



Practice Paper

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ACCREDITATION CONSIDERATIONS IN ENGINEERING ETHICS EDUCATION: BRIDGING GLOBAL STANDARDS AND LOCAL PRACTICES

L. O’Gorman ^a, A. Gwynne-Evans ^b, L. Ridgway ^c,
M. Rebow ^d, S. Chance ^{e,1}

^a Atlantic Technical University, Sligo, Ireland

^b University of Cape Town, Cape Town, South Africa, [0000-0002-3737-7878](tel:0000-0002-3737-7878)

^c Dublin City University, Dublin, Ireland, [0009-0006-9296-9231](tel:0009-0006-9296-9231)

^d TU Dublin, Dublin, Ireland, [0009-0005-4941-8306](tel:0009-0005-4941-8306)

^e TU Dublin, Dublin, Ireland, [0000-0001-5598-7488](tel:0000-0001-5598-7488)

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ABSTRACT

Accreditation can drive curricular innovation and change in engineering and can have a role in encouraging students’ development of ethics-related competencies. Despite engineering educators’ competence in the technical aspects of design and research, there can be an element of discomfort in planning and delivering lessons relating to ethics that span social justice, diversity and inclusion, environmental sustainability, and ethical theories. Because engineering accreditation can encourage and/or require the inclusion of ethical content in accredited engineering courses, the recently published *Routledge Handbook of Engineering Ethics Education* dedicated an entire section to the topic. This paper critically assesses the handbook’s accreditation section in terms of its value and usefulness for engineering educators whose primary focus is teaching rather than research. Overall, the paper summarises a discussion of a recent symposium panel focused on the handbook’s accreditation section, probing the section’s relevance and practicality for the SEFI community, and amplifying the handbook’s core messages for a wider audience.

¹ *Corresponding Author*

S. Chance

shannon.chance@tudublin.ie

1 INTRODUCTION

This paper aims to catalyse thought regarding the role and practice of accreditation in engineering education. It shares insights from a panel discussion held during the SEFI Ethics Spring Symposium in Ireland in March 2025, which focused on the interplay between the professional accreditation of engineering degree programs and the teaching of engineering ethics. Panellists examined the accreditation section of the *Routledge Handbook of Engineering Ethics Education* (Chance, Børsen, et al., 2025), an open-access resource developed by SEFI's Ethics Special Interest Group. The panellists (the authors of this paper) were not authors of the handbook section but instead represented the target users of the material. Overall, the panel provided a critical reflection on engineering accreditation as both a driver and an inhibitor of curricular change, as well as on how to define and integrate ethical competencies within engineering curricula.

We situate this paper within the broader discourse on engineering ethics education (EEE) and accreditation, actively and critically engaging with the handbook and one another. The panel format (developed by Tom Børsen, Shannon Chance, Mircea Tobosaru, and Diana Martin) was based on calls for greater reflexivity by engineers and engineering educators (Børsen *et al.*, 2025); it modelled the iterative practice of individual and collective reflection enacted through reading, contemplation, and active dialogue (Marin *et al.*, 2025).

This paper complements the views presented by the authors of the handbook's accreditation section. In it, we provide critical analysis of the chapters, supplemented with reflection on our lived experiences as engineering educators. Bucciarelli (2008) and Mitcham (2009) called for critical reflection on engineering ethics education, and newer scholars have joined the effort (e.g., Chang & Wang, 2011; Holsapple *et al.*, 2012; Hsu, 2021; Martin, 2020). The handbook authors and panellists accepted the challenge to actively foster reflection and dialogue across the global engineering education community, encouraging ongoing analysis that explores ethics accreditation and challenges the various power dynamics, cultural biases, and practical limitations inherent in accreditation frameworks today. Our use of a reflective panel format to analyse the handbook enabled a layered critique that incorporated both scholarly and practitioner voices. In this paper, we extend the handbook by offering new perspectives to engage meaningfully with the scholarship of teaching and learning. We frame ethics education as a pedagogical challenge influenced by institutional structures, such as accreditation.

2 PANEL INSIGHTS

Because accreditation aims to ensure graduates possess ethics-related competencies, our panel reflected critically on the implementation and impact of accreditation on the teaching and learning of engineering ethics. Handbook chapters on the historical evolution of ethics in accreditation (Jesiek *et al.*, 2025) and the role of licensure in professional standards and global mobility (Bielefeldt *et al.*, 2025) provided crucial context for the discussion. A key concern highlighted was the tension between broad, often Western-centric accreditation standards and the vital need to address diverse local, cultural, and societal realities—points raised in the handbook chapters by Kovacs & Hladik (2025) and Seniuk Cicek *et al.* (2025). We critiqued the impersonal and decontextualised nature of many accreditation

processes and documents, which may not adequately capture the nuances of ethical practice (Kovacs & Hladik, 2025; Junaid *et al.*, 2025). We voiced concern about power dynamics within accreditation, questioning whose voices are amplified and whose are marginalised (Seniuk Cicek *et al.*, 2025). Furthermore, we observed that focusing on meeting accreditation requirements often results in superficial engagement with ethics, rather than a deep and substantive integration into the curriculum and learning outcomes.

Overall, our panel underscored the need for critical reflection on accreditation processes and a move towards more context-aware, inclusive, and critically engaged approaches. This paper summarises our reflections, which probed the relevance and practicality of current accreditation practices for engineering ethics educators. Below, we distil the most salient points raised during the panel (all individuals named below have consented to being named in this paper).

Leah Ridgway appreciated the feminist analysis of the power dynamics presented in Chapter 35 (Seniuk Cicek *et al.*, 2025), questioning whose voices are audible. Ridgway emphasised the need to evaluate the silences between the words of accreditation documents, the core critical approach of Seniuk Cicek *et al.*, to help uncover marginalised perspectives. Ridgway noted that the chapter prompts reflection on how we can move away from intellectualizing ethics and towards understanding how we feel about and embody ethics. Ridgway drew attention to the alignment between Chapter 35 and Chapter 36 (Kovacs & Hladik, 2025) regarding the disconnect between abstract accreditation standards and the lived experience of ethics at the local level. Ridgway's personal contribution was identifying bias toward North American perspectives and the lack of class analysis in the section, recommending that these areas be examined critically in the future.

Louise O'Gorman noted tensions between accreditation's broad, high-level standards and local concerns regarding implementation and the difficulties that can arise, which is a central theme of Chapter 36 (Kovacs & Hladik, 2025). O'Gorman noted that accreditation frameworks can emphasise ethics but often do so in impersonal, decontextualized ways. This can limit teachers' ability to tailor ethics to localized needs, and it is important to acknowledge that accreditation bodies have positionality – they are not neutral. These bodies actively shape what is considered ethical engineering education, and this reflects dominant perspectives. Power dynamics are explored in Chapter 35 (Seniuk Cicek *et al.*, 2025), and the potential for a lack of local representation is discussed in Chapter 36 (Kovacs & Hladik, 2025). O'Gorman pointed out the absence of guidance on how to engage with these power issues and suggested the need to include practical tools to address ethical concerns. This could help bridge the gap between the broad principles of accreditation and the local implementation challenges highlighted in Chapter 36.

Referring to Chapter 34 (Bielefeldt *et al.*, 2025), O'Gorman distinguished “licencing” as a process related to but distinct from accreditation that further reinforces expectations of professional behaviour. Licensure often involves individual accountability mechanisms, such as ethics exams or codes of conduct, that are not typically emphasised in accreditation frameworks. This distinction underscores how licensure can potentially serve as a more direct means of embedding ethical responsibility in engineering practice, as evidenced by the two case studies from the

United States and Ireland. However, the chapter also notes that both accreditation and licensure are shaped by the socio-political contexts in which they operate, and that neither process is ideologically neutral.

Alison Gwynne-Evans drew attention to the way that Sarah Junaid's research maps differences and similarities in the use of terms such as "ethics" and "professionalism" in accreditation documents, resulting in the methodology described in Chapter 33 (Junaid *et al.*, 2025). This methodology involved quantitative analyses of key ethical terms used both explicitly and implicitly in accreditation policies across different countries and cultural clusters. Gwynne-Evans paid tribute to Junaid and drew attention to her research methodology, noting that over the years, the structure of her research created a space for people to step into from different parts of the world. As such, Chapter 33 reflects Junaid's collaborative and inclusive nature, as well as her team's research efforts, which contributed to the wide representation of nationalities at the 2025 SEFI Spring School.

Gwynne-Evans highlighted the tension between (a) using accreditation to ensure ethics is included and (b) the risk of ethics education becoming objectified and losing its depth. Findings by Junaid *et al.* (2025) that social justice was mentioned only by Columbia (in accreditation documents), align with the critical analysis provided in Chapter 35 (Seniuk Cicek *et al.*, 2025) about the potential limitations of accreditation and the concerns raised in Chapter 36 (Kovacs & Hladik, 2025) about the impersonal nature of broad accreditation standards. Gwynne-Evans noted that the emphasis on "mutual recognition of qualification for professional mobility RATHER than for public service" suggests that a corporate-driven rather than values-driven approach is typical. This resonates with the critique of neoliberal influences presented in Chapter 35 and the potential for accreditation to overlook local values, as per Chapter 36.

Gwynne-Evans also highlighted the concept of "academic colonialism" (Jesiek *et al.*, 2025; Tormey *et al.*, 2025) that encourages conformity to Western patterns and directly links to the argument about the Western/Global North-centred nature of accreditation presented in Chapter 35 (Seniuk Cicek *et al.*, 2025). Gwynne-Evans found it interesting that graduate attributes are shifting from "inputs" to "outputs", but the terminology still projects a process-oriented approach, which she senses could relate to the bureaucratic processes and potentially abstract language discussed in Chapter 36 (Kovacs & Hladik, 2025). During the panel, Gwynne-Evans emphasised the importance of ensuring "substance" to the definition of ethics in accreditation, referencing the work of Junaid *et al.* (2025). This connects to the concerns in several chapters about the depth and relevance of ethics education under accreditation.

Marek Rebow focused his discussion on Chapter 36, regarding "the broad, impersonal conceptions of engineering ethics contained in accreditation documents and processes [that] impact how they can be translated, interpreted, or implemented in local and personal contexts" (Kovacs & Hladik, 2025, p. 651). The authors argue that accreditation, often viewed as a bureaucratic quality assurance mechanism, has significant implications for how ethics is taught and integrated into educational programs at the local level. Rebow was particularly impressed with the chapter's diagram (please see Figure 36.1 in the handbook, p. 661), which supports the constructive criticism presented across the section's chapters regarding the prototypical accreditation process. The diagram emphasizes that while institutional

frameworks often aim to address ethics through formal curricular structures, the translation to classroom teaching and individual student understanding can be fragmented, context-limited, and lacking in historical or cultural grounding. This graphic serves as a catalyst for discussion and reflection, helping stakeholders engage more deeply with the subject. Rebow echoed the concern that ethics have become overly "broad" and "vague" in their definitions, making implementation challenging at the local level. This point connects to the need for more specific and locally relevant approaches to accreditation, as discussed in Chapter 36, and the critique of broad Western norms presented in Chapter 35 (Seniuk Cicek *et al.*, 2025). The aim should be to induce innovation and ensure effective organisational diversity rather than simply achieve bureaucratic compliance.

3 DISCUSSION

We now highlight one question the panel received related to expectations for accrediting bodies that demonstrates the importance of dialogue between academics and those who define accreditation standards:

Panel attendee **Darren Carthy**, the Academic Affairs Officer at Engineers Ireland who manages the country's portfolio of engineering programs, voiced the importance of ensuring "graduates have the correct set of graduate attributes and professional competencies they need both within Ireland and also to ensure global mobility" stating this relates to "the recognition of qualifications and potentially licensure across different regions". Carthy is part of a delegation to the International Engineering Alliance (IEA) and other groups that endeavour to strike an appropriate balance between being clear and directive in their requirements and giving educators leeway to innovate their programmes. He sought input from the panellist regarding what he could take back to these groups.

In response, **Leah Ridgway** highlighted the importance of considering "who is not present" and which communities need to be engaged more in accreditation processes. Ridgway pointed out that there isn't a single, universally agreed-upon view of ethics, as it can relate to health and safety, legislation, or personal responsibility and expressed the belief that the "mixing of ethics and professionalism is a really tricky one" because professionalism can sometimes be used to exclude individuals. Ridgway focused on ethics as behaviour and personal responsibility, aligning comments with the critical perspectives in Chapter 35 (Seniuk Cicek *et al.*, 2025). Ridgway noted that educators must feel safe to actively engage learners with ethics, a topic that can be challenging and uncomfortable for some students. The use of fixed-term contracts (with employment often tied to visas) in the sector forms a power dynamic which can unintentionally encourage staff to pursue a less activating ethics curriculum due to a desire not to "rock the boat".

Alison Gwynne-Evans again emphasised the "danger of decoupling ethics from accreditation". She suggested ensuring that ethics is something that infiltrates every single graduate attribute in different ways and stressed the necessity of not just defining ethics but also "giving substance" to what it means. Drawing on her experience living and working in Africa, Gwynne-Evans raised a crucial point about the challenges in translating ethics and professionalism into different languages and cultures, where the concept of what it means to be "professional" may be contested. She argued that if ethics isn't explicitly present in accreditation documents, concepts

like justice, social justice, or equity can easily be overlooked or decoupled from the idea of professionalism.

Panel moderator **Shannon Chance** added that she views Ireland's accreditation standards as very forward-thinking and "probably one of the most progressive" sets of engineering accreditation standards globally, at least in terms of ethics. The standards, she said, explicitly specify that students must demonstrate competencies in EDI (equity, diversity, and inclusion) and environmental sustainability. **Darren Carthy** agreed with her summary and noted that these considerations are embedded in every criterion and standard of the Irish accreditation process. He also highlighted the value of resources, such as the Engineering Ethics Toolkit (Engineering Professors Council, 2025; Hitt *et al.*, 2023), to help guide educators in integrating ethics, including environmental and social sustainability, into their courses.

4 KEY THEMES

Key themes highlighted during the discussion and within the chapters were:

- **The fundamental tension between broad accreditation standards and diverse local contexts**, as well as the challenge of applying universal guidelines to varying cultural, societal, and regional realities.
- **The critique of the impersonal and decontextualised nature of accreditation processes and documents**, and an acknowledgement that current approaches may not adequately capture the complexities of ethical practice in specific settings.
- **Concerns about power dynamics, marginalised voices, and the need for inclusivity** and for considering whose perspectives are included in shaping accreditation standards, and the importance of engaging with underrepresented communities.
- **The complex interplay and potential tensions between ethics and professionalism**, acknowledging the intertwined nature of these concepts in accreditation, as well as potential issues with using "professionalism" as a proxy for ethics or as a tool for exclusion.
- **Challenges of language, translation, and global applicability**, considering how the vocabulary of ethics and professionalism is understood and translated across different languages and cultural contexts.
- **The depth, substance, and specificity of ethics education under accreditation**. This raises questions about whether accreditation fosters a genuine and thorough integration of ethical principles or leads to superficial compliance, emphasising the need for more concrete articulation of ethics.
- **The role of accreditation as a driver for change (and its inherent limitations and potential to stifle innovation)**, recognising accreditation's influence on curriculum development while also noting its potential to be overly prescriptive or to focus on performative measures rather than substantive ethical learning.
- **The value of transnational panels and discussion platforms** for enabling critical engagement with the accreditation process.
- **Influence of global alignment and the often-unstated rationale behind accreditation wording**, referring to the impact of international agreements and fuzzy explanations for specific requirements in accreditation documents.

- **The shift from educational 'Inputs' to 'Outputs' and the nature of assessment**, considering how the focus on outcomes and graduate attributes shapes the evaluation of ethics in engineering education.
- **The ongoing need for critical reflection, dialogue, and further engagement** underscores the importance of continuous evaluation and discussion among stakeholders to improve the effectiveness and relevance of engineering ethics accreditation.

5 NEXT STEPS

The moderator's final challenge to the panel – to identify what we saw as missing from the mapping described in the handbook's introduction by Tormey *et al.* (2025) – drew attention to core themes and key ideas that emerged from the accreditation section, including need for sustained engagement with a wide range of global perspectives, engagement with emerging issues and systemic injustices, tools for practical implementation, and deeper consideration of local contexts. Looking at next steps for the EEE community, we articulated the need for:

- **A broader global perspective:** Ridgway argued that the accreditation section seemed to have a predominantly North American perspective. Gwynne-Evans noted the absence of explicit sections focused on Africa (or Australasia) and the need to consider how accreditation is approached in Africa, considering the challenges of language and cultural diversity. O'Gorman voiced the need for research across different jurisdictions and accreditation bodies to understand whose voices are heard and identify what is missing.
- **Engagement with emerging ethical concerns:** O'Gorman highlighted a lack of significant engagement with how accreditation can evolve to address emerging ethical concerns in engineering topics such as AI ethics, climate change, and algorithmic or data-driven bias.
- **Addressing systemic injustices:** O'Gorman also highlighted limitations in the current discussion on how accreditation frameworks can better address systemic injustices in engineering education and practice.
- **Practical tools and implementation strategies:** O'Gorman emphasized the need for more practical toolkits to apply the ideas in teaching.
- **Deeper consideration of local context and heterogeneity:** Rebow re-emphasized points from Kovacs & Hladik (2025), highlighting the importance of counteracting the current "impersonality of accreditation documents" (p. 650) and recognising geographical diversity and local context when addressing engineering ethics. He echoed the authors of Chapter 36, arguing that generic, one-size-fits-all approaches in accreditation standards may fail to resonate meaningfully with individual engineers and may not accurately reflect the ethical complexities encountered in specific professional settings.
- **Vocabulary and translation:** Gwynne-Evans raised concerns about the vocabulary used in discussions of ethics and professionalism, as well as how these terms are translated into other languages, particularly from an African perspective.
- **Consideration of class analysis:** Ridgway suggested that incorporating a class analysis can enhance practice and the body of knowledge in this realm.

6 CONCLUSIONS

The formulation of this paper, as a reflective, dialogical (Marin *et al.*, 2025) and reflexive (Børsen *et al.*, 2025) response to the content of the handbook's accreditation section, draws attention to the way in which scholarship is deepened within and transmitted across the community. Engaging with this section on accreditation and comparing it with our knowledge and experience has helped us identify and articulate the critical need to reconcile the demands of engineering ethics accreditation with the realities of diverse educational contexts. Fostering ethically responsible engineers will require a concerted and ongoing effort to bridge the gap between broad accreditation standards and the nuances of local practices. As a global community of practice, we must actively seek to integrate currently missing cultural/ethical/regional/linguistic perspectives, such as those from Africa and Australasia. We must develop practical strategies for collating and sharing diverse approaches to implementing ethical principles in diverse engineering curricula. Ultimately, this practice paper emphasizes that meaningful accreditation in engineering ethics education relies on effectively bridging the gap between global standards and local practices to foster the development of more inclusive, context-aware, and impactful ethical competence in future engineers.

Capturing the panel discussion and translating it into an academic paper provides a model that illustrates the value of structured and critically engaged reflection by a community (Børsen *et al.*, 2025; Marin *et al.*, 2025) upon the artefacts of that community. The *Routledge Handbook of Engineering Ethics Education* (Chance, Børsen *et al.*, 2025) emerged from a collaborative process involving the practices and outputs of the SEFI community over several years, and it will continue to inform practice and knowledge production in the years to come. The production of the handbook itself was a collaborative process of co-creation (Tormey *et al.*, 2025), and it is fitting that critical engagement with the handbook is modelled on a collaborative process that deliberately expands the range of voices and thus expands responsibility for engaging critically with accreditation processes.

Although this paper does not set out to provide direct implementation tools, we believe its content is adaptable to diverse educational settings. We have highlighted various challenges in applying universal accreditation standards across different cultural, institutional, and linguistic contexts. We have argued for tailoring ethics education to specific environments, and our findings are broadly applicable, not just within Europe, but also across the Global South, as illustrated through the African and South American examples discussed. We have highlighted the need for greater geographical diversity. We present this manuscript as a reflective and analytical piece, viewing it as a work-in-progress – a collective effort toward increased reflexivity aimed at enhancing engineering ethics education. The handbook section, this panel, and the resulting paper constitute steps toward enacting greater reflexivity across the engineering accreditation and teaching communities.

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