The UNIVERSITY of VERMONT

FACULTY SENATE

Approved Minutes
January 11, 2016

Called to order 4:03 p.m.

Senators in Attendance: 46

Absent: Senators Adams (Anesthesiology), Eastman (Anthropology), Mierse (Art), Agnarsson (Biochemistry), Jones (GSB), Vanden Bergh (GSB), Heiss (CDEA), Mathieu-Bolh (Economics), Pinder (Engineering), Yoo (English), Feurzeig (ERT), Perry (Extension), Weinstein (Family Medicine), Ross (FPPC), Esselstrom (History), Busier (Leadership & Developmental Science), Teuscher (Medicine), O'Meara (Nursing), Maltby (Nursing), Pope (Nutrition & Food Science), Contompasis (Pediatrics), Cuneo (Philosophy), Yang (Physics), Beckage (Plant Biology), Aultman-Hall (President), Eyler (Psychiatry), Lemos (Radiology), Ricketts (RSENR), Chittenden (SAC), Prue (SAC), Witkin (Social Work), Khanna (Sociology)

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1. Approval of the Minutes.
   Motion: To approve the minutes of December 3, 2015 as written.
   By: Cathy Paris
   Vote: Approve 98%, Oppose 0%, Abstain 2%

2. **Resolutions In Memoriam**
   Professor Jim Burgmeier presented a **Resolution in Memoriam for Larry Kost, Senior Lecturer in the Department of Mathematics and Statistics**. The Resolution was unanimously approved, and will be inscribed in the minutes of the Faculty Senate and a copy will be sent to Larry's family.

   Associate Provost, Brian Reed presented a **Resolution in Memoriam for Professor Emerita of Nursing, Judith Cohen**. Cathy Paris moved that this Resolution in Memoriam for Judith Cohen be inscribed in the minutes of the Faculty Senate and that copies be sent to Judy's family. The Faculty Senate voted unanimously to approved the Resolution.

   Professor Michael Gurdon presented a **Resolution in Memoriam for Associate Professor Emerita of Education Dolores Sandoval**. The Resolution was unanimously approved and will be inscribed in the minutes of the Faculty Senate and a copy will be sent to Dolores's family.

3. Presentation of Degrees

It was moved, seconded, and voted that the following numbers of graduates be recommended by the Senate to the President for the awarding of the appropriate degrees or certificates as authorized by the Board of Trustees. Individual names of the graduates are recorded with the Minutes of this meeting in the permanent Senate records.

a. Graduate College (81)
b. College of Medicine (2)
c. Honors College Scholar (11)
d. College of Nursing & Health Sciences (12)
e. Rubenstein School of Environment and Natural Resources (11)
f. Grossman School of Business (21)
g. College of Education and Social Services (27)
h. College of Agriculture and Life Sciences (64)
i. College of Engineering and Mathematical Sciences (36)
j. College of Arts and Sciences
    i. Bachelor of Arts (95)
    ii. Bachelor of Science (19)

Motion: To accept the degrees as presented
By: Cathy Paris
Vote: 100% approve

4. Faculty Senate Vice President's Remarks- Jan Carney

Jan Carney thanked the Senators for voting on two recent ballots. The ballot to amend the Constitution and Bylaws to allow for a special election for Faculty Senate President has passed. In the election for At Large Member of the Faculty Senate, Thomas Borchert from the Department of Religion received the majority of the votes. Jan welcomed Thomas Borchert as the new At Large member.

5. UVM President & Provost Remarks

The President and Provost had no remarks.

6. Curricular Affairs Committee – Cathy Paris

Proposal for a new minor in International Politics, CAS* (VOTE)

Cathy Paris presented the subcommittee report on the review of the proposal for a new minor in International Politics offered through the College of Arts and Sciences. The subcommittee recommended that the proposal be approved. The Curricular Affairs Committee has approved the proposal, and recommends approval by the Senate.

Cathy Paris called a vote to approve the proposal for a new minor in International Politics offered through the College of Arts and Sciences.
Approve 77%, Oppose 10%, Abstain 13%

Proposal for a new B.S. degree program in Data Science, CEMS* (VOTE)

Cathy Paris presented the subcommittee report on the review of the proposal for a new Bachelor's of Science in Data Science degree program submitted by the College of Engineering and Mathematical Sciences. The Curricular Affairs Committee approved the proposal and recommends that the proposal be approved by the Faculty Senate.

Cathy Paris called a vote to approve the proposal for a new B.S. degree in Data Science. Approve 79%, Oppose 10%, Abstain 10%.

7. Student Affairs Committee – Thomas Chittenden
   Thomas Chittenden was not present, and the item was moved to February meeting agenda.

8. Nominations from the Floor for Faculty Senate President
   Jan Carney reminded the Senate that Lisa Aultman-Hall is not able to fulfill her term as Faculty Senate President. The term to be completed expires on June 30, 2017. The recent Bylaw amendment 3.5.4 Special Election for President, states: *In the event that the President can no longer perform the duties of the office and the Vice-President is unable or unwilling to complete the President's term of office, then a special election may be held. The election will follow the guidelines established in 3.5.1 and 3.5.2 with the exception that the election will not be required to take place in April.* Jan asked for nominations from the floor for Faculty Senate President.

   Chris Burns from Libraries nominated Cathy Paris from Plant Biology to run for President. The nomination was seconded by Alison Pechenick.

   Tom Macias from Department of Sociology nominated Thomas Streeter, Professor of Sociology. The nomination was seconded.

9. New Business
   There was no new business.

10. Adjourn
    Motion: To adjourn.
    Motion carried.
    The meeting was adjourned at 4:55 p.m.

2015 – 2016 Faculty Senate Meetings (all meetings will be held in Memorial Lounge)

Monday, February 8, 2016, 4:00-5:30pm
Monday, March 14, 2016, 4:00-5:30pm
Monday, April 11, 2016, 4:00-5:30pm
*Thursday, May 19, 2016, 4:00-5:30pm**

**Meeting will include conferral of degrees*

Curricular Affairs Committee of the Faculty Senate

Memo

To:	Curricular Affairs Committee of the Faculty Senate
From:	New Minor in International Politics Proposal Subcommittee: Ellen Rowe and Lori E. Meyer
Date:	November 30, 2015
Re:	Recommendation: Approval

We have reviewed and recommend for approval a proposal for a new minor in International Politics offered through the College of Arts and Sciences (CAS).

Program Description and Rationale

The minor would include 6 courses/18 hours in International Political Science courses including: Pols 51; Pols 71; 12 hours in International Relations, Comparative Politics, or other Political Science courses with more than 50% international content at the 100 level or above.

Efforts to reach prospective students for this field of study would be greatly enhanced with a new clearly defined minor. Though current Political Science minors may complete the suggested set of courses currently, credentials would not provide a transcript reading "International Politics", specifically describing the course of study.

Evidence of Demand and Justification

The new minor would be attractive to new students and to majors from other colleges, especially international business, CDAE (international development) in CALS, and the Rubenstein School. The department frequently hears from Global Studies majors that they would like to minor in International Politics.

Current global issues require expertise in both domestic (Comparative Politics) and transnational (International Relations) topics. These two areas of study and their significance to the International Politics minor will be described further below.

Incoming Political Science students frequently share that they would like to minor in International Relations or International Politics. However, they interpret this as simply a study of politics beyond the United States. Political Scientists call the study of countries and regions beyond their home country, Comparative Politics. This is confusing for students who think a program of study solely in Comparative Politics will meet the requirements for International Politics.

Similarly, the study of transnational topics alone does not meet the requirements for International Politics. The current Global Studies minor focuses only on issues that cross borders such as trade, way and immigration (i.e., transnational). Politics courses such as Chinese Politics and African Politics are not included in Global Studies because they focus on domestic politics rather than the relationships between countries. The proposed minor will allow students to focus on both the domestics and transnational aspects, which form the study of International Politics. Many Global Studies students who now minor in Political Science will choose to minor in International Politics instead and this new minor will attract more Global Studies majors.

Anticipated Enrollment
They believe the new minor will create a small increase in enrollments in international relations and comparative politics courses. They have enough space to accommodate the increase.

Relationship to Programs Currently Offered/Evidence of Communication with Academic Units
This minor is similar in content to the Political Science minor. However, most students minoring in Political Science take some courses in American Politics or Political Theory. Yet, this proposed minor will be completed by focusing only on courses in international politics (i.e., Comparative Politics and International Relations).

Admission Requirements and Process
This minor is not available to students with a major or minor in Political Science.

Advising
Despite best efforts, current and prospective students interested in this course of study are not directed towards the appropriate courses nor do they become aware of the option for this sequence of coursework within the Political Science minor. The new minor will help us reach interested students earlier and guide them through the clearly defined minor.

Curriculum
6 courses/18 hours in international political science courses including:
Pols 51
Pols 71
12 hours in international relations, comparative politics, or other pols course with more than 50% international content at the 100 level or above of which thirteen 100 level relevant courses are identified in the proposal along with an additional eight 200 level courses.

Staffing Plan, Budget, and Resource Requirements
No additional faculty are anticipated. Library resources presently available are sufficient to support the new minor. No additional funding is requested for first five years of implementation.

Assessment Plan: None provided beyond the description of course requirements.

Evidence of Support
The Political Science Department voted unanimously to support the creation of the International Politics minor. The minor also carries the support of the CAS Curriculum Committee (vote taken on October 6, 2015) and the CAS faculty (vote taken on October 13, 2015).

Recommendation of the Subcommittee: CAC subcommittee recommends approval of the new minor in International Politics as proposed by the CAS.

Curricular Affairs Committee of the Faculty Senate

Memo

To: Curricular Affairs Committee of the Faculty Senate

From: B.S. in Data Science Review Subcommittee: Laura Almstead, Stephen Everse

Date: December 5, 2015

Re: Recommendation: Approve

We have reviewed a proposal for a new Bachelor's of Science in Data Science degree program submitted by the College of Engineering and Mathematical Sciences (CEMS) and recommend approval. The degree program is a collaboration between the Departments of Mathematics & Statistics and Computer Science. A program director will be named from the participating faculty, currently James Bagrow, Jeff Buzas, Chris Danforth, and Peter Dodds from Mathematics & Statistics, and Margaret Eppstein from Computer Science. The list of participating faculty is expected to grow as the program expands. It is anticipated that this new degree program will be offered beginning Fall 2016.

Program Description and Rationale

Data Science is an interdisciplinary field that focuses on extracting information and meaning from large data sets (i.e. "big data"). Given the exponential rise in the importance of big data in numerous industries, there is a huge unmet demand for trained data scientists. The proposed B.S. in Data Science utilizes existing courses in Computer Sciences, Mathematics, and Statistics to provide students with the education, skills, and experience necessary to be successful and sought-after job candidates in this rapidly growing field.

Justification and Evidence for Demand

Data Science is an emerging field that impacts our daily lives in myriad ways, though we are often unaware of its importance. For example, we have data scientists to thank for the news we read on social media feeds, and the production and distribution of much of the food we eat has likely been guided by the study of big data. As the application of Data Science expands to more and more industries, the need for skilled employees has grown exponentially. The importance of this emerging field was emphasized in the 11 February 2011 issue of *Science*, which was devoted to issues in the analysis of the torrent of new data generated by our rapidly growing technologies. Additionally, the McKinsey Global Institute report *Big Data: The next frontier for innovation, competition, and productivity* points to the increased prevalence of digital data "in every sector, in every economy, in every organization and user of digital technology." A quick search by this subcommittee found a recent NY Times article that cites Harvard Business review, "stating that data science 'the sexiest job in the 21st century,' and by most accounts this hot new field promises to revolutionize industries from business to government, health care to academia" (http://www.nytimes.com/2013/04/14/education/edlife/universities-offer-courses-in-a-hot-new-field-data-science.html).

The demand for employees in the field of Data Science has outpaced the development of programs to provide a source of educated job candidates. A study from the U.S. Bureau of Labor Statistics found that "Computer and information research scientists are likely to enjoy excellent job prospects…many companies report difficulties

finding these highly skilled workers." The McKinsey Global Institute projects a shortage of 190,000 data scientists by the year 2010. Although many schools, including UVM, have Masters Programs in Data Science, there are few options for students at the undergraduate level. Nation-wide, the three main undergraduate Data Science programs are offered by George Mason University, Ohio State University, and Arizona State University. By comparison, UVM has the distinct advantage of being a smaller institution with more moderately sized classes. In the Northeast, the options for students interested in obtaining a Bachelors degree in Data Science are the programs offered at UMASS-Dartmouth, the University of Rochester, and Becker College, and an online degree through Southern New Hampshire University. UVM's strong reputation for research in the field of Data Science gives UVM an advantage over these programs. The Complex Systems Center has received substantial recognition for its work with Twitter data sets and the creation of happiness index. Research-wise, UVM stands at the forefront of the Data Science field. If inaugurated, UVM's B.S. in Data Science would position UVM to be a leading name in Data Science studies.

Relationship to Existing Programs

Currently, there are no other undergraduate programs at UVM that provide the curriculum structure of the proposed Data Science degree. Although students can choose to pursue a degree in Statistics, Mathematics, or Computer Science, they do not receive the benefit of interdisciplinary study. The proposed B.S. in Data Science would allow students to study all three of the major components of Data Science and their interconnections. A solid basis in all three subjects is essential for students to be competitive in the job market. The presence of the recently approved Accelerated M.S. in Complex Systems and Data Science could be a draw for students considering studies in Data Science at UVM, and students completing the Bachelors program could provide a source of candidates for the Masters program.

Curriculum

The proposed B.S. in Data Science relies entirely on courses already offered in the departments of Mathematics & Statistics and Computer Science, and creates an interdisciplinary curriculum that spans all three fields. Students in the Data Science program would take a core set of courses in Computer Science, Statistics, and Mathematics (see table below), plus two Computer Science electives (one 100-level and one 200-level) and three Mathematics electives (100-level or above) selected from lists of approved courses. Students would also take an additional 12 credits of approved Data Science electives at the 200-level or above chosen from approved courses in mathematics, statistics, computer science, complex systems, and/or natural resources. Additionally, the curriculum includes eight credits of a natural science (BIOL 001/002, CHEM 031/CHEM 032, or PHYS 052/152). Students are required to fulfill UVM's General Education requirements.

Computer Science	**Statistics**	**Mathematics**
CS 064 (or MATH 052)	STAT 095**	MATH 052 (or CS 064)
CS 008*	STAT 151 or STAT 251 (or CS 128)	MATH 021
CS 021	STAT 141 or STAT 143 or STAT 211	MATH 022
CS 110	STAT 221	MATH 122 or MATH 124
CS 124	STAT 201	
CS 204	STAT 223	
	STAT 229	
	STAT 287	

*Students with equivalent knowledge can substitute another CS elective.

**Approved as STAT 087 as of 11/19/15.

To obtain the 120 credits necessary for graduation from UVM, students in the Data Science program would need to complete at least 19 credits of additional coursework. The proposers state that students will be encouraged to use these credits to obtain a minor in an application domain such as biology or the social sciences, but this is not a requirement for the degree.

Admission Requirements and Process

The requirements and process for admitting students into the B.S. in Data Science program will be similar to those for the existing undergraduate degrees. Students will be selected for the degree based on interest and academic standing, similar to other students in CEMS.

Anticipated Enrollment and Impact on Current Programs

The proposers project that the new B.S. in Data Sciences program will enroll approximately 15 students in the first year. This estimate is based on information provided by the University of Rochester's Academic Program Manager & Communications Specialist and enrollment in the Data Science programs offered at Michigan, Ohio State, Miami University, Winona State, and Northern Kentucky University. The proposers predict that the program will attract new students to UVM with an interest in Data Science who might otherwise have chosen to pursue studies elsewhere. Even if the B.S. in Data Science did simply draw from students who would normally have opted for a degree in Computer Science, Mathematics, or Statistics at UVM, the students would still be in the same departments and college. Thus, a redistribution of students due to the inauguration of a Data Sciences degree would have no noticeable effect on enrollment or tuition dollars for CEMS or other academic units.

Advising

Advising will follow the standards and guidelines set for existing programs in CEMS. Efforts will be made to place students with advisors within the Computer Science or Mathematics & Statistics Departments who align with their individual area of interest.

Staffing Plan, Budget, and Resource Requirements

No additional resources are required to inaugurate a new B.S. in Data Science. As the curriculum is composed entirely of existing courses, the degree will make use of current faculty and facilities. If the program grows such that additional faculty are warranted, this will be funded by CEMS under IBB.

Assessment Plan

The program will be evaluated using student feedback obtained through course evaluations and other surveys, enrollment numbers, graduation rates, and successful placement of majors post-graduation. The B.S. in Data Science will be reviewed through the Faculty Senate's Academic Program Review process.

Evidence of Support

A letter of support has been obtained from the Dean of CEMS, Luis Garcia. The Chairs of the Computer Science and Mathematics & Statistics Departments, Margaret Eppstein and Jeff Buzas, worked on the development of the proposal and fully endorse it.

Strengths of the Program

Data Science is a rapidly growing field great importance because it impacts our lives in myriad ways every moment of every day, from improving health care through personalized medicine to helping farmers identify and reduce areas of inefficiency and waste. The proposed B.S. in Data Science program will allow students and faculty to create a synergistic mix of resources from Computer Science, Mathematics, and Statistics to educate students in an area of immense importance to our society. The program capitalizes on existing courses and expertise, and will provide students the knowledge and skills necessary to be successful in the field of Data Science. As the demand for educated data scientists has experienced rapid growth in recent years, the development of undergraduate programs in Data Science has been slow. Therefore, UVM is in a position to become one of the leaders in Data Science studies. In addition, UVM's widely recognized Complex Systems center, strong reputation in data science research, and recently approved Accelerated M.S. in Complex Systems and Data Science program, set UVM apart from the few programs that are currently offered at other institutions. Students graduating from UVM with a B.S. in Data Science will be excellently positioned to pursue post-baccalaureate studies in the field or gain immediate employment upon graduation.