MINUTES
Department of Aeronautics & Astronautics
January 16, 2020

Attending: Breidenthal, Dabiri, Ferrante, Hermanson, Jarboe, Knowlen, Kurosaka, Little, Livne, Mesbahi, Morgansen, Salviato, Shumlak, Yang; Connery, Maczko

Absent: Acikmese, Bragg, Vagners, Williams

MINUTES
Minutes of the December 2019 meeting were unanimously approved.

ANNOUNCEMENTS
• State of the Department will be held January 24th in GUG 220. This will be geared toward the students but all are welcome to attend. The students are interested in the direction of the department.
• Voluntary Retirement Incentive (VRI) Option reminder – faculty who are eligible have already received relevant information. Questions can be directed toward Kristi Morgansen or Aileen Trilles.
• Our new administrator Rachel Reichert’s first day is February 3rd. There will be a welcome breakfast from 9am to 10am. Everyone is encouraged to stop by and introduce yourself.
• The next Women in Aerospace meeting is Feb 5th, 5-7pm – faculty should inform their students. They are focusing on research and industry opportunities.
• Prohibiting student catering of required meetings – The College has given direction to not require food at PhD exams because this puts an undue burden on the students. For future exams, the department will provide coffee, water, snacks. It is not prohibited, but faculty should not encourage students to bring food. If the student really wants to bring something, that is ok.
• Qualifying exams will now be on a set number of days each quarter due to scheduling difficulties. They will be on the last three days of instruction and the 2 days after that. Faculty should try to leave these days open on a regular basis so students have an easier time scheduling.
• Welcome to David Wilson our new IT Specialist. His hours are 8am to 4:30pm.
• Reminder that EH&S has updated the confined space program manual. Faculty using equipment in their lab space that may constitute a confined space must have a confined space entry plan.
• There is a Diversity Equity and Inclusion Workshop in STEM. Let Prof. Morgansen know if you are interested in attending.
• New funded research:
  o Dana Dabiri – ARO grant, ARO DURIP, Boeing Grant

CHANGE TO DATA SCIENCE OPTION PROPOSAL (attached)
Fulfillment of the Aeronautics & Astronautics department requirements: No course may overlap between A&A department requirements and A&A DSO requirements.

Student cannot do a double counting in order to get the Data Science Option certificate. They must have 9 credits of distinct courses from their regular degree. Core and breadth have to be distinct.

Grad committee moved for the vote to accept this change to the Proposal for an Aeronautics & Astronautics PhD student “Data Science option”
Motion passed
REPORTS FROM STANDING COMMITTEES

Tenure Track Search Committee: Ackmese – We currently have about 60 candidates from each area, Controls and Structures. Skype interviews are happening now. The target number for Skype interviews is 12. The committee would like to bring 5 to 6 candidates total for onsite interviews. Standout applicants will be invited to come to campus immediately.

A third open position has been approved by the Dean. We are waiting for approval from Academic Human Resources. Prof. Morgansen and Kim Maczko are working on the ad now. Prof. Morgansen will send around the ad language and request feedback from faculty and discuss with the search committee. This search is late to start, it’s possible that we can roll it to next year if we can’t find someone we would like to hire. This hire must be at the early Assistant professor level. The applicant cannot be close to promotion with tenure.

Cluster hire initiative (see attached slides) – 26 new faculty lines are being provided by the state. They will be multiyear collaboration between 2 or more departments. The Chairs cannot drive the hire; it must be faculty driven. Planning 9 hires this year in additional to regular hires. Dean Allbritton wants to hear how proviso lines in the cluster will build interdisciplinary research, how it will contribute to educational missions, support diversity, equity, and inclusion. There will be a template that faculty will have to complete.

COE will provide a rubric and the department chair must provide a letter of support. There is an aggressive timeline for hiring. Further information from the Dean’s office should go out later this week.

Lecturer Search Committee: Hermanson – We have three finalist visiting campus over the next few weeks. Urge everyone to sign up to meet with the candidates. This hire will be a voting member of the faculty, so faculty should make an effort to meet with them to make sure they are good fit.

No report from the following committees: Undergraduate Committee, Computer Committee, Graduate Committee, Peer Evaluation Committee, Safety Committee, Aero/Astro Working Committees, Space Allocation Committee, Strategic Planning, AIAA, Sigma Gamma Tau, Boeing Professor Selection, Diversity, MAE-CMS Advisory, Space Systems Center, UWAL, PSI Center, Accreditation, Educational Policy, COE EDGE/UWEO, COE Executive, Promotion & Tenure, College Council, Academic Conduct, Engineering Manufacturing, FAA Center of Excellence, GISE, Technical Japanese, Certification Program, Faculty Fellows, Faculty Senate

EMERITUS APPOINTMENT FOR - JARBOE
MOTION: Appoint Tom Jarboe as Professor Emeritus
Motion passed

GRAD FACULTY MEMBERSHIP – JARBOE
MOTION: Appoint Tom Jarboe to hold a 5-year Graduate Faculty membership with endorsement to chair doctoral committees
Motion passed

RESEARCH ASSOCIATE PROFESSOR REAPPOINTMENT - KNOWLEN
Motion: Reappoint Carl Knowlen to a 5-year term effective June 1, 2020.
Motion passed

ADJOURNED
Meeting adjourned at 1:30pm.
Proposal for an Aeronautics & Astronautics PhD student “Data Science option”

Summary Description
The proposed Data Science Option (DSO) is designed to meet a critical educational gap at the intersection of Aeronautics & Astronautics (A&A) and Data Science. Aeronautics & Astronautics graduate students will receive credentialed training in the analysis of large datasets. The Data Science option provides students an introduction to the world of data science, giving them the skills to understand a variety of techniques and tools. The goal of this option is to educate all students in the foundations of data science, so they may apply those methods and techniques in current research. The A&A DSO is designed for students with little or no background in data science, computer science or coding.

The requirements for the A&A DSO are as follows:

I. Courses from three out of the following four areas:
   1. Software development for data science
   2. Statistics and machine learning
   3. Data management and data visualization
   4. Department specific requirement


III. Fulfillment of the Aeronautics & Astronautics department requirements. No course may overlap between A&A department requirements and A&A DSO requirements.

******************************************************************************************

1. Software development for data science
   1. Software Development for Data Scientists (CSE 583)
   2. Software Engineering for Molecular Data Scientists (ChemE 546)
   3. High Performance Computing (AMATH 583)

2. Statistics and machine learning
   1. Introduction to Machine learning (CSE416/STAT416)
   2. Introduction to Statistical Machine Learning (STAT 435)
   3. Machine Learning (CSE 546)
   5. Introduction to Mathematical Statistics (STAT 509)
   6. Statistical Inference (STAT 512 or 513)
7. Computational Methods for Data Analysis (AMATH 582)
8. Inferring Structure of Complex Systems (AMATH 563)
10. Convex Optimization (AA/EE/ME 578)
11. Machine Learning Control (ME 599)

3. Data management and data visualization
   1. Introduction to Database Systems (CSE 414)
   2. Principles of DBMS (CSE 544)
   3. Data Visualization (CSE 442)
   4. Introduction to Data Visualization (CSE 412)
   5. Data Visualization (CSE 512)
   6. Interactive Information Visualization (INFX 562)
   7. Interactive Information Visualization (INFO 474)
   8. Information for Visualization (HCDE 411 or 511)

4. Department specific requirement
   1. Computational Methods for Plasmas (AA 545)
   2. Computational Fluid Dynamics of Compressible Flows (AA 543)
   3. Computational Fluid Dynamics of Incompressible Flows (AA 544)

eScience Community Seminar
   Two quarters of the eScience Community Seminar (CHEME 599F).

Rationale for Adding a Data Science Option
The path to significant engineering advances is changing rapidly. Most disciplines, from physical to life sciences, have entered an era where discovery is no longer limited by the collection and processing of data, but by the management, analysis, and visualization of this information. Novel developments in instrumentation have led to a tremendous increase in the volume of this data, forcing scientists to perform analyses on data that is too big for standard desktop computing tools. Thus, rising scholars need the skills to process big data.

To harness the opportunities that big data brings, the next generation of scientists requires education both in a domain science and in methods for data management, analysis, and visualization. Thus, many graduate students in Psychology need an education that focuses on building the next generation of data science tools and knowledge in the application of these tools in a discipline-specific manner.

In addition, given the small number of tenure-track positions available to students and postdocs, experience in data science opens up additional career paths for graduate students.
Total Credits

Total credits required for the current Doctor of Philosophy (Aeronautics & Astronautics) is 90 credit. A&A PhD students must complete 15 graded credits of analytical coursework, 15 graded credits of core coursework, and 6 graded credits of breadth electives. A public defense and written dissertation are also required for the degree.

The Doctor of Philosophy (Aeronautics & Astronautics (DATA SCI)) shares the above requirements, but has a distinct curricular focus of 9-15 credits in coursework and 2 seminar credits. Courses taken to fulfill Data Science Option requirements count toward the 90 total credits required for a doctoral degree, but are not eligible to count toward the analytical, core, and breadth course requires outlined above.

Infrastructure Requirements

The Data Science curriculum makes use of courses that are well established within Aeronautics & Astronautics and other departments such as Computer Science, Statistics, and Applied Mathematics. The DSO will not require the development of additional resources or improvements to the current infrastructure.

Faculty

Since the curriculum makes use of courses that are already well established, it will not require additional faculty.

Administrative Location

Aeronautics & Astronautics department will administer the DSO for its own students.

Timeline for Implementation

The Data Science Option was approved by A&A faculty in Winter 2020. The DSO will be available to students beginning in Spring 2020.

Relationship to Institutional Role, Mission, and Academic Unit Priorities:

Many departments have already approved the “Data Science Option”.

This option will give graduate students the opportunity to be trained and receive a credential in the data science field.

The courses that form the curriculum are all existing courses. The Aeronautics & Astronautics graduate program advisor and coordinator (GPC/GPA) will carry out student tracking and determine whether classes are eligible to meet requirements.

Documentation of Need for Program

A graduate “option” is the only transcriptable method to offer a credentialed recognition of our students’ efforts and to serve a recruiting tool for the units involved. We have several
enrolled graduate students who have expressed an interest in data sciences – so we expect roughly 10% of our graduate student cohort to choose to participate in the DSO.

**Program Oversight**

The Aeronautics & Astronautics graduate program director (GPC) and the eScience Education Working Group chair (currently Bing Brunton) will provide formal oversight to the program.

To apply for the Aeronautics & Astronautics Data Science option, a student must be a full-time Ph.D. student in Aeronautics & Astronautics. The student must send an email to the graduate advisor and declare interest in pursuing the Data Science track. The research advisor of the graduate student must approve the application.

**Administration**

Because the oversight required for students to participate in the option is minimal, we will not require any administrative resources nor other support services beyond the existing graduate advising staff in the participating departments.

**Students**

Eligible students for the DSO include all full time Ph.D. students in the Aeronautics & Astronautics program in good standing who have completed the first year requirements. There are no other requirements to apply.

We will advertise the availability of the option by posting information about the option on the department website and internal student resource page.

**Diversity**

Only students from participating departments will be able to register for the Data Science option. As a result, the option will directly leverage the departments’ efforts to increase diversity.

**Program Assessment**

The department will collect feedback from the students and their advisors at least once per year to get their input on the program. This will be done through an online survey and in-person interviews. Once students start graduating from the DSO program we will also collect data from students who have recently left the program.

The Aeronautics & Astronautics graduate committee may also recommend changes to the program based on the feedback from the students and faculty from Aeronautics & Astronautics and other departments.

**Budget**

The A&A DSO is revenue neutral. No additional funding resources will be required to support students who enter the new option.
Cluster Hiring Initiative

Overview and purpose

This initiative aims to facilitate interdisciplinary strategic hiring within the College to:

- Bridge gaps in existing faculty expertise where a critical new hire could lead to significant advances and increase reputation in that area.
- Catalyze, encourage and foster interdisciplinary research across departments, in innovative and exciting fields of study.
- Increase diversity and improve equity and inclusion.
- Address enrollment growth and strategic teaching needs.

This is the first year in a multi-year, faculty-driven process where available positions in the College will be reserved for cluster hires. We anticipate that the first round will result in the selection of 3-5 clusters for hiring and that could continue over 2-3 years.

Proposal guidelines

- Proposals must describe how the cluster will benefit the research and educational mission of the College of Engineering by bridging gaps in expertise and/or fostering research in innovative and exciting fields of study.

- Any group of faculty may propose a cluster but must include faculty from 2 or more departments, with a designated cluster leader. It is not necessary for proposals to include joint hires, especially at the assistant professor level. The proposal must identify potential home departments for each hire.

- Hiring requests can span several years, beginning in 2020-21 and continuing through 2022-23.

- Buy-in from department faculty not involved in the clusters is essential. Your proposal should identify ways in which potential home departments will be
engaged at all stages, including before, during, and after the search, hiring, and onboarding processes (i.e., presentations about the cluster at faculty meetings, faculty participation in candidate interviews, integration of faculty hire into departments, etc.)

- Proposals must outline plans to attract diverse faculty and comply with diversity, equity, and inclusion best practices in recruitment, hiring and retention. Effective practices include inclusive job ad language, candidate evaluation rubrics, reducing bias in evaluation skill building, real-time reporting of faculty candidate pool demographics, faculty on-boarding, mentoring plans, etc. Proposals must outline plans to provide new hire mentorship and cluster team building activities to ensure that the cluster continues to work as a cohesive unit post-hire.

- Proposals must identify any unusual startup costs and/or resources needed.

**Three-stage proposal evaluation process**

In the first stage, a faculty evaluation committee will review proposals based on an established rubric and make recommendations to the dean. The dean may then choose from existing proposals or invite more proposal submissions.

A subgroup of proposals will advance to the second stage where department chairs and the faculty at large will have the opportunity to review all proposals and presentations. Department chairs will provide feedback and describe to the dean how specific proposals fit in to their department strategic research and hiring initiatives, educational plans, and growth needs. Based on the feedback of the committee and the chairs, the dean will select final proposals to move forward to hiring.

**Cluster hire interaction with hiring committees**

The cluster participants are expected to serve on the hiring committees of their respective departments. The chair of the committee should be a department faculty member who is not a participant in the cluster, with a possible co-chair from the cluster. The committee should also include faculty members who are not
cluster participants to ensure departmental buy-in and engagement in the hiring process.

The hiring committee must follow established diversity best practices and assume responsibility for engaging department faculty and leadership during each step of the search. To keep the College apprised on the status of the search, the hiring committee must also share search progress information with the Dean’s office.

Failed searches can be re-launched in the next year.

**Brainstorming sessions**

Faculty are invited to participate in two brainstorming sessions in order to engage with potential proposal topics, learn about others’ research and identify potential collaborators.

The first session will be held on **February 12, 12-3 pm in HUB 334**

The second session will be held on **February 27, 10 am-1 pm in HUB 145**

**Key dates and deadlines**

**March 18, 2020** – Proposals due

**March 18 – April 3** – First-stage review by evaluators

**April 13 – May 1** – Second-stage review by Chairs, potential presentations

**May 15** – Proposals selected

**May 15 – June 30** – Cluster hiring prep meetings to work on ads, rubrics, recruitment/outreach plans. Search committees and ads finalized

**August** – Advertisements posted
Questions?

Contact Dean Nancy Allbritton (nlallbr@uw.edu) or Vice Dean Greg Miller (gmiller@uw.edu)

For questions related to diversity best practices, including talks at department faculty meetings or search committee meetings, contact Eve Riskin (riskin@uw.edu) or Joyce Yen (joyceyen@uw.edu)

Please submit proposals, using the attached template, to Lucia Ersfeld (luciap@uw.edu)