

## UNIVERSITY OF MARY WASHINGTON -- NEW COURSE PROPOSAL

Electronically submit this completed form with attachments in one file to the Chair of the College Curriculum Committee.

<b>COLLEGE (check one):</b>	<b>Arts and Sciences</b> <input checked="" type="checkbox"/>	<b>Business</b> <input type="checkbox"/>	<b>Education</b> <input type="checkbox"/>
Proposal Submitted By: Chad Murphy	Date Prepared: 11/26/2017		
Course Title: Adv Resr Methods in Pol Sci			
Department/discipline and course number*: PSCI 490			
Prerequisites: PSCI 101 and PSCI 102			

\*This course number must be approved by the Office of the Registrar before the proposal is submitted.

Number of credits: 3	<b>Will this course meet for at least 700 contact minutes for each credit hour proposed? If no, provide a credit hour justification.</b>	<b>YES</b>	<input checked="" type="checkbox"/>	<b>NO</b>	<input type="checkbox"/>
Will this be a <i>new, repeatable</i> "special topics" course? (Do you want students to be able to take this new course more than once if the topic changes?)		<b>NO</b>	<input checked="" type="checkbox"/>	<b>YES</b>	<input type="checkbox"/>

Date of first offering of this <b>new</b> course: <b>FALL SEMESTER, year</b>	Spring 2020
Proposed frequency of offering of the course:	Once every other year
Proposed enrollment limit for the course:	15
List the faculty who will likely teach the course:	Chad Murphy
Are ANY new resources required?	<b>NO</b> <input checked="" type="checkbox"/> <b>YES</b> <input type="checkbox"/> <i>Document in attached impact statement</i>

\*\*The earliest the course may be offered is the fall semester of the academic year FOLLOWING the year in which the course proposal is approved.

<b>This new course will be (check all that apply):</b>			
Required in the major	<input type="checkbox"/>	Required in the minor	<input type="checkbox"/>
Elective in the major	<input checked="" type="checkbox"/>	Elective in the minor	<input type="checkbox"/>
		General Elective	<input type="checkbox"/>
		General Education**	<input type="checkbox"/>

\*\*AFTER the new course is approved, a separate proposal must be sent to the General Education Committee.

<b>Catalog Description</b> (suggested length – less than 50 words):	
<b>An overview of advanced methods in Political Science, with topics including predictive analytics and machine learning as applied to voter turnout, donor recruitment, and get-out-the-vote efforts, best practices for data visualization, and implementing these methods in the R programming language.</b>	

<b>COURSE HISTORY:</b>	Was this course taught previously as a topics or experimental course?	<b>YES</b>	<input type="checkbox"/>	<b>NO</b>	<input type="checkbox"/>
<b>Course Number and Title of Previous Course</b>		<b>Semester Offered</b>	<b>Enrollment</b>		
PSCI 471C5 – Adv Resr Methods in Pol Sci		Spring 2016	10		
PSCI 471C5 – Adv Resr Methods in Pol Sci		Spring 2019	12		

**CHECK HERE** if the proposed course is to be **equated** with the earlier topics or experimental offerings. If equated, students who took the earlier "topics" course will only be able to take the new course as a repeat (C- grade or lower).

**NOTE:** If the proposed course has not been previously offered as a topics or experimental course, **explain in the attached rationale statement** why the course should be adopted even though it has not been tried out.

**REQUIRED ATTACHMENTS:**

1. **Rationale Statement** – Why is this course needed? What purposes will it serve?
2. **Credit Hour Justification** (if required) – explain how this course will comply with the UMW Credit Hours Policy (D.5.3)
3. **Impact Statement** – Provide details about the Library, space, staffing, budget, and technology impacts created by adding this new course. Include supporting statements from the Library, IT Department, etc. **Any change that impacts another Department must have a written statement (such as an email) from the Chair(s) agreeing to the change.**
4. **Sample Syllabus**

Department Chair Approval\*: \_\_\_\_\_

Date: 11/28/18

CCC Chair Approval: \_\_\_\_\_

Date: 1/21/2019

**\*COB and COE proposals approved by the Associate Dean. *BEFORE* consideration by the UCC, the proposal must be approved the two levels noted above. Approval by the UCC and UFC are noted on the proposal “status history” at the UCC web site.**

## **1. Rationale Statement**

Since the 2008 elections, campaigns and various related non-governmental organizations have become increasingly reliant on predictive analytics to reach out to voters and increase turnout for their candidates, to recruit donors, and to study voter behavior more generally. I was originally hired by the department to teach PSCI 391: Research and Writing (among other courses), which at the time was the department's only methods course. This course teaches traditional techniques of qualitative and quantitative research, including case studies, interviews, basic ideas of fieldwork, and linear regression. These techniques are useful to any political scientist and help students both read and conduct their own research, but are generally more appropriate for academic settings. Since my hire, political science has imported a new set of methods that are mostly useful for practitioners of political science and if we want to place students in this important (and lucrative) field of politics we need to give them the skills to do so. This course will teach them those methods and delve deeper into predictive analytics, which are only introduced in PSCI 391.

The core question of politics is "Who gets what, when, and why?" This course will give students more skills with which they can answer this question, give them the tools to reach out to voters and encourage them to participate in democracy, and the skills to communicate their work to diverse audiences. I anticipate this course will be useful to students who want to work for campaigns, non-governmental organizations focused on citizen outreach, polling firms, any sort of data related job, or who want to go to graduate school to study political science, policy, or public administration. It has also been opened up to other students in the Data Science Minor and is part of the proposed Applied Statistics Minor program as well, which reach out to a broad group of students interested in applied machine learning.

## **2. Credit Hour Justification**

The course will meet the required 700 minutes per credit hour, complying with the UMW Credit Hours Policy.

## **3. Impact Statement**

The course requires no extra staffing, space, or other resources beyond a typical class offered in the Political Science Department – a classroom, occasional use of the Monroe First Floor Computer Lab, and I will teach it as part of my regular teaching load.

## **4. Sample Syllabus**

(See next page for the 2016 syllabus)

# Political Science 471: Advanced Research Methods in Political Science

## University of Mary Washington

**Instructor:** Professor Chad Murphy  
E-mail: [cmurphy3@umw.edu](mailto:cmurphy3@umw.edu)  
Office: Monroe Hall 342  
Office Hours: Tuesday and Thursday 2:00—4:30  
(\*\*\*Make an appointment at <http://profmurphyofficehours.youcanbook.me> \*\*\*)

### **Introduction:**

This course offers an in-depth examination into both the theory and methodology of Political Science research. In this course we will examine topics such as what exactly research looks like in Political Science, how to develop a good question, the difference between qualitative and quantitative approaches to studying political questions, selection of appropriate methods, and how to execute all types of research from single case studies, comparative case studies, and large-N statistical research.

### **Learning Outcomes:**

- *Learning the Fundamental Principles of Political Analysis*
  - o This course will expose students to a variety of quantitative statistical tools, a number of unique laboratory experiments, and case studies of media performance and strategies in recent elections. This is consistent with the developing disciplinary norm of methodological pluralism, and will give students a variety of tools to answer political questions of their own.
- *Development of Discipline-specific Writing Skills*
  - o The two papers in this course will help students both learn how to summarize difficult materials in a concise, clear fashion, and will help them move beyond ideological critiques and think about evidence in a critical fashion and will help them learn to develop their own research ideas in a scientific way.

### **Required Reading:**

*Discovering Statistics Using R.* Andy Field, Jeremy Miles, Zoe Field.

### **To be Successful in this Class:**

Students MUST attend lectures and come prepared to class by doing all of the assigned readings. While in class, students are expected to listen attentively and take good notes. Please be courteous to fellow students by silencing cell phones before class begins and refraining from talking to your neighbor during lecture. If you attend only occasionally, goof around in class, and skip the reading, you will have a very hard time doing well in the course.

## **Method of Evaluation:**

My goals for this class are not that you master specific factual details, but instead are that you grasp key concepts. Accordingly, students will be evaluated based on their performance on written assignments and weekly homework assignments. The assignments will be posted on Wednesdays and will be due Fridays before class starts (11:59 am), uploaded to Canvas. Please see the individual handouts for more detailed instructions.

Additionally, students will be graded on attendance and participation in section. Attendance and participation both in section and the class meeting will account for a significant portion of your grade, so take both of them seriously.

Grades for the course will be calculated using the following scale:

<u>Paper #1: Voter Analysis:</u>	30 percent
<u>Paper #2: Student-chosen Analysis:</u>	30 percent (divided into 5 for the proposal, and 25 for the paper)
<u>Weekly Assignments:</u>	30 percent
<u>Class Participation &amp; In-Class Assignments:</u>	10 percent

## **Course Policies:**

**Late Assignments:** Given the importance of deadlines both in college and the real world, **NO LATE PAPERS OR ASSIGNMENTS WILL BE ACCEPTED.** Please be mindful of when assignments are due and work out any transportation/computer/printer/etc. issues before the assignment is due as there are NO exceptions to this policy.

**Special Accommodations:** If you have a physical, psychiatric/emotional, medical, or learning disability that may impact your ability to carry out assigned work, you are urged to contact the instructor so that accommodations may be arranged.

**Academic Dishonesty:** This university has a detailed and strict academic dishonesty policy. Please take the time to review it. If you violate this policy, you will be reported to the Honor Council for disciplinary action in accordance with this policy. There are no exceptions!

**Canvas:** Please check the course page on Canvas frequently. You will find things that will be useful to you such as: a record of all of your grades, course announcements, course assignments, and from time to time I will post extra handouts and notes from class. Also, from time to time I will send out emails regarding procedural matters, so please check your student email accounts on a regular basis.

**Email:** Please feel free to email me procedural questions during the course. Please see me in office hours for substantive questions, as I am unable to respond to these via email. Please do not email me the night before paper is due with a question about a lecture or other question about the substance of the course. Please see me with your questions before the last minute, as I will be able to better assist you with your questions during office hours. If you find you are having trouble with the readings or assignments please come to me for help.

## **Schedule of Topics and Assigned Readings:**

### *Part 1: What Are We Doing Here? (Weeks 1-2)*

- Introduction to the class and introduction to political research (KKV Chapter 1 – see Blackboard)
- Starting a research project – What is my question, generating falsifiable predictions, hypothesis testing, predictions.
- Measurement and Causality

### *Part 2: Math is Fun, Math is Easy: Stats and Large-N Research (Weeks 3-4)*

- Descriptive Statistics
- Probability Distributions
- Correlation and Regression

### *Part 3: Basics of Machine Learning (Weeks 5-12)*

Week 5: Unsupervised models and how to put together a dataset

Week 6: K-Means Clustering

*~~~Research Proposal Due Monday February 22, uploaded to Canvas by 12:00 pm~~~*

Week 7: Multi-dimensional scaling

Week 8: Supervised models and how to create a finished product

Week 9: Linear regression and predictions

Week 10: Logistic regression, predictions, and interaction variables

*~~~Voter file analysis due Wednesday, March 23, uploaded to Canvas by 12:00 pm~~~*

Week 11: Support Vector Machines

Week 12: Random Forest Models

### *Part 4: Data Visualization and Presentation of Findings (Weeks 13-15)*

- (Re)Introduction to ggplot
- Different types of data viz (scatterplots, regression plots, barplots, waffle plots, everything other than pie charts)
- Best practices and avoiding “chartjunk”

*~~~Paper #2 Due Friday April 29 uploaded to Canvas by 2:30 pm~~~*