



## Course syllabus

Faculty of Technology

Kalmar Maritime Academy

1ER03T Elteknik, 5 högskolepoäng

Electrical Engineering, 5 credits

### STCW reference

Section AIII/1, AIII/2, AIII/6 och AIII/7

### Main field of study

Electrical Engineering

### Subject Group

Electrical Engineering

### Level of classification

First Level

### Progression

G1N

### Date of Ratification

Approved by Faculty of Technology 2017-04-24

The course syllabus is valid from spring semester 2018

### Prerequisites

General entry requirements and Mathematics 2a / 2b / 2c, Physics 1b1 / 1a or Mathematics B, Physics A (Field-specific entry requirements 7/A7).

## Objectives

### *Proficiency and comprehension*

After completing the course the student should be able to:

- explain electrical concepts such as voltage, current, capacitance, inductance and real, reactive and apparent power
- describe the operation of the common accumulators
- describe the principles of three-phase power systems.

### *Skills and abilities*

After completing the course the student should be able to:

- performing calculations on DC and single-phase AC circuits using circuit theory
- explain and predict the risks of electricity (electrical danger)
- choosing and using measurement methods and measure instruments for measuring on electrical DC and AC circuits
- calculate the symmetrical three-phase AC circuits using circuit theory.

## Content

- Current, voltage and resistance
- Circuit theory
- Electrical danger
- Accumulators
- Potential, grounding and short circuit
- Electrical power and energy
- Measurement methods and measuring instruments
- Alternating current, magnetism and induction
- Description of sinusoidal waveforms and phasor diagram
- Active, reactive and capacitive loads and effects
- Transformers basics
- Load compensation of single and three phase power systems
- Three phase power system, line and phase voltage, Wye/Delta connection

## Type of Instruction

Instruction consists of lectures and exercises. Attendance is mandatory at all exercises.

## Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

In order to receive the grade Pass the objectives must be met. In order to receive the Pass with distinction grade, a similar grade is required for the written exam.

Knowledge assessment takes place as follows:

Through individual written exam and exercise performance

## Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty and at the Kalmar Maritime Academy.

## Required Reading and Additional Study Material

### Required Reading

Spiegelberg, Sven, *Ellära*, Liber. Latest edition, ca 200 pages

Spiegelberg, Sven, *Ellära övningsbok del 1*, Liber. Latest edition, approximately 70 pages

Spiegelberg, Sven, *Ellära övningsbok del 2*, Liber. Latest edition, approximately 60 pages

Teknisk formelsamling, Sjöfartshögskolan