

Faculty	Engineering
Bachelor	Corso di Laurea in Ingegneria Meccanica, La Spezia
Year/Semester	2010/2011, I semester

Course Title	Foundations of Electrical Engineering
ID Course Code	60333
Course Credits (CFU)	9
Scientific-Disciplinary Sector	ING-IND/31
Course Type	
Lecturer-in-charge	Mansueto Rossi

Learning Outcomes:

The course is organized in two parts: in the first one the basic concepts on electromagnetic phenomena and electrotechnics are given, while the second one is devoted to an introduction to electrical machines, systems and apparatuses.

Course Organisation Details

Introduction – Electromagnetic phenomena, voltage and current – Dipoles and power balance – Kirchhoff Laws – Direct current networks – Dielectric phenomena (capacitor) – Magnetic phenomena (inductor) – Sinusoidal regime (alternate current networks) – Three phase networks – Magnetic circuits – Transformers – Introduction to rotating machines – Asynchronous (induction) machines – Synchronous machines – Direct current machines – Converters – Power systems

Assessment	hours
Lectures	70
Practice	20
Laboratory	0.0
Integrative activities	0.0

References

- M. Guarnieri, A. Stella: “Principi ed applicazioni di Elettrotecnica”, Edizioni Libreria Progetto Padova.
 C. K. Alexander, M.N.O. Sadiku: “Fundamentals of Electric Circuits”, McGraw-Hill, ISBN 0072463317 2004.
 C. A. Desoer, S. Kuh: “Basic Circuit Theory”, C. A. Desoer, E. S. Kuh, McGraw-Hill, 1969

Organization and examinations

Examination: written and oral.

Written examination: two exams during lecture period (one exercise and three points each exam) or one of the exams scheduled outside of lecture periods (two exercises, three points each exercise).

Threshold for oral exam: sum of points ≥ 4

Oral exam: about 30 minutes on theory and practical exercises

Pre-requisites