College of Engineering
Board of Advisors Meeting

Peter E. Crouch
Dean
September 30th, 2016
Meeting Agenda

• 8:30 Welcome and Introductions
• 8:45 Who is Peter Crouch – Q&A
• 9:15 The dean’s first 30 day observations
• 9:30 Dean’s near term plans, needs, SWOT and evolving the Vision/strategies
• 10:00 Break
• 10:15 BOA and the 2017 Texas Legislative Session – Jeff Jeter UTA Government relations
• 10:45 Top 3 COE focus areas
• 11:30 Lunch and faculty/student spotlight
• 12:45 Top 3 COE focus areas
• 1:30 Top 3 areas for BOA to help COE execute
• 2:30 Conclude
The Dean’s First 30 day Observations

• Great Place – research in the College is amazing
• Faculty and Staff have given me a very warm reception – clearly hungry for compassionate yet strong leadership
• I’m really excited about the dynamism within DFW and the potential for helping build the College
• College offers 39 degree programs!
Engineering Degrees Offered at UTA

Bioengineering:
• B.S., Biomedical Engineering
• M.S., Biomedical Engineering
• Ph.D., Biomedical Engineering

Materials Science and Engineering:
• M.S., Materials Science and Engineering
• M.Eng., Materials Science and Engineering
• Ph.D., Materials Science and Engineering

Computer Science and Engineering:
• B.S., Computer Engineering
• B.S., Computer Science
• B.S., Software Engineering
• M.S., Computer Engineering
• M.S., Computer Science
• M.S., Software Engineering
• Ph.D., Computer Science
• PhD., Computer Engineering

Mechanical and Aerospace Engineering:
• B.S., Aerospace Engineering
• B.S., Mechanical Engineering
• M.S., Aerospace Engineering
• M.Eng., Aerospace Engineering
• M.S., Mechanical Engineering
• M.Eng., Mechanical Engineering
• Ph.D., Aerospace Engineering
• Ph.D., Mechanical Engineering

Civil Engineering:
• B.S., Architectural Engineering
• B.S., Civil Engineering
• M.S., Civil Engineering
• M.Eng., Civil Engineering
• Master of Construction Management
• Ph.D., Civil Engineering

Electrical Engineering:
• B.S., Electrical Engineering
• M.S., Electrical Engineering
• M.Eng., Electrical Engineering
• Ph.D., Electrical Engineering

Industrial, Manufacturing and Systems Engineering:
• B.S., Industrial Engineering
• M.S., Engineering Management
• M.S., Industrial Engineering
• M.S., Logistics
• M.S., Systems Engineering
• M.Eng., Industrial Engineering
• Ph.D., Industrial Engineering
The Dean’s First 30 day Observations

• College has ~140 tenure track faculty and ~180 full time faculty – So:
  • 3.6 tenure track faculty per degree program
  • 4.6 faculty per degree program

• UH for example has 5 faculty per degree program and no full time non tenured faculty

• So College is stretched very thin – yet need to offer more programs seems inevitable to serve the needs of even the TX community
The Dean’s First 30 day Observations

- The recruitment imperative is a huge issue for the University and hence for the College – our goal is 10,000 students by 2020! – 7,240 today!
- But - growth is a challenge for the College both in developing the capacity and growing the student enrollment
- And - growth has created significant budget issues for the College and University – mostly around a corresponding growth in teaching assistants and adjunct lecturers
- Dean has experience dealing with growth in a previous institution
The Dean’s First 30 day Observations

• Many folks in University have saved up their problems with the College for the “new dean” to solve – but we are so far we are dealing with these successfully

• Very significant data flows back and forth from University Administration to College/Units was unexpected

• The Dean needs to move from being viewed as COO gateway into the College to the CEO to begin the job of creating the external face of the College

• Hence need to improve staffing and function within the College Dean’s office
The Dean’s First 30 day Observations

• Development efforts have significantly diminished – but the Foundation has the underlying data base in great shape for the new Development officer

• Links to alumni are not being leveraged

• Development of links between the College and the corporate enterprise and industry have also significantly diminished for College - even though faculty/units continue to foster their links
The Dean’s First 30 day Observations

• Little sense of a unified College culture as opposed to multiple units with their own culture
• Hence few coordinated themes for College focus
• College holds a wonderful career fair every fall and spring – Just this Wednesday!
• College does not leverage the presence of so many hiring companies on campus and use this as an occasion to enhance the relationship with the College
Some initial BOA impressions

• Need to revitalize BOA – need to help the nominating committee get back into full operation – need a volunteer to chair the committee and they should be a key member of the executive committee

• Need to move focus of the BOA to one involved in College centric issues, as opposed to unit/curriculum centric issues. Units have their own Advisory Boards

• The BOA Sponsored Endowed Professorship was a great success – what are the next projects for the BOA to take on? – to be discussed later today.

• Probably need to change the by-laws – but let’s wait a year and see where we are then
The Dean’s near-term Plans and Needs
Evolving the Vision
Initial SWOT
Examples of Dean’s near-term plans

Some initial short/medium term initiatives – Develop:
• A College Student center – one stop shop for Student needs – on a ground floor – for example the President’s focus on the new University Recruitment Center
• More focus on recruitment – both graduate and undergraduate
• A better mechanism to teach large numbers of students much more efficiently (and hence with less cost)
• Much more College Collateral both printed and electronic to help get the word out about the College
• A more coordinated College focus on innovation, entrepreneurship and tech transfer
• Much more College support for Student Projects and use these as a mechanism for selling/marketing the College
• More support for the College research mission and particularly large research grants that distinguish great engineering schools
Initial Dean’s Needs

• Help with Development – Fundraising subcommittee of BOA?
• Help with Creating an active Alumni network – starting locally – meeting monthly? – form a BOA ad hoc committee?
• Help on developing an advocacy network – also legislatively. College is creating a College “Points of Pride” publication to assist tell our story
• Input/Help on developing a high level College strategic planning document
Initial Dean’s Needs

• Help with forming stronger links to industry
  – Example: - currently working on a more formal mechanism for company sponsorship of student projects including capstone projects – with a culminating grand exhibition at the end of the spring semester

• Help with determining the future focus areas for the College (before lunch BOA discussion) - where will future faculty hiring be focused? and how do these choices reinforce the President’s four University focus areas?:
  – Health and Human Condition
  – Sustainable Urban Communities
  – Global Environmental Impact
  – Data Driven Discovery
Focusing the College

• With limited College resources need to help focus activities to create bigger impact
• 16 tenure track hires last year! – brochure included in your packet
• College just submitted a request to hire 19 new tenure track faculty – but unclear what level of funding the University is willing to invest into new faculty?
• What can we tell from these hires and proposed hires about the focus of the top priorities from the College units?
Themes from ‘15-’16 hires and ‘16-’17 proposed hires

Aerospace
- Systems and Controls

Manufacturing
- Systems and Engineering Management
- Additive Manufacturing
- Manufacturing of nanomaterial and micro/Nano electronics
- Six Sigma – manufacturing systems
- Logistics

Energy
- Renewable energy
- Electric Power Grids

Health
- Health Analytics
- Medicine
- Bio and Medical Informatics
- Bio-nano hybrid systems for biochemical/sensing/ energy/medicine
- Reengineering human tissue/organs
- Tissue engineering/ regeneration
- Biomechanics
- Biosensors

Computing
- Chemical Detectors
- Cyber Security
- Software security
- Distributed and parallel computing
- Cloud computing
- Cyber–Physical Systems
- Big Data
- Big Data Processing - Infrastructure

Infrastructure/Environment
- Smart Urban Infrastructure
- Sustainable and resilient infrastructure systems
- Structural Health
- Construction Engineering
- Water - Climate Change – Hydrological aspects
- Sustainable Systems

Networks
- Internet of Things
- Sensor Networks
- Air traffic networking and management
Significant DFW Industrial Sectors – Naive survey

- Aerospace
- Manufacturing
- Logistics
- Health care
- Health care suppliers - dentistry, optics, ...
- Automotive
- Telecom
- Software/ Security
- Energy/ Renewable Energy
- Construction/ Infrastructure
- Other???
Evolving the Vision - Initial SWOT

• Already have two strategic plans – the College Draft and the University - we don’t need to formulate another!
• But we need to develop the right higher level College plan interpolating the two existing documents (to take around one year)
• Dean has provided several specific visioning statements around contemporary engineering education – as per dean’s interview – included in your packet
• Can we ratify some of these?
• Need specific BOA feedback on what is important – later this morning
• Dean and Associate/Assistant Deans have developed initial SWOT document – in your packet
Initial SWOT Analysis

**Strengths**
- Position within the growing and dynamic Metro DFW
- University focused on growth
- Engineering is key to University planning and vision
- Research base already established – Now Research 1
- Relative Quality of Space
- UTA is an Hispanic Serving Institution

**Weaknesses**
- Philanthropic fund raising
- Alumni relations
- Corporate/Industry relations
- Staffing levels

**Consequences of changes in leadership**
- Lack of Scholarship support
- Lack of US Graduate Students and lack of diversity in the students we do have
- Lack of targeted marketing strategies – specifically for recruitment
- Immature, but growing reputation
- National rankings
- Quality of graduate student pool
Initial SWOT Analysis

- **Opportunities**
  - Distance education
  - International Relationships
  - Devising cost effective mechanisms to deal student growth
  - Turning around, Philanthropy, Alumni and Corporate/Industry relations
  - Telling our story better
  - Industrial research funding
  - Building the technology transfer pipe line in engineering leveraging UTARI and technology incubator being discussed between UTA, Arlington and Fort Worth

- **Threats**
  - Competition from other Texas Schools and in particular UT Dallas, Texas Tech
  - Inability to become more cost effective in delivering education in the face of student growth
  - Eventual Economic Downturn in Metro DFW/TX
  - Legislative funding cuts
  - Unsuccessfully embracing growth
  - Losing research active faculty to other schools
A Vision for the Future of the College of Engineering at UT Arlington

Peter E Crouch

7/29/16
Embraces the University Vision

“UTA is an internationally recognized research university, distinguished by excellence and access through transformative knowledge production and education based on scholarship, collaboration, innovation, creativity, and global impact”

- Emphasizes those components that point to Engineering,
- Adopts components that Engineering can contribute to the Institution,
- Leverages University assets and those of the community to achieve the vision, thereby giving back to the community that supports Engineering.
Equipped for and embraces student growth

• Embraces a fast growing institution with high enrollment and degree production
• Well-developed student pathways, especially focused upon K-12, Community Colleges, and employers
• Professional (re-)education for employees of industry
• Distance Education – extending the capacity, reach and visibility of the College
• Engages with employers to build and support an increasing set of practical experiences/projects for students
• Develops a College wide appreciation and need for programs that promote “Open Access” by students to a college education at UTA and a College of Engineering Education
Vigorous research programs focused on societal impact

- Builds capacity in University’s Guiding Themes: Health care – Sustainable Urban environments – Global Environmental Impact – Data Science and Engineering Enabling Discovery
- Engages significantly with the societal infrastructure challenges of sustaining and improving life in a Megacity
- Rallies around cross disciplinary research thrusts or clusters for the College
- Builds upon and leverages university research expertise in other disciplines through interdisciplinary and multidisciplinary research programs
- Builds the high end of the faculty academic leadership through hiring and promoting future NAE members, and other national level senior faculty
- Develops NSF ERC worthy programs and relationships with other institutions and companies
Embraces diversity

• Builds upon the University’s highly ranked status as a diverse research university
• Engages in programs that enhance the diversity of students, faculty and staff
• Develops and maintains vigorous programs that enhance student retention of disadvantaged and underrepresented minorities including women
• Installs programs that help all College personnel appreciate and combat unintentional discrimination
• Pays special attention to student organizations that support disadvantaged and underrepresented minorities including women
Nationally recognized for engineering education

• Acknowledges the generally bad track record of engineering education for student retention and attraction of students to the discipline – especially for underrepresented minorities

• Acknowledges that we can adapt teaching methodologies to improve retention and attraction of engineering as a discipline

• Benchmark against new ASEE retention surveys, and local and national successful programs

• Leverage federal funding for programs that enables new engineering curricula and pedagogy

• Examine potential for new engineering education programming and research
The go-to institution for engineering workforce in Texas

• Leverages its position within a “University of Choice”

• Expands the outreach of College’s “friends and alumni” in the community and empowers College Advisory Councils and Alumni Organizations

• Corporations make investments in the College as reciprocal (unwritten) agreements in return for College providing workforce
Constantly maintains visibility - locally, nationally, with alumni and has a growing global presence

• Promotes its position within a “University of Choice” heavily promoting its distinguishing attributes
• Enhances its capacity for publicizing success locally, nationally, and with alumni
• Develops faculty capability to interpret their work for its societal impact and importance
• A leading partner with the University in social messaging practices to obtain and maintain connection with (prospective) students
Recognized as “THE” local source of Innovation and Entrepreneurship (I&E)

• Integrates I&E into the student culture
• Integrates I&E content in the curriculum
• Links to faculty research and technology transfer
• Leverages national focus and funding for I&E program development
Continually builds its international presence

• Leverages:
  – Dallas/Fort Worth access to both Europe and Asia
  – The intrinsic international dimension of the engineering profession
  – The significant fraction of engineering faculty with international backgrounds
  – The significant international ties of the Dallas & Texas community

• Distance Education as an enabler

• Benchmarks and adopts best practices locally and nationally
Recognizes the significance of rankings for its stakeholders and aims at “Top 50”

- Benchmarks its performance against available data bases e.g. US News, ASEE
- Decisions that can be made to enhance rankings, are made
- Seeks University and private investment for programs that improve rankings
- Utilizes leadership experience of steering Engineering Schools into “Top 50” status