HEALTH INFORMATICS — M.S.

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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 professions 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 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.

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.

Student learning outcomes
Outcome 1 Students will demonstrate competence in information systems, specifically information system analysis, design, implementation, and management.
Outcome 2 Students will demonstrate a keen understanding of informatics with respect to structure, function, and transfer of information; socio-technical aspects of health computing, and human computer interaction.
Outcome 3 Students will demonstrate a thorough understanding of information technology, including but not limited to computer networks, databases and system administration, security, and programming.
Outcome 4 Students will demonstrate the ability to effectively communicate verbally and in writing.
Outcome 5 Students will demonstrate the ability to facilitate successful project management.
Outcome 6 Students will demonstrate the ability to perform data analytics.

Accreditation
Loma Linda University is regionally accredited by the WASC Senior College and University Commission (WSCUC), 985 Atlantic Avenue, Suite 100, Alameda, CA 94501; telephone: 510/748-9001; fax: 510/748-9797; Web site: <http://www.wascsenior.org> or <http://www.wascsenior.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 requirements:

Admission requirements
• Provide evidence of completion of a bachelor’s degree from an accredited U.S. college or university or the foreign equivalent
• 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.

Note: Because this program is designed as a part-time program for working individuals, it does not meet the criteria for an F1 or J1 visa. For this reason, admissions is not open to international students who need these types of visas.

Program requirements

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<thead>
<tr>
<th>Year 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AHCJ 555</td>
<td>Writing for Health-Care Professionals</td>
<td>3</td>
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<tr>
<td>AHRM 514</td>
<td>Biostatistics</td>
<td>3</td>
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<tr>
<td>HLIF 510</td>
<td>Health-Care Information Systems</td>
<td>4</td>
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<tr>
<td>HLIF 515</td>
<td>The U.S. Health-Care System</td>
<td>3</td>
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<tr>
<td>HLIF 525</td>
<td>Management of Healthcare Data and Information</td>
<td>2</td>
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<td>HLIF 548</td>
<td>Human Computer Interactions</td>
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<tr>
<td>HLIF 565</td>
<td>Technical Structures in Health Informatics</td>
<td>3</td>
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<tr>
<th>Year 2</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HLIF 520</td>
<td>Data Management: Modeling and Development</td>
<td>3</td>
<td></td>
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<tr>
<td>HLIF 530</td>
<td>Data Analytics and Decision Support</td>
<td>3</td>
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<td>HLIF 532</td>
<td>Financial Management in Health Care</td>
<td>2</td>
<td></td>
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<tr>
<td>HLIF 540</td>
<td>Leadership Perspectives and Practice</td>
<td>3</td>
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<tr>
<td>HLIF 545</td>
<td>System Design, Implementation, and Management</td>
<td>3</td>
<td></td>
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<td>HLIF 555</td>
<td>Health-care Vendor and Project Management</td>
<td>2</td>
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HLIF 560. Policy Development for Privacy and Security in Health-Care Systems 3
HLIF 570. Professional Portfolio 1
Choose one:
HLIF 575. Capstone: Project and Special Topics in Health Informatics 2
HLIF 584. Professional Practicum and Seminar for Health Informatics
RELT 563. Health Care, Humanity, and God 3

Total Units 45

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 all courses in the program.

Normal time to complete the program
2 years (7 academic quarters) based on three-quarter-time enrollment

Courses
HLIF 510. Health-Care Information Systems. 4 Units.
Development and diffusion of current and futuristic information systems in health-care organizations. Explores an array of systems, from modular applications to enterprise-wide systems. Encompasses the concepts of EHR, PHR, HIE, regulatory movements, system architecture, system theory, and strategic planning for information systems. Course includes weekly laboratory (2-4 hours) focused on demonstrating competency with Microsoft Excel.

HLIF 515. The U.S. Health-Care System. 3 Units.
Overview and analysis of health-care delivery in the United States, including the history of health-care institutions, accrediting bodies, organizations that provide health care, regulations, standards, reimbursement methods used, and the professionals who provide services. Research and analysis of historical health-care models/regulations proposed or utilized in the United States and other countries, current system regulations proposed or being utilized in the United States and other countries, and reflection by the student as to future models that may improve the current system and delivery of health care in the United States.

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 Healthcare 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 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 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.

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 555. Health-care Vendor and Project Management. 2 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.

HLIF 560. Policy Development for Privacy and Security in Health-Care Systems. 3 Units.
Study of the regulatory, social, and ethical issues of privacy and security in health care information systems. Topics covered include HIPAA, breach legislation/reporting requirements, security requirements/defenses, business continuity planning, and other regulatory issues related to privacy and security.

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. 1 Unit.
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, and other items as developed during the program.
HLIF 574. Capstone I: Project and Special Topics in Health Informatics. 1 Unit.
Student works independently on a business plan—either with an assigned facility or a theoretical business opportunity—to select, implement, and optimally utilize information technology on an effective solution. Student subsequently prepares and presents a complete business plan (project charter) that draws from all previous curriculum course work and includes, but is not limited to, the following elements: analysis of business and system need; articulation of project goals, assumptions, dependencies; delineation of project scope and stakeholders; specification of deliverables that measure success; preparation of complete budget; establishment of timeline; and project management strategies.

HLIF 575. Capstone: Project and Special Topics in Health Informatics. 2 Units.
Student works independently on a business plan, either with an assigned facility or a theoretical business opportunity, to select, implement, and optimally utilize information technology on an effective solution. Student subsequently prepares and presents a complete business plan (project charter) that draws from all previous curriculum course work and includes, but is not limited to, the following elements: analysis of business and system need; articulation of project goals, assumptions, dependencies; delineation of project scope and stakeholders; specification of deliverables that measure success; preparation of complete budget; establishment of timeline; and project management strategies.

HLIF 580. Health-Care Policy. 2 Units.
Analysis of current health-care policy development at a local, regional, state, and national levels. Includes review and critical analysis of proposed policy and contemporary forces impacting various policy agendas.

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.