

**University of Central Florida**  
**PHI 4400: Philosophy of Science**  
**Fall 2018, Syllabus, v. 08262018**



**Course Information**

- Title: Philosophy of Science
- Course number-section: PHI 4400-0W61 (91184)
- Credit hours: 3.0
- Term: Fall semester 2018
- Mode: Web
- Time zone: Eastern Time (ET)

**Instructor Information**

- Name: Luis Favela, Ph.D. (Please refer to me as “Dr. Favela” or “Professor Favela.”)
- Email: [luis.favela@ucf.edu](mailto:luis.favela@ucf.edu)
- Website: <http://philosophy.cah.ucf.edu/staff.php?id=1017>
- Office location: PSY 0245
- Office hours: Tuesday and Thursday 3:00 – 4:30 pm

**Course Description**

- Catalogue description: An examination of the conceptual foundations and methodology of modern science.
- Detailed description: This course is an introduction to the philosophy of science. It will provide background knowledge for pursuing specific and more advanced topics in the area. You will gain increased understanding of this field via exposure to topics of both historical and contemporary importance. Topics will center on questions such as: Can science be demarcated from pseudoscience? Do nonscientific values play a role in scientific practice? Is there progress in science? What is the problem of induction? These issues are significant for philosophers interested in the nature of science, practicing scientists interested in the theoretical commitments underlying their work, and the general public who are affected by the practice and products of science.

**Student Learning Outcomes**

- Students will be able to *describe* major topics in the philosophy of science.
- Students will *analyze* significant primary and secondary sources in the philosophy of science.
- Students will be able to *reconstruct* arguments concerning topics in the philosophy of science.
- Students will be able to *articulate* their positions in regard to topics in the philosophy of science.

**Online Learning, Time Commitment, and Internet Usage**

- Online learning: Online learning is not for everyone; some people may not be able to manage a course that does not meet face-to-face to learn. Online learning requires a great deal of planning and self-pacing so that you may be successful in this course. Since we will be covering much material this this semester, I highly recommend treating this course like a

regular lecture course: keep up with lectures and assignments. Do not be tempted to skip two weeks of lectures and expect to catch up easily.

- Time commitment: This is a three-credit course over a 15-week period and covers the same amount of material as a face-to-face course. The expectation of a three-credit course over a 15-week semester is that there will be three hours of class time each week (45 hours for semester) and two hours (minimum) of study time for every hour of class time (90 hours for semester), for a total of 135 hours devoted to each class. Although a web-based format, this course will require *at least nine hours per week* of your time. These nine hours (minimum) will include “class” time in the form of students reading textbook and slides (three hours per week) and study time in the form of reviewing notes, etc. (six hours per week).
- Internet usage: You will be expected to have daily access to the internet and email, since I will be emailing you constantly about assignment updates, additions and changes. All students at UCF are required to obtain a Knight's Email account and check it regularly for official university communications. If you do not own a computer, there are computer accessible to you in all UCF’s computer labs, and most computer labs have computers connected to the internet. For further information on computer labs, please see the following website: <<http://guides.ucf.edu/c.php?g=78577&p=517810>>.

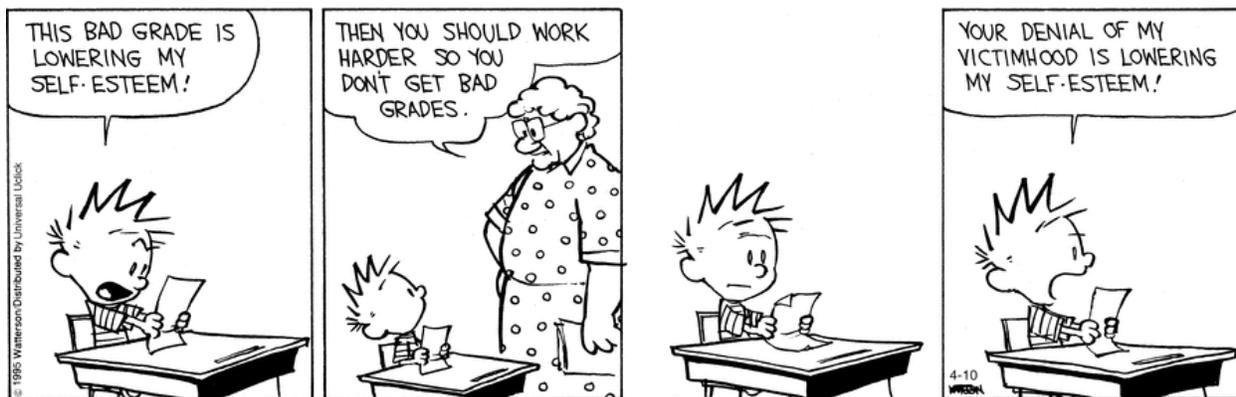
### Course Materials

- All readings and materials are provided in Webcourses as PDFs or links.

### Course Requirements

- **Required Academic Activity**
  - All instructors/faculty are required to document students’ academic activity at the beginning of each course. In order to document that you began this course, please complete the following academic activity by the end of the first week of classes or as soon as possible after adding the course. Failure to do so may result in a delay in the disbursement of your financial aid.
  - Activity: RAA quiz:
    - After you read the syllabus, take the RAA (Required Academic Activity) Quiz in Webcourses as an indicator that you understand the expectations and policies of this course.
    - Available 8:00 am ET, Monday, August 20.
    - Due 5:00 pm ET, Friday, August 24.
- Quizzes
  - There will be 13 quizzes, or about one per week.
  - Quiz questions will be based on material from the assigned readings and in-class lectures and discussions.
- Exams
  - Students will have two exams. The first exam will cover material from about the first half of the course, and the second exam will cover material from about the second half of the course.
  - Guidelines and expectations will be distributed closer to the assignment dates.
- Note: You are responsible for all reading assignments. Unless stated otherwise (e.g., “optional” readings), anything assigned to you is potential quiz or paper material.

## Grading



- Quizzes
  - 13 quizzes, 20 points each, 260 points total
  - Combined 20% of total grade, each quiz ~1.5% of total grade
- Exams
  - Two exams, 520 points each, 1040 points total
  - Combined 80% of total grade, each exam 40% of total grade
- Total
  - 1300 points
    - A = 1300-1170
    - B = 1169-1040
    - C = 1039-910
    - D = 909-780
    - F = 779-0
  - The following example demonstrates how +/- are assigned:
    - B- = 80, 81, 82%
    - B = 83, 84, 85, 86%
    - B+ = 87, 88, 89%
  - Percentages are not rounded, for example, an 80.2% is a B-, an 82.6% is a B-, an 89.8% is a B+, etc.
- Incomplete grades: The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed the next semester. As the instructor for this course, I am the final authority on whether you qualify for an incomplete. Incomplete work must be finished by the end of the subsequent semester or the “I” will automatically be recorded as an “F” on your transcript.
- Extensions and late assignments
  - In general, no extensions will be allowed or late assignments accepted. (Really.)
  - However, extensions and late assignments will be considered for exceptional circumstances (e.g., family or medical emergencies) if appropriate documentation can be provided (e.g., doctor’s note, funeral program, etc.).
  - If an assignment is accepted late, then it will be deducted 5% of the total possible point value of the assignment for every 12-hour block of time, including weekends. For

example, if an assignment is due Monday at 11:59 pm and it is submitted on Tuesday at 12:01 am, then that assignment will lose 5%; if it is turned in on Tuesday at 1:00 pm, then it will lose 10%; and so on.

- Extra credit: There is no extra credit.
- Grade distributions: The final grades will not be curved.
- Grade dissemination: Graded materials in this course will be returned individually by request. You can access your scores at any time using the Grades section of [Webcourses@UCF](mailto:Webcourses@UCF).

### Course Policies

- Contact procedures
  - In-person contact: If you have questions related to the course, then see me during my office hours. We can attempt to schedule another time if you are unable to meet during those.
  - Email and professionalism: I strongly believe that the university is a professional environment and that you and I are in a professional relationship. As such, be professional when you message me—for example, begin your message with “Hello Dr. Favela” and not “Hey you, can I have...” In addition, write complete sentences, be clear and concise, and reread messages before sending them. I will give one warning and then stop responding to your messages if they are unprofessional and/or discourteous. Allow 24 hours for a response during the week, and possibly more during the weekend and holidays.
  - Skype: If an issue comes up such that you prefer to talk instead of exchanging emails and you are unable to attend office hours or schedule an alternate in-person meeting time, then contact me and we can arrange to meet via Skype <dr.luis.favela>.
  - Webcourses: **Do not contact me via Webcourses.** I do not check it and will not reply.
- Professionalism policy: Per university policy and classroom etiquette, mobile phones, iPods, etc. must be silenced during the entire class time period. Those not heeding this rule will be asked to leave the classroom immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., will be warned and can suffer a reduction in their final class grade.
- Academic integrity: Students should familiarize themselves with UCF’s Rules of Conduct at <<http://osc.sdes.ucf.edu/process/roc>>.
  - According to Section 1, “Academic Misconduct,” students are prohibited from engaging in:
    - Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
    - Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else’s efforts and used as part of an examination, course assignment, or project.
    - Commercial use of academic material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the

instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.

- Falsifying or misrepresenting the student's own academic work.
  - Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.
  - Multiple submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
  - Helping another violate academic behavior standards.
  - For more information about Academic Integrity, consult the International Center for Academic Integrity <<http://academicintegrity.org>>.
  - For more information about plagiarism and misuse of sources, see "Defining and Avoiding Plagiarism: The WPA Statement on Best Practices" <<http://wpacouncil.org/node/9>>.
- Responses to academic dishonesty, plagiarism, or cheating: Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, The Golden Rule <<http://goldenrule.sdes.ucf.edu/docs/goldenrule.pdf>>. UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and when necessary respond to academic misconduct. Penalties can include a failing grade in an assignment or in the course, suspension or expulsion from the university, and/or a "Z Designation" on a student's official transcript indicating academic dishonesty, where the final grade for this course will be preceded by the letter Z. For more information about the Z Designation, see <<http://goldenrule.sdes.ucf.edu/zgrade>>.
  - Course accessibility: The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need disability-related access in this course should contact the professor within the first two weeks of class. Students should also connect with Student Accessibility Services (SAS) <<http://sas.sdes.ucf.edu/>> (Ferrell Commons 185, [sas@ucf.edu](mailto:sas@ucf.edu), phone 407-823-2371). Through SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student.
  - Campus safety statement: To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <<https://my.ucf.edu>> and logging in. Click on "Student Self Service" located on the left side of the screen in the toolbar, scroll down to the blue "Personal Information" heading on the Student Center screen, click on "UCF Alert," fill out the information, including email address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK." Students with special needs related to emergency situations should speak with their instructors outside of class.
  - Make-up assignments for authorized university events or co-curricular activities: Students who represent the university in an authorized event or activity (for example, student-athletes) and who are unable to meet a course deadline due to a conflict with that event must provide the instructor with documentation in advance to arrange a make-up. No penalty will be

applied. For more information, see the UCF policy at <<http://policies.ucf.edu/documents/4-401.1MakeupAssignmentsForAuthorizedUniversityEventsOrCocurricularActivities.pdf>>.

- Religious observances: Students must notify their instructor in advance if they intend to miss class for a religious observance. For more information, see the UCF policy at <<http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALOct17.pdf>>.
- Deployed active duty military students: Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.
- Controversial content: We will be learning about and discussing a number of controversial topics, including those related to religion and social values. If you feel uncomfortable with this, please let me know and we can attempt to make accommodations.
- **Copyright and intellectual property**
  - Copyright: This course may contain copyright protected materials such as audio or video clips, images, text materials, etc. These items are being used with regard to the Fair Use doctrine in order to enhance the learning environment. Please do not copy, duplicate, download or distribute these items. The use of these materials is strictly reserved for this online classroom environment and your use only. All copyright materials are credited to the copyright holder.
  - Unauthorized use of class materials: There are many fraudulent websites claiming to offer study aids to students but are actually cheat sites. They encourage students to upload course materials, such as test questions, individual assignments, and examples of graded material. Such materials are the intellectual property of instructors, the university, or publishers and may not be distributed without prior authorization. Students who engage in such activity are in violation of academic conduct standards and may face penalties.
- Syllabus adjustments: The instructor reserves the right to modify all parts of the syllabus during the course. The instructor will inform students if any modifications are made.

**Important Dates** <<https://calendar.ucf.edu/2018/fall>>

- Classes begin: August 20
- Last day to drop and request full refund: August 23
- Add deadline: 11:59 pm, August 24
- Withdrawal deadline: 11:59 pm, October 26
- No class: November 22 (holiday)
- Classes end: December 1
- Finals: December 3-8
- Grades available: 9:00 am, December 14

### Topic, Reading, and Video Schedule

Week	Dates	Topic	Readings	Videos
1	Aug 20 - 26	Introduction	1-4	
2	Aug 27 - Sep 2	Logical Positivism	5	A-B
3	Sep 3 - 9	Verificationism	6-7	C
4	Sep 10 - 16	Holism	8-10	D
5	Sep 17 - 23	Induction	11-12	E-F
6	Sep 24 - 30	Scientific Realism	13-16	G
7	Oct 1 - 7	Exam 1	2-16	A-G
8	Oct 8 - 14	Popper and Falsificationism	17-19	H-I
9	Oct 15 - 21	Kuhn and Normal Science	20	J
10	Oct 22 - 28	Kuhn and Revolutions	21	K
11	Oct 29 - Nov 4	Kuhn and Progress	22-23	L
12	Nov 5 - 11	Science and Values	24-25	
13	Nov 12 - 18	Science and Gender	26-27	
14	Nov 19 - 25	Demarcation	28-29	M
15	Nov 26 - Dec 2	The Paranormal	30-31	N-O
16	Dec 3 - 9	Exam 2	17-31	H-O

### Assignment Schedule

Assignment	Material	Dates
RAA	Reading 1	8:00 am, Mon, Aug 20 - 5:00 pm, Fri, Aug 24
Quiz 1	Readings 2-4; lecture slides	12:00 pm, Thu, Aug 23 - 11:59 pm, Sun, Aug 26
Quiz 2	Reading 5; videos A-B; lecture slides	12:00 pm, Thu, Aug 30 - 11:59 pm, Sun, Sep 2
Quiz 3	Readings 6-7; video C; lecture slides	12:00 pm, Thu, Sep 6 - 11:59 pm, Sun, Sep 9
Quiz 4	Readings 8-10; video D; lecture slides	12:00 pm, Thu, Sep 13 - 11:59 pm, Sun, Sep 16
Quiz 5	Readings 11-12; videos E-F; lecture slides	12:00 pm, Thu, Sep 20 - 11:59 pm, Sun, Sep 23
Quiz 6	Readings 13-16; video G; lecture slides	12:00 pm, Thu, Sep 27 - 11:59 pm, Sun, Sep 30
Exam 1	Readings 2-16; videos A-G; lectures slides	12:00 pm, Thu, Oct 4 - 11:59 pm, Sun, Oct 7
Quiz 7	Readings 17-19; videos H-I; lecture slides	12:00 pm, Thu, Oct 11 - 11:59 pm, Sun, Oct 14
Quiz 8	Reading 20; video J; lecture slides	12:00 pm, Thu, Oct 18 - 11:59 pm, Sun, Oct 21
Quiz 9	Reading 21; video K; lecture slides	12:00 pm, Thu, Oct 25 - 11:59 pm, Sun, Oct 28

Quiz 10	Readings 22-23; video L; lecture slides	12:00 pm, Thu, Nov 1 - 11:59 pm, Sun, Nov 4
Quiz 11	Readings 24-25; lecture slides	12:00 pm, Thu, Nov 8 - 11:59 pm, Sun, Nov 11
Quiz 12	Readings 26-27; lecture slides	12:00 pm, Thu, Nov 15 - 11:59 pm, Sun, Nov 18
Quiz 13	Readings 28-31; videos M-O; lecture slides	12:00 pm, Thu, Nov 29 - 11:59 pm, Sun, Dec 2
Exam 2	Readings 17-31; videos H-O; lecture slides	12:00 pm, Thu, Dec 6 - 11:59 pm, Sun, Dec 9

## Readings

1. Syllabus
2. Stemwedel (2014) What Philosophy Science Should Scientists Care
3. Carey (2003) Science
4. Okasha (2002) What Is Science
5. Stadler (2007) Vienna Circle
6. Carnap (1932.2005) Elimination Metaphysics Logical Analysis Language
7. Ayer (1946.1952) Ch 1 Elimination Metaphysics
8. Duhem (1954) Physical Theory Experiment
9. Quine (1951) Two Dogmas Empiricism [Especially Section V]
10. Jackman (2014) Meaning Holism [Sections 1-2]  
<<https://plato.stanford.edu/entries/meaning-holism/>>
11. Ladyman (2002) Ch 1 Induction Inductivism
12. Ladyman (2002) Ch 2 Problem Induction Other Problems Inductivism
13. Chakravartty (2017) Scientific Realism [Sections 1-3]  
<<https://plato.stanford.edu/entries/scientific-realism/>>
14. French & Saatsi (2011) Continuum Companion Philosophy Science
15. Psillos (1996) Scientific Realism Pessimistic Induction
16. Psillos (2011) Scope Limits No Miracles Argument
17. Popper (1963) Science Conjectures Refutations
18. Godfrey-Smith (2003) Ch 4 Popper Conjecture Refutation
19. Hansson (2006) Falsificationism Falsified
20. Kuhn (1970) Structure Scientific Revolutions Ch 1-5
21. Kuhn (1970) Structure Scientific Revolutions Ch 6-9
22. Kuhn (1970) Structure Scientific Revolutions Ch 10-13
23. Godfrey-Smith (2003) Ch 7 Lakatos Laudan Feyerabend Frameworks
24. Dupre (2007) Fact Value
25. Douglas (2007) Rejecting Ideal Value-Free Science
26. Longino (1995) Gender Politics Theoretical Virtues
27. Okruhlik (1994) Gender Biological Sciences
28. Nickles (2013) Problem Demarcation
29. Hansson (2017) Science Pseudo-Science <<https://plato.stanford.edu/entries/pseudo-science/>>
30. Goode (2013) Paranormalism Pseudoscience Deviance

## 31. Churchland (1987) How Parapsychology Could Become Science

**Videos**

- A. I Hope This Helps: Logical Positivism  
<<https://www.youtube.com/watch?v=SdSzJdQhCiQ>> (~6 min.)
- B. A. J. Ayer on Logical Positivism and Its Legacy (1976)  
<<https://www.youtube.com/watch?v=nG0EWNzFl4>> (~38 min.)
- C. What is Verificationism? <<https://www.youtube.com/watch?v=PHCWWIRdyis>> (~3 min.)
- D. W. V. O. Quine's "Two Dogmas of Empiricism"  
<<https://www.youtube.com/watch?v=bJSh4lPLAtI>> (~5 min.)
- E. I Hope This Helps: The Problem of Induction  
<[https://www.youtube.com/watch?v=Fd1U\\_MC\\_p3M](https://www.youtube.com/watch?v=Fd1U_MC_p3M)> (~6 min.)
- F. The Problem of Induction <<https://www.youtube.com/watch?v=sd8cxXfPJU4>> (~6 min.)
- G. Stathis Psillos: Scientific Realism (4/7)  
<<https://www.youtube.com/watch?v=s3IH290ihZ0>> (~9 min.)
- H. Karl Popper's Falsification <<https://www.youtube.com/watch?v=wf-sGqBsWv4>> (~2 min.)
- I. Karl Popper and the logic of falsification  
<<https://www.youtube.com/watch?v=XlFywEtLZ9w>> (~9 min.)
- J. Thomas Kuhn, normal science <<https://www.youtube.com/watch?v=sOGZEEZ96ynI>> (~9 min.)
- K. Thomas Kuhn, scientific revolutions  
<<https://www.youtube.com/watch?v=JQPsc55zsXA>> (~9 min.)
- L. Thomas Kuhn, incommensurability and progress  
<[https://www.youtube.com/watch?v=euE7PP\\_RUfk](https://www.youtube.com/watch?v=euE7PP_RUfk)> (~7 min.)
- M. Richard Feynman on Pseudoscience  
<<https://www.youtube.com/watch?v=tWr39Q9vBgo>> (~2 min.)
- N. What is Parapsychology? (Closer to Truth Roundtables - Season 2, Episode 12)  
<<https://www.youtube.com/watch?v=ogdnQuTxjFo>> (~27 min.)
- O. James Randi - Secrets of the Psychics Documentary  
<<https://www.youtube.com/watch?v=2MFAvH8m8aI>> (~54 min.)