

*I do not feel obligated to believe that the same God who endowed us with sense, reason, and intellect had intended for us to forgo their use...*

- Galileo Galilee (1564 – 1642)

• **Philosophy 125 – Philosophy of Science**

Section 04

Spring 2020 (January 21<sup>st</sup> – May 15<sup>th</sup>)

Days: Tuesday/Thursday 1:30 PM – 2:45 PM

Room: Mendocino Hall 3013

Satisfies General Education Area B5 (see course objectives/requirements below)

• **Instructor: J. P. Carboni**

E-mail: [Joshua.carboni@csus.edu](mailto:Joshua.carboni@csus.edu)

Mailbox: Philosophy Department Office: Mendocino Hall Room 3000

Office Hours: **Wednesday 11:00 PM – 12:00 PM**  
**Tuesday/Thursday 12:15 PM – 1:15 PM**  
**Mendocino Hall 3032**

**Course Catalogue:** Study of the philosophical problems that arise in the sciences: the nature of scientific reasoning, the limits and styles of explanation, identifying pseudoscience, values in science, unity and diversity of the sciences, and science's impact on our world view.

• **Required Textbook:**

***Worldviews: An Introduction to the History and Philosophy of Science, 2nd Edition* by Richard DeWitt. ISBN-13 978-1405195638**

• **Learning Objectives for Phil 125:**

By the end of this course and successful completion of all course requirements, the student will be able to do all of the following:

- Accurately summarize the central questions and debates facing philosophers of science today
- Compare and contrast the predominant philosophical positions on such questions and debates
- Explain the importance of such issues by appeal to specific episodes from the history of scientific thought
- Exercise an improved ability to think philosophically about today's scientific research and findings.

• **Area B-5 – Further Studies Learning Outcomes:**

Students will be able to:

- Develop an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems.
- Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of the physical universe and/or its life forms rather than merely to apply existing knowledge.

- Develop an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Specifically, all students will:**

1. Demonstrate a knowledge and understanding of natural phenomena.
2. Apply the methodologies of science when approaching a scientific problem.
3. Explain the limitations of scientific inquiry.

These learning objectives will be met through a variety of practical assessments including quizzes, group work, essay writing and verbal communication (class/group participation).

• **Student Standards of Conduct:**

**Plagiarism and/or cheating** will not be tolerated in this class. All those who engage in these activities will receive a zero on the associated assignment. In addition, all incidents of cheating and/or plagiarism will be reported to the department chair and to the Judicial Officer in the Office of Student Affairs. It is your responsibility to both know and adhere to Sac State's Academic Honesty Policy. This policy can be found at the following address:

<http://www.csus.edu/umannual/student/stu-0100.htm>

If you wish for more assistance/advice on the issue of plagiarism, please see the following CSUS library link <http://csus.libguides.com/home> (information on citing and researching)

**In-Class Participation:** Purposely “obstructing” the viewpoint of another student in the classroom during classroom discussions is prohibited. This class will involve many discussions concerning the material assigned for homework and the material presented during the classroom lectures. This being a philosophy course, many of these discussions *may* challenge certain beliefs that you hold. Open dialog and proper methods of argumentation (which will be discussed) are not only expected but required for this class.

**Attendance/Participation:** Students are expected to attend each class session. This class will involve many in-class discussions and a significant amount of in-class, graded and ungraded work. Students are expected to have completed the readings and participate in all in-class discussions.

**Cell Phones and Computers:** Please set your phone to vibrate before class. Cell phones are not to be used in class for any reason. If you must take a call (which I discourage unless an emergency) please step outside before you answer. No texting or general internet use will be allowed in class.

**Email Correspondence:** Monday through Friday I check my Sac State *and* Gmail accounts two times each day (morning and evening). If I do not respond to an email that you have sent within one business day, please feel free to resend the email. In order to ensure a prompt reply, all emails that you send must be formatted according to the following link:

[https://www.csus.edu/college/arts-letters/philosophy/\\_internal/g6-how-to-correspond-with-your-professor.pdf](https://www.csus.edu/college/arts-letters/philosophy/_internal/g6-how-to-correspond-with-your-professor.pdf)

**NOTE:** All emails *not formatted* according to the above link will not be answered promptly.

• **Disability Accommodations:**

If you have a disability and require accommodations, you will need to provide disability documentation to SSWD, Lassen Hall 1008, (916) 278-6955. Information can be found at the following link: <https://www.csus.edu/student-affairs/centers-programs/services-students-disabilities/>. Please discuss your accommodation needs with me after class or during my office hours *before* the end of the third week of the semester.

**Special Note:** All instructors employed by CSU, Sacramento are ‘mandatory reporters’ of suspected child abuse or neglect according to the *California Child Abuse and Neglect Reporting Act*. As such, I am bound to the requirements established by CSU Executive Order 1083 which can be found at the following link: <http://www.calstate.edu/eo/EO-1083.html>

• **Evaluation/Homework Assignments:**

**In-Class Assignments:** There will be a number of randomly assigned, short in-class assignments throughout the term. These assignments will be worth a total of 5 – 10 points each (you will be informed of the specific point value when each assignment is given). At the end of the term, a total of 50 points will be possible. There are no make-ups on missed in-class work.

**Quizzes:** As outlined on the weekly course breakdown below, there will be three types of quizzes in this class.

- (1) **Reading Quizzes:** Prior to each *new section* lecture/new topic, there will be a quiz to be completed prior to the lecture on that reading/subject (see weekly breakdown below for details). These quizzes must be completed in CANVAS and must be completed prior to the scheduled class time. Each Reading Quiz will be made available by 11:59 PM on the date stated in the weekly breakdown and will be available until that scheduled class begins. **No make-ups will be given for missing a quiz.** These quizzes will be multiple choice and/or true and false. Each quiz will be worth 10 points. Once you begin a quiz, you will have 20 minutes to complete it.
- (2) **Lecture Quizzes:** This course is scheduled to meet Monday, Wednesday and Friday. As illustrated in the weekly breakdown below, each class session will involve a lecture/class discussion on the material assigned for that class. At the end of each week (after Friday’s lecture each week) students will be required to complete a short quiz on the lecture material provided. This quiz will be available in CANVAS on Friday by 11:59 PM and must be completed no later than 10 AM on Monday. Once you begin a quiz, you will have 20 minutes to complete it. Like each Reading Quiz, the Lecture Quizzes will be multiple choice and/or true and false. Each Lecture quiz will be worth 10 Points.
- (3) **In-Class Quizzes:** All in class quizzes (11 in total) will be taken in class only and will be administered immediately once class begins. In-Class Quizzes will not be announced until administered (they are, effectively, pop-quizzes). You will have no more than 15 minutes to complete an In-Class Quiz. **No make-ups will be given for any missed In-Class Quizzes.** All quizzes will be completed using either a laptop computer or a cell-phone. If a class period has an In-Class Quiz, you will be provided with a one-time code that must be submitted in CANVAS and will allow you

to begin the quiz. All In-Class quizzes will consist of no more than 2 multiple choice and/or true and false questions. Each quiz will be worth a total of 5 points (totaling 55 points at the end of the term). **If you are late to class and miss the quiz, you will not be allowed to complete that In-Class Quiz – be on time to class.**

**Please Note:** There will be no make-up quizzes if you miss a quiz (either type). To do well on these quizzes and thus to do well in the class, you should make sure to attend class, to actively participate in the lecture, and to complete the assigned readings. If you are confused in any way about the detailed quiz schedule, it is your responsibility to come and speak to me during my office hours. **Also Note:** If you have any issues during the quiz (like, for example, a system freeze) please do not email me about the issue. Please speak to me either in my office hours or after *the next* class.

**Essays:** There will be two essays in this class. For each assignment, you will be provided with assignment topics, structural details, and a grading rubric two weeks prior to the due date for each essay. Essays must be handed in at the beginning of class on the day that they are due. Late essays will be docked 5 points for every day that they are late (not every class session & not including Saturday or Sunday). If your essay is late, you must arrange a method to hand in the essay with me after the class that the essays are due.

**Essay #1 Assigned: Tuesday, 2/18**  
**Essay #2 Assigned: Tuesday, 4/7**

**Essay #1 Due: Thursday, 3/5**  
**Essay #2 Due: Thursday, 4/30**

### **Basic Essay Guidelines:**

Students are expected to adhere to the guidelines posted in both “Writing Guidelines” & “How to Analyze a Philosophical Essay” that are located on the CSUS Department of Philosophy webpage. This information will be reviewed in class on *Monday of Week 5* (prior to the first essay being due). Below is the link to the webpage:

[https://www.csus.edu/college/arts-letters/philosophy/\\_internal/g3-department-of-philosophy-writing-guidelines.pdf](https://www.csus.edu/college/arts-letters/philosophy/_internal/g3-department-of-philosophy-writing-guidelines.pdf)

Below is a link to the department’s outline of proper philosophic analysis:

Philosophical Analysis: [https://www.csus.edu/college/arts-letters/philosophy/\\_internal/g5-how-to-analyze-a-philosophical-essay.pdf](https://www.csus.edu/college/arts-letters/philosophy/_internal/g5-how-to-analyze-a-philosophical-essay.pdf)

All essays will be graded based on the department grading guidelines. Below is a link to the [Department Grading Guidelines](#):

Grading Standards: [https://www.csus.edu/college/arts-letters/philosophy/\\_internal/g4-grading-standards-for-philosophy-papers1.pdf](https://www.csus.edu/college/arts-letters/philosophy/_internal/g4-grading-standards-for-philosophy-papers1.pdf)

**Examinations:** There will be two examinations in this class (a midterm and a final exam). There will be a comprehensive review held before each exam. There will be no make-ups on exams - except with “extraordinary” circumstances - so schedule outside activities accordingly. Note: Extraordinary circumstances do not include *personal* athletic activities, vacations, car not starting, **bought an early plane ticket home/for family vacation**, just not feeling like it, etc. A doctor’s note (or something similar) will be required to schedule a make-up exam.

**Midterm Exam: Week 8 – 3/14**

## Final Exam: TBA

**Extra Credit:** There will be one extra credit assignment offered in the Spring 2019 term. This assignment, which will be announced during Week 2, will involve attending a CSUS Philosophy Speaker Series Event or another Speaker Event sponsored by the Ethics Center (see link below for details). Detailed instructions will be provided for this assignment, including specific event details, during the second week of class. Below is the link to the Ethics Center homepage, which will list all upcoming speaker dates once announced:

**Center for Practical and Professional Ethics:** <https://www.csus.edu/center/practical-professional-ethics/#Center%20for%20Practical%20and%20Professional%20Ethics>

## Grading Scale:

All essays will be graded based upon a 100-point scale according to the following breakdown:

<b>A</b> Outstanding (75 - 80 pts)	<b>A-</b> Very Good (72 - 74 pts)
<b>B+</b> Above Satisfactory (68.5 - 71 pts)	<b>B</b> Satisfactory (67 - 68 pts)
<b>B-</b> Below Satisfactory (64 - 67 pts)	<b>C+</b> Above Average (61 - 63 pts)
<b>C</b> Average (58 - 60 pts)	<b>C-</b> Below Average (56 - 57 pts)
<b>D+</b> Poor High (53 - 55.5 pts)	<b>D</b> Poor Low (48 - 52 pts)
<b>F</b> Unacceptable (47 and lower pts)	

All Examinations will be graded based on a 100-Point scale according to the following breakdown:

<b>A</b> Outstanding (100 - 95 pts)	<b>A-</b> Very Good (94 - 90 pts)
<b>B+</b> Above Satisfactory (89 - 86 pts)	<b>B</b> Satisfactory (83 - 85 pts)
<b>B-</b> Below Satisfactory (82 - 80 pts)	<b>C+</b> Above Average (79 - 76 pts)
<b>C</b> Average (75 - 73 pts)	<b>C-</b> Below Average (72 - 70 pts)
<b>D+</b> Poor High (69 - 66 pts)	<b>D</b> Poor Low (65 - 60 pts)
<b>F</b> Unacceptable (59 and lower pts)	

## • Total Point Breakdown:

- **Reading Quizzes (x18 = 180 pts) – 160 after 1 dropped quiz**
- **Lecture Quizzes (x13 = 130 pts) – 120 after 1 dropped quiz**
- **In-Class Quizzes (x10 = 50 pts)**
- **Two Essay Option:**
  - Essay #1: 100 possible pts**
  - Essay #2: 100 possible pts**
- **Midterm Examination: 100 possible pts**
- **Final Examination: 100 possible pts**
- **In Class Work: 45 possible points**

---

Total Points Possible 775

**Final Grade Breakdown:** **A** 775 – 725 pts; **A-** 724 – 691 pts; **B+** 690 – 663 pts; **B** 662 – 648 pts; **B-** 647 - 616 pts; **C+** 615 – 586 pts; **C** 585 - 562 pts; **C-** 561 – 539 pts; **D+** 538 – 500 pts; **D** 499 – 485; **D-** 484 – 461; **F** 460 or lower points

## Reading/Assignment Schedule

Note: (1) All **Reading Quizzes** will be posted to CANVAS by 11:59 PM on the indicated date and must be completed no later than 10 minutes prior to the class listed for each quiz.

(2) All **Lecture Quizzes** will be posted to CANVAS on Friday no later than 11:59 PM.

(3) Note: If any particular quiz fails to be posted on or before 11:59 PM on the date indicated, you will receive full credit on that quiz.

---

Week 1: (1/20 – 1/24)

**For Tuesday** *Class Introduction – What Is Philosophy, What Is Philosophy of Science? (No reading)*

**For Thursday:** *In Class Assignment #1: Are We Entitled to Our Opinions? (Short Reading Posted to Canvas)*

---

Week 2: (1/27 – 1/31)

**For Tuesday:** **The Nature of Truth** - DeWitt, Chapter 2: *Truth (Pgs 17-32)*  
• **Due: Reading Quiz #1 (Posted to CANVAS on 1/25)**

**For Thursday:** **The Nature of Facts** – DeWitt, Chapter 3: *Empirical Facts and Philosophical/Conceptual Facts (Pgs. 32 – 38)*

**DUE: Tuesday 2/4 Lecture Quiz #1 (Posted to Canvas on 1/31)**

---

Week 3: (2/3 – 2/7)

**For Tuesday:** **Good Science and Bad Science** – DeWitt, Chapter 4 *Confirming and Disconfirming Evidence and Reasoning (Pgs. 38 – 46)* & Sections 1, 2 and 3 from <https://plato.stanford.edu/entries/pseudo-science/#PurDem>

**For Thursday:** **What Do You Mean It's False?** – DeWitt, Chapter 7, *Falsifiability (66 – 71)*

**DUE:** **Tuesday 2/4 Reading Quiz #1.1 (Posted to Canvas Friday 1/31)**  
**Thursday 2/6 Reading Quiz #2 (Posted to Canvas Tuesday 2/4)**  
**Tuesday 2/11 Lecture Quiz #2 (Posted to Canvas Thursday 2/6)**

---

Week 4: (2/10 – 2/14)

**For Tuesday:** **Method, Man: What is this Method You Keep Talking About? - What is the Scientific Method and is it Reliable?** – DeWitt, Chapter 5: *The Quine–Duhem Thesis and Implications for Scientific Method (Pgs 46 –58)*

**For Thursday:** *Humpty Dumpty Had a Great Fall, Probably* - *Philosophic Interlude: Problems and Puzzles of Induction* (Pgs. 58 – 66)

**DUE:** **Tuesday 2/11 Reading Quiz #3 (Posted to Canvas Friday 2/7)**  
**Thursday 2/13 Reading Quiz #4 (Posted to Canvas Tuesday 2/11)**  
**Tuesday 2/18 Lecture Quiz #3 (Posted to Canvas Thursday 2/14)**

---

Week 5: (2/17 – 2/21)

**For Tuesday:** **Philosophic Interlude: Is the *Matrix* a Documentary Film?**  
**Reading:** *Are We Living in a Computer Simulation?* By Nick Bostrom (Reading Posted to CANVAS in Additional Readings Folder)

**For Thursday:** **Philosophic Interlude: A Short Discussion of Alternative Facts Or ... How I Stopped Worrying and Came to Love the Truth (No Reading Due – Video Posted Under Additional Content in CANVAS)**

**DUE:** **Thursday 2/20 Reading Quiz #5 (Posted to Canvas Tuesday 2/18)**  
**Tuesday 2/25 Lecture Quiz #4 (Posted to Canvas Thursday 2/21)**

**Provided:** **Tuesday 2/18 - Essay Prompt #1**

---

Week 6: (2/24 – 2/28)

**For Tuesday:** ***Say What You Will, But Togas Are Just Darn Comfortable: Science qua Teleology – DeWitt, Chapter 9:*** The Structure of the Universe on the Aristotelian Worldview (Pgs. 81 – 87)

**For Thursday:** **Aristotle Continued – Teleology: It's all in Your Understanding of the End Game, Man!**

**DUE:** **Tuesday 2/25 Reading Quiz #6 (Posted to Canvas Friday 2/21)**  
**Thursday 2/27 Reading Quiz #7 & #8 (Posted Tuesday 2/24)**  
**Tuesday 3/3 Lecture Quiz #5 (Posted to Canvas Thursday 2/27)**

---

Week 7: (3/2 – 3/6)

**For Tuesday:** **Just Who Did Aristotle Think He Was? – DeWitt, Chapter 10**  
The Preface to Ptolemy's *Almagest*: The Earth as Spherical, Stationary, and at the Center of the Universe (Pgs 87 – 99)

**For Thursday:** ***Catch – Up If Needed & Midterm Review***

**DUE:** **Tuesday 3/3 Reading Quiz #9 (Posted to Canvas Friday 2/28)**  
**Thursday 3/5 Reading Quiz #10 (Posted to Canvas Tuesday 3/3)**  
**Thursday 3/5 Essay #1 Due**  
**Tuesday 3/10 Lecture Quiz #6 (Posted to Canvas Thursday 3/5)**

## **Provided: Tuesday 3/3 – Midterm Exam Study Guide**

---

Week 8: (3/9 – 3/13) – **Midterm Week**

**For Tuesday:** ***In-Class Assignment*** (Materials provided in-class) & further review for Midterm Exam

**For Thursday:** ***Midterm Exam 3/12 (Normal Class Time – Exam Posted to CANVAS in the “Examinations Folder” – Please follow all instructions listed on the Midterm Exam Review Guide)***

**DUE: No Quizzes Assigned Week 8 (Except for Lecture Quiz #6 which is due on Tuesday 3/10)**

---

Week 9: (3/16 – 3/20)

**For Tuesday:** ***What Happens When \*^#%#@# Gets Crazy, Yo: The Copernican Revolution Blew People’s Minds! – DeWitt, Chapter 14 The Copernican System (Pgs 123 -134)***

**For Thursday:** ***Copernicus Continued: The Philosophic Implications of Copernicus***

**DUE:** ***Tuesday 3/17 Reading Quiz #11 (Posted to Canvas Friday 3/13)***  
***Thursday 3/19 Reading Quiz #12 (Posted to Canvas Tuesday 3/17)***  
***Tuesday 3/24 Lecture Quiz #7 (Posted to Canvas Thursday 3/19)***

---

Week 10: (3/23 – 3/27)

**For Tuesday:** ***Two Totally Rad Dudes – Dude 1: Tycho Brahe – DeWitt, Chapter 15 The Tychonic System; Dude 2: Johannes Kepler – DeWitt, Chapter 16: Kepler’s System***

**For Thursday:** ***Finish Johannes Kepler***

**DUE:** ***Tuesday 3/24 Reading Quiz #12 (Posted to Canvas Friday 3/20)***  
***Tuesday 3/31 Lecture Quiz #8 (Posted to Canvas Thursday 3/26)***

---

Week 11: (3/30 – 4/3)

**Spring Break – No classes held**  
**3/31 – Cesar Chavez Birthday – Campus Closed**

**DUE: No Quizzes Due**

---

Week 12: (4/6 – 4/10)

**For Tuesday:** **Philosophical Interlude - Science vs. Pseudo-Science Read Section 2, 3, and 5 in <https://plato.stanford.edu/entries/pseudo-science/#PurDem>**

**For Thursday:** **Finish Science vs. Pseudo-Science**

**DUE: Tuesday 4/14 Lecture Quiz # 9**

**Provided: Tuesday 4/7 - Essay #2 Prompt**

---

Week 13: (4/13 – 4/17)

**For Tuesday:** ***Eppur Si Muove* – DeWitt, Chapter 17 and *Start The Need For A New Science* – DeWitt Chapter 18 (Please begin Reading Chapter 18)**

**For Thursday:** ***Finish The Need for a New Science* – DeWitt, Chapter 18; *What Does This Mean for Philosophers? & The Laws of Science* – DeWitt, Chapter 20 & DeWitt, Chapter 21**

**DUE: Tuesday 4/14 Reading Quiz #14 (Posted to Canvas Friday 4/10)  
Thursday 4/16 Reading Quiz #15 (Posted to Canvas Tuesday 4/14)  
Tuesday 4/21 Lecture Quiz #10 (Posted to Canvas Thursday 4/16)**

---

Week 14: (4/20 – 4/24)

**For Tuesday:** ***Newton: The Man With The Plan* – DeWitt, Chapter 20 & 22**

**For Thursday:** ***Did Einstein Want to Be a Stand-Up Comedian? He Already Had the Funny Hair!* – DeWitt, Chapter 23 and *START: Einstein Gets a Hair Cut* – DeWitt, Chapter 24**

**DUE: Tuesday 4/21 Reading Quiz #16 (Posted to Canvas Friday 4/17)  
Tuesday 4/28 Lecture Quiz #11 (Posted to Canvas Thursday 4/23)**

---

Week 15: (4/27 - 5/1)

**For Tuesday:** ***At the Microscopic Level, It Just Gets Weird* – DeWitt, Chapter 25**

**For Thursday:** ***DeWitt, Chapter 26 – What Was Kayne Thinking? ... sorry, I meant Aspect Theory***

**DUE: Thursday 4/30 Reading Quiz #17 (Posted Tuesday 4/28)  
Thursday 4/30 Essay Assignment #2  
Tuesday 5/5 Lecture Quiz #12 (Posted to Canvas Thursday 4/30)**

---

Week 16: (5/4 – 5/8) NOTE: May 8<sup>th</sup> is the final day of instruction for the semeste

**For Tuesday:**     **Is Evolution Real – Let’s Evolve... an Answer – DeWitt,**  
*Chapter 27*

**For Thursday:**   **Why I’m Always Right ... Can Science Tell Us What’s Right**  
**and Wrong? – DeWitt, Chapter 28** (*Additional Reading to be*  
*Posted to Canvas*)  
• **Final Exam Review**

**DUE:**            **Tuesday 5/5 Reading Quiz #18 (Posted to Canvas Friday 5/1)**  
**Tuesday 5/12 Lecture Quiz #13 (Posted to Canvas Thursday 5/8)**

***Provided: Tuesday 5/5 Midterm Exam Study Guide Provided***

---

Week 17:        (5/11 – 5/15)  
***Final Examination Week – Date TBA***

---

**Welcome to Phil 125!**