



# **FACULTY OF ENGINEERING**



## FACULTY OF ENGINEERING

The Faculty of Engineering was originally established in 1994. We aim at being recognized as a top-ranking faculty in Thailand by 2017.

We are striving to be an incubator which encourages, supports, develops, and serves knowledge of technology for human resources and social development of Thailand, leading to self-reliance, as well as being globally competitive.

The Faculty has four departments: Civil Engineering, Industrial Engineering, Mechanical Engineering, and Electrical and Computer Engineering. Supplementing the departments in research endeavors are the centers of excellence, such as the Center of Excellence for Research in Innovation and Technology for Water Treatment, Center of Excellence for Research in Water Resources, Center of Excellence for Research in Road and Railway Innovation, Center of Excellence for Research in Sustainability of Health, Environment and Industry, Center of Excellence for Research in Energy Technology and Environment, and Center of Excellence for Research in Environmental Research and Innovation (CERI).

To achieve high quality education and research, which support our core operations as efficiently as possible, we joined hands with partners nationally and internationally. Some collaborations in Thailand are with Tipco Asphalt PCL., Thailand; Concrete Product and Aggregate Co., Ltd.; Electricity Generating Authority of Thailand; and Thailand Advanced Institute of Science and Technology. Reflecting the Faculty's mission and reputation as a unit within a research university, we have sought out collaborative ventures abroad, such as Software Engineering Institute; Carnegie Mellon University; Imperial College London, UK; Kyoto University, Japan; National Technical University of Athens, Greece; Politecnico di Torino, Italy; and the Asian Institute of Technology.

# Master of Engineering Program in Civil Engineering

## Research Focus

- Water Resource Engineering
- Structural Engineering
- Construction Engineering
- Transportation Engineering
- Geotechnical Engineering

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	3
- Electives	21
Required Non-credit Courses	5
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

### 2. Core Course

Requirements	Option 1.2	
	Course No.	Cr.
Applied Mathematics for Engineers	304501	3
<b>Total</b>	<b>1</b>	<b>3</b>

### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
<b>Structural Engineering</b>		
Advanced Structural Analysis	304511	3
Advanced Mechanics of Materials	304512	3
Advanced Concrete Technology	304513	3
Structural Dynamics	304514	3
<b>Construction Engineering</b>		
Construction Planning	304521	3
Cost and Economics in Design and Construction	304522	3
Probability Statistics and Decision for Civil Engineering	304523	3
Construction Monitoring, Inspection and Control Process	304524	3
<b>Transportation Engineering</b>		
Urban Transportation Planning	304531	3
Traffic Design and Operations	304532	3
Advanced Highway Planning and Design	304533	3
Economic Analysis for Transportation Engineering	304534	3
<b>Water Resource Engineering</b>		
Advanced Fluid Mechanics	304541	3
Water Resources Development and Management	304542	3
Advanced Hydrology	304543	3
Design of Hydraulic Structures	304544	3
<b>Geotechnical Engineering</b>		
Advanced Soil Mechanics	304551	3
Advanced Foundation Engineering	304552	3
Soil Dynamics	304553	3
Earth Structures	304554	3
<b>Total</b>	<b>≥7</b>	<b>≥21</b>

#### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	304503	3
Seminar 1	304581	1
Seminar 2	304582	1
<b>Total</b>	<b>3</b>	<b>5</b>

#### 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	304591	3
Thesis 2, Option 1.2	304592	3
Thesis 3, Option 1.2	304593	6
<b>Total</b>	<b>3</b>	<b>12</b>

# Master of Engineering Program in Computer Engineering

## Research Focus

- Digital Image Processing
- Computer Vision
- Artificial Intelligence
- Software Engineering
- Hardware Technology
- Computer Networks
- Information Engineering

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.1	Option 1.2
Coursework	-	24
- Core Courses	-	9
- Electives	-	15
Required Non-credit Courses	5	5
Thesis	36	12
<b>Total</b>	<b>36</b>	<b>36</b>

\* Minimum credits required

### 2. Core Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Mathematics for Computer Engineering	-	-	305500	3
Advanced Computer Architectures	-	-	305501	3
Advanced Algorithm Analysis and Design	-	-	305502	3
<b>Total</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>9</b>

### 3. Electives

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
<b>Group 1: General Courses in Computer Engineering</b>				
Advanced Computer Programming	-	-	305503	3
Theory of Computation	-	-	305504	3
Advanced Operating Systems	-	-	305505	3
Parallel and Distributed Computing	-	-	305506	3
Special Topics in Computer Engineering and Applied Computing	-	-	305507	3
<b>Group 2: Artificial Intelligence and Signal Processing</b>				
Advanced Digital Signal Processing	-	-	305510	3
Matching Learning and Applications	-	-	305511	3
Human and Computer Interaction Analysis and Design	-	-	305512	3
Advanced Digital Image Processing	-	-	305513	3
Advanced Computer Graphics and Animation	-	-	305514	3
Multimedia Signal Processing	-	-	305515	3
Multimedia Standards and Applications	-	-	305516	3
Computer Vision and Applications	-	-	305517	3
Special Topics in Digital Image Processing	-	-	305518	3
<b>Group 3: Software Engineering</b>				
Software Engineering Design and Management	-	-	305520	3
Engineering Requirements	-	-	305521	3
Software Analysis and Design	-	-	305522	3
Software Architecture Concept and Design	-	-	305523	3
Software Product Line Concept and Design	-	-	305524	3
System Verification and Validation	-	-	305525	3
Computer System Quality	-	-	305526	3

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Special Topics in Software and System Engineering	-	-	305527	3
<b>Group 4: Hardware Technology and Computer Networks</b>				
Advanced Computer Networks	-	-	305530	3
Embedded and Real Time Systems	-	-	305531	3
Wireless and Mobile Networking	-	-	305532	3
Multicast Protocols and Applications	-	-	305533	3
Computer and Network Security	-	-	305534	3
Computers and Sensors Interfaces	-	-	305535	3
Sensor Networks and Applications	-	-	305536	3
Mechatronic and Robotic Systems	-	-	305537	3
Special Topics in Embedded and Real Time Systems	-	-	305538	3
<b>Group 5: Data and Information Engineering</b>				
Advanced Database Management Systems	-	-	305540	3
Data and Web Mining	-	-	305541	3
Data Integration	-	-	305542	3
Enterprise Information Systems	-	-	305543	3
Service Oriented Architectural Design and Development	-	-	305544	3
Knowledge Engineering	-	-	305545	3
Information Retrieval and Web Search	-	-	305546	3
Special Topics in Data and Information Engineering	-	-	305547	3
<b>Total</b>	-	-	≥5	≥15



#### 4. Required Non-credit Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Science and Technology	305550	3	305550	3
Seminar 1	305558	1	305558	1
Seminar 2	305559	1	305559	1
<b>Total</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>5</b>

#### 5. Thesis Credit Requirements

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Thesis 1, Option 1.1	305551	9	-	-
Thesis 2, Option 1.1	305552	9	-	-
Thesis 3, Option 1.1	305553	9	-	-
Thesis 4, Option 1.1	305554	9	-	-
Thesis 1, Option 1.2	-	-	305555	3
Thesis 2, Option 1.2	-	-	305556	3
Thesis 3, Option 1.2	-	-	305557	6
<b>Total</b>	<b>4</b>	<b>36</b>	<b>3</b>	<b>12</b>

# Master of Engineering Program in Construction Management

## Research Focus

- Construction Management Techniques
- Construction Cost and Control
- Construction Equipment and Method
- Information Technology in Construction

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	15
- Electives	9
Required Non-credit Courses	5
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

### 2. Core Courses

Requirements	Option 1.2	
	Course No.	Cr.
Construction Management Techniques	313521	3
Construction Cost, Economics and Finance	313522	3
Information Technology in Construction	313523	3
Law and Contracting in Construction	313524	3
Construction Equipment and Methods	313525	3
<b>Total</b>	<b>5</b>	<b>15</b>

### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
Construction Monitoring, Inspection and Control Process	304524	3
Safety and Environmental Issues in Construction	304525	3
Organization Management in Construction	304526	3
Real Estate Development	304527	3
Advanced Project Management	313526	3
Design and Construction Process	313527	3
Building Information Modeling for Project Participants	313528	3
Selected Topics in Construction Management	313583	3
Special Problems in Construction Management	313584	3
<b>Total</b>	<b>≥3</b>	<b>≥9</b>

### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	313503	3
Seminar 1	313581	1
Seminar 2	313582	1
<b>Total</b>	<b>3</b>	<b>5</b>

### 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	313591	3
Thesis 2, Option 1.2	313592	3
Thesis 3, Option 1.2	313593	6
<b>Total</b>	<b>3</b>	<b>12</b>

# Master of Science Program in Disaster Management

## Research Focus

- GIS and Remote Sensing Application for Disaster Management
- Early Warning System
- Community-based Disaster Risk Reduction
- Climate Change Adaptation
- Hazard Mapping
- Disaster Resilience

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	9
- Electives	15
Required Non-credit Courses	5
Thesis	12
<b>Total</b>	<b>36</b>

\* - Minimum credits required

- Specific course numbers will be assigned at the first registration.

### 2. Core Courses

Requirements	Option 1.2	
	Course No.	Cr.
Introduction and Disaster Management Theories	30****	3
Disaster Preparedness, Response and Recovery	30****	3
GIS and Remote Sensing in Disaster Management	30****	3
<b>Total</b>	<b>3</b>	<b>9</b>

### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
Meteorological (Climatologically) Hazards	30****	3
Landslides and Seismic Hazards	30****	3
Hydrological Hazards	30****	3
Industrial Hazards	30****	3
Fire Hazards	30****	3
Hazards Forecasting and Early Warning Systems	30****	3
Urban and Rural Planning and Hazards Mapping	30****	3
Disaster Management in Urban Environment Planning	30****	3
Executive Leadership and Ministration Skills	30****	3
Community-Based Disaster Risk Reduction	30****	3
Earthquake Vulnerability Reduction	30****	3
Climate Change Adaptation and Mitigation	30****	3
Climate Change and Climate Risk Management in Changing Urban Environment	30****	3
Disaster Law	30****	3
Disaster Management in ASEAN Context	30****	3
Role of Media in Disaster Management	30****	3
Disaster Analysis and Prevention	310514	3
Disaster Health Management	30****	3
Nutrition in Emergencies	30****	3
Public Health in Complex Emergency	30****	3
Public Health and Biological Hazards	30****	3
Environment and Energy	30****	3
Biotechnology for Energy and Environment	30****	3
Industrial Safety and Environment Management	30****	3
Environmental Law and Organization Management	30****	3
<b>Total</b>	<b>≥5</b>	<b>≥15</b>

\*\*\*\* To be assigned later

#### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	30****	3
Seminar 1	30****	1
Seminar 2	30****	1
<b>Total</b>	<b>3</b>	<b>5</b>

#### 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	30****	3
Thesis 2, Option 1.2	30****	3
Thesis 3, Option 1.2	30****	6
<b>Total</b>	<b>3</b>	<b>12</b>

# Master of Engineering Program in Electrical Engineering

## Research Focus

- Power Electrical Engineering
- Electronics and Embedded Systems
- Control System and Signal Processing
- Communication Engineering

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Fundamental Courses	3
- Core Courses	9
- Electives	12
Required Non-credit Courses	4
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

2. **Fundamental Courses** (A 3-credit course must be selected and approved by the student's advisor.)

Requirements	Option 1.2	
	Course No.	Cr.
Mathematics for Signal Processing	303501	3
Mathematics for Approximation	303502	3
Non-Linear Mathematics	303503	3
<b>Total</b>	<b>1</b>	<b>3</b>

### 3. Core Courses (Nine credit courses must be selected and approved by the student's advisor.)

Requirements	Option 1.2	
	Course No.	Cr.
Power System Operation and Control	303511	3
Theory of Electrical Machines	303512	3
Energy Conversion Systems	303513	3
Microprocessor-Based System Design	303531	3
Advanced Electronic Circuit Design	303532	3
Noise Reduction Techniques	303533	3
Fundamentals of Control Theory	303551	3
Optimization Theory and Its Applications	303552	3
Signal Processing	303561	3
Stochastic Signals and Systems 1	303571	3
Information Theory	303580	3
Electromagnetic Theory	303581	3
<b>Total</b>	<b>3</b>	<b>9</b>

### 4. Electives (Twelve credit courses must be selected and approved by the student's advisor.)

Requirements	Option 1.2	
	Course No.	Cr.
Organization and Finance of a Power Utility	303514	3
Optimization and Its Applications in Power Systems	303515	3
Advanced High Voltage Technology	303516	3
Electricity Economics and Planning	303517	3
Power System Dynamics and Stability	303518	3
Power Quality	303519	3
Advanced Energy Technology	303521	3
Electrical Machine Design	303522	3
Photovoltaic Systems Engineering	303523	3
Analysis of DC Power Converter Characteristics	303524	3



Requirements	Option 1.2	
	Course No.	Cr.
Special Topics in Electrical Power Engineering	303528	3
Design of High-Frequency Amplifiers and Oscillators	303540	3
Advanced Network Synthesis and Design	303541	3
Real-time System Programming	303542	3
Opto-electronics	303543	3
Biomedical Electronics	303544	3
Special Topics in Electronics and Embedded Systems 1	303548	3
Special Topics in Electronics and Embedded Systems 2	303549	3
Neural Network and Fuzzy Logic Control	303553	3
Optimal Control Systems	303554	3
Robust Control	303555	3
Image Processing	303562	3
Computer Vision	303563	3
Filter Design	303564	3
Mechatronics and Robotics Systems	303565	3
Wavelets	303566	3
Machine Learning Theory	303567	3
Special Topics in Control System Engineering and Signal Processing	303569	3
Stochastic Signals and Systems 1	303571	3
Stochastic Signals and Systems 2	303572	3
Theory of Optical Fibers and Optical Communications	303573	3
Communication System Design	303574	3
Microwave Circuits: Theory and Techniques	303575	3
Radio Wave Propagation	303576	3
Cellular Radio and Wireless Communications	303577	3
Advanced Digital System Communications	303578	3
Finite Element Method for Electrical Engineering	303582	3
Numerical Methods in Electromagnetics	303583	3
Queuing Theory and Applications	303584	3

Requirements	Option 1.2	
	Course No.	Cr.
Coding Theory	303585	3
Antenna Theory	303586	3
Special Topics in Communication Engineering	303589	3
<b>Total</b>	<b>≥4</b>	<b>≥12</b>

### 5. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Electrical Engineering Seminar	303591	1
Research Methodology in Science and Technology	303592	3
<b>Total</b>	<b>2</b>	<b>4</b>

### 6. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	303593	3
Thesis 2, Option 1.2	303594	3
Thesis 3, Option 1.2	303595	6
<b>Total</b>	<b>3</b>	<b>12</b>

# Master of Engineering Program in Environmental Engineering

## Research Focus

- Solid and Hazardous Waste Management
- Water and Wastewater Treatment
- Environment and Energy Management
- Air and Noise Control

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	9
- Electives	9
Required Non-credit Courses	4
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

### 2. Core Courses

Requirements	Option 1.2	
	Course No.	Cr.
Advanced Chemistry for Environmental Engineering	307501	3
Physico-Chemical-Biological Processes and Reaction Kinetics	307502	3
Environmental Fate and Transport of Pollutants	307503	3
<b>Total</b>	<b>3</b>	<b>9</b>

### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
Air Pollution and Control	307511	3
Design of Air Pollution and Control System for Industry	307512	3
Atmospheric Chemistry	307513	3
Advanced Noise Control	307514	3
Global Warming and Impact Mitigation	307515	3
Special Topics in Environmental Engineering	307579	3
Advanced Wastewater Treatment Process	307521	3
Advanced Water Supply Technology	307522	3
Sewerage and Water Distribution Systems	307523	3
Water and Wastewater Treatment Plant Operation and Management	307524	3
Integrated Municipal Solid Waste Engineering and Management	307531	3
Advanced Hazardous Waste Management	307532	3
Industrial Waste Control	307533	3
Site Remediation	307534	3
Solid and Hazardous Waste Landfill Engineering	307535	3
Environmental and Health Risk Assessment	307536	3
Community Environmental Technology	307541	3
Pollution Management	307542	3
Environmental System Modeling	307543	3
Environmental Health and Sanitation	307544	3
Pollution Prevention	307545	3
Environment and Energy	307546	3
Biotechnology for Energy and Environment	307547	3
Industrial Safety and Environment Management	307548	3
Environmental Law and Organization Management	307549	3
<b>Total</b>	<b>≥3</b>	<b>≥9</b>

#### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	307581	3
Seminar	307582	1
<b>Total</b>	<b>2</b>	<b>4</b>

#### 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	307591	1
Thesis 2, Option 1.2	307592	2
Thesis 3, Option 1.2	307593	3
Thesis 4, Option 1.2	307594	6
<b>Total</b>	<b>4</b>	<b>12</b>

# Master of Engineering Program in Infrastructure Engineering Management

## Research Focus

- Infrastructure Policies, Infrastructure Management and Planning
- Inspection Techniques and Deterioration Model
- Financial and Economical Analysis
- Disaster and Risk Management

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	12
- Electives	12
Required Non-credit Courses	5
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

### 2. Core Courses

Requirements	Option 1.2	
	Course No.	Cr.
Infrastructure Planning and Management	310501	3
Infrastructure Project Evaluation	310502	3
Stakeholders Participation and Environment Impact Assessment	310504	3
Information Management System for Infrastructure Engineering Management	310505	3
<b>Total</b>	<b>4</b>	<b>12</b>

### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
Community Environment Technology	307542	3
Urban Development Planning	310503	3
Transport and Logistics Management	310506	3
Selected Topics in Infrastructure Engineering Management	310507	3
Special Problem Studies in Infrastructure Engineering Management	310508	3
Superstructure Inspection and Maintenance	310511	3
Substructure Inspection and Maintenance	310512	3
Standards and Regulations for Infrastructure Management	310513	3
Disaster Analysis and Prevention	310514	3
Urban Water Management	310521	3
Hazardous and Solid Waste Management	310522	3
Urban Energy Management	310523	3
Construction Management Techniques	313521	3
<b>Total</b>	<b>≥4</b>	<b>≥12</b>

### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	304503	3
Seminar 2	310592	1
Seminar 3	310593	1
<b>Total</b>	<b>3</b>	<b>5</b>

### 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	310594	3
Thesis 2, Option 1.2	310595	3
Thesis 3, Option 1.2	310596	6
<b>Total</b>	<b>3</b>	<b>12</b>

# Master of Engineering Program in Management Engineering

## Research Focus

- Operations Research
- Industrial Engineering
- Engineering Management
- Manufacturing Systems and Automation
- Logistics and Supply Chain Management
- Product Design and Development

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	9
- Electives	15
Required Non-credit Courses	5
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

### 2. Core Courses

Requirements	Option 1.2	
	Course No.	Cr.
Production Management	301502	3
Operations Management	301503	3
Applied Statistics for Engineering Management	310505	3
<b>Total</b>	<b>3</b>	<b>9</b>



### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
Design and Analysis of Experiment	301514	3
Simulation	301515	3
Total Quality Management	301516	3
Selected Topics in Engineering Management	301591	3
Optimization and Applications	301521	3
Operations Research in Production Planning and Control	301522	3
Stochastic Processes	301524	3
Applied Fuzzy Set Theory in Operations Research	301526	3
Numerical Methods in Engineering Management	301527	3
Metaheuristics	301528	3
Stochastic Modeling for Logistics and Supply Chain Management	301529	3
Maintenance Management	301530	3
Project Management	301531	3
Supply Chain Management	301533	3
Inventory Management	301534	3
Marketing Engineering	301535	3
Ergonomics and Work Design	301536	3
Safety Engineering and Management	301537	3
Eco-design and Product Life Cycle Assessment	301540	3
Enterprise Resource Planning	301542	3
Computer Integrated Manufacturing	301544	3
Flexible Manufacturing Systems	301545	3
Applications of Industrial Robot	301546	3
Product Design and Development	301547	3
Lean Production Systems	301548	3
Manufacturing Strategy	301549	3
<b>Total</b>	<b>≥5</b>	<b>≥15</b>

#### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	301504	3
Seminar 1	301596	1
Seminar 2	301597	1
<b>Total</b>	<b>3</b>	<b>5</b>

#### 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	301592	3
Thesis 2, Option 1.2	301593	3
Thesis 3, Option 1.2	301594	6
<b>Total</b>	<b>3</b>	<b>12</b>

# Master of Engineering Program in Mechanical Engineering

## Research Focus

- Energy
- Mechanics
- Automatic Control
- Thermodynamics and Fluid Mechanics
- Agricultural Engineering
- Biomedical Engineering
- Precision Engineering

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	6
- Electives	18
Required Non-credit Courses	4
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

### 2. Core Courses

Requirements	Option 1.2	
	Course No.	Cr.
Advanced Mathematics for Mechanical Engineering	302502	3
Statistics for Mechanical Engineering	302503	3
<b>Total</b>	<b>2</b>	<b>6</b>

### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
<b>Applied Mechanics and Design Group</b>		
Theory of Elasticity	302513	3
Mechanics of Fatigue and Fracture	302515	3
Theory of Plasticity	302516	3
Decision Theory	302517	3
Mechanics of Composite Materials	302518	3
Selected Topics in Mechanical Engineering	302594	3
Special Problem Studies in Mechanical Engineering	302595	3
<b>Thermal Engineering and Mechanics of Fluid Group</b>		
Advanced Fluid Dynamics	302520	3
Advanced Engineering Thermodynamics	302522	3
Computational Fluid Dynamics	302523	3
Transport Phenomena for Mechanical Engineers	302524	3
Advanced Heat Transfer	302525	3
Advanced Heat Pipe	302526	3
Boiling Heat Transfer and Two-phase Flow	302527	3
Selected Topics in Mechanical Engineering	302594	3
Special Problem Studies in Mechanical Engineering	302595	3
<b>Energy Engineering Group</b>		
Energy Conversion	302544	3
Energy Engineering Economics	302545	3
Energy Conservation and Management	302546	3
Renewable Energy Resources	302547	3
Design of Air-conditioning, Heating, and Ventilation System	302548	3
Synthetic Fuels	302532	3
Fuel Briquetting Technology	302533	3
Gasification Technology	302534	3
Selected Topics in Mechanical Engineering	302594	3

Requirements	Option 1.2	
	Course No.	Cr.
Special Problem Studies in Mechanical Engineering	302595	3
<b>Dynamics System and Automatic Control Group</b>		
Instruments and Measurement	302500	3
Numerical Analysis for Mechanical Engineers	302521	3
Automatic Control Theory	302550	3
Digital Control	302552	3
Advanced Automotive Control	302554	3
Engineering Dynamic System Design	302555	3
Computer-controlled System	302557	3
Selected Topics in Mechanical Engineering	302594	3
Special Problem Studies in Mechanical Engineering	302595	3
<b>Agricultural Engineering Group</b>		
Theory of Agricultural Machinery Design	302560	3
Renewable Energy for Agriculture	302561	3
Harvesting Machinery	302562	3
Testing and Evaluation Techniques of Agricultural Machinery	302563	3
Drying and Storage of Agricultural Products	302564	3
Microwave Drying Technology	302565	3
Agricultural Products Processing Technology	302566	3
Selected Topics in Mechanical Engineering	302594	3
Special Problem Studies in Mechanical Engineering	302595	3
<b>Total</b>	<b>≥6</b>	<b>≥18</b>

#### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	302501	3
Seminar	302591	1
<b>Total</b>	<b>2</b>	<b>4</b>

## 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	302597	1
Thesis 2, Option 1.2	302598	5
Thesis 3, Option 1.2	302599	6
<b>Total</b>	<b>3</b>	<b>12</b>