# Emergencies: COVID and Climate

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*Chair of JBM*

# COVID

**JBM letter sent to Heads of Department covers the following:**

- Expectation that changes to programmes will involve blended delivery, including both in-person time and online delivery.

- Any changes to programme-level learning outcomes would require a paper submission. (Null response).

- Changes to module-level learning outcomes which collectively do not alter the programme-level learning outcomes only require noting at your next visit.

- Changes to assessments which significantly alter the proportions of project work, coursework and examination assessment, to the extent that the flavour of the programme is fundamentally changed, will require a paper submission. (Null response).

- In-person laboratory sessions in 20/21 not a requirement, but in their possible absence we will still require that students experience online laboratory demonstrations as part of their learning.

- Site visits or field courses not required in 20/21, but we will expect to see alternative arrangements via virtual tours or on-campus activities.

- We expect to see your IAB functioning as usual, probably online.

- We expect to see industrial mentoring, personal tutoring and other student-facing enhancements functioning as usual, probably online.

- Remote-access students should have the opportunity to achieve all learning outcomes.

- We are here to help in any way you would like us to do so.

- Tell us about any innovative plans, for sharing.

**Rearrangement of JBM visits:**

- Almost all review visits have taken place remotely, as planned, during 2020.

- All full visits in 2020 have been moved to 2021, with a year's extension added to all accreditation.

- All of these visits are presently being planned to be remote. In situations where inspection of facilities is deemed important, fleeting visits by a subset of the team will be conducted after the full remote visit.

- Some visits in 2021 are being pushed back into 2022, with a year's extension added to all accreditation.

# CLIMATE

# UK Structural Engineers Declare Climate & Biodiversity Emergency

**It is estimated that 150,000 people die annually from the effects of climate change**

https://www.who.int/heli/risks/climate/climatechange/en/

# It is estimated that we emit about 40Gt of $CO_2$ every year

https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/#:~:text=The%20Report%20finds%20that%20around,20%25%2C%20mostly%20since%201900.

**So, a skyscraper containing 250,000 tonnes of $CO_2$ leads to one human death indirectly**

**(And don't forget about the one million species at threat of extinction)**

https://www.nature.com/articles/d41586-019-01448-4

**Unscientific at this stage, but where does this leave our CDM requirements?**

**Or our equivalent Hippocratic Oath?**

**Or our ethics?**

# JBM's guidelines need to change

**The climate emergency must be**

# CENTRAL

**to our education of engineers**

# The approved changes

In addition to complying with the UK-SPEC's outcomes-based approach, the JBM has a number of civil engineering-specific requirements which must be met, and these are set out within these guidelines. **In particular, we see the extraordinary challenge of the Climate Emergency as a very necessary central cultural feature in the education of civil engineering students, and our guidelines should be read with this strongest intent in mind.**

# Additional Design Thread Aims

- **Place the global challenges of the Climate Emergency, the 17 UNSDGs and cultural change central to their material selection, design and construction thinking.**
- **Experiment and be creative, both independently and within a team.**
- **Challenge and question a brief and write a brief from scratch which demonstrates the embedment of key Climate Emergency drivers.**
- **Undertake proficiently digital modelling, output validation and parametric design.**
- **Conceive of solutions to reuse, remodel and recycle our existing infrastructure appropriately, including retrofit and maintenance.**
- **Sketch to communicate and to develop ideas.**
- **Have the competency to produce holistic conceptual designs through generating ideas (divergent thinking) and optimising and prioritising these ideas (convergent thinking), coupled with an explicit understanding of the different phases.**
- **Provide a sense of worldliness (to include the needs of both developed and developing countries) and an empathy for all users of our designs.**
- **Exploit data and the internet of things to drive their design thinking.**
- **Conduct approximate analyses in order to drive rapid decision making.**

# Additional Sustainability Thread Aims

**The future of humanity and biodiversity is our biggest global challenge, wrapped up in the Climate Emergency. It is imperative that students are immersed in a culture of education which frames engineering as possibly unlocking solutions to global challenges, including sustainable development.**

**Students will understand that their interventions should minimise the temporary borrowing of finite-resource material, while maximising societal benefit.**

**Students will possess the knowledge and understanding to enable them to:**

- **Carry out an embodied-carbon check on a design, and then minimise this carbon footprint while retaining the key elements of the brief**
- **Know how wasteful or not a design is when rated against carbon footprint and societal benefit**

# Additional Prof & Ethics Thread Aims

**Understand the implications and opportunities in reducing or eradicating demolition as a possible construction activity.**

**One of the acid tests for success of education providers should lie in the proportion of students who retain their enthusiasm throughout their studies for engineering, and who go on to enter the profession on graduation.**

**The JBM believes that professionalism and ethics must be integrated and nurtured within teaching and learning throughout students' engineering education. This has never been more important than in this era of the Climate Emergency and changing society, where an ability to make ethical decisions and a cultural confidence to simply say 'NO' in situations where ethics are judged to be violated are essential attributes of civil engineering graduates.**

**Formulate and articulate judgements relating to ethical behaviour**

**Understand how social inclusion, cultural diversity, change and the UNSDGs all relate to being a professional engineer**

**Formulate the right questions to be asked to tackle a problem, and to realise that formulating the right questions is as important as providing answers**

**Collaborate with other professions to add value**

**Understand the limits of their technical competency in recognising complexity in problems**

**Demonstrate the importance of honesty, integrity and an ethics-driven mind set**

**Understand the importance of a decolonised approach to engineering education, involving global empathy**

**See the importance of teaching others and mentoring ‘upwards’ in an era where development of skills is so important**

**Confidently suggest and enact change**

# Industrial Advisory Board

**IAB advice should include:**

**Which aspects of the programme might be dropped to make way for emerging priorities, including greater emphasis on the Climate Emergency and associated cultural change – this is the single most important contribution which the Board can make to an HEI, given the thought, vision and bravery which is required to do so.**

# Addition of 'Transport' to B list of subjects

Thank you.

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