CELEBRATING AWESOME!

Ahmed Naumaan, PhD
Outline

- Engineers Week
- Education
- Engineering and Society
- Celebrating Engineering
Engineers Week

- February 19-25, 2023
Why Celebrate?

- The world is built by Engineers
Current Trends in Education

- Wide-spread availability of free learning resources
- Packaging of credits from different sources
- Certificates
- Customized and adaptive learning
- Confounding of education and training
Education

- Education IS NOT just:
  - Training
    - Familiarization with specific tools, mechanisms, procedures
  - Learning
    - Gaining information about topics
Education

- Education IS:
  - A systematic introduction to multiple bodies of knowledge
  - An opportunity to synthesize learning from multiple disciplines
  - An opportunity to have one’s understanding evaluated
Education

- Education is:

  An opportunity to build one’s self!
- Demand is for expertise NOT narrowness
- Recasting the Engineer – more than technical skills
Well-Educated Engineering Graduates

- Able to think critically
- Able to think systemically
- Professionally skilled
- Technically competent
Industry and Academia
Collaboration

- Educational institutions prepare the workforce you hire
- Industry experts often return to educational institutions to teach or lead
- Regular communications between companies and educational institutions benefit both
Understanding Needs

- Considerations for Academia and Industry:
  - Depth of preparation in foundational and industry-specific knowledge
  - Balancing knowledge and skills
  - Technical and professional competence
  - Learning how to learn
How can companies begin creating relationships with educational institutions?
Creating Relationships

- Alignment between an educational institution's capability and the needs of an industry partner
There are multiple ways of starting to work with colleges and universities
Creating Relationships

- Contact the institution's leadership and express your interest
Hire graduates from that institution on a regular basis
Inquire if you can serve on an educational institution’s Advisory Committees

An institution may have multiple advisory committees which operate at different levels and serve different units of an institution.
Select people to represent your company who:

- provide perspectives from several scopes/levels within your company
- are knowledgeable about practices within your industry
- can describe trends and developments within your industry as a whole
Creating Relationships

- Describe what competencies you look for in the people you hire
  - for entry-level and mid-level jobs
  - for career progression that will take them to more senior-level jobs
Express requirements for the people you would like to hire
  - in terms of what you need them to do for you
  - NOT in terms of what they should be taught in school
Creating Relationships

- Describe your current needs and what you expect your needs to be 5-10 years hence
Regular/frequent conversations on a 1-1 level with the leadership and faculty within an institution are as valuable as formal group meetings once or twice a year.
Visit onsite or online campuses of an institution and engage with students

- about developments within your industry
- about what you look for in employees
Invite students to tour your plants
Sustaining Relationships

- Support student clubs/activities with mentoring and donations
Sustaining Relationships

- Offer regular **paid** internships and coop opportunities to students
Propose project activities where students work on your projects but can also use them to satisfy academic requirements.
Send your employees back to the institution you are working with for continuing education and more advanced degrees
Sustaining Relationships

- Be a partner and cultivate a long-term relationship
Engineering and Society

- Critical and systemic thinking
- The practice of Engineering
  - Providing systemic solutions
  - Bringing positive societal change
  - Engineering the world
With the power to build comes the responsibility to build considerately
Deployment of technologies have consequences

Assess projects for both technical and ethical impact
How are costs of externalities estimated and accounted for?

Are Engineers able to bring these considerations into business decisions?

Who will protect Engineers when they challenge unethical behavior?
Celebrating Engineering

Engineers' Week Talk - A. Naumaan, PhD
2023 February 21
Celebrating Engineering

- Development has been a consequence of technology
- Holistic Engineering thinking is needed for sustainable development
“Scientists discover the world that exists; Engineers create the world that never was.”

Theodore Von Karman
Celebrating Engineering

- Engineering is only as good as the Engineers who practice it
- The world has been and will continue to be built by Engineers
- That’s Awesome!
Thank You!

Ahmed Naumaan, PhD
ahmed.naumaan@gmail.com
612-568-4402

The majority of the images in this presentation came from chronicle.com and discovere.org.