

**Monthly Faculty Meeting  
Department of Electrical Engineering**

**Present:** Roger Dougal, Chair

Mohammad Ali	Krishna Mandal
Seongtae Bae	David Matolak
Andrea Benigni	Enrico Santi
Charles Brice	Grigory Simin
MVS Chandrashekhar	Jamie Steadman
Yinchao Chen	Guoan Wang
Herbert Ginn	Xiaofeng Wang
Paul Huray	Bin Zhang
Asif Khan	

**Absent:** Brice, Chandarshekhar, Matolak, and Simin

**Recorder:** Nat Paterson

The meeting was called to order by Dr. Roger Dougal at 3:30 p.m. in EE Conference Room 3A75 on May 12, 2016.

**1. Announcements –**

- Spring 2016 Peer evaluation of teaching – classroom & content due May 15
- Biennial Curriculum Retreat – Fri May 13, all day, followed by reception at Dr. Dougal's house
- Identity Finder – data protection software. David London will soon install this on all computers. Please run it as soon as possible.

**2. Guest Speaker – the Dean – Dr. Hossein Haj-Hariri – spoke to the faculty for the first time since he took over the position in January. The Dean updated the faculty on the following topics:**

- College's future hiring
- Research focuses – each department was asked to submit a white paper to recommend the research focuses. The decision should be made in the summer.
- Engineering fee increase to offset the budget deficit
- Industry partnership through the office of Economic Development – i.e. IBM, Boeing, etc.

Overall the Dean said he was very impressed with how well the faculty performed in both research and teaching regardless of the lack of resources and funding. As one additional pre-award staff was added, he hopes that the faculty will get help they need to produce higher quality proposals to increase better chance of external and high dollar funding.

At the end he also raised a few topics he would like to work on in the near future:

- Addressing the downward trend of EE incoming freshmen
- Bringing Computer Engineering back to Electrical engineering and brand it as Electrical and Computing Engineering

### 3. Committee Reports –

#### I. Undergraduate Committee – Dr. Dougal (in place of Dr. Simin)

Dr. Dougal gave the faculty an overview of the main objectives of the Curriculum Retreat. The following list is what we would like to accomplish by the end of the retreat.

- Establish improvement plans for fall 2016 courses
- Increase competency to use Blackboard effectively and understanding of the process
- Increase quality and documentation of assessments in each course
- Evaluate coverage of elective courses (500 level) against current topics in EE.
- Develop best practices for documenting course improvements

#### Next actions:

- Submit Spring 2016 assessment data
- Bring their pen-enabled devices to the Retreat

#### II. Faculty Development Committee – Dr. Ali

##### Discussion #1 – summary of recommended research focuses for future hiring

Per the Dean's request, the department submitted 4 research focuses recommended for future hiring. The information would be gathered and the final decision would be made by the Dean in the summer. Please see Appendix A for details.

The priorities will be given to the research topics or technical areas that can work across the college in multidisciplinary projects.

#### Next actions:

- The faculty were asked to review other departments' recommendations to see if there are any focuses that our department can collaborate.

#### III. Report of Chair –

##### Recap of 2015-2016

- Extended implementation of new course outcome assessment processes
- Purchased new pen computing devices to assist faculty in moving towards more online course processes
- Established a new endowed scholarship – Robert Pettus Endowed Scholarship, and aiming to start more
- Conducted the first Advisor Effectiveness Survey
- Continued to improve and migrate departmental web pages. Research webpages now in process (Please providing info to Richard!)
- Pursuit of research funding in the fiscal year of 2015-2016
  - Total of 47 proposals were submitted by 12 different faculty:
  - 27 submitted to Federal agencies – NSF, DoE, DoD, NASA, ONR, etc = \$5,848,024.00
  - 11 submitted to another agencies – GRAPES, U of Arkansas, Applied Research, Intelligent Automation, Global Technology, UCF, UTC, etc. = \$542,649.00
  - 9 submitted internally (ASPIRE, Magellan, SPARC, etc) = \$143,561.00
  - The highest number of proposals is 12 – Dr. Zhang
  - 12 submitted with Co-PIs – 9 are across departments (Mechanical, CSCE, Public Health, Chemistry, Environmental Science, Education

##### Upcoming focuses for 2016-2017

- **Increase research funding** -- Develop more and larger collaborative research proposals
- **Electronic Materials & Devices Fabrication and Characterization Facilities** – as the lab manager, Dr. Alexander Grekov is being hired, the implementation of the shared facility plan will be completed as soon as possible.
- **Faculty hiring** – expect search to start in late summer
- **Freshmen Recruitment**– with 50% decrease of freshmen in fall 2016, we need to seriously figure out what went wrong and aggressively develop a more effective recruiting plan
- **Scholarships** -- Continue “giving campaign” to fund more scholarships
- **Increase the use of Blackboard** – to communicate expectations and performance to students and for auto-documenting our own teaching and student performance assessments
- ABET Self-Study Report -- Write initial draft report – with college ABET coordinator
- Improve documentation of plans for committee duties
- Review and make new committee/service assignments (soon)

**Next actions:**

- The new committee/service assignments will be circulated shortly
- The faculty is encouraged to propose a fundraising project through the University’s crowd funding tool.

Meeting adjourned at 5:11 PM

Appendix A

# Summary of Hiring Recommendations

Research Focus	Opportunities	Justifications	Start-up Cost	Competition	Funding agencies	Strength
Communications	Increase collaboration with in EE and outside like in Mechanical, Aerospace, Physical Sciences, etc.	Lots of new initiatives including 5G cellular, Internet of Things, and device-to-device wireless communication are actively being supported by federal agencies	<ul style="list-style-type: none"> <li>• Lab computers &amp; software &lt;\$25K</li> <li>• Software defied radio &lt;\$50K</li> <li>• Others (high speed digital oscilloscopes, spectrum/signal analyzers, signal generators, and RF hardware are available in the department</li> </ul>	Most good ECE programs conduct research in communications. We need to find the right focus area, forge inter-university collaborations, and selectively employ existing CEC strengths.	<ul style="list-style-type: none"> <li>• NSF</li> <li>• Airforce</li> <li>• DARPA</li> <li>• NASA</li> <li>• Navy</li> </ul>	<ul style="list-style-type: none"> <li>• Four faculty (Matolak, Ali, Huray, Chen, G. Wang)</li> <li>• \$2.4M funding in the area over the past 5 years</li> </ul>
Digital Signal Processing	<ul style="list-style-type: none"> <li>• Growth in communications and medical applications</li> <li>• Increase collaboration with in EE and outside like in Mechanical, Aerospace, Physical Sciences, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Core competency in EE</li> <li>• Applied across the entire EE, CE, CS, and others</li> <li>• EE has no graduate course in this area which is leave a hole in the curriculum</li> </ul>	<ul style="list-style-type: none"> <li>• Lab computers &amp; software &lt;\$25K</li> <li>• Software defied radio &lt;\$50K</li> <li>• Others (high speed digital oscilloscopes, spectrum/signal analyzers, signal generators, and RF hardware are available in the department</li> </ul>	Most good ECE programs have DSP research, investigators in DSP tend to specialize within a field, such as communications, or image processing, or biomedical imaging Find an area of current strength/growth in the department/college where DSP can add significant value. Multiple areas exist in communications, CSE, aerospace, and mechanical	<ul style="list-style-type: none"> <li>• NSF</li> <li>• DARPA</li> <li>• NASA</li> <li>• DoD</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> <li>• Funding in the area over the past 3 years (formerly, Shin had funding in this area)</li> </ul>

# Summary of Hiring Recommendation

Research Focus	Opportunities	Justifications	Start-up Cost	Competition	Funding agencies	Strengths
Smart Grid and Microgrid	The need to find new ways to efficiently and reliably generate, store, and deliver energy that limit impact on the environment requires expertise in electrical power, control and information system to contact research in advanced electricity systems.	Research in this area is increasing nationwide. It is critical to the economic development of the state. This is a strategic time to invest in this research area, strengthening the existing program and providing critical mass for future expansion of the program.	\$400K depending on the equipment needs	<ul style="list-style-type: none"> <li>National – FSU, Penn State</li> <li>Local – Clemson, NCSU, UNC Charlotte, GA Tech</li> </ul> <p>We have a long history of funding in the power and energy area with microgrid and smartgrid types of systems. Funding in the near term looks secure. However, we need a critical mass of faculty members in the area or risk falling behind.</p>	<ul style="list-style-type: none"> <li>Office of Naval Research</li> <li>National Science Foundation</li> <li>Department of Energy</li> <li>Airforce</li> <li>Army</li> </ul>	<ul style="list-style-type: none"> <li>\$30M funding in the area over the past 15 years, 4 faculty (down from 6), strong publication record, GRAPES research center, ESRDC, FEEDER, national prominence</li> <li>Strong indications of funding from ONR for the next 5 years</li> </ul>
Ultra-wide band-gap materials & devices	This area is expected to see future growth in many areas including power semiconductor devices, mm-wave high power amplifiers (industry competition GaAs is inadequate for high power at frequencies greater than 30 GHz).	Been losing faculty in this area over the last several years. Needs to infuse osme you ng blood to keep our strength going	Minimal to no cost. Existing infrastructure can be used at ease.	Though NCSU has NMMI and Clemson focuses on photnics, we will focus on power systems and communication and radar.	<ul style="list-style-type: none"> <li>NSF</li> <li>DoD</li> <li>SBIR</li> <li>STTR</li> <li>Various national labs</li> </ul>	<ul style="list-style-type: none"> <li>Four faculty in semiconductor materials area (Khan, Chandra, Mandal, Simin)</li> <li>Significant past funding, some funding in the past 3 years, significant facilities</li> </ul>

