

American Society for Engineering Education Liberal Education / Engineering & Society Division (LEES)

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The ASEE Liberal Education/Engineering and Society Division is deeply concerned about changes proposed in ABET Criteria 3 and 5, changes that run counter to the longstanding consensus, recognized in the Washington Accord, that engineers must be able to communicate well, practice professional responsibility, understand societal and global contexts of their work, and engage in lifelong learning.

In particular, we urge ABET to:

* Retain the concept of "professional responsibility" in the ethics outcome, or at a minimum change the proposed wording to "Demonstrate an understanding of ethical principles and professional and social responsibility in the context of engineering practice." It is not enough merely for engineers to "demonstrate ethical principles." Engineers must possess a reflective ability to assess a given situation and apply ethical analytical frameworks, as well as professional codes to that situation. We would also like to see the criteria explicitly include the ability to generate creative responses to ethical challenges engineers encounter in professional practice.

* Retain the essential skills named in Criteria "h)" and "l)" in a combined form as: "the broad education necessary to understand the social and global contexts of engineering in historical and contemporary settings" or "the ability to understand the social and global contexts of engineering in historical and contemporary settings."

* Retain the outcome on lifelong learning. Among the most consistent and persistent messages from industry is that engineers must have the ability to adapt to changing sociotechnical systems with new learning. It is essential that engineers in training learn to view the world through multiple disciplinary perspectives, thus developing intellectual power, critical thinking, and reflective abilities, and cultivating continued curiosity throughout their careers.

* Retain the ability to work in **multidisciplinary** teams. Today's engineered systems require collaboration across expertise within and beyond engineering.

* Retain the EC2000 listing of multiple constraints for design. It is crucial that engineers understand how to design under specific constraints, including political constraints, manufacturability constraints, sustainability constraints (reflecting not merely environmental, but also other forms of sustainability), and others articulated in current criteria a-k. Not to name these explicitly is to risk losing these essential skills in our engineering workforce.

* Add an outcome regarding the ability to meaningfully include diverse groups in engineering practice. This ability includes the incorporation of ideas from all groups in defining engineering challenges, the participation of all groups in engineering practice, and equitably addressing impacts of engineering on all groups.

* In the proposed Criterion 5, replace "general education" with "broad education." Industry has repeatedly called for broadly educated (more recently, "T-shaped") engineers to address increased complexity in sociotechnical systems that operate globally. It is more important now than ever—and is essential for global competitiveness—that graduates have the ability to leverage breadth alongside depth in engineering practice.

We appreciate your attention to these issues.

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