

Strategic Research Areas

COE Information Meeting

11:00 AM - Noon

Clement 212

October 23, 2012

October 25, 2012



21ST CENTURY
**RENAISSANCE
ENGINEERS**

REVOLUTIONIZING ENGINEERING

TU TENNESSEE TECH
UNIVERSITY

Joe Rencis, Dean
Kari Rajan, AD & CESR Director
Ken Currie, CMR Director

Strategic Plan: 2020 Destination → Eminence

“Do not go where the path may lead;
go instead where there is no path and
leave a trail.”

Ralph Waldo Emerson.
US essayist & poet
(1803 – 1882).



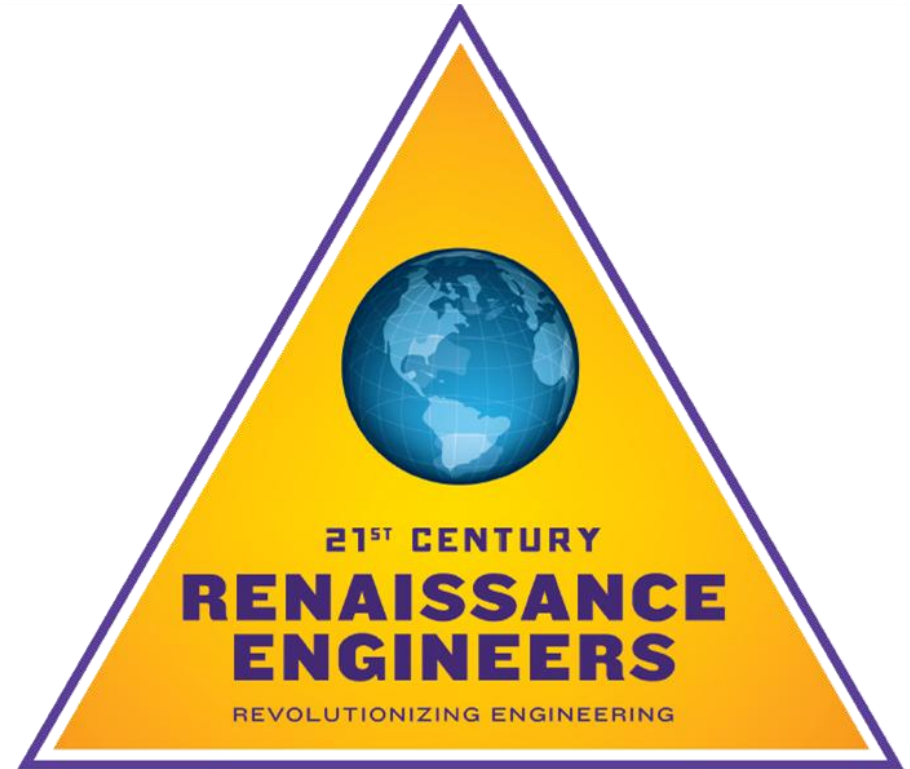
COE Vision & Mission

Vision

21st Century Renaissance Engineers
Revolutionizing Engineering
to Solve Societal Problems

Mission

To graduate innovative engineers
who solve technological challenges
to meet societal needs.

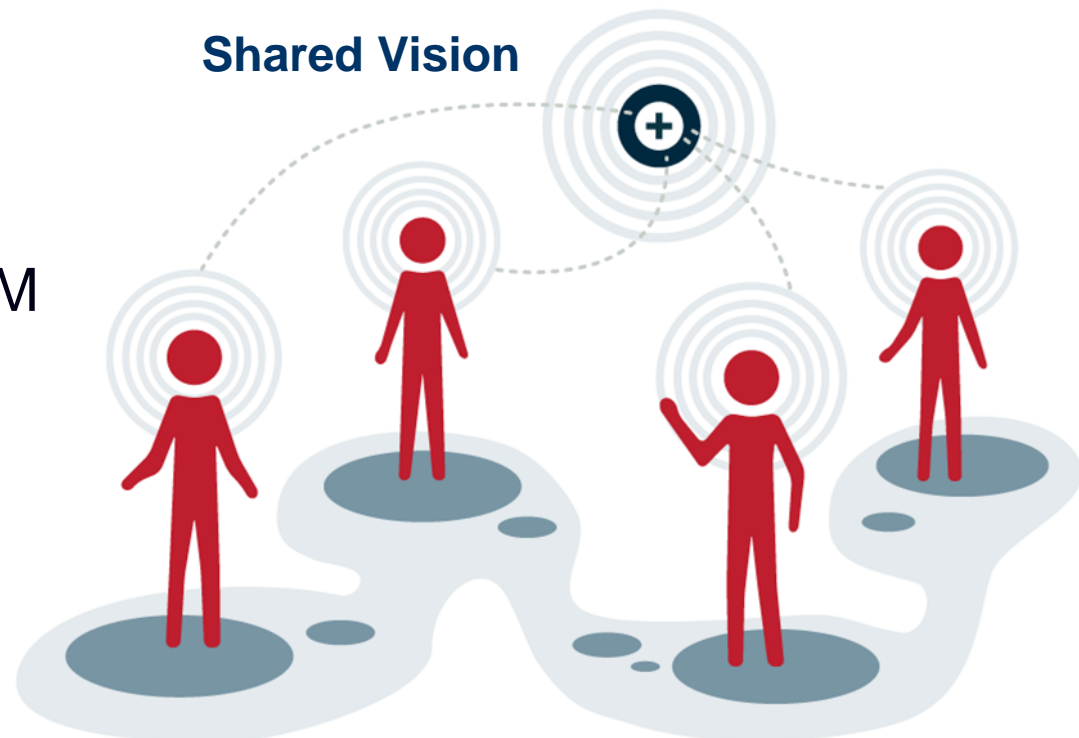


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COE Core Values

Underscore & support the vision & mission through its commitment to **ASPIRE** to greatness.

- **A**IM HIGH
- **S**TUDENTS FIRST
- **P**ROFESSIONALISM
- **I**NNOVATION
- **R**ECOGNITION
- **E**MINENCE



Strategic Plan Research Goals & Strategies

- Goal 2: Our College engages in research and innovation as the vehicle to support the teacher-scholar/student-scholar model.
 - Strategy 1: FUNDING RESEARCH. Increase external research funding to a level that supports the college mission.
 - Strategy 2: FACULTY RESEARCH. Increase the percent/number of faculty engaged in research to a level that supports the college mission.

Strategic Plan Research Goals & Strategies

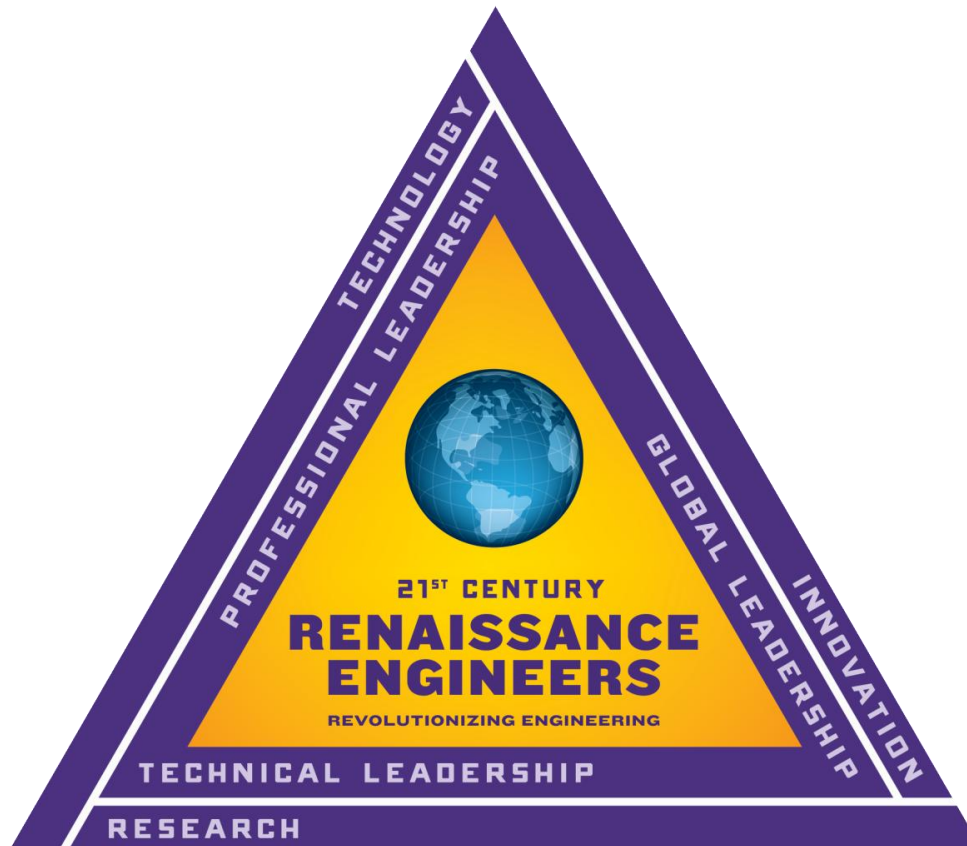
- Goal 2: Our College engages in research and innovation as the vehicle to support the teacher-scholar/student-scholar model.
 - **Strategy 3: STUDENT RESEARCH.** Increase the percent/number of students (undergraduate, graduate and diversity) engaged in research to a level that meets the college mission.

Strategy 3 is a 2012-13 COE Priority

2012-13 Implementation w/ SRA

- Goal 2: Strategy 1: FUNDING RESEARCH.
 - Action 3.1. Identify and invest in strategic research areas. **IN PROGRESS**
 - Action 3.2. Align the mission of centers to the key research areas of the College (or vice versa). **DONE**
 - Action 3.5. Develop a plan to allocate resources based on research priorities and progress made toward those priorities. **IN PROGRESS**
 - Action 3.6. Promote and enhance research partnerships between centers and departments. **IN PROGRESS**
 - Action 3.9. Create a research-focused position at the college level, such as associate dean of research. **DONE**

Create Jobs & Drive Innovation



Why Strategic Research Areas?

- Limited resources to invest non-strategically.
 - We cannot do everything.
 - Need not be world class in all areas.
- **Guide faculty hiring decisions.**
- Provide information to allow COE to better project itself upward & outward.
- Facilitate new partnerships inside & outside.
- Identify development & publicity opportunities.
- Goal - Move COE research profile to the next level of excellence.

Strategic Research Area Characteristics

- Faculty-driven
- Strategic-based
- Broad-based
- Team Dynamics
- Interdisciplinary – Not just COE.

Research Efforts Outside SRA

- We are not closing the door on other research areas.
- Individuals can seek external funds in any area they please and will be recognized & rewarded for success.
- Centers will do minor investment in high impact research areas that do not align with their mission & research focus areas.

Faculty Hiring – Candidate Characteristics

- Overall faculty quality can improve only if we recruit faculty who are not only better than we are but also willing & able to challenge us to become better than we thought we could be.
- Commitment to Undergraduate Education
- Teacher-Scholar
- Scholar in SRA(s)
- Complement SRA Group–Make **team** stronger.
- Cutting Edge of SRA(s)
- High Potential for External Funding

Faculty Hiring - Process

- *Governing Assumption.* Often takes several years to find high quality candidates that will elevate us to eminence.
- *Tough Decisions.* Hiring committees, departments, department chairs, center directors and dean will all make the tough call of rejecting good candidates in the belief that outstanding ones will emerge in subsequent hiring cycles
- *Guarantee.* Dean must guarantee that once a department is authorized to search for a position, the line will remain available to that department until it is filled (based on financial status of University & State).

Dean's Priorities for SRA

- Major Team Effort
- Strength in Team, Not Individual
- Multiple PIs, Co-Authors, Co-Patents, etc.
- Seminars & Group Meetings
- Actively Involved in Faculty Hiring

**Transformation from
Individual → Group → Team**

SRA Summer Task Force

- Charge - The goal is to identify 3 to 5 research focus areas for the College of Engineering that must include the Centers for Research Excellence.
- Charge and Report Emailed to COE

STA Summer Task Force Members

- **S. Canfield, ME, Co-Chair**
- **C. Privon, '79, Co-Chair**
- K. Rajan, CESR/AD
- K. Currie, CMR,
- D. Bond, '70/'71
- F. Hossain, CEE
- J. Biernacki, ChE
- S. Scott, CS
- A. Anderson, ECE
- I. Fidan, MIT
- D. George, CWR
- S. Pardue, STEM
- F. Otuonye, VPR

SRA, Center & Coordinator(s)

SEE HANDOUT FOR DETAILS

- Advanced Manufacturing – CMR/Canfield
- Energy Storage & Conversion – CMR/Zhu
- Networking & Sensing – CMR/Qiu
- Resilient Infrastructure – CESR/Hossain & Biernacki
- Smart Grid – CESR/Ojo
- Nanoparticle & Proteomics in the Environment – CWR/Stretz, Arce & Boles

SRA Selection

- SRA build on the COE's current strengths in order to succeed in highly competitive areas. **Want to go from good to great!**
- Computer Science Research
 - Integrated in Six SRA
 - Can be Faculty Hires in Computer Science
- Educational Research
 - Integrated in Six SRA
 - Probably No Faculty Hires in Educational Research
Since Many Outstanding Teachers & Potential Partnership with College of Education

SRA Coordinator Responsibilities

- Convene periodic meetings of the group to discuss/brainstorm on new research projects funding agencies, research group formation, etc.
- Identify contacts in funding agencies and arrange visits to funding agencies.
- Arrange visits of personnel from funding agencies
- Arrange seminars by external distinguished visitors (at least one per semester).
- Arrange seminars by internal speakers (faculty and students).

SRA Coordinator Responsibilities

- Serve as a communication link between the group and administrators (Center Director, Associate Dean of Research & Dean).
- Help with at least one large proposal per year involving a large participation from the group. The proposal can be a research proposal or REU, MRI, DURIP, etc.
- Assist in the identification and attraction of external university/industry partners.
- Assist in the external marketing activities, publicity (website, etc.).

SRA Coordinator Responsibilities

- Help in recruiting graduate students.
- Ensure group participation in faculty hiring.

Why is coordinator important?

SRA Assessment Committee

- *2012 - 2013 Charge.*
 - Develop an assessment process.
 - Use metric based rubrics that include research expenditures, collaborations, papers, citations, etc.
- *2013 - 2020.* Assess yearly performance of SRA & report yearly to the Associate Dean for Research & Dean.
- *Future SRA.* Future SRA based on resources, performance, and potential. We may be able to consider other research areas in future.

SRA Assessment Committee Members

- K. Rajan:
Committee Chair-
AD Research
- M. Wells-BE
- J. Liu-CEE
- R. Sanders-ChE
- S. Ghafoor-CSC
- J. Ojo-ECE
- J. Zhu-ME
- A. Elsayy-MIT
- NA-CESR
- K. Ting-CMR
- Datta-CWR
- S. Pardue-STEM Dir.
- K. Currie-CMR Dir.
- K. Rajan-CESR Dir.
- D. George-CWR Dir.
- F. Otuonye-VP Res.

Conclusion

- SRA will move the research profile of COE to the next level of excellence.
- SRA Team-based Research Environment
- SRA Lead to “Organic Mentorship”
- The journey before us is electric with unlimited possibilities. **GameChanger!**

2020 Destination → Eminence



**UNLEASH YOUR
AWESOMENESS**

Questions?