

HEALTHCARE SYSTEMS ENGINEERING, M.S.

The Healthcare Systems Engineering (HSE) Master's Program offers the two following options:

1. **4+1 HSE program** for LMU undergraduate science students who earn their BS degree at LMU and wish to earn the MS degree one year later
2. **A regular HSE MS program**

Objectives and Outcomes of Healthcare Systems Engineering Master's Program

1. To serve the healthcare industry with innovative comprehensive education in systems-based healthcare operations management, preparing graduates for successful careers in healthcare. Potential applications include: clinical and operational management within hospitals, clinics, radiology and clinical laboratories, pharmacies, emergency departments, operating rooms, healthcare enterprise IT systems; as well as industry initiatives such as lifecycle patient wellness and population health, telemedicine, health delivery systems, and medical device systems. Educational Outcome: All students will appreciate and understand these applications.
2. To integrate academic training with industry application, through effective partnerships with national recognized faculty from LMU, Kaiser Permanente, UCLA Health, and other healthcare organizations, who deliver exciting and relevant curriculum, as well as student projects, internships, and industry connections. Educational Outcome: All students will perform a Capstone Project with relevant and practical industrial application.
3. To equip graduates with industry-leading knowledge in health systems engineering, systems-enhanced lean management, and project management, providing management skills that enables graduates to effectively lead systems-based change initiatives within the healthcare setting. Educational Outcome: All students will perform a Capstone Project demonstrating systems engineering and project management process and skills. Two advanced Lean courses will test students' ability to apply Lean methods.
4. To assure continued program excellence and industry relevance with nationally recognized experts serving on the HSE Board of Advisors. Educational Outcome: All students will have an opportunity to interact with national experts in their classes, in guest lectures and seminars and in industrial visits.
5. To serve our students, graduates, and the industry with an emphasis on medical ethics. Educational Outcome: Medical ethics principles will be incorporated in coursework and projects, and the students' capstone projects will include an analysis of the project in light of medical ethical principles.

Online and Face-to-Face Courses

Courses for the Master's in Healthcare Systems Engineering are a combination of synchronous on-line and in-person sessions and field trips.

Capstone projects may require in-person activities and observations.

4+1 HSE Program for LMU Undergraduate Science Students

Admission Requirements

- Senior standing in Fall semester; apply by December 15 in the senior year
- Application to Graduate Admission. To apply online, visit <http://graduate.lmu.edu>
- Undergraduate GPA of at least 3.0 recommended. Lower GPA will be considered on a case-by-case basis.
- Essay demonstrating passion for a healthcare career.
- One letter of recommendation.

HSE Program for Regular Students

Admission Requirements

- Application to Graduate Admission and a \$50 application fee. To apply online, visit <http://graduate.lmu.edu>.
- Bachelor's degree an U.S. accredited University
- Minimum cumulative GPA of 3.0 recommended. Lower GPA will be considered on a case-by-case basis.
- Essay demonstrating passion for healthcare
- Two letters of recommendation
- Applications are accepted on a rolling basis (year round)

4+1 HSE Program for LMU Undergraduate Science Students

Graduation Requirements

30 units. One course (HSEG 515 Healthcare Delivery Systems) recommended to be taken in the senior year as an undergraduate elective, plus 9 HSE courses. 500-level courses taken as an undergraduate may not be repeated for graduate credit.

Code	Title	Semester Hours
Core Courses		
SYEG 510	Project Management	3
HSEG 515	Healthcare Delivery Systems (taken as an undergraduate elective in the Senior year included in the undergraduate tuition)	3
HSEG 535	Lean Healthcare	3
HSEG 605	Healthcare Systems Engineering	3
HSEG 625	Patient Safety and Quality Systems	3
HSEG 635	Advanced Lean Management of Healthcare	3
HSEG 665	Population Health and Big Data Analytics	3
HSEG 675	Healthcare Enterprise Informatics and Electronic Health Records	3
HSEG 695	Preparation for Capstone Project	0
HSEG 696	Project in Healthcare ¹	3
Subtotal		27
Elective Course		
Select one of the following:		3
HSEG 545	Healthcare Seminar ²	
HSEG 655	Medical Devices and Integrated Systems ²	
SYEG 668	Systems Engineering Modeling and Analysis ²	

HSEG 699	Independent Studies ^{2,3}	
Subtotal		3
Total Semester Hours		30

1

The Capstone Project HSEG 696 Project in Healthcare should be taken in the last Spring or Fall semester of the studies.

2

In any given year, between two and four of these elective courses will be offered depending on the number of students and their interests.

3

HSEG 699 Independent Studies must be pre-approved by the Advisor.

Schedule

- Take the first course HSEG 515 Healthcare Delivery Systems in Senior Spring semester as an Elective, under the undergraduate tuition
- Graduate normally with the BS degree in May of the Senior year
- As a graduate student, follow with the HSEG 535 Lean Healthcare course in Summer Session II
- Follow with five courses (510, 605, 625, 635 and 695) in the Fall semester and four in the Spring semester
- Graduate with MS degree in May
- 4+1 students may not deviate from this plan without written consent of their academic advisor.

HSE Master's Program for Regular Students

Graduation Requirements

The requirement for the MS in HSE is 30 semester hours (10 courses at three semester hours each).

Code	Title	Semester Hours
Core Courses		
SYEG 510	Project Management	3
HSEG 535	Lean Healthcare	3
HSEG 605	Healthcare Systems Engineering	3
HSEG 625	Patient Safety and Quality Systems	3
HSEG 635	Advanced Lean Management of Healthcare	3
HSEG 665	Population Health and Big Data Analytics	3
HSEG 675	Healthcare Enterprise Informatics and Electronic Health Records	3
HSEG 695	Preparation for Capstone Project	0
HSEG 696	Project in Healthcare ¹	3
Subtotal		24
Elective Courses		
Select two of the following:		6
HSEG 515	Healthcare Delivery Systems (mandatory, if the student lacks healthcare background)	
HSEG 545	Healthcare Seminar	
HSEG 655	Medical Devices and Integrated Systems ²	
SYEG 668	Systems Engineering Modeling and Analysis	
HSEG 699	Independent Studies ³	

Subtotal	6
Total Semester Hours	30

1

The Capstone Project, HSEG 696 Project in Healthcare, should be taken in the last Spring or Fall semester of the studies.

2

In any given year, between two and four of these elective courses will be offered depending on the number of students and their interests.

3

HSEG 699 Independent Studies must be pre-approved by the Advisor.

Schedule

- Students can be admitted either for the Summer Term II or Spring Semester (note: no Fall semester admissions).
- HSE students are free to take between one and four courses per semester.

Students with healthcare work experience may complete the HSE MS program in one year by following this schedule:

- Enter the program in the Summer Term II with the course HSEG 535 Lean Healthcare.
- Follow with four courses in the Fall (plus the HSEG 695 Preparation for Capstone Project course of zero units) and four in the Spring semesters.
- End with an Elective course in the Summer Term I.