

ELEC3509 – Lab 2 – Marking Scheme

The marks are generally weighted as follows:

- 50% for showing how you obtained your results
- 50% for explaining what your results mean

Prelab

There are two parts to the prelab for a total of **5 marks**. The first part is worth **2.5 marks** and must be completed for **Day 1**. The second part is worth **2.5 marks** and must be completed for **Day 2**.

To receive **Day 1** prelab marks, you must present the following:

- Part 2:
 - Small-Signal Model for CE, CB and CC amplifiers
 - A_{mid} , R_{in} , R_{out} , f_{high} , f_{low} for CE, CB and CC amplifiers
- Part 3:
 - Estimates of A_{mid} , R_{in} , R_{out} , f_{high} , f_{low} of CE-CB, CC-CB and CC-CE amplifiers

To receive **Day 2** prelab marks, you must present the following:

- Specification Values based on Student Number
- Schematic for Cascode Amplifier
- Small Signal Model for Cascode Amplifier
- Design Equations (you must be able to explain these)
- Table of Components with Design Values

Checkout

There are two parts to the prelab for a total of **5 marks**. The first part is worth **2.5 marks** and must be completed for **Day 1**. The second part is worth **2.5 marks** and must be completed for **Day 3**.

To receive **Day 1** checkout marks, you must present the following:

- All Parts:
 - Component Tables (Name, Design Value / Measured Value)
 - Data Tables (Name, Design Value / Measured Value)
- Part 2:
 - Measured values for A_{mid} , R_{in} , R_{out} , f_{high} , f_{low} for CE, CB and CC amplifiers
- Part 3:
 - Measured values for A_{mid} , R_{in} , R_{out} , f_{high} , f_{low} of CE-CB, CC-CB and CC-CE amplifiers

To receive **Day 3** checkout marks, you must present the following:

- Component Tables (Name, Design Value / Measured Value)
- Data Tables (Name, Design Value / Measured Value)
- Measured values for A_{mid} , R_{in} , R_{out} , f_{high} , f_{low} of your design
- Gain-Frequency plot
- Demonstrate your circuit. The TA will test to see that your circuit meets the specifications. It must be on and functioning within the design specification. **DO NOT DISASSEMBLE YOUR CIRCUIT UNTIL THE TA HAS TESTED IT.**

ATTENTION!

You MUST demonstrate your working circuit to a TA, even if you did not get the checkout mark by the end of day 3.

If you cannot check out on time, it is **your responsibility** to demo your circuit in another lab section or to otherwise arrange a time for a TA to meet you. You will not get any marks for a late demo but it is **mandatory**. You will **automatically fail** the lab if you do not demo the circuit.

Report Marking Scheme

This table provides the minimum requirements and the total available marks for each. Completing only the minimum requirements is NOT sufficient to receive full marks.

Section	Min. Requirements	Available Marks
Introduction		5
Transistor Amplifier Characterization		
	Calculate Small-Signal Parameters for Amplifiers	6
	Explanation of Calculations	2
	Measure Small-Signal Parameters for Amplifiers	5
	Explanation of Measurements / Comparison with Calculated Values	5
	Explain the link between Part 1 and Part 2	3
Cascode Specification and Design		
	Derive Specification Table	3
	Design of DC Bias Network	5
	Design for Gain Specification	5
	Design for Frequency Specification	8
Cascode Implementation and Verification		
	Performance Summary Table	5
	Gain-Frequency plot	8
	Comparison with Design Values	5
Conclusion		5
Overall Writing and Organization		20
TOTAL		90