Key Metrics
Advisory group size & duration
HSE Program Operations PMAP

Program Requirement
- Faculty Requirements
- Needed Infrastructure

Curriculum Design
- Program goals & objectives
- Community advisors
- Faculty advisors
- Program requirements
- Alumni feedback
- Canvas
- Published readings

Course Development
- Cross-course mappings
- Knowledge & expertise
- Canvas
- Candidate readings
- Legacy course materials
- Course syllabi
- Instructional materials
- Advising materials
- Assessment strategies
- Selected readings
- Collateral materials

Assessment Development
- Assessment strategies
- Canvas

Staffing & Training
- Program schedules
- Faculty availability
- Canvas
- Faculty assignments
- Train-the-trainer

System of Internal Controls
- Confirmed faculty assignment lead times

Key Metrics
- Course materials completeness & freshness
- Faculty-to-course ratios and readiness
HSE Program Execution PMAP

- Admitted learners
- Promotions
- Candidate learner advisement

- Advised learners
- Programs of study
- Advisor assignments

- Community service
- Educated learners
- Instructor & peer feedback

- Program alumni
- Credentials
- Research output

Continuous learning
- Alumni feedback

Marketing & Admissions
- Learner candidates
- Program applicants
- Transcripts / test scores
- Recommendations

Orientation & Advising
- Learners
- Advising materials

Enrollment & Teaching
- Learners
- Registrations
- Instructors
- Canvas

Assessment & Graduation
- Educated learners
- Practicum opportunities

Support & Service
- Program alumni

System of Internal Controls
- Program advising
- Program of study

Key Metrics
- Admission ratios, quantitative & qualitative
- Course completion rates & levels
- Progressions toward practicum & graduation
- Market share