Dyson School of Design Engineering

DE 2 Electronics 2

Final Laboratory Oral Examination Guidelines (2025)

Peter Cheung, version 2.5

Assessment on Lab 4 - 6 and the challenges will be in the form of a 20-minute oral examination **in pairs of lab partners together** with one of the four Assessors on Thursday 20 March 10.00 to 12.40 and 14.00 – 16.20. If you or your partner are unable to attend the Lab Oral at the appointed time, please find another pair willing to swap with you and inform me via email. A schedule for the examination is shown below. **This is a formal assessment, and you are REQUIRED to be present at the allotted time**. The Lab Oral will take place in Level 3 Studio, Dyson Building.

The purpose of the Oral examination is to establish how much you have learned in the second half of this term, and how much you have achieved in the Challenges. Questions will be asked to establish your level of understanding and how effectively you have conducted the experiments including the effective use of your logbook for Labs 4 - 6. You are expected to **keep your own logbook**. If you share a logbook, you must demonstrate that it is not a ONE PERSON's effort alone, i.e. you will be tested on contents in the logbook even if you were not the one who "kept" it!

During the oral, you are also expected to show what you have achieved for the challenges. **I strongly recommend that you take short videos of the challenge outcomes with your phone, even if you plan to demonstrate your achievement live.**

YOU MUST BRING YOUR SEGWAY ASSEMBLY, THE PYBENCH CARDBOARD BOX, ALL CABLES, ASSESSORIES AND LITHIUM BATTERY WITH CHARGER, BULB BOARD AND EVERYTHING ELSE ASSOCIATED WITH THIS MODULE TO YOUR LAB ORAL. NO MARKS WILL BE RECORDED OR RETURNED TO YOU UNTIL I HAVE RECEIEVED YOUR COMPLETE KIT.

The learning outcomes for each Lab are summarized below. It is helpful if you consider to what extend you have understood with respect to this list of learning outcomes.

Lab 4: IMU and OLED Display

How accelerometer and gyroscope can be used to measure pitch and roll angles; their strength and limitations; how the limitations of both type of sensors can be mitigated; how to write stand-alone program in uPy; what happens when you power up the PyBench hardware board; understanding of what the Matlab and uPy code do.

Lab 5: Motor speed measurement & Polling vs interrupt

Explain how motor speed can be measured using Hall effect sensors; demonstrate understanding of the difference between polling and interrupt and their relative advantages and disadvantages; explain how MicroPython can be used to set up various interrupt mechanisms so that interrupts happen; explain what is an interrupt service routine and how to write a good one.

Lab 6: Buffering and Beat Detection

Explain how timer can be used to determine and control the collection of real-time audio data at a fixed sampling rate; show how to use memory of the microcontroller to capture and store a block of data; instantaneous energy can be used to determine the beat of music; suggest possible improvement in the skeleton algorithm provided.

Weighting for the Final Week Lab Oral

The Final Week Lab Oral is worth 20% of the module. 15% will be on the performance in Lab 4-6. This is the same weighting as the DRAW week Lab Oral. 5% of will be on the achievement with the challenges.

DE2 2024-5 Final Lab Oral - 20 March 2025

Group No	Surname_1	First Name_1	Surname_2	First Name_2	Time	Assessor
53	Gao	Sihan	Su	Yuhan	10.00 - 10.20	Assessor_1
46	Dinkci	Can	Hayretci	Erim	10.00 - 10.20	Assessor_2
26	Karzazi	Zaynab	Silver	Anna	10.00 - 10.20	Assessor_3
13	Chourbaji	Judy	Ortiz	Alain	10.00 - 10.20	Assessor_4
39	Wang	Bohan	Wei	Bill	10.20 - 10.40	Assessor_1
24	Ismail	Mustafa	Md	Tahmid	10.20 - 10.40	Assessor_2
25	Jirapongtraku	Meni	Liu	Lijiangke	10.20 - 10.40	Assessor_3
33	Ozmerter	Ilayda	Sheikholeslami	Davin	10.20 - 10.40	Assessor_4
7	Hu	Robert	Zhang	Ke	10.40 - 11.00	Assessor_1
10	Chen	Shiyun	Dong	Yuanxi	10.40 - 11.00	Assessor_2
16	Galal	Sara	Zhou	Yipeng	10.40 - 11.00	Assessor_3
8	Broer	Leah	Jackson	Lucy	10.40 - 11.00	Assessor_4
5	Appleyard	Sebastian	Merchant	Alex	11.10 - 11.20	Assessor_1
2	Abe	Yemi	Kathirgamarajah	Aadhavan	11.10 - 11.20	Assessor_2
3	Ahmed	Safiyya	Grankin	Phoebe	11.10 - 11.20	Assessor_3
22	Han	Harry	Wu	James	11.10 - 11.20	Assessor_4
		BREAK				
35	Tidmarsh	Will	Wordsworth	Matthew	11.40 - 12.00	Assessor_1
42	Posirisuk	Meepooh	Zhou	Jiangchuan	11.40 - 12.00	Assessor_2
21	Gustave	Amelia	Ibrahim	Selin	11.40 - 12.00	Assessor_3
38	Wang	Junyi	Zheng	Bozhong	11.40 - 12.00	Assessor_4
1	Guillon	Matteo	Warriner	Harry	12.00 - 12.20	Assessor_1
28	Ganesan	Jasmi	Kulenthrarajah	Baargavi	12.00 - 12.20	Assessor_2
30	Lo	Charlotte	O'Hara	Alexis	12.00 - 12.20	Assessor_3
27	Kremer	Leo	Laird	Dylan	12.00 - 12.20	Assessor_4
17	**Gan**	**Zitong**	**Shi**	**Helen**	12.20 - 12.40	Assessor_1
20	Goel	Devansh	Merican	Lara	12.20 - 12.40	Assessor_2
6	Bindloss	George	McEvoy	Louis	12.20 - 12.40	Assessor_3
		LUNCH				
47	Wang	Hanqiang	Zhang	Haoxiang	14.00 - 14.20	Assessor_1
4	Alsop	Joseph	Height	Thomas	14.00 - 14.20	Assessor_2
52	Crowder	Harrisen	Neill	Claudia	14.00 - 14.20	Assessor_3
50	Ibrahim	Omar	Karolia	Ismaeel	14.00 - 14.20	Assessor_4
43	Su	Yuyang	Zhou	Maggie	14.20 - 14.40	Assessor_1
34	Gao	Chang	Li	Xiaoyun	14.20 - 14.40	Assessor_2
51	Huang	Yincan	Shi	Steven	14.20 - 14.40	Assessor_3
29	Liu	Ziheng	Meng	Tingxiang	14.20 - 14.40	Assessor_4
49	Jung	Zoe			14.40 -15.00	Assessor_1
32	Nanthaguma	Harshana	Sheehan	Stephanie	14.40 -15.00	Assessor_2
44	Lee Scott	Owen	Surtees	Ben	14.40 -15.00	Assessor_3
15	Elley	Brooke	Es-serghyny Elha	Salma	14.40 -15.00	Assessor_4
19	Gheel	Hannah	Ng	Felicia	15.00 - 15.20	Assessor_1
23	He	Shixian	Hu	Coco	15.00 - 15.20	Assessor_2
41	Ye	Steven	Zhao	Yizhuo	15.00 - 15.20	Assessor_3
48	Cheng	Chik Hin	Chua	Ean	15.00 - 15.20	Assessor_4
		BREAK			15.20 - 15.40	
36	Garoosi	Neeka	Vale	Jacob	15.40 -16.00	Assessor_1
40	Yang	Nancy	Zhao	Hanxiu	15.40 -16.00	Assessor_2
14	de Noronha	Vasco	Ize-Iyamu	Andrew	15.40 -16.00	Assessor_3
9	Xia	Feifan	Zhang	Carsten	15.40 -16.00	Assessor_4
37	Simpson	Naomi	Viswanath	Rishi	16.00 - 16.20	Assessor_1
31	Midgley	Archie	Swabel	Calev	16.00 - 16.20	Assessor_2
45	Cheung	Krystal	Luk	Sze Yuen	16.00 - 16.20	Assessor_4

Imperial College London

DE2 Electronics 2 – Final Week Lab Oral Feedback Form

Students1 | **Lab Grade for 1:**

Student 2 | **Lab Grade for 2:**

Name of Assessor: | Grade on Challenges:

Performance on the Lab Experiments 4, 5 & 6. (use 1 & 2 to indicate individual's performances)

1. Logbook Quality and Effectiveness

Highly effective | Effective | OK | Contrived | Poor

2. Ability to answer questions from the logbook

Excellent | Good | OK | Poor | Very poor

3. Effort in completing Lab 4 to 6

Fully engaged Strong evidence	Good engagement Good evidence	Acceptable Engagement	Below expected Engagement	V. poor Engagement

4. Examiner's opinion on candidates' depth of understanding in general

Broad & deep | Good | Average | Less than average | Poor

5. Achievement on the Challenges (tick all boxes that apply)

☐ Balancing Segway ☐ Dancing Only ☐ PID motor control ☐ LED or IMU motor ☐ None

Grade on Challenges: _____

Students have returned their Lab Kit: **YES** ☐ **NOT YET** ☐

FEEDBACK TO STUDENT: