

Imperial College London
Department of Electrical & Electronic Engineering
EE2 Circuits & Systems – Mid-term Lab Oral 2025

The mid-term lab oral in the form of a 15-minutes oral examination conducted in person in Level 1 Teaching Lab. This will take place on Monday 3rd or Tuesday 4th of November 2025. The purpose of this mid-term lab oral is to assess your level of attainment in the intended learning outcomes of **Lab 1 and Lab 2 only**. A schedule for the oral examination is attached. **This is a formal assessment**. If you are unable to attend and wish to swap with someone else, you MUST find a willing person to swap with, and seek my agreement ahead of time via email. The mid-term Lab Oral is worth 15% of the module's marks.

Logbook

You must **bring your logbook** (electronics or paper) with you to the Oral Examination. Although your logbook will NOT be formally “marked”, your examiner will nevertheless assess how effective you have kept a log of the experiment and whether you have used your logbook to help you learn through planning and reflection. Your examiner will also be asking questions that can **only** be answered by referring to the logbook.

Format of the Oral – You must turn up to the Level 1 Lab at least 5 minutes before your allocated time. Your Examiner will call you over to their station when it is your turn. You will be asked questions **on Lab 1 and Lab 2 only**. The Examiner may even ask questions not directly linked to what you have done to test your **understanding**. In addition to understanding, examiner will also consider the effort you have put into completing the experiments.

Grading – Attached is the marksheet that your Examiner will be using during the oral examination. The assessment form with feedback will be returned to you via MS Teams. Your will receive a grade for this assessment according to the criteria shown below:

A = Excellent (70%+)	Completed and understood everything with no gap in knowledge
B = Good (60%+)	Completed all and good understanding with minor gaps
C = OK (50%+)	Fair understanding with some gaps, completed most parts
D = Weak (40%+)	Weak understanding with many gaps
E = Fail (below 40%).	Very weak understanding, lack evidence of real effort

We expect the average mark for this assessment to be around 65% for the entire class. To ensure fair assessment, I will perform moderation of marks between different Examiners and apply adjustments if necessary.

Learning Outcomes – Lab 1 and Lab 2

Lab 1 – Amplification

- Characterisation of signal sources with understanding of source impedance and loading effect
- Building of working op-amp circuits in a tidy manner
- Isolating load from source using op-amp using unity gain buffer
- Shifting reference voltage for single power supply operation
- Biasing input and output at middle of supply range
- AC vs DC coupling
- Gain-Bandwidth limitation of op-amp
- Interpretation of op-amp datasheet
- Multi-stage amplification
- Driving of very low output impedance (e.g. speaker) via class D amplifier

Lab 2 – Applications of Op-amps

- Rectifier circuit
- Peak detector and how to choose R C values of the detector
- Voltage comparator with hysteresis and what determines the hysteresis
- Oscillator with positive feedback, and what determines the frequency of oscillation
- Function generator and how it works
- Analogue pulse-width modulator and how it works
- Active filter using Sallen-Key topology
- Butterworth filter design

Peter Cheung

Version 2.0, 26 October 2025.

Updated Lab Oral Schedule

First name	Last name	Date	Time	Examiner
Phuong	Vo	Mon, 3 Nov	09.15 - 09.30	Assessor_1
Laura	Shaw Barrag	Mon, 3 Nov	09.15 - 09.30	Assessor_2
Peixin	Yao	Mon, 3 Nov	09.15 - 09.30	Assessor_3
Krishna	Sookun	Mon, 3 Nov	09.15 - 09.30	Assessor_4
Muhammad	Abubakar	Mon, 3 Nov	09.30 - 09.45	Assessor_1
Zeb	Forde-Smith	Mon, 3 Nov	09.30 - 09.45	Assessor_2
Herbie	Skidmore	Mon, 3 Nov	09.30 - 09.45	Assessor_3
Sakthivel	Balaji Perum	Mon, 3 Nov	09.30 - 09.45	Assessor_4
Eugene	Gardiner	Mon, 3 Nov	09.45 - 10.00	Assessor_1
Patryk	Nowak	Mon, 3 Nov	09.45 - 10.00	Assessor_2
Vo	Tran	Mon, 3 Nov	09.45 - 10.00	Assessor_3
Bavneet	Sehra	Mon, 3 Nov	09.45 - 10.00	Assessor_4
Aarya	Sharma	Mon, 3 Nov	09.45 - 10.00	Assessor_5
Hanna	Semnani	Mon, 3 Nov	10.00 - 10.15	Assessor_1
Londrina	Hyseni	Mon, 3 Nov	10.00 - 10.15	Assessor_2
Wei	Ooi	Mon, 3 Nov	10.00 - 10.15	Assessor_3
Yuhan	Zou	Mon, 3 Nov	10.00 - 10.15	Assessor_4
Rhys	Lloyd	Mon, 3 Nov	10.00 - 10.15	Assessor_5
Usayd	Hussain	Mon, 3 Nov	10.15 - 10.30	Assessor_1
Ronak	Kumar	Mon, 3 Nov	10.15 - 10.30	Assessor_2
Marzouk	Hajaij	Mon, 3 Nov	10.15 - 10.30	Assessor_3
Yi	Tan	Mon, 3 Nov	10.15 - 10.30	Assessor_4
Marios	Avraam	Mon, 3 Nov	10.15 - 10.30	Assessor_5
Zhiyuan	Shi	Mon, 3 Nov	10.45 - 11.00	Assessor_1
Hoi	Chou	Mon, 3 Nov	10.45 - 11.00	Assessor_2
Ensar	Bati	Mon, 3 Nov	10.45 - 11.00	Assessor_3
Michael	Wettasinghe	Mon, 3 Nov	10.45 - 11.00	Assessor_4
JITONG	CAI	Mon, 3 Nov	10.45 - 11.00	Assessor_5
Hemapriya	Karthikeyan	Mon, 3 Nov	11.00 - 11.15	Assessor_1
Summer	Xia	Mon, 3 Nov	11.00 - 11.15	Assessor_2
Lee	Zhung Han	Mon, 3 Nov	11.00 - 11.15	Assessor_3
Claryce	Yap	Mon, 3 Nov	11.00 - 11.15	Assessor_4
Yuheng	Fu	Mon, 3 Nov	11.00 - 11.15	Assessor_5
Joe	Seitler	Mon, 3 Nov	11.15 - 11.30	Assessor_1
Chenghong	Wu	Mon, 3 Nov	11.15 - 11.30	Assessor_2
Archie	Eltherington	Mon, 3 Nov	11.15 - 11.30	Assessor_3
Yik	Chan	Mon, 3 Nov	11.15 - 11.30	Assessor_4
Lukas	Mykhnenko	Mon, 3 Nov	11.15 - 11.30	Assessor_5
Ziyi	Liu	Mon, 3 Nov	11.30 - 11.45	Assessor_1
Aaditya	Sharma	Mon, 3 Nov	11.30 - 11.45	Assessor_2
Long	Yang	Mon, 3 Nov	11.30 - 11.45	Assessor_3
Chaitanya	Khemani	Mon, 3 Nov	11.30 - 11.45	Assessor_4
Ian	Leary	Mon, 3 Nov	11.30 - 11.45	Assessor_5
Hong	Lim	Mon, 3 Nov	11.45 - 12.00	Assessor_1
Hong	Tan	Mon, 3 Nov	11.45 - 12.00	Assessor_2
Ziyu	Cui	Mon, 3 Nov	11.45 - 12.00	Assessor_3
Kaitlyn	Mistry	Mon, 3 Nov	11.45 - 12.00	Assessor_4
Froher	Nabizada	Mon, 3 Nov	11.45 - 12.00	Assessor_5

First name	Last name	Date	Time	Examiner
Christos	Papazacharia	Tue, 4 Nov	09.00 - 09.15	Assessor_1
Ryan	Parsons	Tue, 4 Nov	09.00 - 09.15	Assessor_2
Yong Zhi	Tong	Tue, 4 Nov	09.00 - 09.15	Assessor_3
Wen	Li	Tue, 4 Nov	09.00 - 09.15	Assessor_4
Soham	Shah	Tue, 4 Nov	09.00 - 09.15	Assessor_5
Yee	Lim	Tue, 4 Nov	09.15 - 09.30	Assessor_1
Ava	Amar	Tue, 4 Nov	09.15 - 09.30	Assessor_2
Sarah	Mahmoud	Tue, 4 Nov	09.15 - 09.30	Assessor_3
Roy	Seo	Tue, 4 Nov	09.15 - 09.30	Assessor_4
Xin	Ng	Tue, 4 Nov	09.15 - 09.30	Assessor_5
Eden	Wong	Tue, 4 Nov	09.30 - 09.45	Assessor_1
Ioan	Prince	Tue, 4 Nov	09.30 - 09.45	Assessor_2
Yanzhong	Shi	Tue, 4 Nov	09.30 - 09.45	Assessor_3
Racha	Khedimallah	Tue, 4 Nov	09.30 - 09.45	Assessor_4
Samuel	Snelson-Was	Tue, 4 Nov	09.30 - 09.45	Assessor_5
Adam	Silverwood	Tue, 4 Nov	09.45 - 10.00	Assessor_1
Rafael	Langdon	Tue, 4 Nov	09.45 - 10.00	Assessor_2
Thennavan	Kanakarayar	Tue, 4 Nov	09.45 - 10.00	Assessor_3
Chengkun	Yang	Tue, 4 Nov	09.45 - 10.00	Assessor_4
Chun	Ooi	Tue, 4 Nov	09.45 - 10.00	Assessor_5
Alvaro	Vicente Tarra	Tue, 4 Nov	10.00 - 10.15	Assessor_1
Alexandros	Psyllidis	Tue, 4 Nov	10.00 - 10.15	Assessor_2
Junjiang	Wu	Tue, 4 Nov	10.00 - 10.15	Assessor_3
Kevin	Song	Tue, 4 Nov	10.00 - 10.15	Assessor_4
Dong	Chen	Tue, 4 Nov	10.00 - 10.15	Assessor_5
Parich	Savetvanich	Tue, 4 Nov	10.15 - 10.30	Assessor_1
Rohan	Kapisthalam	Tue, 4 Nov	10.15 - 10.30	Assessor_2
Josiah	Tse	Tue, 4 Nov	10.15 - 10.30	Assessor_3
Charles	Theobald	Tue, 4 Nov	10.15 - 10.30	Assessor_4
Anjum	Jahan	Tue, 4 Nov	10.15 - 10.30	Assessor_5
Kei	Chan	Tue, 4 Nov	10.45 - 11.00	Assessor_1
Dominic	De Jonge	Tue, 4 Nov	10.45 - 11.00	Assessor_2
Che	SU	Tue, 4 Nov	10.45 - 11.00	Assessor_3
Ihsaan	Hussain	Tue, 4 Nov	10.45 - 11.00	Assessor_4
Tin	Maicharoen	Tue, 4 Nov	10.45 - 11.00	Assessor_5
George	Chen	Tue, 4 Nov	11.00 - 11.15	Assessor_1
Yida	Wu	Tue, 4 Nov	11.00 - 11.15	Assessor_2
KRISH	KOTHARI	Tue, 4 Nov	11.00 - 11.15	Assessor_3
Harrison	Huang	Tue, 4 Nov	11.00 - 11.15	Assessor_4
Niklas	Tikka	Tue, 4 Nov	11.00 - 11.15	Assessor_5
Edward	Sandeman	Tue, 4 Nov	11.15 - 11.30	Assessor_1
Oluwafunbi	Ogunlaja	Tue, 4 Nov	11.15 - 11.30	Assessor_2
Simonas	Zalatorius	Tue, 4 Nov	11.15 - 11.30	Assessor_3
Clementine	White	Tue, 4 Nov	11.15 - 11.30	Assessor_4
Lutfi	Cengiz	Tue, 4 Nov	11.15 - 11.30	Assessor_5
Mayan	Maheswaran	Tue, 4 Nov	11.30 - 11.45	Assessor_1
Nicole	Oliveira Cost	Tue, 4 Nov	11.30 - 11.45	Assessor_2
Lexie	Lyu	Tue, 4 Nov	11.30 - 11.45	Assessor_3
Kirsty	Wei	Tue, 4 Nov	11.30 - 11.45	Assessor_4
Run	Zhang	Tue, 4 Nov	11.30 - 11.45	Assessor_5
David	Lesman	Tue, 4 Nov	11.45 - 12.00	Assessor_1
Junyuan	Zheng	Tue, 4 Nov	11.45 - 12.00	Assessor_2
Wei	Tan	Tue, 4 Nov	11.45 - 12.00	Assessor_3
Krish	Thyagarajan	Tue, 4 Nov	11.45 - 12.00	Assessor_4

Name of Student:

Names of Assessors:

Date: Mon / Tue

Performance on the Lab Experiments

1. Logbook Quality and Effectiveness

<input type="text"/>	Highly effective	Effective	OK	Weak	Poor
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2. Ability to answer questions from the logbook

<input type="text"/>	Excellent	Good	OK	Poor	Very poor
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3. Effort to completing Lab 1 & 2

<input type="text"/>	Fully engaged Strong evidence	Good engagement Good evidence	Acceptable Engagement	Below expected Engagement	V. poor Engagement
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Understanding and Learning Outcomes

4. Explanation on theories behind experiments

<input type="text"/>	Excellent	Good	OK	Poor	Very poor
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5. Examiner's opinion on candidate's depth of understanding in general

<input type="text"/>	Broad & deep	Good	Average	Less than average	Poor
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FEEDBACK TO STUDENT:

Grade: