

IOWA STATE UNIVERSITY

Department of Electrical and Computer Engineering

## Panel 1: Perspectives from Academia

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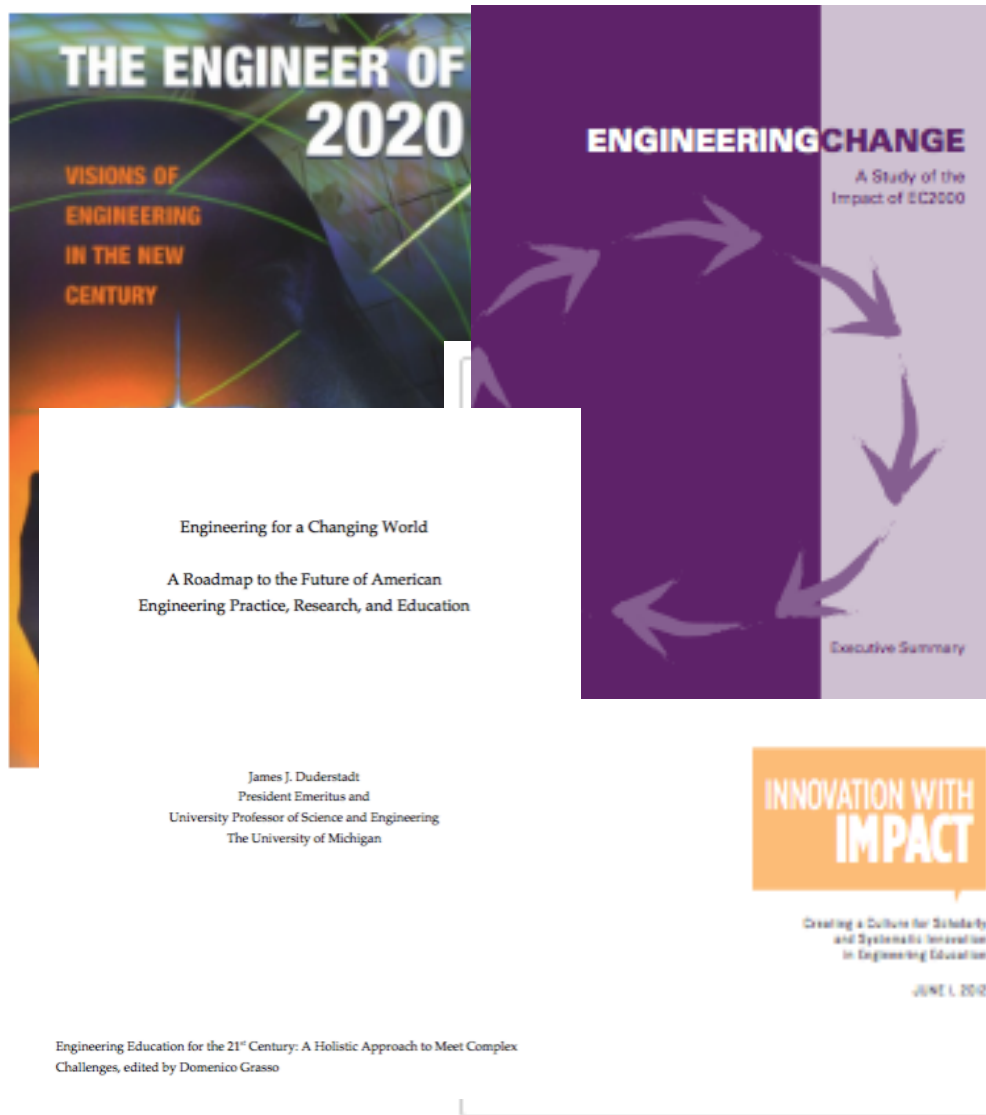
National Academy of Engineering  
Forum on Proposed Revisions to  
ABET Engineering Accreditation Commission  
General Criteria on Student Outcomes and Curriculum  
(Criteria 3 and 5)

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# 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