11-21-2019

Faculty Meeting Minutes - November 21, 2019

Provost's Office
Gettysburg College

Faculty Meeting Minutes - November 21, 2019

Abstract

Minutes of the Gettysburg College Faculty Business Meeting, November 21, 2019.

Comments

Appendix : Motion from the Academic Policy and Program Committee Background and Rationale

Minutes of the Gettysburg College Faculty
November 21, 2019
Mara Auditorium
Business Meeting
(Quorum 100; Attendance 103)

President Robert Iuliano called the meeting to order at 4:01 pm.

He noted that two students were in attendance: Benjamin Pontz for the *Gettysburgian,* and Patrick McKenna, for Senate.

The president then called for a quorum count, which succeeded.

Minutes for October 3, 2019 were approved as submitted.

On behalf of the Academic Policy and Program Committee, Professor McCall introduced the following motion:

> Beginning in January 2020, students may elect to pursue a minor in Data Science. The minor will be administered within the Department of Interdisciplinary Studies.

Please see the Appendix for the rationale.

Professor McCall explained the reasons the Policy committee is enthusiastic about the proposal from the advisory committee that worked on it over the past year. It calls for a program that is interdisciplinary, that is innovative, and that is within the traditions of liberal education. Senate, he added, has expressed enthusiasm because students will develop marketable skills through it.

Professor Portmess spoke of the work of the advisory committee; she commended Provost Zappe for calling for contributors to the minor from every academic division. By the summer the proposal was far enough along that the committee could review course proposals, many of which have undergone refinement during the past few months. After she reviewed the membership of the committee, Professor Platt defined the field, stressed that the minor will complement majors from each division, and argued that one reason it exemplifies the liberal arts is that it functions within an ethical context.

Speaking for the Faculty Finance Committee, Professor Campbell Hetrick advised that the minor can be added at a low cost to the college. Professor Shannon added that Interdisciplinary Studies also supports the motion.

Professor Lowy voiced two concerns about what she characterized as a proposal that is well thought out. She wondered, first, whether the program would be stronger with the appointment of a full time faculty member to teach in it, instead of the recommended four adjunct positions. She indicated as well her concerns that administrating the program might take a disproportionate amount of faculty time. Professor Portmess pointed out that some administrative tasks will be automated, and that one of the more time-consuming activities—determining which courses taken off-campus

can count toward the minor—will be handled by the appropriate offices. She added that the amount of administrative work that will go into the minor depends upon how many students declare it.

Noting that we do not yet have an estimate of that number, Professor Good asked about prerequisites students would need to meet requirements for the minor. Professor Platt did not believe they posed a significant impediment to interested students, in part because the committee mainly concerned itself with learning outcomes. He then reviewed the requirements and observed that throughout the program, there's a strong emphasis on how to frame pertinent questions. Statistics can be taken in any department that offers it. The proposed Data Science 256 (Programming) and 325 (Applied Data Science) are still to be developed. Students will take three core courses and three electives, one of which needs to be outside of the department in which they are majoring. He identified twenty-four courses that would be suitable as electives. He spoke briefly of Data Science 150, a new course, one that will not be required but that can serve as a gateway into the field and that will be appropriate for students without a background in statistics.

President Iuliano stated that there will be a vote on the motion during the December 5 meeting.

Provost Zappe said that he has never witnessed so fine a display of interdisciplinary work as has gone into the development of the proposal. He is thrilled to see how interest in it has expanded beyond the three fields in which it was originally concentrated, to include representation across the curriculum.

Professor Platt identified three or four courses with prerequisites, but which also give instructors discretion to allow students to enroll without them. Other classes are under development and are envisioned as having no prerequisites. Professor Blume-Kohout sketched one such course, Cultural Analytics, which will be paired with courses in which students do either textual or network analysis, and through which they will find content to investigate.

President Iuliano asked for consideration of motion 1.5 that the Faculty Grievance Committee introduced on November 7:

> that the statement concerning expectations of behavior for chairpersons (section IV. F. 8.) be removed from the faculty handbook.
>
> The statement currently reads ...
>
> > IV. THE FACULTY MEMBER AND COLLEGE GOVERNANCE
> >
> > F. Department Chairpersons
> >
> > *8. Personal Professional Performance*
> >
> > Provide professional leadership in the department; set the example for personal professional behavior in interacting with department colleagues, other members of the faculty, students, and members of the administration and staff; demonstrate

> professional competence in teaching, research, and other professional activities; participate in professional associations.

[The] Statement would now read …

> Provide professional leadership in the department; demonstrate professional competence in teaching, research, and other professional activities; participate in professional associations.

Hearing no discussion, the president asked for a vote.

The motion passed: one hundred seven in favor; eleven opposed; four recorded abstentions.

Approximately fifteen people indicated that they were unable to log into the electronic voting system. Discussion ensued about possible causes and remedies.

The president then asked for consideration of Motion 1 from the Grievance Committee, also introduced on November 7, with two amendments (indicated in boldface) requested by the committee:

> that additional language be added to the *F[aculty]H[andbook]* which purposefully provides clear expectations to promote collegiality among the faculty. The wording of the following new paragraph can be inserted somewhere in Section IV A. 3.
>
> Gettysburg College expects all faculty, at any level, to maintain the highest professional and personal decorum in interacting with each other. Faculty at all levels should foster **high** standards of collegiality, honesty, and civility with students, administrative staff members, support staff members, and other faculty members.
>
> Faculty members who experience difficulties with others should seek guidance from their chairs, the Provost, or an ombudsperson to resolve the problem(s). They may also avail themselves of the Employee Assistance Program (EAP) (see Section VII. I.1.). The resolution of faculty conflicts ~~**should**~~ **may** be guided by mediation and an understanding that a diverse faculty communicates in diverse ways. Collegiality and tolerance are essential for employees working together over the long term.

There was no discussion of the amended version, the rationale for which—greater clarity that the intention is to provide guidelines to help resolve conflicts that fall short of possible legal violations—Professor Milingo reviewed. But Professor Anchisi asked that we find a way to be certain all votes are counted, even in cases where the result is unambiguous. Professor Kevin Wilson advised that while the flaws in the current system need to be corrected for the sake of both fairness and accuracy, it is at least free of the tacit pressures that go with voice votes. Motions so enacted might be approved by acclamation, a process that can easily mask dissent.

President Iuliano called for a vote on the amendments to the motion.

That motion passed, one hundred twenty in favor, six opposed, and three recorded abstentions,

Six people reported that they were unable to log into the system.

Professor Good explained his support of the motion as a member of the committee that brought it: it provides a non-prescriptive and affirmative means of defining a communal ethos, one that fits in with the statement about free speech recently adopted. Professor Alan Perry concurred. Of everything we are likely to see from the Grievance Committee, this motion is likely to be the most important. It gives faculty guidelines for treating one another with respect. It provides a starting point for resolving conflicts. Professor Hancock described himself as uneasy not about the general principles informing the statement, but about an apparent lack of groundwork in recommending its adoption at this time. It uses culturally loaded terms—"collegiality" is one example—and brings no guarantee that it will not be used in a way that is invidious. It is possible that the community has become educated in intercultural competency, that its members have taken meaningful steps to arrive at it. And it is possible that most people have taken the Intercultural Development Inventory and have reflected on possible biases. But the Grievance Committee has not presented evidence that either has happened, or that the climate is hospitable enough for us to add language to the Handbook that has the potential to be used, for example, against African American women whom colleagues regard as angry.

Professor Milingo responded that the committee could not come up with a better term than collegiality, but that it is open to better choices. Professor Hancock replied that the issue is not a semantic one, but about the attitudes of the community, about how to tell that someone is genuinely in violation of the standards we are trying to maintain.

President Iuliano called for a vote on the amended motion. When five people could not log in, someone suggested a show of hands that would allow those votes to be counted. Professor Cushing-Daniels argued that they should not be put in a position to forego the anonymity everyone else has. The motion passed by a six vote margin on an initial attempt, but it was clear that too many people were excluded from the system for the vote to be conclusive. A second vote was taken, with those who could not log on through the application asked to get into the system through web browsers. A few people indicated that they were timed out of the system before they could vote.

The motion passed, seventy-five for, fifty-five opposed, with nine recorded abstentions.

Provost Zappe reviewed the new course evaluation process; he spoke of it as being refined over the three years in which it was tried out as a pilot program, and of the decision to adopt it last March. Associate Vice President Foster demonstrated how to start and use the system and urged anyone finding it difficult to call the Help Desk. He noted that cross-listed courses will have two buttons, each of which a faculty member must click in order to make sure all students will be able to do evaluations; students will only see a link for the version of the course for which they are enrolled. He reassured people that the system guarantees anonymity. He noted that the team overseeing it has experience with people who have mistakenly started it for the wrong cross, and that it can provide a remedy if is contacted immediately. There are two processes, one that will cover ninety percent of our courses, and an "exceptional" one, for the remainder. Faculty members who have received an

exception know that they have one and have been instructed in how to use it. Students in affected courses have been notified about what they should do.

Professor Else announced a Friday Afternoon Social Hour on November 22, to be held in the West Building Gallery.

The president adjourned the meeting at 5:02 pm.

Submitted,

Leonard S. Goldberg
Faculty Secretary

Appendix
Motion from the Academic Policy and Program Committee
Background and Rationale

Motion to Create a Data Science Minor within the Department of Interdisciplinary Studies

Motion:

Beginning in January 2020, students may elect to pursue a minor in Data Science. The minor will be administered within the Department of Interdisciplinary Studies.

Background and Rationale

Data science is an interdisciplinary field of study that focuses on understanding, processing, interpreting, visualizing, and communicating data. A minor in Data Science exemplifies the goals of a liberal arts education, as it integrates quantitative methodologies from mathematics, statistics, and computer science with effective communication, interdisciplinary teamwork, social and ethical context, and domain knowledge from a student's major field of study.

The Data Science minor complements majors across the natural sciences, social sciences, arts, and humanities. For example:

- For students in the humanities or performing arts, a data science minor might provide technical skills for critical text analysis, identifying thematic innovations, tracing networks of topical and linguistic influences through song lyrics or film scripts, testing hypotheses about differences by gender or ethnicity in usage, or developing recommender systems like Spotify Discover.
- For students in the visual arts or art history, a data science minor might focus on creative visualization of data, image processing and deep learning to detect forgeries or evaluate uniqueness of an artist's works, creating novel computer-generated images (CGI) for animation, or creating search engines and databases to catalog and broaden public access to works in a museum's collection.
- For students in the social sciences, a data science minor would complement and extend traditional disciplinary methods courses, allowing larger scales of analysis for describing interactions and influence among individuals, among social groups, or among nation-states. For example, insights gained from data science research might accompany qualitative data collected through anthropological fieldwork. Students might examine network data from political campaigns, data from social media generated by individuals, campaign contribution and lobbying expenditure made by organizations and individuals, or data that charts international trade.
- For students in the natural sciences, a data science minor would help organize the deluge of petabytes of scientific data generated by satellites, telescopes, supercomputers, and sensor networks. In biology and the health sciences, the growing field of bioinformatics requires not only deep knowledge of biological mechanisms, but also capabilities in 'big data' processing and machine learning. Students with interests in cognitive neuroscience might use artificial neural networks to search for patterns in large, high-resolution imaging datasets, or consider the usefulness and validity of artificial neural networks and artificial intelligence models of human processing.

A National Academies of Science, Engineering, and Medicine Consensus Study Report recently concluded, "Academic institutions should embrace data science as a vital new field that requires specifically tailored instruction delivered through majors and minors in data science as well as the development of a cadre of faculty equipped to teach in this new field." (p. 2) While most SLACs currently do not offer data science programs, several of our peer institutions, notably several listed among the most innovative liberal arts colleges in US News and World Report, are beginning to embrace this growing field of study. For example, Bates, Mount Holyoke, Smith, Denison, Goucher, and Allegheny offer interdisciplinary majors related to data science,[1] while Davidson College and Macalester College offer interdisciplinary minors. Through the development of a Data Science minor, Gettysburg College has the opportunity to be a leader in the integration of data science and the liberal arts, and offer our students valuable skills and experiences that will position them well for jobs and graduate school in data-intensive fields.

The Data Science Minor

Gettysburg's new interdisciplinary minor in data science will be open to all students effective January 2020. The minor is designed to complement any major and to prepare students for success in a data-driven world. The minor will help students to integrate domain-area knowledge from their major field of study with technical skills in data management, statistical analysis, and programming, to answer questions in an ethically responsible manner in the arts, humanities, social sciences, and/or natural sciences.

Student Learning Outcomes

1. Students will discern what questions can be answered using data science techniques.
2. Students will obtain appropriate data sets and clean and validate the data.
3. Students will visualize, model, and analyze data to identify patterns and trends.
4. Students will effectively communicate findings visually, orally, and in writing.
5. Students will acquire relevant statistical, programming, and data management skills.
6. Students will collect, analyze, and communicate data in an ethically responsible manner and be keenly aware of emergent ethical issues in data science.

Minor Requirements

The minor comprises three core courses (a statistics course from any department, DS 256, and DS 325), and three electives. Beginning in AY2020-21, DS 256 and DS 325 will be offered annually.

- One course in statistics
- DS 256 Data Science Programming
- DS 325 Applied Data Science
- Three electives

[1] Program names vary, for example: Data Science, Statistical & Data Sciences, Data Analytics, Digital & Computational Studies, and Integrative Informatics.

Core Courses

Approved Statistics Courses

Course Number	Course Title	Prerequisites
BIO 260	Biostatistics	Bio 112
ECON 241	Introductory Economics and Business Statistics	ECON 103 and 104, and one of the following: Math 105-106, 111 or equivalent; or department permission
HS 232	Statistics for Health Sciences	None
MATH 107	Applied Statistics	None
MATH 353[2]	Probability and Statistics	Math 211 & Math 212 with a C- or better
OMS 235	Statistical Methods	None
POL 215	Methods of Political Science	Completion of Pol 101, 102, 103, or 104 and sophomore status or above
PSYCH 205	Introduction to Statistics	PSYCH 101 and Psychology major
SOC 299	Data Analysis and Statistics	1 100-level Sociology course and 1 200-level Sociology course

DS 256 Data Science Programming

Data scientists apply methods from statistics, data analysis, computer science, and machine learning in order to gain insight from data. In Data Science Programming, we focus on developing the programming and machine learning skills necessary to gain such insight. Through experiential learning, we equip students with the fundamental computer problem-solving skills and tools to clean raw data, engineer data features, build statistical and machine learning models, predict unknown values and/or discern patterns, and present data insights. No prerequisites.

DS 325 Applied Data Science

Advanced treatment of data science concepts. Through a series of case studies, students explore datasets from a variety of domains and extract meaningful information and insights using mathematical, computational, and other scientific methods and algorithms. Topics include the fundamental algorithms of data science: regression, decision trees, support vector machines, clustering, and neural networks. Through a semester-long project, students demonstrate knowledge of fundamental data science concepts and ability to interpret and communicate effectively the results of the analysis. Prerequisites: DS 256: Data Science Programming and an approved statistics course.

[2] For the Data Science Minor, Math 353 can count as either the Statistics course or as an elective. It cannot count as both.

Elective Courses

Students must take three approved elective courses. At least one elective must be taken outside the student's major department(s), and only one elective can be at the 100-level. One possible elective is the newly approved DS 150 Data Science and Society, but we offer many other courses that fulfill the elective requirement.

DS 150: Data Science and Society

This course introduces students to data science and research design. This course is divided into two parts. During the first half of the semester, students will be introduced to theories of science and how systematic and falsifiable analysis applies to a wide variety of fields of study. During the second half of the semester, students will be introduced to data management, statistical and computer programming software, and econometrics.

Approved Elective Courses for Data Science Minor

Course Number	Course Title	Prerequisites
ARTS 160	Introduction to Digital Media	None
BIO 251/CS 251	Introduction to Bioinformatics	BIO 112
BIO 315	Molecular and Genome Evolution	BIO 211
CS 360	Principles of Database Systems	CS 216
CS 371	Introduction to Artificial Intelligence	CS 216
DS 150	Data Science and Society	None
ECON 350	Econometrics	ECON 241, 243, and 245
ECON 352	Advanced Econometrics	ECON 350, plus one other 300-level ECON course
ES 230	Introduction to Geographic Information Systems	ES 196 or permission of instructor
ES 363	Remote Sensing	ES 230 or permission of instructor
FYS 162	Math and Voting	First year students only
MATH 342	Applied Linear Algebra	MATH 212 with a C^- or better
MATH 353 *	Probability and Statistics	MATH 211 and MATH 212 with a C^- or better
MATH 362	Operations Research	
MATH 363	Wavelets and Their Applications	MATH 212 with a C^- or better
MGT 301	Research Methods	MGT 235
MGT 303	Systems Thinking	MGT 235 and MGT 275
MGT 321	Topics in Operations Management	MGT 235 or declared business minor that has completed statistics requirement
MGT 395	Organizational Ethics	Jr or Sr status
PHIL 109	Wrong Science, Bad Science, Pseudo Science	None
PHIL 211	Logic	100 level philosophy course or permission of instructor
PHIL 253	Philosophy of Technology	100 level philosophy course or

		permission of instructor
PHYS 335	Computational Methods in Physics	Jr or Sr status and instructor permission
PHYS 350	Observational Astronomy	PHYS 211, PHYS 110, or instructor permission
PSYCH 305	Experimental Methods	PSYCH 205

*For the Data Science Minor, Math 353 can count as either the Statistics course or as an elective. It cannot count as both.

Future Elective Courses for Data Science Minor

Course Number	Course Title	Prerequisites
DS 2xx *	"Just" Data	Concurrent enrollment or prior credit for MATH 107 or equivalent, CS 107/111, DS 256, or instructor permission
DS 2xx *	Cultural Analytics	Any 1 course from a long list of possible humanities or social sciences options
DS 2xx/Soc 2xx *	Visual Sociology	Any 100-level Soc course
ES 2xx	Quantitative Ecology	ES211 or stats

***** Under development; will be submitted to APPC during AY2019-20

Elective Courses through Affiliated Study Abroad Programs

Many off campus study programs offer courses that meet DS minor requirements, including:

- Lancaster University, England offers a variety of undergraduate courses in data science across several departments.
- CET Shanghai, China offers a full undergraduate program of courses and internship opportunities in data science.
- DIS in Copenhagen, Denmark offers several courses that would support the Data Science minor including Computational Analysis of Big Data and Econometrics.
- American University in Cairo, Egypt offers a BSc in Data Science and a full curriculum taught in English.

Administrative Structure

With very few exceptions (e.g. Bates), Data Science programs tend to be proposed by and housed in Computer Science and Mathematics/Statistics departments. In contrast, the proposed Data Science minor at Gettysburg College will be fully interdisciplinary, and administered by a Data Science Advisory Committee under IDS. The Data Science Advisory Committee will request that any course developed for the Data Science minor has a DS subject designator in the course catalog. One rotating person on the curricular advisory committee will serve as the contact person (unpaid) for the Registrar's Office. This person will sign minor declaration forms and approve off-campus study course requests.

Data Science Advisory Committee

Chris Barlett	Psychology
Meg Blume-Kohout	Economics
Scott Boddery	Political Science
Alice Brawley Newlin	Management
Kazuo Hiraizumi	Biology
Ivaylo Ilinkin	Computer Science
Ryan Johnson	Physics
Ben Kennedy	Math
Sunny Kim	Computer Science
Junjie Luo	East Asian Studies
Todd Neller	Computer Science
VoonChin Phua	Sociology
Rud Platt	Environmental Studies
Lisa Portmess	Philosophy
James Puckett	Physics
Kris Stuempfle	Provost's Office
Chris Zappe	Provost's Office

Potential Impact on Departments and Programs

The Data Science Minor will draw on the College's existing faculty expertise and strengths across a wide array of disciplines and departments. We anticipate that there may be a need for additional adjunct sections for departments with faculty contributing new courses to the Data Science minor program (DS 150, DS 256, and DS 325). Initially this could require four adjunct sections a year across the contributing departments, but that may grow with demand.

The DS minor may affect enrollments for certain courses, particularly in Math and CS. Enrollments in Math 107 will need to be monitored; if the minor grows as hoped, students with no equivalent course in their home department will most likely choose Math 107 for their required statistics course. On the other hand, offering DS 256, which teaches Python programming skills, may help to alleviate demand for CS 107 among non-CS majors.

In the medium to long term, we anticipate that the courses offered will expand and diversify as faculty build expertise and student demand grows. Indeed we are heartened that many faculty across campus are seeking professional development opportunities to integrate data science approaches in their own teaching and research (e.g., a JCCTL-sponsored faculty working group has recently been formed called "Effectively Teaching Data Science and Statistics with R"). If demand warrants it, we will need to offer more sections of DS 150 and offer additional electives that can reasonably be completed by arts and humanities majors. Fortunately, at this early stage we already have a wide range of existing electives to support the minor.