COLLEGE OF NATURAL SCIENCE and MATHEMATICS
Minutes of Council of Chairs Meeting – September 18, 2015

A meeting of the Council of Chairs of the College of Natural Sciences and Mathematics was held on Friday, September 18, 2015. Stephen Addison presided, members present: Ginny Adams, Jeff Allender, Pat Desrochers, Ramesh Garimella, Uma Garimella, Brent Hill, Carl Frederickson, and Rahul Mehta (for C. Frederickson).

Agenda Items:

- Dean Addison and Ginny Adams led a discussion on creating online scholarship applications for the various scholarships available to CNSM students. Discussion followed on what information to include, criteria, and deadlines for submission. G. Adams suggested that we create a write up on the history on all of the named scholarships similar to the one for the E. E. Cordrey Scholarship in Chemistry. Dean Addison asked that a flyer be created to distribute at recruiting events to help get the information out to eligible students.
- The minutes from the May 4, 2015 and August 17, 2015 meetings were approved.
- Dean Addison led a discussion on the use of computers in CNSM introductory courses. He discussed the need to decide on what kind of technology to require, what the minimum specs would be, what software and applications should be required, and developing workshops on best practices for the use of technology in the classroom.
    - C. Frederickson discussed how he is using Arduino and Raspberry Pi micro-controllers in University Physics 2 and his plans on introducing them to University Physics I in Spring 2016. He said that the cost is minimal to the students and there is a variety of online software and classroom instructions available online.
    - Dean Addison announced that he met with G.B. Cazes and Kevin Nolten from the Cyber Innovation Center and UCA was selected to be part of the national roll-out for Cyber Discovery 2.0 next summer. This opportunity could lead to more grant opportunities and national recognition for our programs.
- Dean Addison led a discussion on departmental goals and the disparity between the departments. He suggested that the council work on developing some college wide goals and asked the chairs to discuss their department's goals for this academic year.
    - B. Hill discussed Biology's goals to continue working on inventory issues, changes needed to meet increasing enrollments in courses from students in the Nursing program, and changes needed to increase retention and graduation rates.
    - P. Desrochers discussed Chemistry's goals for hiring new faculty and the need to get approvals to hire earlier in order to get a better quality candidate pool and increasing interactions between faculty and students.
    - R. Garimella discussed Mathematics' goals for clarification of the Math Education Program and its relationship to STEMteach and ways to better prepare incoming students for college-level mathematics courses.
    - Dean Addison asked that due to time, this discussion be continued at the next Council of Chairs meeting.
- Dean Addison announced that Bill Nye the Science Guy would be coming to UCA on October 6, 2015 and that we would be hosting a reception. He asked chairs to submit the names of any guests they would like to invite to him as soon as possible.

- Dean Addison led a discussion on Reassigned Time in the CNSM. Student involvement in research at the undergraduate level is one of the CNSM's programs of distinction and it is important that our faculty have time to mentor students in the lab. Dean Addison stated that the Council of Deans is doing a load analysis for reassigned time and asked that chairs develop reassigned time guidelines for their departments. A copy of the guidelines developed by R. Garimella for Mathematics was distributed and discussed. Dean Addison asked that chairs turn in their guidelines as well as their requests for reassigned time for the Spring 2016 semester to him by October 1st.
- Dean Addison went over the SBAC request for funding guidelines and asked that chairs submit their requests to him by October 1st.

Chair Reports (Appended)

Biology

Dr. Hill submitted:

- Two accepted papers for publication:
  - Weigand K, Reno L, Rowley B. Low-level mercury causes inappropriate activation in T and B lymphocytes in the absence of antigen stimulation. . Journal of the Arkansas Academy of Science. (accepted, to be published in Vol. 69, 2016)
  - Entrekin, S., K. Maloney, K. Kapo, A. Walters, M.Evans-White, K. Klemow. *In press.* Stream vulnerability to widespread and emerging stressors: a focus on unconventional oil and gas. PLOS ONE.
- Drs. Brent Hill and Rahul Mehta went to visit the NASA Ames Research Center in California from August 9-12 to investigate future collaborations and educational opportunities for students. Funding provided by the Arkansas Space Grant Consortium.

Chemistry

Dr. Desrochers submitted:

- Nilu Runge earned a Deep Learning grant through the HPAW Residential College and the IDC. She will be using this support to improve instruction in CHEM 1402, a course in which at least half the students are nursing majors.
- Ben Scheuter installed as the new lab coordinator. Ben has been assisting Upward Bound classes in Chemistry (with Erin Bell) and in Physical Science (with Morgan McKnight) during the month of June preparing chemicals for experiments for these students.
- Lei Yang established a shared use agreement with Professor A. Caro of Hendrix College for their newly acquired EPR spectrometer. This instrument is newer than the department's existing X-band EPR spectrometer, with improved sensitivity and capabilities for smaller sample sizes, including biological tissue samples.
- Melissa Kelley received her AR INBRE renewal award that runs through December 2017.
- New tenure-track assistant professor, Greg Naumiec arrived in Conway in mid-June and begins teaching Organic I during the Summer II session.
- The department, in collaboration with the AAC, established and implemented a short chemistry-screening exam. The exam is being administered during freshmen advising. Two benefits of the exam are emerging. First, it provides AAC staff additional insight and advisory tools to properly place students in freshmen or remedial chemistry classes. Second, student

results will be compiled in the years ahead to help guide improved advising and potential curricular changes that can improve student retention.
- Kristin Dooley shared chemistry demos all day as part of at Florence Mattison Elementary School's enrichment day, May 2015.
- Kristin Dooley participated in the CNSM bootcamp for entering freshmen students and reported an improvement in student interaction over 2014.

Computer Science

Dr. Ramesh Garimella submitted:

- Dr. Tansel Halic, Assistant Professor, and Dr. Sinan Kockara, Associate Professor, received a $326,000 NIH- INBRE grant.
- James Stamps (Fall), Alxander Yu (Spring) received 2015 outstanding Computer Science Student awards and Bryce Nicholson received Faculty Special Recognition Award.
- The Computer Science Department is supporting MIS to host IT Camp sponsored by Acxiom from June 17-20.
- A paper, "Uncork Napa's Cabernet Sauvignon by Association Rule Based Classification," co-authored by Bernard Chen has been accepted by IEEE International Conference on Machine Learning and Applications (ICMLA 2015). Coauthors include 5 undergraduate students who were in his CSCI 4370 Data Mining class. One of them is currently our master student.
- This summer IEEE officially released its Standard for Interval Arithmetic IEEE 1788-2015. Professor Chenyi Hu has been an active member of the working group in establishing the standard for years with his specialty in interval computing and application.

Geography

Dr. Allender submitted:

- Ellen Hostetter presented a paper at the International Society for Place, Landscape, and Material Culture titled: *Early Automobile Landscapes: A Bureaucratic Backstory.*
- Steve O'Connell, Matt Connolly and Mary Sue Passe-Smith along with two geography majors are presenting papers or posters at the combined SW American Association of Geographers and Applied Geography conference, November 3rd through 5th in San Antonio. Both Steve and Matt's papers have also been accepted for publication in the Journal of Applied Geography and should be out later this fall.
    - O'Connell's is*: THE PRODUCTION AND MIGRATION GEOGRAPHIES OF PROFESSIONAL HOCKEY – 1970-2010*
    - Connolly's is: *My Friend the Fire Ant: A Preliminary Analysis of the Role of Fire Ants in Vineyard Health.* Additionally, Matt gave an invited research talk last Friday at **Missouri State's** *Department of Geography, Geology, and Planning*.
- We've also set aside travel funds for Brooks Pearson and GIS graduate student Scott Wood to give papers at the South West Decision Science Institute Conference in Oklahoma City in March.
- Steve O'Connell, Matt Connolly and Brooks Pearson are all planning to present papers at the American Association of Geographers National Convention in San Francisco in March.
- I must add that this year, six of the eight faculty members in geography are giving papers at major conferences this year; three of them are giving two different papers at two different conferences. This number presenting in a single year has never happened in the 26 years I've been at UCA, and I'm ecstatic to be able to give them more travel support in this one year than I

received for all my travel and presentations in the previous 26 years combined. I think we're going to like this College!

Mathematics

Dr. Ramesh Garimella reported:

- The following students received stipends from the Department of Mathematics to conduct research on various applied mathematics and mathematics education topics in summer 2015.
    - Graduate students: Brandon Ashley (Applied Math), Seth Bloomberg (Applied Math), Kaiyi Chen (Applied Math), Thomas Deathrage (Applied Math), Jaime Garcia (Applied Math), Haley Lafoon (Math Education) and Rebecca Moody (Applied Math).
    - Undergraduate Students: Cyrus Koch (Math Education), Erika Sparkman (Applied Math) and James Palmer (Applied Math).
- Summer programs in pre-algebra and computer coding, co-sponsored by the Department of Mathematics, for middle and high school students will start on June 9 and end July 3rd. Algebra workshops will be conducted by Dr. Clarence Burg, Associate Professor of mathematics, where as the computer workshops will be conducted by Mr. Sudheer Kavi, a senior program developer at ACXIOM and adjunct faculty in the CS Department. Fifteen students signed up for each of these programs.
- William Kyle Barker received 2015 O.L. Hughes Award, which is annually presented to an outstanding senior mathematics major. Kyle graduated with BS degree in mathematics this past spring will join the Department of Mathematics at the University of Pittsburg this coming fall to pursue a doctoral degree. Jamie Mullins, a junior STEM teach Math Ed major, received the 2015 Dorothy Long Award, annually presented to an outstanding female junior. Brandon Ashley, MS student in Applied Mathematics, received the 2015 outstanding graduate teaching assistantship award.
- A paper co-authored by R. B. Lenin and his colleagues at UMAS Optimizing appointment template and number of staff of an OB/GYN clinic – micro and macro simulation analyses, appeared in BMC Health Services Research.
- Papers co-authored by Carolyn Pinchback has been accepted for presentation (1) at the Arkansas Curriculum Conference, November 5-6, 2015 in Little Rock, and (2) the MSERA Conference in Lafayette, Louisiana, November 2015. She is currently reviewing proposals for the annual meeting of the Research Council in Mathematics Learning.

STEM Institute

Dr. Uma Garimella reported:

- STEM Institute is working with Horace Mann middle school, Greenbrier Elementary and Mayflower to offer long-term support to Science and math teachers.
- STEM Institute received two grants:
    - Connecting Core Concepts - renewed for the third year $146,866
    - MSP grant for Elementary teachers - new grant $145,246

Physics

Dr. Frederickson reported:

Faculty and Student presentations:

- ASGC Symposium Presentations:

- John Ferrier and Dr. William V. Slaton presented a poster titled, "Sound Absorption and Resonance of Venturi Resonator Systems," at the 23rd Annual Meeting of the Arkansas Space Grant Consortium, In Hot Springs, Arkansas on April 10, 2015.
- Otis Perkins and Drs. Rahul Mehta and Azida Walker presented a poster titled. "Changes in Elasticity and Lattice structure of Rat Bones under Space-like conditions," at the 23rd Annual Meeting of the Arkansas Space Grant Consortium, In Hot Springs, Arkansas on April 10, 2015.

- AAPT Presentations
  - Dr. Andrew Mason was the author or co-author on one invited paper, one contributed paper, and two posters at the summer meeting of the American Association of Physics Teachers in College Park Maryland, July 25 – 29. Charles Bertram, an undergraduate physics major, was a co-author on the two posters.
    - Invited Paper - Title: Different Majors' Attitudes Toward Problem Solving: What Factors Matter? Author: Andrew Mason
    - Contributed Paper - Title: Learning from Mistakes in Upper-Level Quantum Mechanics, Author: Benjamin R. Brown, Co-Author(s): Chandralekha L. Singh, Andrew Mason
    - Posters
      - Title: Enrollment Fluctuation: Effect on Qualitative In-Class Data Analysis, Author: Andrew J. Mason, Co-Author: Charles A. Bertram
      - Title: Enrollment Fluctuation: Effect on Quantitative Assessment of Student Attitudes, Author: Andrew J. Mason, Co-Author: Charles A. Bertram
- PERC Presentations
  - Dr. Andrew Mason and undergraduate physics major, Charles Bertram, both presented posters during the Physics Education Research Conference July 29-30 in College Park Maryland.
    - Title: Exploring Student Ideas About Metacognition, Author: Rita Dawod, Co-Author(s): Charles Bertram, Scott V. Franklin, Noah-Kee J. Marks, Corey Ptak, Martha Rangel, Eleanor C. Sayre, Mary Bridget Kustusch
    - Title: Lab experiences and students' ideas about the nature of science, Author: Noah-Kee Marks, Co-Author(s): Martha Rangel , Charles Bertram, Rita Dawod, Scott V. Franklin, Mary Bridget Kustusch, Corey Ptak, Eleanor C. Sayre
    - Title: Progression from Novice-like to Expert-like Behaviors in 1st-generation and Deaf and Hard of Hearing Students, Author: Charles Bertram, Co-Author(s): Rita Dawod, Noah-Kee J. Marks, Corey Ptak, Martha Rangel, Eleanor C. Sayre, Mary Bridget Kustusch, Scott V. Franklin
    - Title: Potential Relationship of Chosen Major to Problem Solving Attitudes and Course Performance, Author: Andrew J. Mason
- CONTREC Presentation
  - Dr. Rahul Mehta and student Hayley Heacox attended the CONTREC Radiation Effects and Countermeasures meeting May 6-9 at the University of Arkansas Rockefeller Institute, Petit Jean, AR. They presented a poster titled, "Measurements of Elasticity and Changing Lattice Structure of Rats and Mice Bones under Simulated Microgravity and Space-like Radiation." Authors on the poster are: Rahul Mehta, Hayley Heacox, L. Michael Benzmiller, Max Dobretsov and P. Chowdhury. Hayley and Michael are UCA students.

- Drs. Rahul Mehta and Brent Hill from UCA and Dr. Nawab Ali from UALR traveled to the NASA Ames Research Center on August 10th and 11th to visit with researchers there. They presented a collaborative talk titled, "Research Studies at UCA, UAMS and UALR: Measurement of changes in mechanical, physiological and biochemical properties in Rats and Mice that are under Simulated Microgravity and Space-like Radiation conditions." The travel was funded by a NASA EPSCoR RID grant through ASGC.

Faculty Development:

- Drs. Rahul Mehta, Debra Burris, and Azida Walker attended the Chautauqua short course titles, "Active Learning in Introductory Physics Courses: Research-Based Strategies that Improve Student Learning." The course was held at the corporate headquarters of Vernier in Beaverton, Oregon on June 18-20.

- Dr. Carl Frederickson attended a workshop at Vernier headquarters titled "Vernier Sensors with Arduino."
- Drs. Azida Walker and Rahul Mehta along with students Otis Perkins (Graduated), Michael Benzmiller, and Hayley Heacox travelled to NASA's Johnson Space Center in Houston, Texas on May 4th and 5th. The trip was funded through the Arkansas Space Grant Consortium. While there, the group was able to visit with NASA researchers in the areas of physiology and biomechanics. The purpose of the trip was to build relationships that could lead to research collaborations.