Engineering Education in a Globally-Competitive Marketplace

Celebrating 60 years of Engineering Education in Bangladesh
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Engineering Education as We Know It

Technical subjects
Humanities
Multi-disciplinarity
Team work
Creativity
Communication skills
Role of the Teaching Community

- Innovation
- Creativity
- Interactivity across traditional disciplines
- Linkage with industry and society
- Interactions with students (e.g., online forums)

Educators’ Dilemma

Teach theory and practice for students to understand the fundamentals

Impart practical knowledge for graduates to be productive at graduation (force of globalization)
Conflicting Long-term Interests

What is good for the industry now?

What is good for the engineer’s long term future?

Industry Interaction

Interaction with industry also helps both professors and students to be exposed to the engineering practices in the globally competitive workforce.
Pressures of Globalization

Production on demand

Diversity of designs

New hires be productive upon graduation

New hires must understand basic operations of manufacturing, software design, industrial production, construction, etc.

Exposure of Students to Industry - USA

In the United States there is a strong emphasis on cooperative programs.

Students are encouraged to spend several semesters during their undergraduate education at an industrial facility, laboratory or an office.
Exposure of Students to Industry - India

In India, additional courses taught on campus by engineers and designers from industry.

This gives the students an opportunity to interact with working professionals in a classroom setting.

They get a better feel for the possible application of the classroom knowledge.

Course Loads in Engineering Programs

- **US:** 128 credit hours for BS degree (16 credit hours per semester)
  
  Average contact hours per week: 20

- **India:** Average contact hours per week: 36-40
How to be Responsive to Industry Needs

- Internship or co-op programs
- Industry advisory committees
- Supplementary lectures on campus
- Practice-oriented masters degree (POMD)

Developing Country Students Have Unique Needs

- Curriculum at the undergraduate level must prepare them for further studies abroad
- Curriculum must prepare them to meet needs of the domestic industry
- Post-graduate curriculum must conform to international standards for transferrability
Dilemma for Developing Country Institutions

Educate engineers to meet national needs?

Educate engineers to be employable and study in other countries?

Issue of Accreditation

- Accreditation Board for Engineering & Technology (ABET in USA), Professional body
- All-India Council for Technical Education (AICTE), Government
- Russia, China, Japan, Europe, So. America: Done by the Ministry of Education or similar government bodies.
Non-governmental Organizations

- **Washington Accord**: Australia, Canada, Hong Kong, Japan, Ireland, New Zealand, South Africa, UK, USA

- **Bologna Declaration (European)**: Streamline diverse programs into standard four-year undergraduate programs. Move away from the five-year baccalaureate program as requested by industry for worldwide consistency.

- **IEEE**: (Best practices being implemented in China, South America, South Africa, etc.)

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Resources for International Students, Graduates, and Schools

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Global Agreements and Accords

Washington Accord Agreement
Australia, Canada, Hong Kong, Ltd. New Zealand, Japan, South Africa, United States, United Kingdom

Link to www.washingtonaccord.org/

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Questions or Comments?