MHA 532 Optimization and prescriptive decision models (3 cr)[2]
Introduces the frameworks, algorithms and applications of optimization modeling and operations research methods that can help healthcare professionals, managers and organizations prescribe optimal decisions and solutions. Real-world cases will be discussed with applications of linear programming, network flows, integer programming, nonlinear programming, heuristics, as well as stochastic methods, to motivate the use of optimization to support managerial decision making and problem solving, and develop relevant skills for identifying opportunities and managing the implementation of optimization.

MHA 533 Systems simulation and design for healthcare delivery (3 cr)
Introduces key elements of computer simulation of healthcare delivery systems that can provide healthcare managers and professionals a unique decision support tool to evaluate design alternatives in complex systems subject to uncertainty, without interrupting the actual process. Topics include simulation modeling with a software package, design of simulation experiments, input modeling, output analysis, cost analysis, verification and validation, systems comparison, optimization via simulation, and visualization and communication. Real-world examples include simulating patient flows at a major hospital for resource allocation and scheduling; disease spread for evaluating mitigation strategies; a pharmaceutical distribution center for congestion reduction; and a pharmaceutical market for evaluating promotion strategies among others.

MHA 534 Health Record Management and cybersecurity (3 cr)
Explores the roadmap of design, implementation and optimization of electronic health record systems, as well as the prevention of cybercrimes which threaten patient privacy and safety, clinical outcomes and healthcare organizational financial performances. Topics include budgeting, workflows, vendor selection, governance, communication and training, privacy and security compliances, strategies for improving cybersecurity, technology and infrastructure systems optimization, and implications on medical decisions and outcomes.

MHA 541 Introduction to data programming (3 cr)
Students will gain fundamental understanding of a popular programming language with a simple syntax and a powerful set of libraries by creating a variety of scripts for analytics, database access, and web applications. Programming for analytics is becoming an integral part of many professions ranging from finance and insurance to education and healthcare, and an essential skill for many professionals including healthcare researchers, practitioners and managers. This course is suitable for students without any prior programming experience. Students learn to implement basic coding skills for practical, real-world applications, which can be in a simple cloud-based environment, and will be able to organize and analyze data efficiently by writing scripts.

MHA 542 Machine learning and artificial intelligence for healthcare (3 cr)
Explores various ML/AI technologies, applications and opportunities for healthcare as more real-world applications emerge. This course is aimed to provide a fundamental understanding of the potential for AI innovations to transform healthcare through the efforts of leaders and professionals from both the healthcare and technology industries. Students will have the experiential learning opportunity to practice data organization, data aggregation and ML model building using case data or real data with various healthcare applications. *Prerequisite: MHA 541 or permission of the instructor.*

MHA 551 Healthcare delivery and service management (3 cr)[3]
Explores value-based healthcare delivery with focus on improved quality, lower cost, and better patient satisfaction for achieving service excellence as a competitive advantage. Topics include service systems and strategies for delivering customer value, communication, staffing and training, motivation and empowerment, financial incentives and risk sharing, accountable care organizations, impact of population health and public policies, information technology infrastructure, quality and safety improvement, waste elimination, contract management, and systems integration.

MHA [illegible] Lean Six Sigma and project management for healthcare (3 cr)
Lean Six Sigma combines the methodologies of six sigma quality management and the lean enterprise to enable fact based management and change management, and create an efficient organization that maximizes value. Students will practice business problem solving and process improvement through experiential learning activities, and experience a project-based approach for defining, measuring, analyzing, improving and controlling healthcare outcomes. In addition to Lean Six Sigma methodologies, topics also include the essentials of project management including initiating, planning, implementing, managing, and controlling a project, which drives innovations and changes in healthcare organizations.

[3] Required for the Service Excellence concentration