I. Approval of the November 20, 2014, Minutes

II. Proposals, Awards, and Scholarships (PAS) Report
(Dr. Ric Steele reporting)
   A. PSM-EA 4+1 Track
      (See Addendum)

III. Program and Curricular Changes (PCC) Report
(Dr. Justin Blumenstiel, reporting)
   A. Program Change: PSHX, MS (change in required and elective hours)
   B. Course Changes:
      1. New Courses: BINF 703, BINF 704, PSYCH 984, PSYC 988

IV. Old Business

V. New Business
   A. COGA website new awards and funding page
   B. Kate Stephens Fellowship update
I. Approval of the November 20, 2014, Minutes

The University of Kansas
College of Liberal Arts & Sciences
COMMITTEE ON GRADUATE STUDIES

MINUTES
November 20, 2014, 11:00AM
STRONG HALL – ROOM 210

Members Present: Brian Ackley, Justin Blumenstiel, ChangHwan Kim, Milena Stanislavova, Armin Schulz, Ric Steele, Patrick Terry (Graduate Student)

Others in attendance: Kristine Latta (COGA), Cindy Lynn (COGA), Jim Mielke (ex-officio) and Marilu Goodyear (Vice Chancellor, Edwards), Reggie Robinson (Director, School of Public Affairs and Administration)

The meeting was called to order by Dr. Stanislavova, standing in as chair, at 11:00 a.m.

Minutes
A motion was made and seconded to approve the November 6, 2014, minutes of the Committee on Graduate Studies, as written. The motion was approved unanimously.

Report of the Proposals, Awards, and Scholarships (PAS) Subcommittee
(Dr. Ric Steele, reporting)

A motion was made and seconded to approve the School of Public Affairs and Administration Graduate Certificates proposals. The motion was approved unanimously.

C. New Graduate Certificate: SPAA, City and County Management

D. New Graduate Certificate: SPAA, Performance Management

Dr. Steele introduced Dr. Goodyear and Dr. Robinson, who responded on behalf of SPAA to questions from the CGS.

There being no further business, the meeting was adjourned by Dr. Stanislavova at 11:15 a.m.

Respectfully submitted by Cynthia Lynn, COGA
II. Proposals, Awards, and Scholarships (PAS) Report
(Dr. Ric Steele reporting)

A. PSM-EA 4+1 Track
   (See Addendum)

III. Program and Curricular Changes (PCC) Report
(Dr. Justin Blumenstiel, reporting)

A. The PCC Subcommittee recommends the following program change to the CGS:

   PHSX, MS

The requested changes to this degree or certificate program are:

(OLD) Current

M.S. Degree in Physics

The departmental web page with some additional information, e.g., milestones, can be found at http://www.physics.ku.edu/~physics/graduate/about.shtml

Candidates must complete a minimum of 30 credit hours of advanced lecture courses (numbered 500 or above) in physics and related subjects within a period of 7 years. Program requirements include

1. An undergraduate knowledge of physics. This must be certified by the department to be at an advanced undergraduate level (600-level KU courses). The certification must be achieved within 12 months (extension possible with recommendation of the graduate admission committee) of entering the program and may require additional coursework. Extension is possible with recommendation of the graduate admission committee. Certification can be achieved in several ways:
   1. A GRE physics score greater than or equal to 650; or
   2. The determination by the graduate director and graduate advisor, based on the diagnostic exam given on entering the program combined with the student's undergraduate record, that the student understands all major elements of undergraduate physics; or
   3. Successful completion with grade of B or better on all undergraduate courses that the graduate director and/or advisor recommends based on the results of part b. above. The student who has not succeeded in certifying his or her undergraduate physics knowledge in 1 of the above 3 ways could, within 12 months of starting the program, petition the Graduate Committee for an oral exam on undergraduate physics. The oral exam will be administered by a committee of 6 faculty members assigned by the department.
   4. A candidate for a Master's or Ph.D. degree who has not had the equivalent of 6 credit hours of advanced undergraduate laboratory course work (Junior/Senior...
level) is required to take 1 of the 3 advanced laboratory courses offered in the Department.

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4. A minimum of 2 hours in PHSX 899 Master’s Research/Thesis is required, with a maximum of 6 hours that count toward the master’s degree. Ordinarily no more than 2 hours will be allowed unless a thesis or written report is presented.

5. The remaining 9 to 13 hours of advanced electives must be either advanced lecture courses or advanced undergraduate laboratory courses. (This proviso excludes seminars and special problems courses.)

**Communication Skills**

All graduate students, after their first semester, will deliver at least 1 oral presentation per semester. The talk should be at least 20 minutes long. For students not yet associated with a research group, the Graduate Seminar can serve as a venue. For more advanced students the seminar of their research group would be a natural venue. The student does not need to be enrolled in the seminar to present a talk for this purpose. Off-campus venues such as collaboration meetings and physics conferences can also serve this purpose. When giving presentations, students should fill out a form available on the department web site and have it signed by 2 witnesses, 1 of which must be a Physics or Astronomy faculty and other a Ph.D. doing research in the department. The completed form must be handed to the office staff. Faculty
members who sign off on the talks are expected to provide constructive feedback to the student. The graduate advisor will monitor student compliance with the requirement.

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**M.S. Subspecialty in Computational Physics and Astronomy**

This degree is a subspecialty program for students with a background in physics, astronomy, computer science, mathematics, or engineering who wish to become familiar with computer-based approaches to problems in these fields. Minimum preparation expected includes a year's course in general physics, mathematics through differential equations, and a knowledge of FORTRAN, C++, or another programming language.

A total of 30 hours of graduate credit is required. The 33 hours listed below under 2 and 3 may include certain undergraduate-level electrical engineering and computer science courses. (Only courses numbered 500 and above count as graduate credit.) Students entering the program may have satisfied several of these requirements, but a total of 30 hours of graduate credit is still required. No more than the required 6 hours of [PHSX 899](#) Master’s Research/Thesis may be counted toward the degree. Degree requirements include

1. An undergraduate knowledge of physics. This must be certified by the department to be at an advanced undergraduate level (600-level KU courses). The certification must be achieved within 12 months (extension possible with recommendation of the graduate admission committee) of entering the program and may require additional coursework. Extension is possible with recommendation of the graduate admission committee. Certification can be achieved in several ways:
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   3. Successful completion with grade of B or better on all undergraduate courses that the graduate director and/or advisor recommends based on the results of part b above. The student who has not succeeded in certifying their undergraduate physics knowledge in 1 of the above 3 ways could, within 12 months of starting the program, petition the Graduate Committee for an oral exam on undergraduate physics. The oral exam will be administered by a committee of 6 faculty members assigned by the department.
   4. A candidate for a Master's or Ph.D. degree who has not had the equivalent of 6 credit hours of advanced undergraduate laboratory course work (junior/senior
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2. Required Courses (21 credit hours)

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<tr>
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</thead>
<tbody>
<tr>
<td>PHSX/ASTR 815</td>
<td>Computational Methods in Physical Sciences</td>
<td>3</td>
</tr>
<tr>
<td>PHSX 718</td>
<td>Mathematical Methods in Physical Sciences</td>
<td>3</td>
</tr>
<tr>
<td>MATH/EECS 781</td>
<td>Numerical Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>EECS – 1 course at the 300 level or above (in addition to EECS 781)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1 additional PHSX/ASTR/ATMO lecture course at the level or above</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PHSX 899</td>
<td>Master's Research/Thesis</td>
<td>1-10</td>
</tr>
</tbody>
</table>

3. 12 or more credits from the following list of courses:
(Note: Double counting of courses is not allowed, e.g. a course used to fulfill a requirement under part 2. (e.g. EECS 448) may not also be counted under part 3.)

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<td>EECS 560</td>
<td>Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>EECS 672</td>
<td>Introduction to Computer Graphics</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 of the following - Special Topics (Examples of recent topics: Mathematics of Wall Street Computer-aided, Study of Differential Geometry, Chaos and Fractals, Fractional Brownian Motion and Its Applications, Wavelet Analysis, Statistical Theory, Stochastic Differential Equations and Applications)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MATH 596</td>
<td>Special Topics: _____</td>
<td></td>
</tr>
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<td>MATH 627</td>
<td>Probability</td>
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<td>MATH 647</td>
<td>Applied Partial Differential Equations</td>
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MATH 783  Applied Numerical Methods for Partial Differential Equations  3
PHSX/ASTR/ATMO Courses Numbered 500 and above
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Please go to this website to see the University's policy on time limits:
https://documents.ku.edu/policies/Graduate_Studies/maprogramtimeconstraints.htm

(NEW) Proposed
Change in required and elective hours

M.S. Degree in Physics

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<tr>
<td>PHSX 792</td>
<td>Topics in Advanced Astrophysics</td>
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2. Required Courses (21 credit hours)

- **PHSX/ASTR 815** Computational Methods in Physical Sciences 3
- **PHSX 718** Mathematical Methods in Physical Sciences 3
- **MATH/EECS 781** Numerical Analysis I 3

EECS – 1 course at the 300 level or above (in addition to EECS 781) (Note: courses below the 500 level will not count towards the required 30 hours of graduate credit.)

1 additional PHSX/ASTR/ATMO lecture course at the level or above

- **PHSX 899** Master's Research/Thesis 1-10

3. 12 or more credits from the following list of courses:
   (Note: Double counting of courses is not allowed, e.g. a course used to fulfill a requirement under part 2. (e.g. **EECS 448**) may not also be counted under part 3.)

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The change(s) to this program will first take effect Fall 2015 and first appear in the 2015-2016 academic catalog.

JUSTIFICATION:
The faculty has taken a vote and determined that PHSX 718 is a core class that is fundamental to a Graduate level education in Physics and Astronomy. Because PHSX 718 is proposed as an additional required course, the number of elective credit hours would need to be reduced from 9-13 down to 6-10. In addition to making PHSX 718
a required course, the faculty has determined that PHSX 731 and PHSX 792 are valuable courses and should be added as additional elective courses to give the students more options for meeting their 6-10 hour requirement.

B. The PCC Subcommittee recommends the following new courses to the CGS:

1. New Courses: BINF 73, BINF 704, PSYC 964, PSYC 988

   Computational Biology
   (formerly Bioinformatics)

**BINF 703 Advanced Computational Biology I (5)**
This is the first semester of an intensive two-semester course in Computational Biology, aimed at second-year graduate students. Topics include graph theory, systems biology, mathematical and computational modeling of complex systems, synthetic biology and protein design. Students will gain a mastery of cutting-edge topics in Computational Biology through lectures, careful reading of current literature, and advanced individual research projects. Prerequisites: BINF 701 and 702, or consent of instructor. LEC.

Grading: A-F, W and I
This course is an elective
This course is not an RSRS course
This course is not a degree requirement

Effective Fall 2015 and taught every fall semester

**JUSTIFICATION:**
This course is being created as part of our efforts to modernize and expand our graduate curriculum in the newly renamed Center for Computational Biology (formerly the Center for Bioinformatics). This course will be team-taught by several faculty members in our program, including two recent faculty hires who bring new expertise to the Center. Taken as a sequence, BINF 703 and 704 will provide comprehensive coverage of new areas in Computational Biology, with a focus on systems biology, synthetic biology, and protein design. The course is intended for second-year graduate students in the Computational Biology program; graduate students from other programs will be allowed to enroll with permission of the instructors. Based on the strong interest among our graduate students in this topic, we expect that the majority of them will choose to enroll in this course in their second year.

**BINF 704 Advanced Computational Biology II (5)**
This is the second semester of an intensive two-semester course in Computational Biology, aimed at second-year graduate students. Topics include graph theory, systems biology, mathematical and computational modeling of complex systems, synthetic biology and protein design. Students will gain a mastery of cutting-edge topics in
Computational Biology through lectures, careful reading of current literature, and advanced individual research projects. Prerequisites: BINF 703. LEC.

Grading: A-F, W and I

This course is an elective
This course is not an RSRS course
This course is not a degree requirement

Effective Spring 2016 and taught every Spring semester

JUSTIFICATION:
This course is being created as part of our efforts to modernize and expand our graduate curriculum in the newly renamed Center for Computational Biology (formerly the Center for Bioinformatics). This course will be team-taught by several faculty members in our program, including two recent faculty hires who bring new expertise to the Center. Taken as a sequence, BINF 703 and 704 will provide comprehensive coverage of new areas in Computational Biology, with a focus on systems biology, synthetic biology, and protein design. The course is intended for second-year graduate students in the Computational Biology program; graduate students from other programs will be allowed to enroll with permission of the instructors. Based on the strong interest among our graduate students in this topic, we expect that the majority of them will choose to enroll in this course in their second year.

Psychology

PSYC 984 Missing Data Analysis (3)
The primary goal of the course is to promote a solid understanding of the logic and implementation of modern missing data techniques. The following topics are included: missing data theory, traditional missing data techniques, maximum likelihood estimation, EM algorithm, multiple imputation, planned missing data designs, and techniques for missing not at random data. Students will learn how to implement the missing data techniques in SAS, Mplus and R. Prerequisite: PSYC 790 and PSYC 896 LEC.

Grading: A-F, W and I

Meets with: PSYC 684

This course is an elective
This course is an RSRS course
This course is not a degree requirement

JUSTIFICATION:
This course has been taught previously as an instance of PSYC 993. Now, we would like it to have a separate course number with an undergraduate cross-listing
PSYC 988 Modeling of Intraindividual Observations (4)
Many statistical methods are apt for modeling cross-sectional data or growth processes. These methods are often not ideal for researchers collecting intensive intraindividual observations, such as those from diary studies, ecological momentary assessments, and physiological data, which often exhibit complex, nonlinear changes over time. This class examines methods for extracting information from intensive intraindividual observations. This class will survey methods and concepts from areas such as dynamical systems, chaos theory, time series analysis and differential equation modeling. Some prior experience with R or related language strongly encouraged. Some prior experience with R or related language strongly encouraged. Prerequisites: PSYC 790 or equivalent and a course in Structural Equation Modeling or Multilevel Modeling (Hierarchical Linear modeling, Mixed Models). LEC.
Grading: A-F, W and I
Meets with: PSYC 688
This course is an elective
This course is a RSRS course
This course is not a degree requirement

JUSTIFICATION:
This course has been taught previously as an instance of PSYC 993. Now we would like it to have a separate course number with an undergraduate cross-listing so that it can serve also as an elective for the undergraduate.

III. Old Business

IV. New Business

A. COGA website new awards and funding page
   http://clas.ku.edu/coga/awards-funding

B. Kate Stephens Fellowship update