Weekly schedule: EE1P21 "Electricity & Magnetism", 4th quarter, 2015–2016

Week	Lecture topics	Prerequisites	Lecturer	Bibliography	Instruction topics	Exercises	Exams / graded homework
4.1 18.04 – 22.04	**Monday, 10:45-12:30, hall Ampere** **Lecture 1** 1. Introduction to the course 2. Coulomb force **Supplementary topics:** 1. Mathematical reminders 2. Coulomb force due to charge distributions	First year Analysis and Geometry	A. Neto	**Book Wolfson**: Chapter 20, Sections 20.1, 20.2 **Blackboard companion**: **Collegerama**: EE1P21_01	**Friday, 8:45-10:30 or 10:45-12:30, DW-IZ 1 and DW-IZ 2** **Instruction 1** Basic concepts: point charges, Coulomb force, electric field (strength), superposition, field generated by charge distributions	**Classroom:** Chapter 20; Ex. 13, 16, 23, 37, 44, 53, 74, 79 **Homework:** Chapter 20; Ex. 19, 27, 38, 42, 45, 46, 48, 66	
	Thursday, 10:45-12:30, hall Ampere **Lecture 2** 1. Electric field 2. Electric field generated by charges 3. Electric field due to charge distributions **Supplementary topics:** Coulomb force for dielectric materials	Lecture 1	A. Neto	**Book Wolfson**: Chapter 20, Sections 20.3, 20.4 **Blackboard companion**: **Collegerama**: EE1P21_01			
4.2 25.04 – 29.04	**Monday, 10:45-12:30, hall Ampere** **Lecture 3** 1. Gauss Theorem in integral form 2. Field from Gauss Theorem 3. Boundary conditions **Supplementary topics:** Gauss theorem in differential form	Lectures 1-2 and Instruction 1	A. Neto	**Book Wolfson**: Chapter 21 **Blackboard companion:** **Collegerama**: EE1P21_02	**Friday, 8:45-10:30 or 10:45-12:30, DW-IZ 1 and DW-IZ 2** **Instruction 2** Electric flux, Gauss's law (integral form), determining $\vec{E}(\vec{r})$ via Gauss's law, Gauss's law and conductors,	**Classroom:** Chapter 21; Ex. 30, 35, 38, 42, 44, 47, 52, 65 **Homework:** Chapter 21; Ex. 28, 31, 32, 37, 39, 41, 43, 46, 48, 50, 53, 54, 57, 58, 67, 69	
	Thursday, 10:45-12:30, hall Ampere **Lecture 4** 1. Potential energy 2. Potential energy difference 3. Potential difference 4. Potential **Supplementary topics:** Conservative electric field	Lectures 1-2-3 and Instruction 1	A. Neto	**Book Wolfson**: Chapter 22 **Blackboard companion**: **Collegerama**: EE1P21_03			

4.3 02.05 – 06.05	**Monday, 10:45-12:30, hall Ampere** **Lecture 5** **Supplementary topics:** 1. Potential from charge distributions 2. Electric energy 3. Energy in terms of fields	Lectures 1-2-3-4 and Instructions 1-2	A. Neto	**Book Wolfson**: Chapter 22, Section 22.2 **Blackboard companion**: **Collegerama**: EE1P21_03	**Collective TU day off – no instruction**		**Submission Graded homework 1** **Lectures 1, 2, 3**
	Liberation day – no lecture						
4.4 09.05 – 13.05	**Monday, 10:45-12:30, hall Ampere** **Guided exercises** (see classroom exercises of Friday, Chapter 22) 1. Potential 2. Potential from charge distributions 3. Electric energy (in terms of fields)		The team	**Book Wolfson**: Chapter 22 **Blackboard companion**: **Collegerama**: –	**Friday, 8:45-10:30 or 10:45-12:30, DW-IZ 1 and DW-IZ 2** **Instruction 3** Electric potential difference, (work & energy), determining $V(\vec{r})$ for point charges, superposition, potential generated by charge distributions, electric field from potential, charged conductors Electrostatic energy for discrete charges and charge distributions, capacitance – definition and application to simple geometries, equivalent capacitances, stored energy	**Classroom** (not handled on Monday)**:** Chapter 22; Ex. 25, 30, 34, 39, 43, 45, 48, 52, 55, 57, 62, 65, 72, 73 Chapter 23; Ex. 20, 30, 36, 37, 40, 48, 53, 61, 69 **Homework:** Chapter 22; Ex. 24, 27, 28, 31, 32, 36, 37, 40, 41, 44, 46, 50, 51, 54, 61, 64, 69, 71 Chapter 23; Ex. 19, 22, 25, 27, 31, 34, 39, 41, 42, 45, 52, 59, 60, 66, 68, 70, 71, 72, 73	
	Thursday, 10:45-12:30, hall Ampere **Lecture 6** 1. Parallel plate capacitor **Supplementary topics:** 1. Capacitor from charges		A. Neto	**Book Wolfson**: Chapter 23 **Blackboard companion**: **Collegerama**: EE1P21_06			

4.5 16.05 – 20.05	**Whit Monday – no lecture**				**Friday, 8:45-10:30 or 10:45-12:30, DW-IZ 1 and DW-IZ 2** **Instruction 4** Electric currents, current density, electrical conduction mechanisms, resistance/conductance, electric power	**Classroom:** Chapter 24; Ex. 19, 36, 39, 44, 53, 57, 61 **Homework:** Chapter 24; Ex. 56, 62, 63, 64	**Submission Graded homework 2** **Lectures 4, 5, 6**
	Thursday, 10:45-12:30, hall Ampere **Lecture 7** 1. Average electron speed in conductors 2. Ohms law 3. Losses and superconductivity **Supplementary topics:** Continuity of current		A. Neto	**Book Wolfson**: Chapter 24 **Blackboard companion**: **Collegerama**: EE1P21_07			
4.6 23.05 – 27.05	**Monday, 10:45-12:30, hall Ampere** Preparation for the partial exam 1		The team		**Friday, 8:45-10:30 or 10:45-12:30, DW-IZ 1 and DW-IZ 2** **Instruction 5**	**Classroom:** **Homework:**	**Partial exam 1** **Electricity** Wednesday, 9:00–11:00
	Thursday, 10:45-12:30, hall Ampere						

4.11 27.06 – 01.07							**Partial exam 2** **Magnetism** Tuesday, 9:00–11:00