Department of Electrical and Electronic Engineering

Postgraduate Information: 2017-18
MSc: Analogue and Digital Integrated Circuit Design

October 2017
Dear MSc Student,

First of all, on behalf of all my colleagues, I welcome you to Imperial College, the Department of Electrical and Electronic Engineering and to the MSc course in Analogue and Digital IC Design. We share your fascination with integrated circuit engineering and will do our utmost to make the course as useful and attractive for you as possible.

The course is very intensive and involves lectures, laboratories, coursework and finally a research dissertation. Please make sure your attendance is regular and that any coursework is submitted on time.

The course administrator is Ms Wiesia Hsissen and she will be your point of reference throughout the year answering questions, booking appointments with lecturers, or answering questions you may have.

Imperial College has been trying to minimise the use of paper over a number of years. Most notices, instructions and other communications are electronic. You should activate your computer accounts as quickly as possible and check your email at least once every day.

We have tried to provide in this handbook a quick and handy reference to information you may find useful. Please read this guide, and use it in the future as a reference. Some of the contents of this may change in the course of the year; an updated copy will always be available on the Course web page at: 
http://www.imperial.ac.uk/electrical-engineering/study/postgraduate/

As well as gaining your MSc and DIC qualifications, I am sure you will be able to balance your academic work with taking advantage of some of the wide range of activities and interests, which can be pursued in Imperial College and in London.

If you have any comments about the course, good, bad or you have suggestions on something that can be improved, or just want to talk about current developments in integrated circuits, I would be eager to hear about it.

I wish you a rewarding and enjoyable year at Imperial College.

Dr Christos-Savvas Bouganis
Course Director
Email: christos-savvas.bouganis@imperial.ac.uk
Room No: 904

02/10/2017
1. Departmental Postgraduate Administration

Eric Yeatman
Head of Department

E.yeatman@imperial.ac.uk

Andrew Holmes
Director of Postgraduate Studies

Andrew has overall administrative responsibility for the Department’s postgraduate affairs including monitoring the progress of every postgraduate student towards their progression milestones and thesis submission. He is responsible for ensuring that all College regulations are applied appropriately in the Department.

Email: a.holmes@imperial.ac.uk

Calum MacLeod, Postgraduate Administrator

Calum is always available to give advice on PG matters.

Postgraduate Office Room 614.

Email: c.macleod@imperial.ac.uk

Imad Jaimoukha, Postgraduate Tutor

Imad is responsible for the welfare and training of research students. If you need to meet with Imad to discuss any difficulties with your studies or if you have personal circumstances which are hindering your progress you can e-mail him on i.jaimouka@imperial.ac.uk to arrange an appointment or contact him via the postgraduate office.

Room: 1111C

Email: i.jaimouka@imperial.ac.uk
2. Start of term information

- See the Course administrator, Ms Wiesia Hsissen (room 910), who will give you the course information, and will hand out your identity card. She can also answer most of your questions re: the course.

- Activate your computer account.
  Your welcome pack contains instructions on how to activate your computer and email account. Instructions are also available at:

  http://www.imperial.ac.uk/admin-services/ict/self-service/connect-communicate/user-accounts-passwords/set-up/activate-account/

- Attend the welcome meetings organised by College, Department and the Group.

- You should carry the card with you at all times: it serves as a security pass and a library card, as well as giving you access to the Sports Centre and student facilities.

- Information for MSc students in the EEE Department is available in the A – Z for current students

- You are required to enrol on Blackboard. The self-enrolment details is available in A – Z for current students; The web link is:
  You will be asked for your College username and password.
3. **Timetable**

The timetable of lecture Courses is centrally managed by College and is subject to frequent changes especially at the beginning of the Autumn and Spring terms. Typically reaches a stable state by the 3rd week of term. It is a good idea to check the timetable at least twice a week during the first 3 weeks of the term, once a week for the rest of the term.

**MSc student:** From 'groups' select your MSc course e.g. MScA (MSc Analogue & Digital IC Design)

To get your timetable on your phone, online calendar etc. go to [https://www.imperial.ac.uk/facilitiesmanagement/timetabling/mytimetable/](https://www.imperial.ac.uk/facilitiesmanagement/timetabling/mytimetable/)

Your timetable is also available on Imperial Mobile (Please note that there may be a few discrepancies for the first week due to changes in the timetable).

4. **Academic Calendar**

The academic calendar year comprises the three academic terms and three months.

**Term dates**

<table>
<thead>
<tr>
<th>Term</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn Term</td>
<td>30 September 2017 – 15 December 2017</td>
</tr>
<tr>
<td>Christmas Closure</td>
<td>23 December 2017 – 01 January 2018</td>
</tr>
<tr>
<td>Spring Term</td>
<td>06 January 2018 – 23 March 2018</td>
</tr>
<tr>
<td>Easter Closure</td>
<td>29 March 2018 – 03 April 2018</td>
</tr>
<tr>
<td>Summer Term</td>
<td>28 April 2018 – 28 September 2018 (last day of the MSc course)</td>
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</table>

Register the 8 or 9 modules in which you have chosen to be examined. Students taking Autumn term modules examined in December must be confirmed by end of week 3 of Autumn Term (**20th October 17**). All Autumn and all Spring Term modules must be confirmed by **1st February 2018**. Registration should be made via the EEE Department options registration site.

Completion of the mandatory Masters Online Plagiarism Awareness Course: 31 October 2017

Examinations: w/c 04 December 2017 and 01 May 2018 – 25 May 2018

Main work on Individual Research Project: 26 May 2018 – 07 September 2018 with the following submission deadlines:

**Initial Project Report:** 16 March 2018 at 4:00 pm  
**Electronic version of Poster:** 31 August 2018 at 4:00 pm  
**Electronic version of Final Project Report:** 07 September 2018 at 4:00 pm
5. Assessment

Modules
Register the 8 or 9 subjects on which you have chosen to be examined from the available examinable options.

You cannot change your choices after the registration deadline without the permission of the MSc Programme Director. The pass/fail decision and degree classification are based only on the best 8 module marks that include the 4 core modules.

The overall mark for the 8 individual modules that are counted is called the Examination Aggregate Mark (%) and is the equally-weighted average of all 8 exam results.

You can register your exam options at:

http://www.imperial.ac.uk/electrical-engineering/internal/current-students-course-handbook/options-registration/

If you wish to enrol on courses in the Department of Computing you will also need to register on the DoC options registration website as an external student.

https://cate.doc.ic.ac.uk/.

Laboratory work
The overall mark for this component of assessment is called the Laboratory Aggregate Mark (%) which is a weighted sum of the marks for the various items of laboratory work that you are asked to do.

Individual research project
A list of projects proposed by staff will be published towards the end of the Autumn term. Project preferences will be required by the end of the third week of the Spring Term. There is also the option of self-proposed project or project in a company. In both cases, please talk to the Course Director for more information.

The project will be assessed based on the performance on the project itself, the project report and a presentation in the last week of the academic year. The Project Aggregate Mark is a weighted sum of these.

6. Award of the MSc

You will be awarded the following grade of MSc if your marks satisfy the following conditions:
An MSc degree will be awarded to students obtaining:

- at least 40% for each of the 8 modules counted for the computation of the examinations average
- at least 50% for the laboratory work average
- at least 50% for both the project and examinations average

MSc degree with **merit** will be awarded to students obtaining

- at least 40% for each of the 8 modules counted for the computation of the examinations average
- at least 50% for the laboratory work average
- at least 60% for both the project and examinations average

MSc degree with **distinction** will be awarded to students obtaining

- at least 40% for each of the 8 modules counted for the computation of the examinations average
- at least 50% for the laboratory work average
- at least 70% for both the project and examinations average

7. **Individual Research Project**

You are asked to pay a particular attention to the requirements of your **Individual Research Project**. On the web page you will find information on:

- Project aims and deliverables
- Project schedule
- Selection and allocation of projects
- Writing and submitting the project report
- Poster presentation
- Assessment
- Plagiarism
- Important note on external projects
- Useful links

*Failure to comply with Poster and Project deadlines might cause a 12-month delay in the award of the MSc degree.*
8. Poster Presentation Skills Course and Poster Presentation

The Department will arrange a Poster Presentation Skills Course for each MSc group, which will be hosted in the Electrical Eng. Building sometime in August 2018. The exact date is yet to be confirmed. **It is mandatory for you to attend this course** as you will be shown valuable skills that you can use for your poster presentation in September.

Poster presentation for all three MSc courses will take place on **Monday 10th September 2018 in the College Main Entrance.**

9. Late Submission of Coursework or Project Work

Please refer to our [Assessment](#) page.

10. Plagiarism

An Avoiding Plagiarism Session has been arranged for all Master’s students on **Monday 16th October 2017, 1.00 – 2.00 pm, Room 408, Electrical and Electronic Engineering.**

Furthermore, all Master’s students are required to undertake a **compulsory** online course in plagiarism awareness. All MSc students must complete the course by the deadline of **31st October 2017.**

Master’s students should take time to make sure they read the section on [Plagiarism Awareness](#).

11. Notification of Results

You will be given a provisional indication of your performance in the exams (subject to confirmation by the Board of Examiners) in July 2018. Your final results will not be available until after the MSc Examiners’ Meeting in late October 2018.

Your overall MSc result and your transcript should be available to you from Registry website a few weeks after the MSc Examiners’ Meeting (most likely by mid-November)

12. Attendance and reporting absences from College

Students are required by the general College regulations to attend regularly. The College Registry has to be informed of any students not in attendance as College is obliged to monitor the attendance of all students. For overseas students, non-attendance is reported to the UK Border Agency. Therefore, non-attendance and withdrawal from study must be reported to Registry within 10 days of them taking place. Please note that by taking unauthorised leave of absence, overseas students
may also be in breach of UK Border Agency regulations which may affect their student visa and their return to the UK.

Students must notify the course administrator, preferably by email to w.hsissen@imperial.ac.uk if they will be away from College for more than 3 days, with the exception of the College official closures at Christmas and Easter. A medical certificate is required for absences longer than 7 days.

13. Course Description – 2017-2018

Analogue and Digital Integrated Circuit Design (MSc/DIC)

This MSc course aims to provide designers with in-depth knowledge of analogue and digital circuits and also familiarity with both the practical issues of device-level design and system-level performance requirements. A key feature of this MSc course is its balanced approach to both analogue and digital IC design and its in-depth treatment of high frequency and low-power techniques. Issues related to design for test, CAD algorithms and design automation are also covered. Robust design methods which allow relaxation of performance requirements, yield enhancement and exploitation of state-of-the-art process technology are introduced.

Core courses (compulsory)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE9AC1</td>
<td>Analogue Integrated Circuits and Systems</td>
</tr>
<tr>
<td>EE9AC3</td>
<td>Full-Custom Integrated Circuit Design</td>
</tr>
<tr>
<td>EE9AC6</td>
<td>Analogue Signal Processing</td>
</tr>
<tr>
<td>EE9AC16</td>
<td>Advanced Digital System Design</td>
</tr>
</tbody>
</table>

Optional courses (choose 4 from this list)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE9AO2</td>
<td>Digital Signal Processing and Digital Filters</td>
</tr>
<tr>
<td>EE9AO3</td>
<td>Advanced Computer Architecture</td>
</tr>
<tr>
<td>EE9AO4</td>
<td>High Performance Analogue Electronics</td>
</tr>
<tr>
<td>EE9AO6</td>
<td>Radio Frequency Electronics</td>
</tr>
<tr>
<td>EE9AO8</td>
<td>Advanced Electronic Devices</td>
</tr>
<tr>
<td>EE9AO9</td>
<td>Optical Communication</td>
</tr>
<tr>
<td>EE9AO11</td>
<td>MEMS and Nanotechnology</td>
</tr>
<tr>
<td>EE9AO12</td>
<td>Microwave Technology</td>
</tr>
<tr>
<td>EE9AO13</td>
<td>Instrumentation</td>
</tr>
</tbody>
</table>
EE9AO14  (EE4-63)  High Performance Computing for Engineers

For module description please follow the link:

http://intranet.ee.ic.ac.uk/electricalengineering/eecourses_t4/crslistpg.asp?c=A1

Overview:

<table>
<thead>
<tr>
<th>Code</th>
<th>Module name</th>
<th>Lecturer</th>
<th>Exam/Coursework</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE9AC1</td>
<td>Analogue Integrated Circuits and Systems</td>
<td>Prof. C Toumazou/Dr P Georgiou</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AC3</td>
<td>Full-Custom Integrated Circuit Design</td>
<td>Dr T Constantinou</td>
<td>Coursework</td>
</tr>
<tr>
<td>EE9AO2</td>
<td>Digital Signal Processing and Digital Filters</td>
<td>Mr M. Brookes</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO9</td>
<td>Optical Communications</td>
<td>Prof E Yeatman</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO12</td>
<td>Microwave Technology</td>
<td>Prof S Lucyszyn</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO14</td>
<td>High Performance Computing for Engineers</td>
<td>Dr D Thomas</td>
<td>Coursework</td>
</tr>
</tbody>
</table>

Spring Term

<table>
<thead>
<tr>
<th>Code</th>
<th>Module name</th>
<th>Lecturer</th>
<th>Exam/Coursework</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE9AC6</td>
<td>Analogue Signal Processing</td>
<td>Dr P Georgiou</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AC16</td>
<td>Advanced Digital System Design</td>
<td>Dr C Bouganis</td>
<td>Coursework</td>
</tr>
<tr>
<td>EE9AO3</td>
<td>Advanced Computer Architectures</td>
<td>Prof. P Kelly</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO4</td>
<td>High Performance Analogue Electronics</td>
<td>Prof E Rodriguez-Villegas</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO6</td>
<td>Radio Frequency Electronics</td>
<td>Prof S Lucyszyn</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO8</td>
<td>Advanced Electronic Devices</td>
<td>Dr K Fobelets</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO11</td>
<td>MEMS and Nanotechnology</td>
<td>Dr Z Durrani/Prof A Holmes</td>
<td>Exam</td>
</tr>
<tr>
<td>EE9AO13</td>
<td>Instrumentation</td>
<td>Dr C Papavassiliou</td>
<td>Coursework</td>
</tr>
<tr>
<td>EE9-ALAB</td>
<td>A1 LAB</td>
<td>Dr C Bouganis</td>
<td></td>
</tr>
</tbody>
</table>

14. Feedback

Student Surveys

Your feedback is important to your department, the College and Imperial College Union.
Whilst, there are a variety of means to give your feedback on your Imperial experience, the following College-wide surveys give you regular opportunities to make your voice heard:

- **PG SOLE lecturer/module**
- **Student Experience Survey (SES)**
- **Postgraduate Taught Student Experience (PTES)**

The **PG SOLE lecturer/module survey** runs at the end of the Autumn and Spring Terms. This survey is your chance to tell us about the modules you have attended and the lecturers who taught them. Run at the same time as the Autumn Term PG SOLE is the Union’s **Student Experience Survey (SES)**. This survey will cover your induction, welfare, pastoral and support services experience. During December you will receive an email in your Imperial College account with a link to the survey.

The **Postgraduate Taught Experience Survey (PTES)** is the only national survey of Master's level (MSc, MRes, MBA and MPH) students we do and so the only way for us to compare how we are doing against the national average and to make changes that will improve our Master’s students’ experience in future. PTES covers topics such as motivations for taking the programme, depth of learning, organisation, dissertation and professional development. During the spring term you will receive an email in your Imperial College account with a link to the survey.

All these surveys are anonymous and the more students that take part the more representative the results so please take a few minutes to give your views. If you would like to know more about any of these surveys or see the results from previous surveys, please visit:

[http://www.imperial.ac.uk/registry/proceduresandregulations/surveys](http://www.imperial.ac.uk/registry/proceduresandregulations/surveys)

For further information on surveys please contact the Registry's Surveys Team on [surveys.registriesupport@imperial.ac.uk](mailto:surveys.registriesupport@imperial.ac.uk)