

## Engineering Management (EM)

### Curriculum Outline

The Engineering Management Program is designed for qualified individuals who plan to assume a management role in a technologically-based, project-oriented environment within a manufacturing, service, or government organization. It offers a course of study that combines the unique capabilities of industrial engineering, management, and information technology to yield a program that 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 technical and practical aspects of managing complex engineering projects. This enables students to understand and manage the complex interaction among people, technology, finances and the socio-political environment in which organizations operate. As a result, the program provides graduates with broad-based knowledge and quantitative analysis skills to succeed as managers, from project conceptualization through its implementation.

After completing their third year of study, students are allowed to choose three different types of special studies. For more details on the academic options and special studies, consult the Program Coordinator.

### Structure and Components

<b>1. General Basic Courses and Basics in Science and Mathematics</b>	<b>51 Credits</b>
1.1 Humanities	6 Credits
1.2 Social Sciences	9 Credits
1.3 English Language	9 Credits
1.4 Science and Mathematics	27 Credits
<b>2. Core Courses</b>	<b>93 Credits</b>
2.1 Compulsory Courses	93 Credits
<b>3. Free Elective Courses</b>	<b>6 Credits</b>
<b>Total</b>	<b><u>150</u> Credits</b>

### Details of the Curriculum

<b>1. General Basic Courses and Basics in Science and Mathematics</b>	<b>51 Credits</b>
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 (9 courses) GTS 121 GTS 122 GTS 132 GTS 133 MAS 116 MAS 117 MAS 210 MAS 215 TU 130	27 Credits
<b>2. Core Courses</b>	<b>93 Credits</b>
2.1 Compulsory Courses	93 Credits
2.1.1 Fundamental of Technology (6 courses) EMS 211 GTS 302 MTS 251 MTS 252 MTS 253 MTS 254	17 Credits
2.1.2 Information Technology (5 courses) ITS 033 ITS 050 ITS 422 MTS 381 MTS 382	15 Credits
2.1.3 General Management (6 courses) MTS 211 MTS 212 MTS 311 MTS 312 MTS 411 MTS 412	18 Credits
2.1.4 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 432 MTS 451 MTS 453	37 Credits
2.1.5 Special Study	6 Credits
<i>Exchange Track</i> (3 courses) MTS 309 MTS 493 MTS 494	
<i>Extended Management Training Track</i> (1 course) MTS 304	
<i>Senior Project Track</i> (2 courses) MTS 309 MTS 404	
<b>3. Free Elective Courses</b>	<b>6 Credits</b>
Select any courses offered by the university, except basic courses. XXX xxx	
<b>Total Credit Requirement</b>	<b><u>150</u> Credits</b>

## EM Curriculum: 150 Credits

### First Year

<i>Semester I</i>	<i>Credits (lecture-practice-self study hrs)</i>
EC 210 Introductory Economics	3(3-1-5)
EL 171 English Course II	3(3-1-5)
GTS 121 General Science I	3(3-1-5)
ITS 050 Introduction to Computers and Programming	3(2-3-4)
MAS 116 Mathematics I	3(3-1-5)
MTS 252 Materials Science	3(3-0-6)
TU 130 Integrated Sciences and Technology	3(3-0-6)
<b>Sub-Total</b>	<b>21(20-7-36)</b>

#### *Semester II*

EL 172 English Course III	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)
MAS 117 Mathematics II	3(3-1-5)
<b>Sub-Total</b>	<b>18(17-6-31)</b>

### Third Year

#### *Semester I*

GTS 302 Technical Writing	2(2-1-3)
GTS 231 Law and Technology	3(3-1-5)
MTS 312 Principles of Marketing	3(3-1-5)
MTS 331 Economic Decision Analysis	3(3-0-6)
MTS 333 Production and Inventory Management	3(3-0-6)
MTS 351 Management Systems Optimization	3(3-1-5)
MTS 382 Database Systems and Applications	3(3-1-5)
<b>Sub-Total</b>	<b>20(20-5-35)</b>

#### *Semester II*

MTS 332 Quality Management	3(3-0-6)
MTS 334 Applications of Business Statistics	3(3-1-5)
MTS 352 Work Design and Analysis	3(3-1-5)
MTS 381 Business Information Systems	3(3-0-6)
MTS 411 Management Accounting	3(3-1-5)
MTS 451 Project Management	3(3-0-6)
TU 120 Integrated Social Sciences	3(3-0-6)
<b>Sub-Total</b>	<b>21(21-3-39)</b>

#### *Summer*

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

##### **1. Exchange Track and Senior Project Track**

MTS 309 Engineering Management Training	0(0-0-0)
<b>Sub-Total</b>	<b>0(0-0-0)</b>

##### **2. Extended Management Training Track**

XXX xxx Free Elective	3(x-x-x)
<b>Sub-Total</b>	<b>3(x-x-x)</b>

### Second Year

<i>Semester I</i>	<i>Credits (lecture-practice-self study hrs)</i>
EMS 211 Thermofluids	3(3-1-5)
MAS 210 Mathematics III	3(3-1-5)
MTS 211 Principles of Business	3(3-1-5)
MTS 251 Resource Economics	3(3-0-6)
MTS 253 Mechanics for Technologists	3(3-0-6)
MTS 311 Fundamental Financial Accounting	3(3-1-5)
TU 110 Integrated Humanities	3(3-0-6)
<b>Sub-Total</b>	<b>21(21-4-38)</b>

#### *Semester II*

EL 210 English for Engineering I	3(3-1-5)
MAS 215 Differential Equations	3(3-0-6)
MTS 212 Principles of Management	3(3-1-5)
MTS 231 Statistical Methods for Managers	3(3-1-5)
MTS 232 Production and Operations Management	3(3-0-6)
MTS 254 Introduction to Management Science	3(3-1-5)
TU 140 Thai Studies	3(3-0-6)
<b>Sub-Total</b>	<b>21(21-4-38)</b>

### 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 432 Logistics Management	3(3-0-6)
MTS 453 Business Project Analysis	3(3-0-6)
XXX xxx Free Elective	3(x-x-x)
<b>Sub-Total</b>	<b>19(x-x-x)</b>

#### *Semester II*

##### **1. Exchange Track**

XXX xxx Free Elective	3(x-x-x)
MTS 493 Special Study in EM I	3(3-0-6)
MTS 494 Special Study in EM II	3(3-0-6)
<b>Sub-Total</b>	<b>9(x-x-x)</b>

##### **2. Extended Management Training Track**

MTS 304 Extended Engineering Management Training	6(0-40-0)
<b>Sub-Total</b>	<b>6(0-40-0)</b>

##### **3. Senior Project Track**

MTS 404 Senior Project	6(0-18-0)
XXX xxx Free Elective	3(x-x-x)
<b>Sub-Total</b>	<b>9(x-x-x)</b>