Dyson School of Design Engineering

DE 2 Electronics 2 DRAW week Laboratory Oral Examination Guidelines

Peter Cheung, version 2.1

Assessment of Lab 1 to Lab 4 will be in the form of a 15-minute oral examination for each student with one of four Lab Demonstrators on Wed 16 Feb 9.00 to 12.00, or Thurs 17 Feb 13.00 to 16.00. All orals will be conducted in person in Level 3 Studio, Dyson Building. If you are unable to attend the Lab Oral at the appointed time, please find someone 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 purpose of the Oral examination is to establish how much you have learned in respect to the learning outcomes of these Lab Sessions. Questions will be asked which aim to establish your level of understanding and how well you have conducted the experiments including the effective use of your logbook. Your logbook MUST BE available during the oral examination, so that you can refer to its contents. Bring your laptop with you and have the logbook ready for the Assessor to read through quickly. Please arrive on Level 3 studio at least 5 minutes before your time and wait outside the lecture room until you are called.

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 1: Matlab basics

Learn to use basic Matlab features, e.g. plotting graphs; understanding of the time domain and frequency domain views of signals.

Lab 2: Signal Processing with PyBench & Matlab

How Pybench board communicate with Matlab programming environment; generation and capture of signals on the board; spectral domain analysis of sound captured by microphone; effect of under sampling and its consequence; interpretation of results returned by the fft(.) function in Matlab; frequency resolutions of spectrum; strength of harmonic components for periodic signals such as square waves and triangular waves; manipulation of sound files stored as .WAV files on a computer; signal segmentation using instantaneous energy; beat extraction of musical sound.

Lab 3: System Characterization and Transfer Function

DC response of a non-linear system; understand of system modeling in mathematics (in s-domain); meaning of transfer functions; how to obtain frequency response from the transfer function of a "black-box" system; step-response of a system; using Matlab to do the above; difference between the measured and predicted frequency response of the bulb board.

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.

DE2 DRAW week Lab Oral Schedule (16, 17 Feb 2022)

You must arrive outside Level 3 Studio 5 minutes before your schedule time.

Your Assessor will call you in.

Surname	First name	Time	Date	Assessor
Bond	Archie	9.00 - 9.20	Wed 16 Feb	Assessor 1
Chong	Lauren	9.00 - 9.15	Wed 16 Feb	Assessor 2
Lovell	Benjamin	9.00 - 9.15	Wed 16 Feb	Assessor 3
Jiang	Tao	9.00 - 9.15	Wed 16 Feb	Assessor 4
Winson-Bushby	Isaac	9.15 - 9.30	Wed 16 Feb	Assessor 1
Das	Sarthak	9.15 - 9.30	Wed 16 Feb	Assessor 2
Won	Huichan	9.15 - 9.30	Wed 16 Feb	Assessor 3
Revenga Riesco	Ivan	9.15 - 9.30	Wed 16 Feb	Assessor 4
Punpipatpaiboon	Saran	9.30 - 9.45	Wed 16 Feb	Assessor 1
Dave	Rohil	9.30 - 9.45	Wed 16 Feb	Assessor 2
Beaumont	Jack	9.30 - 9.45	Wed 16 Feb	Assessor 3
Zhao	Shirley	9.30 - 9.45	Wed 16 Feb	Assessor 4
Bocaniala	Lavinia	9.45 - 10.00	Wed 16 Feb	Assessor 1
Matthews	Maximilian	9.45 - 10.00	Wed 16 Feb	Assessor 2
Walter	Amy	9.45 - 10.00	Wed 16 Feb	Assessor 3
Perotti	Julia	9.45 - 10.00	Wed 16 Feb	Assessor 4
Ahmed	Tanya	10.00 - 10.15	Wed 16 Feb	Assessor 1
Bolton	Emmeline	10.00 - 10.15	Wed 16 Feb	Assessor 2
Bates	Ciara	10.00 - 10.15	Wed 16 Feb	Assessor 3
Zhou	Xinyan	10.00 - 10.15	Wed 16 Feb	Assessor 4
Stoffer	Rojeanne	10.15 - 10.30	Wed 16 Feb	Assessor 1
Clifford	Molly	10.15 - 10.30	Wed 16 Feb	Assessor 2
Howells	James	10.15 - 10.30	Wed 16 Feb	Assessor 3
Kataria	Riya	10.15 - 10.30	Wed 16 Feb	Assessor 4
Narayan	Anusha	10.30 - 10.45	Wed 16 Feb	Assessor 1
Ing	Keion	10.30 - 10.45	Wed 16 Feb	Assessor 2
Robins	Mila	10.30 - 10.45	Wed 16 Feb	Assessor 3
Marzocco	Ludovica	10.30 - 10.45	Wed 16 Feb	Assessor 4
Parthipan	Divya	10.45 - 11.00	Wed 16 Feb	Assessor 1
Cano Amoros	Arturo	10.45 - 11.00	Wed 16 Feb	Assessor 2
Wang	Enqi	10.45 - 11.00	Wed 16 Feb	Assessor 3
Bastos	Laura	10.45 - 11.00	Wed 16 Feb	Assessor 4
Bui	Oriane	11.00 - 11.15	Wed 16 Feb	Assessor 1
Mah	Kennard	11.00 - 11.15	Wed 16 Feb	Assessor 2
Fan	Tiankuo	11.00 - 11.15	Wed 16 Feb	Assessor 3
Choi	Romana	11.00 - 11.15	Wed 16 Feb	Assessor 4
Guth	Barbara	11.15 - 11.30	Wed 16 Feb	Assessor 1
Grut	Ruby	11.15 - 11.30	Wed 16 Feb	Assessor 2
Contri	Andrea	11.15 - 11.30	Wed 16 Feb	Assessor 3
Brazier	Eva	11.15 - 11.30	Wed 16 Feb	Assessor 4
Jones	Daisy	11.30 - 11.45	Wed 16 Feb	Assessor 1
Franchi	Ludovica	11.30 - 11.45	Wed 16 Feb	Assessor 2
Bryant	Amelia	11.30 - 11.45	Wed 16 Feb	Assessor 3
Owuye	Lily	11.30 - 11.45	Wed 16 Feb	Assessor 4

Surname	First name	Time	Date	Assessor
Chukwuma	Chinene	13.00 - 13.15	Thur 17 Feb	Assessor 1
Vonsovici	Cosmin	13.00 - 13.15	Thur 17 Feb	Assessor 2
Wang	Xianghao	13.00 - 13.15	Thur 17 Feb	Assessor 3
Hu	Mingzhe	13.00 - 13.15	Thur 17 Feb	Assessor 4
Bui	Theo	13.15 - 13.30	Thur 17 Feb	Assessor 1
Baylis	Zachary	13.15 - 13.30	Thur 17 Feb	Assessor 2
Chen	Jiayi	13.15 - 13.30	Thur 17 Feb	Assessor 3
Wang	Yiyang	13.15 - 13.30	Thur 17 Feb	Assessor 4
Edwards	Bertrand	13.30 - 13. 45	Thur 17 Feb	Assessor 1
Brochier	Felix	13.30 - 13. 45	Thur 17 Feb	Assessor 2
Patel	Saian	13.30 - 13. 45	Thur 17 Feb	Assessor 3
So	Zhao Qi	13.30 - 13. 45	Thur 17 Feb	Assessor 4
Mathivannan	Tharany	13.45 - 14.00	Thur 17 Feb	Assessor 1
Themistocleous	Alexander	13.45 - 14.00	Thur 17 Feb	Assessor 2
Scott de Martinville	Kiran	13.45 - 14.00	Thur 17 Feb	Assessor 3
Omar	Loveen	13.45 - 14.00	Thur 17 Feb	Assessor 4
Bateman	Rory	14.00 - 14.15	Thur 17 Feb	Assessor 1
Tangtrongchit	Saran	14.00 - 14.15	Thur 17 Feb	Assessor 2
Sanon	Ozan	14.00 - 14.15	Thur 17 Feb	Assessor 3
Zhou	Yankai	14.00 - 14.15	Thur 17 Feb	Assessor 4
Zhang	Yawei	14.15 - 14.30	Thur 17 Feb	Assessor 1
Mohan	Mohit	14.15 - 14.30	Thur 17 Feb	Assessor 2
Liang	Yang	14.15 - 14.30	Thur 17 Feb	Assessor 3
He	Junqiu	14.15 - 14.30	Thur 17 Feb	Assessor 4
Patel	Neil	14.30 - 14.45	Thur 17 Feb	Assessor 1
Tripathi	Avi	14.30 - 14.45	Thur 17 Feb	Assessor 2
Yammine	Rita	14.30 - 14.45	Thur 17 Feb	Assessor 3
Groff	Chloe	14.30 - 14.45	Thur 17 Feb	Assessor 4
Sulmont	Clemence	14.45 - 15.00	Thur 17 Feb	Assessor 1
Smith	Amy	14.45 - 15.00	Thur 17 Feb	Assessor 2
Kingan	Thomas	14.45 - 15.00	Thur 17 Feb	Assessor 3
Johnson	Joseph	14.45 - 15.00	Thur 17 Feb	Assessor 4
Thavayoganathan	Ragavi	15.00 - 15.15	Thur 17 Feb	Assessor 1
Ning	Yanran	15.00 - 15.15	Thur 17 Feb	Assessor 2
Lefevre	Adrien	15.00 - 15.15	Thur 17 Feb	Assessor 3
Davies	Rosie	15.00 - 15.15	Thur 17 Feb	Assessor 4
Pill	Owain	15.15 - 15.30	Thur 17 Feb	Assessor 1
Mier	Harris	15.15 - 15.30	Thur 17 Feb	Assessor 2
Teoh	Khai	15.15 - 15.30	Thur 17 Feb	Assessor 3
Puglia	Michela	15.15 - 15.30	Thur 17 Feb	Assessor 4
Cutner	Louis	15.30 - 15.45	Thur 17 Feb	Assessor 1

Imperial College London

DE2 Electronics 2 – DRAW Week Lab Oral Feedback Sheet

Name of Student:

Names of Assessors: Date: Wed / Thur

GRADE:

Performance on the Lab Experiments

1. Logbook Quality and Effectiveness

Highly effective	Effective	OK	Weak	Poor

2. Ability to answer questions from the logbook

Excellent	Good	OK	Poor	Very poor

3. Effort to completing Lab 1 to 4

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

Understanding and Learning Outcomes

5. Understanding of experimental setup (i.e. Pybench, Matlab etc.)

Excellent	Good	OK	Poor	Very poor

5. Explanation on theories behind experiments

Excellent	Good	OK	Poor	Very poor

6. Examiner's opinion on candidate's depth of understanding in general

Broad & deep	Good	Average	Less than average	Poor

FEEDBACK TO STUDENT: