



Course memo, spring 2024

EI2410 Field Theory for Guided Waves (7,5 credits)

1 Administrative

1.1 General course information

<https://www.kth.se/student/kurser/kurs/EI2410/>

1.2 Canvas-room for this course offering

<https://canvas.kth.se/courses/44870>

1.3 Zoom-room (in case of going on-line)

<https://kth-se.zoom.us/j/69612279287>

1.4 Department

Electrical Engineering, Teknikringen 29-33

1.5 Course responsible, lecturer and examiner

Martin Norgren, mnorgren@kth.se

1.6 Course material

Reading and practice:

- M. Norgren, Guided Electromagnetic Waves (course compendium TRITA-EECS-RP-2020:1). Available at Kårbokhandeln.
- Additional material in the Canvas room.

Examples of text books for additional reading:

- J. Van Bladel, Electromagnetic Fields, 2:nd ed
- R. E. Collin, Foundations for Microwave engineering, 2:nd ed
- D. M. Pozar, Microwave Engineering, 4:th ed

2 Examination moments and grading criteria

2.1 Mandatory part

2.1.1 Project work (PROA; 1.5 credits; grades A, C, E, Fx, F)

- Carried out in groups of 2-3 students.
- Project topic(s) will be presented in early February.
- For passing grades, all group members must take active part in the presentation.

Grading criteria for the project work:

F Insufficient attempt or failed completion from Fx.

Fx Minor flaws that make the grade E impossible.

E The main subtask carried out correctly and properly reported.

C The gross part of the subtasks carried out correctly and properly reported.

A All subtasks carried out correctly and properly reported.

2.1.2 Written exam (TENA; 6 credits; grades A-F)

Consists of four tasks, each centered around a certain topic from the course content, and divided into an (a)-part and a (b)-part:

- (a) To demonstrate conceptual understanding and prove general principles of electromagnetic fields in waveguides. Marked with $\{a_i = 0 - 5\}_{i=1}^4$ points. Generates exam points $P_a = \sum_{i=1}^4 a_i$.

Exam points (P_a)	0-14	15	16-20
Grade (TENA)	F	Fx	E

Table 1: Grading criteria for passing the written exam.

- (b) To demonstrate skills in quantitatively solving specific guided wave problems. Marked with $\{b_i = 0 - 5\}_{i=1}^4$ points. Generates exam points $P_b = \sum_{i=1}^4 b_i$.

Total exam points ($P_a + P_b$)	16-20	21-25	26-30	31-35	36-40
Grade (TENA)	E	D	C	B	A

Table 2: Criteria for higher grades, awarded if grade E has been obtained in Table 1.

Allowed aids at the written exam:

- Råde & Westergren, Beta Mathematics Handbook and/or Spiegel, Mathematical Handbook of Formulas and Tables.
Other handbooks may be used if approved by the examiner before the writing date.
- Compilation of formulas in electromagnetic theory (from the course home-page).
- The course compendium *Guided Electromagnetic Waves* TRITA-EECS-RP-2020:1

2.1.3 Students with disability

Information under <https://www.kth.se/student/stod/studier/funktionsnedsattning/>

2.1.4 Completion task

The grade Fx permits one attempt on a completion task to reach the grade E.

- For PROA, the completion task is in the feedback on the report.
- For TENA, the completion task is communicated via email.

2.1.5 Course grade

		TENA				
		E	D	C	B	A
PROA	E	E	D	C	C	B
	C	D	C	C	B	A
	A	D	C	B	A	A

Table 3: The course grade determined from the grades of PROA and TENA.

2.2 Optional part: homeworks

During the course offering there will be four homeworks, handled via Canvas according to the schedule therein.

- By topic area, each homework is related to an exam problem, but wider in scope.
- Marked with $\{h_i = 0 - 5\}_{i=1}^4$ points.
- On the written exam, each a_i -point is replaceable with the corresponding h_i -point.