

Engineering Management (EM)

Curriculum Outline

The Engineering Management Program is designed for qualified individuals who plan to assume a management role in a technology-based, project-oriented environment within a manufacturing, service, or government organization. It offers an interdisciplinary course of study that combines the unique capabilities of industrial engineering, management, and information technology. As a result, the program provides a focus on technological leadership through the integration of people and technology.

Students are prepared for leadership roles in technologically-oriented businesses through courses that present both the theoretical and the practical aspects of managing complex engineering projects. The curriculum enables students to understand and manage the complex interaction among people, technology, finance and the socio-political environment in which the organizations operate. Upon completion of the program, graduates will be equipped with broad-based knowledge, and quantitative and qualitative analytical skills to succeed as managers, from project conceptualization through its implementation.

In order to gain practical experiences, fourth-year students are allowed to choose one of the three tracks of studies.

Structure and Components

1. General Basic Courses	36 Credits
1.1 Humanities	6 Credits
1.2 Social Sciences	9 Credits
1.3 English Language	9 Credits
1.4 Science and Mathematics	12 Credits
2. Core Courses	108 Credits
2.1 Compulsory Courses	102 Credits
2.2 Special Study	6 Credits
3. Free Elective Courses	6 Credits
Total	<u>150</u> Credits

Details of the Curriculum

1. General Basic Courses	36 Credits
1.1 Humanities (2 courses) TU 110 TU 140	6 Credits
1.2 Social Sciences (3 courses) EC 210 GTS 231 TU 120	9 Credits
1.3 English Language (3 courses) EL 171 EL 172 EL 210	9 Credits
1.4 Science and Mathematics (4 courses) GTS 132 GTS 133 ITS 050 TU 130	12 Credits
2. Core Courses	108 Credits
2.1 Compulsory Courses	102 Credits
2.1.1 Science and Mathematics (6 courses) GTS 111 GTS 112 GTS 121 GTS 122 GTS 212 GTS 213	18 Credits
2.1.2 Fundamentals of Engineering and Technology (6 courses) EMS 211 GTS 302 MTS 251 MTS 252 MTS 253 MTS 254	17 Credits
2.1.3 Information Technology (4 courses) ITS 033 ITS 422 MTS 381 MTS 382	12 Credits
2.1.4 General Management (6 courses) MTS 211 MTS 212 MTS 311 MTS 312 MTS 411 MTS 412	18 Credits
2.1.5 Engineering Management (13 courses) MTS 231 MTS 232 MTS 331 MTS 332 MTS 333 MTS 334 MTS 351 MTS 352 MTS 403 MTS 431 MTS 451 MTS 453 MTS 481	37 Credits
2.2 Special Study	6 Credits
Students must enroll in the following course or group of courses.	
1) <i>Senior Project Track</i> (2 courses) MTS 309 MTS 404	
2) <i>Foreign Exchange Track</i> (3 courses) MTS 309 MTS 493 MTS 494	
3) <i>Extended Training Track</i> (1 course) MTS 304	
3. Free Elective Courses	6 Credits
Select any courses offered by the university, except basic courses. XXX xxx	
Total Credit Requirement	<u>150</u> Credits

EM Curriculum: 150 Credits

First Year

Semester I Credits (lecture-practice-self study hrs)

EC	210	Introductory Economics	3(3-1-5)
EL	171	English Course II	3(3-1-5)
GTS	111	Introduction to Mathematical Analysis	3(3-1-5)
GTS	121	General Science I	3(3-1-5)
ITS	050	Introduction to Computers and Programming	3(2-3-4)
MTS	252	Materials Science	3(3-0-6)
TU	130	Integrated Sciences and Technology	3(3-0-6)
Sub-Total			21(20-7-36)

Semester II

EL	172	English Course III	3(3-1-5)
GTS	112	Introduction to Linear Algebra and Matrices	3(3-1-5)
GTS	122	General Science II	3(3-1-5)
GTS	132	Introduction to Life Sciences	3(3-1-5)
GTS	133	Environmental Studies	3(2-2-5)
ITS	033	Programming and Algorithms	3(3-0-6)
Sub-Total			18(17-6-31)

Third Year

Semester I

GTS	302	Technical Writing	2(2-1-3)
MTS	312	Principles of Marketing	3(3-1-5)
MTS	333	Production and Inventory Management	3(3-0-6)
MTS	334	Applications of Business Statistics	3(3-1-5)
MTS	351	Management Systems Optimization	3(3-1-5)
MTS	381	Business Information Systems	3(3-0-6)
MTS	382	Database Systems and Applications	3(3-1-5)
Sub-Total			20(20-5-35)

Semester II

GTS	231	Law and Technology	3(3-1-5)
MTS	232	Production and Operation Management	3(3-0-6)
MTS	253	Mechanics for Technologist	3(3-0-6)
MTS	331	Economic Decision Analysis	3(3-0-6)
MTS	332	Quality Management	3(3-0-6)
MTS	352	Work Design and Analysis	3(3-1-5)
MTS	451	Project Management	3(3-0-6)
Sub-Total			21(21-2-40)

Summer

Select either Senior Project Track, Foreign Exchange Track, or Extended Training Track.

1. Senior Project Track and Foreign Exchange Track			
MTS	309	Engineering Management Training	0(0-0-0)
Sub-Total			0(0-0-0)

2. Extended Training Track			
XXX	xxx	Free Elective	3(x-x-x)
Sub-Total			3(x-x-x)

Second Year

Semester I Credits (lecture-practice-self study hrs)

EMS	211	Thermofluids	3(3-1-5)
GTS	212	Calculus for Technologists I	3(3-0-6)
MTS	211	Principles of Business	3(3-1-5)
MTS	251	Resource Economics	3(3-0-6)
MTS	311	Fundamental Financial Accounting	3(3-1-5)
TU	110	Integrated Humanities	3(3-0-6)
TU	140	Thai Studies	3(3-0-6)
Sub-Total			21(21-3-39)

Semester II

EL	210	English for Engineering I	3(3-1-5)
GTS	213	Calculus for Technologists II	3(3-1-5)
MTS	212	Principles of Management	3(3-1-5)
MTS	231	Statistical Methods for Managers	3(3-1-5)
MTS	254	Introduction to Management Science	3(3-1-5)
MTS	411	Management Accounting	3(3-1-5)
TU	120	Integrated Social Sciences	3(3-0-6)
Sub-Total			21(21-6-36)

Fourth Year

Semester I

ITS	422	Introduction to Decision Support Systems	3(3-0-6)
MTS	403	Project Proposal Development for Engineering Management	1(0-3-0)
MTS	412	Business Finance	3(3-1-5)
MTS	431	Facility Location and Layout Planning	3(3-0-6)
MTS	453	Business Project Analysis	3(3-0-6)
MTS	481	Business Process Simulation	3(3-1-5)
XXX	xxx	Free Elective	3(x-x-x)
Sub-Total			19(x-x-x)

Semester II

1) Senior Project Track			
MTS	404	Senior Project	6(0-18-0)
XXX	xxx	Free Elective	3(x-x-x)
Sub-Total			9(x-x-x)

2) Foreign Exchange Track			
MTS	493	Special Study in EM I	3(3-0-6)
MTS	494	Special Study in EM II	3(3-0-6)
XXX	xxx	Free Elective	3(x-x-x)
Sub-Total			9(x-x-x)

3) Extended Training Track			
MTS	304	Extended Engineering Management Training	6(0-40-0)
Sub-Total			6(0-40-0)