Project description

ELECTRICAL CIRCUITS AND ORDINARY DIFFERENTIAL EQUATIONS

Student:

Student ID:

Lecture: MATH2130 “Ordinary Differential Equations”

Lecturer: Dr. Bernd Sing

Submission date: Noon, Monday 12$^{\text{th}}$ April 2010

Maximal mark: 20% of the final mark

Marking scheme: Contents (depth, breadth, accuracy): 50%
Initiative & Understanding: 20 %
Presentation of written report: 15 %
Use of literature: 15%

Project description:
Electrical Circuits

In an electrical circuit that contains resistors, inductors and capacitors, the current satisfies a second order differential equation. The student should familiarise herself/himself with such electrical circuits and how to obtain the differential equation for a given circuit. She/he then should discus how to solve such differential equations, and explain the terms “*transient current*”, “*steady state current*” and “*resonance*”. Appropriate example to explain these concepts should be used.

As a starting point, Section 2.7 in C.H. Edwards and D.E. Penney, “Elemetary Differential Equations with Boundary Value Problems”, Pearson, 2008 (6th ed.) (library: `QA 271 E33`) discusses electrical circuits; they can also be found in other (all?) books on differential equations.

The final report should between 3–5 pages long (but must not exceed 8 pages) in normal font and single spaced (preferrably as pdf). The target audience of the report are your fellow students in MATH2130. Appropriate literature (library!) should be used and cited. However, plagiarism will not be tolerated.

Signature Student: