

Program Structure of Curriculum

Master of Engineering in Electrical and Computer Engineering

Plan A Type A1

Master of Engineering in Electrical and Computer Engineering			
Plan A Type A1			
Semester	Required Course	Elective Course	Credits
1.	Master Thesis (8 credits)	-	11 credits (30 ECTS credits)
	Seminar in ECE (3 credits)		
2.	Master Thesis (8 credits)	-	11 credits (30 ECTS credits)
	Industrial Research Methodology (3 credits)		
3.	Master Thesis (12 credits)	-	12 credits (30 ECTS credits)
4.	Master Thesis (12 credits)	-	12 credits (30 ECTS credits)
Total			46 credits (120 ECTS credits)

Course outlines

	Thai credit	ECTS credit
Total required credit	46	120
Taught course	6	12
General core course	6	12
Master thesis	40	108

Remark

General core courses are mandatory for all students.

Plan of Study

Plan A Type A1 (4 semesters)

Course					ECTS credits	KMUTNB Credits	Code
Semester I							
Master Thesis					24	8	090245097
Seminar in Electrical and Computer Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245005
Total of Semester I					30	11	
Semester II							
Master Thesis					24	8	090245097
Industrial Research Methodology	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245001
Total of Semester II					30	11	
Semester III							
Master Thesis					30	12	090245097
Total of Semester III					30	12	
Semester IV							
Master Thesis					30	12	090245097
Total of Semester IV					30	12	
Total					120	46	

Regular study plan

แผน ก แบบ ก1

ภาคการศึกษาที่ 1 ปีที่ 1 Semester 1 Year 1	ภาคการศึกษาที่ 2 ปีที่ 1 Semester 2 Year 1	ภาคการศึกษาที่ 1 ปีที่ 2 Semester 1 Year 2	ภาคการศึกษาที่ 2 ปีที่ 2 Semester 2 Year 2
090245005 3(3-0-6) Seminar in Electrical and Computer Engineering	090245001 3(3-0-6) Industrial research Methodology	090245097 12 Master Thesis	090245097 12 Master Thesis
090245097 8 Master Thesis	090245097 8 Master Thesis		

Plan A Type A2

Master of Engineering in Electrical and Computer Engineering			
Plan A Type A2			
Semester	Required Course	Elective Course	Credits
1.	Seminar in ECE (3 credits)	4 courses (12 credits)	15 credits (30 ECTS credits)
2.	Industrial Research Methodology (3 credits)	4 courses (12 credits)	15 credits (30 ECTS credits)
3.	Industrial Internship (at least 16 weeks, 4 credits)	-	4 credits (30 ECTS credits)
4.	Master Thesis (12 credits)	-	12 credits (30 ECTS credits)
Total			46 credits (120 ECTS credits)

Course outlines

	Thai credit	ECTS credit
Total required credit	46	120
Taught course	30	60
General core course	6	12
Elective course	24	48
Industrial internship	4	30
Master thesis	12	30

Remark

General core courses are mandatory for all students.

Elective courses can be chosen from the list of all elective courses.

Plan of Study

Plan A Type A2 (4 semesters)

Course	Lecture hours	Assignment and self-study	Preparation for exam	Total working hours per semester	ECTS credits	KMUTNB Credits	Code
Semester I							
Core Course							
Seminar in Electrical and Computer Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245005
Elective Courses							
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Total of Semester I					30	15	
Semester II							
Core Course							
Industrial Research Methodology	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245001
Elective Courses							
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Total of Semester II					30	15	
Semester III							
Industrial Internship					30	4	090245099
Total of Semester III					30	4	
Semester IV							
Master Thesis					30	12	090245098
Total of Semester IV					30	12	
Total					120	46	

Regular study plan

แผน ก แบบ ก2

ภาคการศึกษาที่ 1 ปีที่ 1 Semester 1 Year 1	ภาคการศึกษาที่ 2 ปีที่ 1 Semester 2 Year 1	ภาคการศึกษาที่ 1 ปีที่ 2 Semester 1 Year 2	ภาคการศึกษาที่ 2 ปีที่ 2 Semester 2 Year 2
090245005 3(3-0-6) Seminar in Electrical and Computer Engineering	090245001 3(3-0-6) Industrial research Methodology	090245099 4 Industrial Internship	090245098 12 Master Thesis
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		

Plan B

Master of Engineering in Electrical and Computer Engineering			
Plan B			
Semester	Required Course	Elective Course	Credits
1.	Seminar in ECE (3 credits)	4 courses (12 credits)	15 credits (30 ECTS credits)
2.	Industrial Research Methodology (3 credits)	4 courses (12 credits)	15 credits (30 ECTS credits)
3.	Industrial Internship (at least 16 weeks, 4 credits)	-	4 credits (30 ECTS credits)
4.	Master Project (6 credits)	2 courses (6 credits)	12 credits (30 ECTS credits)
Total			46 credits (120 ECTS credits)

Course outlines

	Thai credit	ECTS credit
Total required credit	46	120
Taught course	36	72
General core course	6	12
Elective course	30	60
Industrial internship	4	30
Master project	6	18

Remark

General core courses are mandatory for all students.

Elective courses can be chosen from the list of all elective courses.

Plan of Study

Plan B (4 semesters)

Course	Lecture hours	Assignment and self-study	Preparation for exam	Total working hours per semester	ECTS credits	KMUTNB Credits	Code
Semester I							
Core Course							
Seminar in Electrical and Computer Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245005
Elective Courses							
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Total of Semester I					30	15	
Semester II							
Core Course							
Industrial Research Methodology	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245001
Elective Courses							
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Total of Semester II					30	15	
Semester III							
Industrial Internship					30	4	090245099
Total of Semester III					30	4	
Semester IV							
Master Project					18	6	090245096
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Elective Course	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245xxx
Total of Semester IV					30	12	
Total					120	46	

Regular study plan

แผน ข

ภาคการศึกษาที่ 1 ปีที่ 1 Semester 1 Year 1	ภาคการศึกษาที่ 2 ปีที่ 1 Semester 2 Year 1	ภาคการศึกษาที่ 1 ปีที่ 2 Semester 1 Year 2	ภาคการศึกษาที่ 2 ปีที่ 2 Semester 2 Year 2
090245005 3(3-0-6) Seminar in Electrical and Computer Engineering	090245001 3(3-0-6) Industrial research Methodology	090245099 4 Industrial Internship	090245096 6 Master Project
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		090245xxx 3(3-0-6) Elective
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		090245xxx 3(3-0-6) Elective
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		
090245xxx 3(3-0-6) Elective	090245xxx 3(3-0-6) Elective		

List of Electives Courses

Course	Lecture hours	Assignment and self-study	Preparation for exam	Total working hours per semester	ECTS credits	KMUTNB Credits	Code
Information Theory and Source Coding	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245121
DSP Design Methodologies and Tools	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245125
Multimedia Communications	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245126
VLSI Architecture	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245127
Algorithm Design of Digital Receivers	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245128
Cryptography	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245129
System and Processor Architectures for Mobile Devices	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245130
Estimation and Detection Theory	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245131
Special Problems in Communication Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245132
Software-Defined Radio and Cognitive Radio Network	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245133
Advanced Topics in Communications	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245134
Electromagnetic Field Theory for Smart Sensing Applications	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245135
Microwave Components and Circuit Design	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245136
Communication Protocols	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245137
Broadband Wireless Communication Systems	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245138
Introduction to Radar Technology	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245139
Power System Reliability	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245222
Electrical Transients in Electrical Power Systems	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245223
Battery Storage Systems	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245224
Electric Vehicles	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245226
Selected Topics in Electrical Power Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245227
Asset Management of Electrical Power System	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245229

Course	Lecture hours	Assignment and self-study	Preparation for exam	Total working hours per semester	ECTS credits	KMUTNB Credits	Code
Power System Monitoring, Control and Protection	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245230
Distributed Generation Systems	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245231
Renewable Energies for Electrical Power Generation	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245233
Electric Drive System	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245234
Testing and Condition Diagnostic of High Voltage Equipment	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245235
Electric Power Generation Control and Protection	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245236
Computer Graphics	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245322
Selected Topics in Practical Computer Science	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245323
Network Security	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245331
Machine Vision	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245332
Digital Image Processing	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245334
Embedded Software	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245336
Machine Learning	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245337
High Performance Computing using Graphics Processing Units	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245338
Advanced Computer Architecture	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245339
Principles of Data Mining	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245340
Information Retrieval	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245341
Algorithmic Differentiation	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245342
Parallel Computing	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245343
High Performance Scientific Computing	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245344
Human-Computer Interaction	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245346
Optimization	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245348
Applications of Digital Image Processing	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245349
Efficient Algorithm	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245350
Hardware and System Software Architectures	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245351
Advanced Software Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245352
Database Systems	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245353

Course	Lecture hours	Assignment and self-study	Preparation for exam	Total working hours per semester	ECTS credits	KMUTNB Credits	Code
Advanced Database Management Systems	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245354
Cloud Computing)	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245355
Storage System	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245356
Compiler Design and Optimization	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245357
Bioinformatics	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245358
Advanced Operating System and Distributed System	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245359
Selected Topics in Computer Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245360
Advanced Topics in Computer Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245361
Communication Systems for Smart Grids	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245423
Internet of Things	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245424
Cyber Security for Smart Grids	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245425
Advanced Topics in Smart Grid Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245426
Special Problems in Smart Grid Engineering	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245427
Data Management and Analysis	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245428
Modern Power Grid Operation and Control	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245429
Advanced Wireless Communications and Metering Infrastructure	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245430
Design Methodology	3h x 15w	5h x 15w	30	150	6	3(3-0-6)	090245431