HEALTH INFORMATICS — M.S.

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Program Overview

The dynamics within the health-care industry are creating an information-intensive environment that professionals must navigate as they deliver health care to patients. Clinical and nonclinical professionals in this industry will be required to be knowledgeable and proficient in the development and use of information technology. The future success or failure of health-care organizations will be predicated on their abilities to effectively and efficiently manage the valuable asset of information. This curriculum blends the topics of leadership, system theory and management, technology, data analytics, project management, process improvement, data management, and regulatory constraints in order to prepare graduates for critical leadership roles in health-care organizations. As informatics leaders, graduates will assist in developing information systems in health care that positively impact patient care at individual, local, and national levels.

The Bureau of Labor Statistics (BLS) Standard Occupational Classification (SOC) identifies health informatics professions as STEM —Science, Technology, Engineering, and Math. The BLS projects the demand for STEM professionals outpacing other professions. As a STEM-recognized profession, health informatics students will enjoy a challenging and stimulating course of study, and graduates can explore exciting and promising careers.

Related STEM SOCs:

- Health Informatics Specialists (STEM)
- Health Information Technologists and Medical Registrars (STEM)
- Clinical Data Managers (STEM)

Opportunities

As the health-care industry develops under vastly expanding regulatory mandates, there is a need for information systems that will meet the needs of all stakeholders. The demand for informatics professionals is steadily increasing as health-care organizations look for greater numbers of skilled workers. There is a projected need for more than 50,000 new information technology workers in the coming years. Health informatics professionals are employed in a wide variety of health settings, including acute care, outpatient care, long-term care, research facilities, software development companies, government agencies, rehabilitation facilities, consulting firms, and others.

Program learning outcomes

Upon completion of this program, the graduate should be able to:

1. Conduct information system analysis, design, implementation, and management.
2. Evaluate data structure, function and transfer of information, socio-technical aspects of health computing, and human-computer interaction.
3. Recommend information technology, including but not limited to, computer networks, databases and system administration, security, and programming.
4. Develop effective verbal and written communications.
5. Ensure successful project management.
6. Assess quality and performance issues in health care using data analytics and performance improvement tools.

Accreditation

Loma Linda University is accredited by the WASC Senior College and University Commission (WSCUC), 1080 Marina Village Parkway, Suite 500, Alameda, CA 94501; telephone: 510/748-9001; fax: 510/748-9797; website: http://www.wscuc.org/contact (https://www.wscuc.org/contact/).

Admissions

In addition to Loma Linda University (http://llucatalog.llu.edu/about-university/admission-policies-information/#admissionrequirementstext) and School of Allied Health Professions (http://llucatalog.llu.edu/allied-health-professions/#generalregulationstext) admissions requirements, the applicant must also complete the following:

- Provide evidence of completion of a bachelor's degree from an accredited U.S. college or university or the foreign equivalent of a bachelor's degree.
- Provide three letters of recommendation that indicate a strong academic background and professional readiness.
- Interview, if deemed necessary.
- Minimum G.P.A. of 3.0. The Graduate Record Examination (GRE) may be requested and considered for G.P.A.s less than 3.0.

Program requirements

Year 1

AHCJ 555	Writing for Health-Care Professionals	3
AHRM 514	Biostatistics	3
HLIF 510	Health-Care Information Systems	4
HLIF 515	The U.S. Health-Care System	4

HLIF 525	Management of Health-Care Data and Information	2
HLIF 545	System Design, Implementation, and Management	3
HLIF 548	Human Computer Interactions	2
HLIF 565	Technical Structures in Health Informatics	3
Year 2		
HLIF 520	Data Management: Modeling and Development	3
HLIF 526	Quality and Performance Improvement for Health Care	2
HLIF 530	Data Analytics and Decision Support	3
HLIF 540	Leadership Perspectives and Practice	4
HLIF 550	Systems Security in Health Care	2
HLIF 555	Health-Care Vendor and Project Management	3
HLIF 570	Professional Portfolio [1]	2
Choose one:		2
HLIF 575	Capstone Project and Special Topics in Health Informatics	
HLIF 584	Professional Practicum and Seminar for Health Informatics	
REL_ 5__ Graduate-level Religion		3
Total Units		**48**

[1] Fulfills service learning requirement

Non-course requirements

An LLU G.P.A. of 3.0 must be maintained throughout the program.

A minimum grade of C (2.0) is required for each course in the program.

Normal time to complete the program

Two (2) years (six [6] academic quarters) based on full time enrollment

Courses

HLIF 510. Health-Care Information Systems. 4 Units.
Development and diffusion of information systems in health care. Explores how data, information, and technology support quality patient care. Covers EHRs, consumer health informatics, HIE, health informatics ethics, regulatory movements, system theory, evidenced-based medicine, clinical decisions support, patient safety, and strategic planning for information systems. Introduces system architecture, data standards, data analytics, and health information privacy and security.

HLIF 515. The U.S. Health-Care System. 4 Units.
Analyzes health-care delivery in the U.S., including health-care organizations, health-care professionals, beliefs, values, access, medical technology, regulatory requirements, reimbursement methods, and cost control. Examines the health-care delivery system from the pre-industrial era to future projections. Studies regulatory, social, and ethical issues of privacy in health care, including HIPAA privacy rules and other regulatory issues with privacy.

HLIF 520. Data Management: Modeling and Development. 3 Units.
Explores the concepts of data and the criticality of appropriate data management to successfully model, develop, and implement health-care information systems. Specific topics include database management, data integrity, knowledge management, data mining, data integration, data visualization, data architecture, and data warehousing.

HLIF 525. Management of Health-Care Data and Information. 2 Units.
“Investigates and analyzes standardization movements and reimbursement systems in health informatics. Topics addressed include SDOs, HL7, federal standardization, ANSI, UMLS, EDI, SNOMED CT, and revenue cycle management.”.

HLIF 526. Quality and Performance Improvement for Health Care. 2 Units.
Explores methods, design, and process for quality improvement within health-care organizations. Topics covered include workflow analysis, error prevention, problem detection, problem solving, change management, and systems evaluation.

HLIF 530. Data Analytics and Decision Support. 3 Units.
“Studies various data sources available for healthcare data analytics, along with direct application of software tools and techniques to extract, transform, analyze, visualize healthcare data. Review of strategies supporting decision support and knowledge management.”.

HLIF 532. Financial Management in Health Care. 2 Units.
Study of economics and financial management in health-care organizations. Analyses of economic market impacts, various health-care payment mechanisms, ratio analysis, cost-benefit analysis, operational and capital budgeting, and investment strategies.

HLIF 540. Leadership Perspectives and Practice. 3,4 Units.
Examines organizational culture and the various structures, designs, and models as they relate to leadership. Specific topics include change management, personnel management, governance, ethics, group dynamics, and human factor in health informatics. Includes an exploration of dominant theories and methods impacting management and behavior of individuals, groups and organizations. Four units required of students under the 2020-2021 catalog.

HLIF 545. System Design, Implementation, and Management. 3 Units.
Study of the fundamentals of the system development life cycle (SDLC) —including system analysis assessment, techniques and tools, system design/development strategies, system implementation and operations, and system evaluation.

HLIF 548. Human Computer Interactions. 2 Units.
Critical analysis of the cognitive science and human factors related to EHRs, PHRs, and consumer informatics. Topics addressed include user needs, application design concepts, patient empowerment, and human-computer interaction.

HLIF 550. Systems Security in Health Care. 2 Units.
Regulatory, social, and ethical issues of privacy and security in health care information systems. HIPAA, breech legislation/reporting requirements, security requirements/defenses, business continuity planning, and other regulatory issues.

HLIF 555. Health-Care Vendor and Project Management. 2,3 Units.
Investigates contemporary health-care information systems, vendor offerings, and effective techniques for establishing effective vendor relationships. Topics include request for information, request for proposals, contract negotiations, and project management. Three units required of students under the 2020-2021 catalog.

HLIF 565. Technical Structures in Health Informatics. 3 Units.
Examines the principles of computer science as related to the development and diffusion of technology supporting health-care information systems. Topics covered include technical infrastructure support of the following: business continuity, daily operations, wireless communication, security, EDI/HIE, networking protocols, system integration, programming languages, and system integration issues. Introduces students to computer programming and software development.

HLIF 570. Professional Portfolio. 2 Units.
Development of a professional e-portfolio that includes a personal video of introduction, the development of personal and professional goals, resume and cover letter writing, major projects completed from each course and from previous work experience, career mapping, reaction papers in response to the University's core values, publications completed, service learning, and other items as developed during the program.

HLIF 575. Capstone Project and Special Topics in Health Informatics. 2 Units.
Summative evaluation based on completion of either a systems application business plan or a data-analytics project utilizing competencies gained in the program. Facility-based or theory-based projects. Preparation and presentation of a complete capstone project.

HLIF 584. Professional Practicum and Seminar for Health Informatics. 2 Units.
Experiential learning in health informatics. Students must satisfactorily complete 110 practicum hours. Second year standing in MSHI program; successful completion of all curriculum courses for the first 6 quarters of the program.

HLIF 599. Health Informatics Independent Study. 1-4 Units.
Student submits a project or paper on a topic of current interest in an area of health information administration. Regular meetings to provide the student with guidance and evaluation. Elected on the basis of need or interest. May be repeated.