

Course Details	
Course Code: HSA625	Professor:
Course Title: Healthcare Informatics and Technology	E-Mail:
Program: Master in Healthcare Management	Term:
Credits: 3	Schedule:
Contact Hours: 48	Delivery:
Prerequisites: HSA565	Campus: AU Sunnybrook Road
Course General Information	

Course Description:

This course provides an advanced examination of healthcare informatics and emerging technologies as strategic resources for improving healthcare quality, patient outcomes, operational efficiency, organizational decision-making, and data management. Students analyze how healthcare information systems support clinical, administrative, financial, and population health functions across complex healthcare organizations.

The course addresses health data sources, data quality, interoperability, healthcare data standards, analytics, privacy, cybersecurity, and regulatory compliance. Students examine standards and terminologies such as HL7, FHIR, ICD-10, LOINC, and SNOMED CT and evaluate their role in facilitating accurate, secure, and effective health information exchange.

Additional topics include telemedicine, mobile health, artificial intelligence, machine learning, clinical decision support, medical imaging, predictive analytics, and emerging digital health technologies. Particular attention is given to technology governance, ethical decision-making, algorithmic bias, patient privacy, accessibility, health equity, implementation risk, and responsible innovation.

Through case studies, data-analysis activities, simulations, and applied projects, students develop the competencies required to evaluate healthcare technologies, interpret health information, manage technology-related risks, and recommend evidence-based digital solutions. The course culminates in the development and presentation of a healthcare informatics and technology innovation proposal aligned with organizational needs and strategic priorities.

Course Learning Outcomes (CLOs)

Through competency-based learning activities, students will strengthen the following MSHM competencies: Information Technology Management, Analytical Thinking, Organizational Awareness, Accountability, Performance Measurement, Strategic Orientation, Project Management, Innovation, Communication Skills, and Professional and Social Responsibility.

Upon successful completion of this course, students will be able to:

- **CLO 1.** Analyze healthcare informatics principles, information systems, data standards, and interoperability requirements within complex healthcare organizations.
- **CLO 2.** Apply health data management, analysis, and visualization methods to support clinical, administrative, and strategic decision-making.
- **CLO 3.** Evaluate privacy, cybersecurity, ethical, and regulatory risks associated with healthcare information systems and digital technologies.

- **CLO 4.** Evaluate telemedicine, mobile health, and other digital health technologies in relation to healthcare access, quality, equity, efficiency, and patient outcomes.
- **CLO 5.** Evaluate artificial intelligence and machine learning applications in clinical and administrative healthcare contexts, considering performance, validity, safety, bias, accountability, and human oversight.
- **CLO 6.** Develop an evidence-based and strategically aligned healthcare informatics or technology innovation proposal that addresses an identified organizational need.

CLO-Competency-PLO Alignment Matrix

The following matrix demonstrates the alignment among the Course Learning Outcomes (CLOs), the MSHM program competencies, and the corresponding Program Learning Outcomes (PLOs). It illustrates how each outcome contributes to the development of the analytical, technological, managerial, and professional competencies expected of healthcare leaders.

Course Learning Outcome	MSHM Competencies	PLO Alignment
CLO 1	Information Technology Management; Organizational Awareness; Analytical Thinking	PLO1, PLO2
CLO 2	Analytical Thinking; Information Technology Management; Performance Measurement	PLO1, PLO2, PLO6
CLO 3	Accountability; Professional and Social Responsibility; Information Technology Management; Analytical Thinking	PLO2, PLO4
CLO 4	Information Technology Management; Strategic Orientation; Organizational Awareness; Professional and Social Responsibility	PLO1, PLO2, PLO4, PLO6
CLO 5	Analytical Thinking; Innovation; Performance Measurement; Accountability; Professional and Social Responsibility	PLO1, PLO2, PLO4, PLO6
CLO 6	Strategic Orientation; Innovation; Project Management; Communication Skills; Information Technology Management	PLO1, PLO2, PLO3, PLO6

Module Alignment

Module	Topic	Primary Assessment Evidence	CLO Alignment
1	Advanced Fundamentals of Health Informatics	Case Study Analysis; Health Data Standards and Interoperability group assignment; Discussion Forum on Technological Advances; Essay on Models and Standards	CLO 1, CLO 3
2	Health Data Analysis and Management	Health Data Analysis and Management lab; Data Analysis for Healthcare Quality and Operational Efficiency; Discussion Forum on Data Sources and Big Data	CLO 2
3	Security and Privacy in Health Informatics	Security and Privacy laboratory activity; Threat and Vulnerability Identification assignment	CLO 3
4	Telemedicine and Mobile Healthcare	Telemedicine and Mobile Healthcare applied activity; Case Study Analysis; Research on Telemedicine Technologies and Platforms; Discussion Forum on Benefits and Challenges	CLO 4, CLO 3
5 & 6	Artificial Intelligence and Machine Learning in Healthcare	Healthcare Management Decision Simulation; AI/ML technology analysis and group presentation; structured debate; Discussion Forum on AI/ML Fundamentals; Emerging Trends Analysis	CLO 2, CLO 3, CLO 5
7	AI Applications in Medical Imaging and Diagnostics	Interactive Group Discussion; Ethical Dilemmas role-play case study; Research Paper on AI in Medical Imaging; Emerging Trends Analysis	CLO 3, CLO 5
8	Future Trends Projects	Future Trends group project and presentation; technology lab and analytical report; Project Management Principles in Healthcare analysis	CLO 2, CLO 3, CLO 4, CLO 5, CLO 6

In this course, students will develop core competencies essential for the effective application and management of health informatics in healthcare organizations. Emphasis will be placed on health data standards and interoperability, data analysis and management, security and privacy, telemedicine, mobile healthcare, and artificial intelligence and machine learning. Students will examine how these technologies support clinical and managerial decision-making, healthcare quality, and operational efficiency.

Through laboratory activities, case studies, simulations, structured debates, and collaborative projects, students will apply analytical thinking, ethical reasoning, and evidence-based decision-making to health informatics challenges. Upon completion, students will be equipped to evaluate emerging technologies, recommend secure and

responsible digital solutions, and apply project management principles to initiatives that improve healthcare delivery and organizational performance.

Assessment Classification and CLO Alignment

The following distribution identifies the graded evidence for each assessment category. Foundational components assess accurate explanation and comparison; applied components assess analysis, interpretation, decision-making, implementation planning, and justified recommendations. The level assigned to each component must be reflected in its scoring rubric.

Assessment	Weight	CLO	Competency	Level	Classification rationale
Foundational informatics discussions and knowledge checks	15%	CLO 1, CLO 3	Information Technology Management; Organizational Awareness	Lower	Verifies accurate explanation of healthcare information systems, standards, privacy concepts, and core terminology.
Concept, standards, and technology comparison essays	15%	CLO 1, CLO 3–4	Information Technology Management; Analytical Thinking	Lower	Assesses comprehension and accurate comparison of informatics models, data standards, and digital health technologies.
Health data analysis and visualization laboratory	15%	CLO 2	Analytical Thinking; Performance Measurement; Information Technology Management	Higher	Requires data-quality assessment, analytical application, interpretation of findings, and an evidence-based recommendation.
Privacy, cybersecurity, and telemedicine applied analyses	15%	CLO 3–4	Accountability; Professional and Social Responsibility; Strategic Orientation	Higher	Requires risk analysis, comparison of controls or implementation alternatives, and justification of an organizational response.
AI and machine learning case analysis and decision simulation	20%	CLO 2–3, CLO 5	Analytical Thinking; Innovation; Performance Measurement; Accountability	Higher	Requires interpretation of dashboards and AI-supported evidence, comparison of alternatives, and responsible managerial decisions.
Healthcare technology innovation proposal and presentation	20%	CLO 1–6	Strategic Orientation; Innovation; Project Management; Communication Skills; Information Technology Management	Higher	Requires integration of course evidence, technology evaluation, implementation planning, measurable outcomes, presentation, and defense.

Grading Scale Policy

Performance Level	Grade	Percentage
Exceeds Expectations	A	90–100%
Meets Expectations	B	80–89%
Minimally Meets Expectations	C	70–79%
Does Not Meet Expectations	D/F	Below 70%

This format is consistent with graduate-level expectations: a grade of C (70–79%) represents the minimum performance level that meets course requirements, while any final score below 70% is classified as Does Not Meet Expectations.

Assessment Category	Earned Percentage
Foundational informatics discussions and knowledge checks	15%
Concept, standards, and technology comparison essays	15%
Health data analysis and visualization laboratory	15%
Privacy, cybersecurity, and telemedicine applied analyses	15%
AI and machine learning case analysis and decision simulation	20%
Healthcare technology innovation proposal and presentation	20%
Total	100%

Note: The grade will be released weekly during the academic term and according to the curriculum, the learning pace and the performance of the students in this class.