Panel 1: Perspectives from Academia

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National Academy of Engineering
Forum on Proposed Revisions to
ABET Engineering Accreditation Commission
General Criteria on Student Outcomes and Curriculum
(Criteria 3 and 5)

February 16, 2016
My ABET Activities

- Late 1990s: initial accreditation of a new computer engineering program under EC2000
- Early 2000s: IEEE ABET program evaluator
- Mid 2000s: associate dean of engineering, college-wide ABET visit, member of IEEE CEAA
- Early 2010s: IEEE rep to ABET EAC, ABET team chair, department co-coordinator for ABET visit
- Recently: short return to IEEE CEAA, member of ABET EAC ExCom and Criteria Committee
- Additionally: scholarly work in engineering education that addresses C3 and C5
EC2000 and Engineering Curricula

My department/college:

- Capstone design/teams
- Professional skills development
- Competency-based assessment
- Industry stakeholders
- S-STEM E2020 Scholars
- Content vs. process
- Middle years
- Faculty development
My View of the Changes: On Paper

- Change process: long time period concurrent with and predating recent engineering education initiatives
- Reconfiguration of related elements of C3 and C5
  - Merging of outcomes reinforces a context to interpret and define them.
  - Addition of project management skills responds to needs.
  - Extracting key terms into definitions provides clarity.
  - Shifting curricular items into C5 is reasonable.
- Substance of C3 and C5 remain essentially the same
  - My early concerns about professional skills were addressed with later versions.
My View of the Changes: In Practice

- Programs will map the a-k student outcomes to the 1-7 outcomes as a starting point.
- Definitions of the student outcomes used by a program will be reviewed and revised as needed.
  - Defining the outcomes in specific and measurable ways is a necessary step whether dealing with a-k or 1-7.
  - The added context for outcomes 1-7 should lead to better definitions.
- Assessment tools will be adapted and added as needed.
- Additional aspects of the curriculum will be documented.
- C3 and C5 remain flexible for wide-ranging institutional and program objectives.
My View of the Changes: In Progress

• Constructive feedback received
  • Refinements needed in introduction, definitions, C3 and C5
• Addressing concerns about over-simplification
  • Substance has not changed
  • Assessment and research community as vital as ever
• State of knowledge vs. research about professional formation of engineers
  • C3 must align with knowledge
My View of the Changes: In Progress

- Addressing concerns about diversity and inclusion
  - Strengthened (e.g., team definition, communication, new introduction)
- Leveraging ethical and professional responsibilities
  - E.g., IEEE Code of Ethics: to treat fairly all persons … race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression
- More work and constructive input needed
  - Consider changes outside of C3 and C5
  - Could be greater emphasis on evidence-based practices (e.g., C6 Faculty, C8 Institutional Support)
Potential Benefits and Drawbacks

Students
+ More concrete list of learning outcomes that may be easier to envision and reflect on
  – Resistance to change by others that hinders current improvements and future change of a greater magnitude

Programs
+ Better definitions
+ Clearer distinctions between learning vs. curricular requirements
  – Challenge of change