Engineering & Systems Management (Thesis Option)

Program
College of Engineering
MEM

The Ministry of Education (MOE) approved two-year M. Sc. in Engineering & Systems Management consists of both thesis and courses-only options. The program was developed in collaboration with the Centre for Complex Engineering Systems (CCES) at KACST (King Abdulaziz City for Science & Technology) and MIT (Massachusetts Institute of Technology). The elective courses span the themes: Decision Analysis & Data Analytics, Manufacturing & Supply Chain Management, and Development of Cyber-Physical Systems. This program is not an MBA; it is a technical master's degree focused on engineering, data science and computation. "Systems thinking" is an important part of the degree, whether applied to the improvement of existing systems and operations or the creation of new products and services. Personal engineering leadership development is a mandatory part of the program.

Curriculum (Thesis Option)

Credit Hours Required for a Master of Engineering & Systems Management

Types of Courses	Compulsory	Elective	Total
Core	12	-	12
Elective(track)	-	12	12
Thesis	18		18
Total	30	12	42

Core Courses

Item #	Title	Credits
MEM 501	Statistics and Data Analytics	3
MEM 503	Project & Program Management of Complex Systems	3
MEM 504	Advanced Engineering Economics & Cost Analysis	3
MEM 505	Operations Engineering & Management	3

Elective Courses

Choose 4 courses; students may take non-listed courses with dept. approval

Track 1: Decision Analysis & Data Analytics

Item #	Title	Credits
MEM 502	Systems Architecture and Engineering	3
MEM 506	Leadership Development for Engineers & System Managers	3
MEM 508	Stochastic Methods for Engineers & Syst Managers	3
MEM 509	Systems Modeling and Simulation	3
MEM 510	Decision & Risk Analysis for Eng & Syst Managers	3
MEM 511	Deterministic Management Science	3
MEM 512	Special Topics I	3
MEM 513	Special Topics II	3

Track 2: Manufacturing & Supply Chain Management

Item #	Title	Credits
MEM 502	Systems Architecture and Engineering	3
MEM 506	Leadership Development for Engineers & System Managers	3
MEM 512	Special Topics I	3
MEM 513	Special Topics II	3

Track 3: Intelligent Industrial Systems

Item #	Title	Credits
MEM 507	Applied Computation and Data Science	3
MEM 512	Special Topics I	3
MEM 513	Special Topics II	3
MEM 524	Artificial Intelligence	3
MEM 525	Machine Learning	3
MEM 527	Industrial Internet of Things (IIoT)	3

Thesis

Item #	Title	Credits
MEM 600	Thesis A	9
MEM 600	Thesis B	9
		42

Semester 1

Item #	Title	Credits
MEM 501	Statistics and Data Analytics	3
MEM 503	Project & Program Management of Complex Systems	3
	MEM Elective	3
	MEM Elective	3

Semester 2

Item #	Title	Credits
MEM 504	Advanced Engineering Economics & Cost Analysis	3
MEM 505	Operations Engineering & Management	3
	MEM Elective	3
	MEM Elective	3

Semester 3

Item #	Title	Credits
MEM 600	Thesis A	9

Semester 4

Item #	Title	Credits
MEM 600	Thesis B	9