Program: **ECE**   **Faculty**/**College**: TGGS
Degree Level: **Master**

Course 090245005

Seminar in Electrical and Computer Engineering

King Mongkut's University of Technology North Bangkok

The Sirindhorn International Thai-German Graduate School of Engineering

Electrical and Computer Engineering Program

Section 1: General Information

1. **Course code and course title**

   090245005   Seminar in Electrical and Computer Engineering

2. **Total credits**

   3 credits   ☐ (2-2-5)   ☑ (3-0-6)   ☐ (3-0-9)   ☐ (2-3-7)

3. **Curriculum and course category**:

   Curriculum: *Master of Engineering in Electrical and Computer Engineering*

   Course category: Required Courses

   ☑ Core Course   ☐ Specific Core Course

   ☐ Industrial Internship   ☐ Master Thesis

   Elective Courses

   ☐ General Elective   ☐ Specific Elective   ☐ Other Elective

4. **Course coordinator/ Instructors**

   Course Coordinator: _____Ekkapot Charoenwanit_____

   Instructor(s):   _____ECE Lecturers_____

5. **Semester/ year of study**

   ☑ Semester 1 (Aug. to Dec.)   ☐ Semester 2 (Jan. to May)   Academic Year: 2021

6. **Pre-requisite (if any)**

   ☑ No   ☐ Yes, please provide: ....

7. **Co-requisites (if any)**

   ☑ No   ☐ Yes, please provide: ....

8. **Venue of study**

   Lecture Day/Time: Mondays at 09.00-12.00

   ☐ On-site: Lecture Room No.:…-…………. Floor:………-…….

   ☐ TGGS, KMUTNB   ☐ Faculty of Engineering, CU   ☐ RWTH

   ☑ On-line*:   Teaching Media: ☑ Microsoft Teams   ☐ Google Meet

   ☐ Zoom   ☐ Webex

   ☐ Other (specify) …………………………..…

9. **Information for quality assurance in education**

This course shows evidence of:

☐ Development of implementation from previous practices, e.g. the improvement of class teaching, course content, content classification and methods used for learning assessment

☐ Involvement from professional bodies/ external agencies in instruction; thus Enhancing student academic and professional experiences

☑ Integration of research or creative activities with instruction; use of research-based learning management; knowledge management practices for learning improvement

☐ Integration of academic services and course implementation

☐ Combination of cultural heritage preservation efforts into instruction or student activities

10. **Date of latest revision**:

28th July 2021

Section 2: Course Description and Implementation

1. **Course Description**

Seminar on research topics in the fields of Electrical and Power Engineering, Communications Engineering, Computer Engineering, and Smart Grid Engineering.

2. **Number of hours per semester**

Lecture	Practice	Self-study
45 hours/ semester (3 hours/week*)	30 hours (2 hours/week*)	75 hours/ semester (5 hours/week*)

Remark: * Based on 15 weeks of lecture

Course Category: ☑ Lecture   ☑ Practice   ☐ Laboratory
Course Evaluation: ☑ A-F   ☐ S/U   ☐P

3. **Number of hours per week for academic guidance to individual students**

☑ 1. Giving academic advice (minimum number of hours per week) during the office hours

☐1   ☐2   ☑3   ☐ 4   ☐ 5   ☐ …………………………
Wednesdays at 13.00-16.00

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The students can arrange to have office hours at times other than the specified office hours by telephone or email.

☑ 2. Adopting information technology-based academic advising

☑ Email: ekkapot.c@tggs.kmutnb.ac.th

☑ Phone :   0971179626

(Do not distribute this mobile number without permission.)

☐ Communication Apps: Line ID: e.wanit

(Please notify the lecturer before adding him/her.)

☐ Meeting Online: The platform will be informed to students upon request.

☐ Other (specify)   …………………………………………...………………

☐ 3. ………………………………………………………………………………………

4. **Course Learning Outcomes** (**CLOs**): **Students should be able to**:

CLO 1.   Explain what they learned from the talks

CLO 2.   Demonstrate that they have paid close attention to what the speakers talk about through interaction such as questions and discussions

CLO 3.   Describe, interpret and analyze technical issues

Remark: *1. Guidelines according to Bloom's Taxonomy is available at https://courses.dcs.wisc.edu/design-teaching/PlanDesign_Fall2016/2-Online-Course-Design/2_Learning-Objectives-Alignment/6_objectives_blooms-taxonomy.html*

2. For the master level course, CLOs should be "apply" and "analyze" or possibly consider the doctoral CLOs "evaluate" and "create". "Remember" and "Understand" are for the undergraduate level courses, however, they can be implemented only at the beginning of the course.

3. CLOs can be defined as many as appropriate for the course.

5. The mapping between Expected Learning Outcomes (**ELOs**) **from the curriculum and Course Learning Outcomes** (**CLOs**)

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Table 5.1 ELOs-CLOs Consistency *(for a subject-specific course/ a specific curriculum)*

Remark: All ELOs and ELOs for the course (highlighted row) are as written in the Official Approved Curriculum.

ELOs/CLOs consistency	CLO 1	CLO 2	CLO 3
ELO1	✓		✓
ELO2	✓		✓
ELO3	✓		✓
ELO4			
ELO5			
ELO6	✓	✓	✓
ELO7		✓	
ELO8			
ELO9			
ELO10			

Table 5.2 Mapping desirable characteristics of KMUTNB graduates and CLOs *(for non-specific courses designed for various curriculums)*

Consistency between desirable characteristics of KMUTNB Graduates- CLOs	CLO 1	CLO 2	CLO 3
1. **Professional credentials with critical thinking skills**	✓	✓	✓
2. **Integrity and social responsibility**			
3. **Innovative and technopreneur mindset**	✓	✓	✓
4. **Global Competence**	✓	✓	✓

Section 3: Student Improvement in relation to Course Learning Outcomes (CLOs)

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Degree Level: **Master**

Organizing learning to develop skills/ knowledge; evaluation of CLOs in accordance with the ones identified in Section 2.4

Course Learning Outcomes (CLOs)	Teaching Methods compliant with CLOs	Evaluation Methods compliant with CLOs
CLO 1	• Lectures • Examples • Individual assignments • Supervision Session	• Short Essays • Class Participation • Class Attendance
CLO 2	• Lectures • Examples • Individual assignments • Supervision Sessions	• Short Essays • Class Participation
CLO 3	• Lectures • Examples • Individual assignments • Supervision Sessions	• Short Essays • Class Participation

*Remark: * Lecture on the concept of the topic is introduced with basic or fundamental definitions, visualization, and correlations. For the complicated equation, the derivation from the basic laws can be shown to students. So, the students do not memorize the equations but understand the basic concept and basic equation. The lecturer will introduce the advanced and new concepts, technologies, and findings to students from publications such as journals and websites and from the research and industrial experiences.*

*** Active learning by asking questions related to the topic in the lecture and encouraging the students to respond to the questions. If the students cannot respond with answers, then the lecturer will give some guidance until the students can respond.*

**** Quiz in the closed-book format on the basic concepts and equations with simple problem solving to evaluate their learning. The solution will be given to students after grading, so they can identify their mistakes and weakness.*

***** Exam on the basic concepts and equations with simple problem-solving in the closed-book format as a review, whereas the complicated/integrated problem solving will be worked in the open-book format.*

Section 4: Lesson Plan and Evaluation

1. **Lesson Plan**

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Week	Topics/Details	CLOs	Hours	Learning and teaching activities; teaching media (**if any**)	Lecturer
1	• Course Introduction • ECE Lecturer Talk 1 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 1	Ekkapot/Nisai
2	• ECE Lecturer Talk 2 • ECE Lecturer Talk 3 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 2	Suramate/Sansiri
3	• Invited Talk 1 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 3	Chaiyod
4	• Invited Talk 2 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 4	Thanapong
5	• ECE Lecturer Talk 4 • ECE Lecturer Talk 5 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 5	Chaiyod/Chayakorn
6	• Invited Talk 3 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples	Nisai

				• Assignment 6	
7	• ECE Lecturer Talk 6 • ECE Lecturer Talk 7 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 7	Thanapong/Ekkapot
8	• Invited Talk 4 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 8	Chaiyod
9	• ECE Lecturer Talk 8 • ECE Lecturer Talk 9 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 9	Soamsiri/Rachata
10	• Invited Talk 5 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 10	Suramate
11	• Invited Talk 6 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 11	Suramate
12	• ECE Lecturer Talk 10 • ECE Lecturer Talk 11 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Q&A • Examples • Assignment 12	Wannida/Yodsawalai

13	• Invited Talk 7 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Discussion • Q&A • Assignment 13	Rachata
14	• Invited Talk 8 • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Discussion • Presentation • Q&A • Assignment 14	Rachata
15	• How to write a resume • Q&A, Discussion	All CLOs	3.0	• Lecture presentation slides • Discussion • Q&A • Assignment 15	Rachata
		Total	45.0		

2. **Evaluation Plan** (**in accordance with OBE** 2 **mapping framework**)

Course Learning Outcomes (CLOs)	Evaluation Methods	Week of Evaluation	Percentage of Evaluation
All CLOs	Class Participation	1-15	20%
All CLOs	Class Attendance	1-15	30%
All CLOs	15 Assignments	1-15	50%

Section 5 Teaching/Learning Resources

Textbooks and materials

1. E. Charoenwanit. (Presentation Slides)

Section 6 Course Evaluation and Improvement

1. **Course evaluation by students**

   The students will have an opportunity to evaluate the effectiveness of the course in the form of paper-based surveys and group interviews at the end of each semester. The results of the survey and the interview including the grading will be reviewed by the curriculum committee to evaluate the course's effectiveness.

2. **Strategies for assessing learning management**

   The students will have an opportunity to evaluate the teaching in the form of paper-based surveys and group interviews at the end of each semester. The results of the survey and the interview including the grading will be reviewed by the curriculum committee to evaluate the teaching. The lecturer will be informed of the evaluation for future improvements.

3. **Improvement schemes of course implementation**

   The evaluation from the students including the grading will be submitted to the curriculum committee for reviewing and brainstorming to improve the teaching of each course. Comments and suggestions given by the curriculum committee will be informed to the responsible lecturer of each course.

4. **Verification of students' learning outcomes, referred to OBE 2 and 3**

   The grading of this course will be evaluated and reviewed by the Department meeting and the TGGS executive board meeting in order to verify its appropriateness before the final approval.

5. **Course review and improvement plans**

   The results of the grading evaluation and student evaluation will be submitted to the curriculum committee for reviewing and brainstorming to improve the effectiveness of the offered courses. Comments and suggestions will be informed to the responsible lecturer of each course.