# Equality, Diversity and Inclusion in Engineering

# Imperial College London Module Handbook 2023-24

# Taught Content

Module Leader: Chloe Agg – [c.agg@ic.ac.uk](mailto:c.agg@ic.ac.uk)

Associate Leader: Julie Varley – [j.varley@ic.ac.uk](mailto:j.varley@ic.ac.uk)

Associate Leader: Sophia Quazi – [s.quazi@ic.ac.uk](mailto:s.quazi@ic.ac.uk)

## Introduction

The module handbook is split into two sections. This, the second section, covers the taught content; describing the specific sessions and what they discuss. The first section of the module handbook should be referred to for an overview of the module, its structure and how it is assessed.

## Lectures

Week 1 – 3rd October - No lecture

Week 2 – 10th October – Chloe, Julie & Sophia: Introductions.

Week 3 – 17th October – Chloe, Julie & Sophia: Positionality.

Week 4 – 24th October – Jenny McLaughlin: Disability, Neurodiversity and Engineering.

Week 5 – 31st October– Aakeen Parikh: Race and Racism in Engineering.

Week 6 – 7th November – Jess Wade: Women in Science.

Week 7 – 14th November – Simon Foster: Outreach and Widening Participation.

Week 8 – 21st November – Wayne Mitchell & Kieren Valentine: Corporate measures & actions in industry and academia.

Week 9 – 28th November – Mark McBride-Wright: LGBTQ+ Inclusion in Engineering. [1 hour tutorial follows – focus on understanding the logbook mark scheme]

Week 10 – 5th December – Kate Ippolito: Embedding and Evaluating EDI initiatives. [1 hour tutorial follows]

Week 11 – 12th December – Chloe, Julie & Sophia: Wrapping up what we have learnt, how to apply it and what is happening next term. [1 hour tutorial follows]

## Session Descriptions

### Each week the module will address a new topic, perspective, methodology or initiative within EDI in engineering. The session will include both taught content and facilitated discussion in order to give all students the opportunity to learn more, but also to reflect upon the learning and thus develop their understanding further. To make the most of the facilitated discussion each week there will be two core “readings” which should be completed, at least at a “skim reading” level, prior to the taught session. It should be noted that some of these readings will be videos. Students are not expected to memorise any of the content, but are advised to make brief notes on the core reading in their online logbooks to have information to refer back to during discussion if needed. Supplementary reading is provided to help guide students when doing research on their chosen term 2 topics, or in areas they find particularly interesting and wish to know more about. None of the supplementary reading is required and students may choose to read other sources when undertaking research for their term two EDI initiative design work.

### All readings are linked on Leganto. The module also has a ‘wiki’ on its Blackboard page where students and staff can add articles of interest as they are found. This creates a searchable resource relating to a range of EDI topics. Students are not expected to read all of the wiki contents, but are welcome to use sections of it to supplement their learning and to provide readings and evidence for their assessments . Students are also encouraged to add to the wiki.

### Introductions – Chloe Agg, Julie Varley, Sophia Quazi

In our first session we will introduce the module, teaching patterns and assessment methods. We go on to discuss and define Equality, Diversity and Inclusion from our own perspectives, that of academia and other broader definitions. We will examine the issues with those definitions and set the scene for EDI in the department and the University with an opportunity to discuss issues that we ourselves have experienced. To support student development throughout the module we will also look into concise writing and critical thinking skills.

Core Reading:

* As this is the first session of the module there is no required pre-reading

Optional Supplementary reading:

* Overview of the Imperial EDI Strategy: <https://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/equality/public/Inclusive-Excellence-brochure-for-EDI-Strategy-2018---updated.pdf>
* The UROP report which recommended the creation of this module: “EDI in Engineering Module Creation UROP Final Report” [https://bb.imperial.ac.uk/bbcswebdav/courses/BX202210/EDI%20in%20Engineering%20Module%20Creation%20UROP%20Final%20Report.pdf](https://bb.imperial.ac.uk/bbcswebdav/pid-2660231-dt-content-rid-13328790_1/xid-13328790_1)
* A conference paper written by the students and staff involved in the creation of the module, produced after the module’s first year: <https://www.designsociety.org/publication/46763/>

### Positionality – Chloe Agg, Julie Varley, Sophia Quazi

Building upon the first session we will examine how our own positionality and privilege affects our perspective on EDI issues and our power to change the status quo. We will look at standard models of EDI and associated tools for looking at the positionality of the initiatives we create. At the heart of positionality is our ability to reflect, so in this session we will also develop the students reflective and reflexive skills.

Pre Reading:

* The Equity Compass: A tool for supporting socially just practice: <https://yestem.org/wp-content/uploads/2020/10/EQUITY-COMPASS-YESTEM-INSIGHT.pdf>
* Reflection and Reflexivity (pages 1-15; stop before the section “Mindfulness”) – We recognize this is a relatively large reading, but as it will support all of your logbook use throughout both terms and with 40% of your assessment it is worth getting to grips with reflective and reflexive practice: <https://uk.sagepub.com/sites/default/files/upm-binaries/32441_01_Bolton_3e_Ch_01.pdf>

Optional Supplementary reading:

* Equality Impact Assessment webinar:

<https://media.rawvoice.com/lse_profservicesdivisions/richmedia.lse.ac.uk/profservicesdivisions/20190903_EDI_RoomforSubtitleEditEIAwebinar.mp4>

* Imperial's Equality Impact Assessment webpage & template:

<https://www.imperial.ac.uk/equality/resources/equality-impact-assessments/>

<https://bb.imperial.ac.uk/bbcswebdav/courses/BX202210/Imperial-EIA-template%20%283%29.docx>

### Disability, Neurodiversity and Engineering – Jenny McLaughlin

This session is about the importance of Systematic Inclusion. Every human is different and we need to keep this in mind as we make decisions on our infrastructure, technology and process so as not to exclude. Exclusion has become a habit, we need to acknowledge that we have it in our gift to be the difference. We start by understanding the fact that humans by nature our diverse. Move into demonstrating how some of the greatest innovation was born of necessity to include. Concluding how each of us play a role in ensuring we go above compliance to being curious how to create a more equitable world for everyone.

Speaker Profile: <https://getitright.uk.com/news/people-profile/board-profile-jenny-mclaughlin>

Pre-Reading: There is no required pre-reading for this session.

Core Reading (post session – select 1-2 chapters of 1 only):

* Mismatch – Kat Holmes: <https://imperial.alma.exlibrisgroup.com/leganto/public/44IMP_INST/citation/44306070620001591?auth=SAML>
* Designing Mind Friendly Environments – Steve Maslin: <https://imperial.alma.exlibrisgroup.com/leganto/public/44IMP_INST/citation/44313452590001591?auth=SAML>
* Living Sensationally – Winnie Dunn:

<https://imperial.alma.exlibrisgroup.com/leganto/public/44IMP_INST/citation/44313459760001591?auth=SAML>

Supplementary Reading:

* Rebel Ideas – Matthew Syed: <https://imperial.alma.exlibrisgroup.com/leganto/public/44IMP_INST/citation/44306077030001591?auth=SAML>
* This is Dyslexia – Kate Griggs: <https://imperial.alma.exlibrisgroup.com/leganto/public/44IMP_INST/citation/44306080080001591?auth=SAML>
* The Art of Thinking Clearly – Rolf Dobelli: <https://imperial.alma.exlibrisgroup.com/leganto/public/44IMP_INST/citation/44306081570001591?auth=SAML>

### Race and Racism in Engineering – Aakeen Parikh

In this session we will look at a variety of topics associated with race in engineering including decolonising the curriculum, racial bias, perspectives of success and impact for BAME engineers. Building upon these fundamentals, and statistics, of BAME experience we will explore the difference with inclusion and quotas, considering positive discrimination. Leading on from decolonisation we will look at Britain’s colonial past and how human centred design can move us forwards away from the focus on western perspective and its impacts on international development.

Core Reading:

* No pre-reading required

Optional Supplementary reading:

* Why I’m no longer talking to white people about race: Reni Eddo-Lodge
* Natives: Akala
* Half of a yellow son: Chimamanda Ngozi Adichie
* The fire next time: James Baldwin
* Orientalism: Edward Said
* Things fall apart: Chinua Achebe
* I am thunder: Muhammed Khan
* Prisoners of Geography: Tim Marshall
* Poor Economics – Abhijit Banerjee
* Shock Doctrine – Naomi Klein
* The price of inequality – Joseph Stiglitz

### Women in Science – Jess Wade

This session will consider the topic of gender in science and engineering, this will look at the following topics;

* Evidence: What is the current data telling us about the circumstances for women in science and engineering?
* Background: Why might is this the case and what are the existing barriers
* Lived experience: Jess's experiences of these barriers
* Initiatives: What EDI initiatives or policies are in place

Optional Supplementary reading:

* Invisible Women – Caroline Criado Perez
* Inferior – Angela Saini
* Jess Wade's work in this area: <https://www.theguardian.com/science/2023/oct/01/why-are-they-not-on-wikipedia-dr-jess-wades-mission-for-recognition-for-unsung-scientists>

### Outreach and Widening Participation – Simon Foster and Jackie Bell

In this session we will examine the educational ‘ecosystem’ around young people and how this impacts their educational outcomes. Whilst a lot of university outreach and engagement focusses on aspiration and inspiration, there are huge issues and disparities facing students with regards to their education. Not only are their huge differences in the quality of education young people are able to access, but also the support they are able to receive from their parents, grandparents, guardians and their social networks. This can have a huge impact upon the educational outcomes of young people from Widening participation backgrounds as many students are unaware about how they can navigate the educational system and also call on support for their studies; we need to be aware of the issues and address them.

Core Reading:

* The 10 key issues with Children’s learning in Primary science in England <https://www.scienceacrossthecity.co.uk/wp-content/uploads/2021/03/3634_Childrens_Learning_in_Primary_Science_Report_2020_v8.pdf> [Stakeholder Observations and First Hand Experiences are optional reading as this is 29 pages long]
* ASPIRES 2. Young people’s career aspirations, age 10 -19: <https://discovery.ucl.ac.uk/id/eprint/10092041/15/Moote_9538%20UCL%20Aspires%202%20report%20full%20online%20version.pdf> [Executive Summary, pages 4-10]

Optional Supplementary reading:

* OFSTED/Government review of literature relating to the field of science education: <https://www.gov.uk/government/publications/research-review-series-science/research-review-series-science>
* Wellcome trust study into the Impact of COVID-19 on Primary science education: <https://cms.wellcome.org/sites/default/files/2021-09/the-impact-of-covid-19-on-primary-science-education.pdf>
* Young people’s views on science education: <https://wellcome.org/sites/default/files/science-education-tracker-2019.pdf>
* Bronfenbrenner’s Ecological systems theory <https://www.simplypsychology.org/bronfenbrenner.html>
* The Office for Students annual review (2021), Section 5. Equality of Opportunity: <https://www.officeforstudents.org.uk/annual-review-2021/equality-of-opportunity/>

### Corporate measures & actions in industry and academia – Wayne Mitchell & Kieran Valentine

In this session we will hear from two different speakers in order to compare and contrast the industry and academic approaches to benchmark EDI (e.g. Stonewall, Athena Swan, REC) and the type of actions which get taken due to these measures as well as other examples of good practice for EDI in the engineering industry and academia.

Core Reading:

* Hoare Lea Diversity and Inclusion Strategy <https://hoarelea.com/about-us/diversity-inclusivity/>
* Imperial 2018 EDI Strategy <https://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/equality/public/2018-Imperial-EDI-Strategy---updated.pdf>

Optional Supplementary reading:

* Work as a Masculinity Contest, Berdahl et al. 2018, Journal of Social Issues <https://spssi.onlinelibrary.wiley.com/doi/10.1111/josi.12289>
* Masculinity and Overconfidence [Bullshitters: Who Are They and What Do We Know about Their Lives? (iza.org)](https://docs.iza.org/dp12282.pdf)
* Imperial Athena Swan application <https://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/equality/public/athena/Imperial-Athena-Silver-renewal-May-2022-public.pdf>
* Case Study: DEI in the Built Environment [Buro Happold's new RNIB HQ first to adopt neurodiversity standard - Construction Management](https://constructionmanagement.co.uk/new-rnib-building-achieves-neurodiversity-standard/)

### LGBTQ+ Inclusion in Engineering – Mark McBride-Wright

Engineering is a majority-male industry which needs to make rapid progress in the composition of the sector in terms of diversity demographics. This is needed to profit from the stated benefits which a diverse workforce brings. However, D&I programmes can create polarity when they focus more on the *diversity* and less on the *inclusion*. Mark will explain his journey in leading culture change for LGBTQ+ inclusion in engineering. He will also talk through concepts from his Masculinity in Engineering research which presents a method for engaging the majority via linking together physical safety and psychological safety.

Core Reading:

* Masculinity in Engineering, Equal Engineers 2019 <https://equalengineers.com/wp-content/uploads/2020/01/Masculinity_In_Engineering_Report.pdf>
* Mark McBride-Wright keynote speech <https://markmcbridewright.com/wp-content/uploads/2022/07/Mark_2_subs_com.mp4>

Optional Supplementary reading:

* Equal Engineers Podcast: <https://podcast.equalengineers.com/>
* InterEngineering blogs and reports: <https://interengineeringlgbt.com/>

### Embedding and Evaluating EDI initiatives – Kate Ippolito

In this session we will explore how we can embed more equitable and inclusive practices into the Imperial culture, including addressing existing barriers.  This will serve as an illustrative example for embedding and evaluating EDI initiatives more widely.  We will discuss what roles students and faculty play in fostering equality, diversity, and inclusion in higher and professional education and plan action we can take within our communities at Imperial.  This will be supported by input on current initiatives and on how to design surveys and focus groups to collect quantitative and qualitative evidence of EDI initiative impact.

Core Reading:

* The Advance HE programme standard for [Embedding equality, diversity and inclusion in the curriculum](https://www.advance-he.ac.uk/knowledge-hub/embedding-equality-diversity-and-inclusion-curriculum-programme-standard)
* Supporting the Identity Development of Underrepresented Students [SIDUS-Handbook.pdf (imperial.ac.uk)](https://www.imperial.ac.uk/media/imperial-college/staff/education-development-unit/public/SIDUS-Handbook.pdf)

Optional Supplementary reading:

* [Imperial's Inclusive Teaching Toolkit](https://www.imperial.ac.uk/staff/educational-development/teaching-toolkit/inclusive-learning-and-teaching/)
* Education Evaluation Toolkit <https://www.imperial.ac.uk/education-research/evaluation/>

### In Conclusion – Chloe Agg, Julie Varley & Sophia Quazi

This session wraps up and reflects on what we have heard about throughout the term, as well as clarifying the term two assessments. We will “reverse engineer” an existing EDI initiative to see how it is constructed, to inform the term 2 coursework.

Core Reading:

* Catch up with at least 1 reading you didn’t find time for earlier in the term

Optional Supplementary reading:

* [Imperial EDI Seed Fund](https://www.imperial.ac.uk/equality/activities/seed-fund/)
* EDI in Engineering Assessment Rubrics

## Beyond The Module

The EDI in Engineering module is not just about educating our students, but also about empowering our students voices and collaborating with them to create change within and beyond the Mechanical Engineering department at Imperial College London. As such, we encourage continuing this collaboration and empowerment beyond the module. Our original alumni who developed the module went on to present about it at the Engineering and Product Design Education conference in Barcelona in 2023. This is just one route though; what might you to do create change and how might we help you?:

* Imperial’s EDI Seed Fund
  + <https://www.imperial.ac.uk/equality/activities/seed-fund/>
* President’s Community Fund
  + <https://www.imperial.ac.uk/about/leadership-and-strategy/president/presidents-funds/presidents-community-fund/>
* Student Shapers Projects
  + <https://www.imperial.ac.uk/students/studentshapers/>
* UROPs
  + <https://www.imperial.ac.uk/urop/>
* Imperial’s Festival of Teaching and Learning
  + <https://www.imperial.ac.uk/staff/educational-development/networks-and-events/>
* Engineering Education Research Network conference
  + <https://epc.ac.uk/network/communities/eern/>
* Engineering and Product Design Education conference
  + <https://epde.info/>

