

**PHIL 265A Philosophy of Science***3 Credits, 3 hours*

This course is designed as an introduction to the central issues in the philosophy of science. Topics may include the problem of induction, demarcating science and non-science, the logic of discovery and justification in science, paradigm shifts and theory change, and the role of science in society.

**Instructor**

Mark Young, Ph D.

S213C

780.791.4825

[Mark.Young@keyano.ca](mailto:Mark.Young@keyano.ca)**Office Hours**

Tuesdays 1:00pm-2:00pm

Thursdays 1:00pm-3:00pm

Fridays 1:00pm-3:00pm

(or by appointment)

**Hours of Instruction**

Wednesdays 9:00am – 10:20am CC224

Fridays 10:30am-11:50am CC224

**Required Resources**

A course package has been designed specifically for this course and is available in the campus bookstore.

**Course Outcomes**

Upon successful completion of the course, students will be able to:

- Identify and understand the key debates over the scientific method.
- Identify and understand the debate over the relevance of ethical values to science.
- Demonstrate the ability to write an argumentative term paper which includes scholarly academic research and properly adopts APA or MLA referencing.

**Evaluation**

Students will be evaluated based on the completion of four assignments. These assignments include: a term exam, term paper, a final exam and on-line discussion topics. Below is a brief description of each assignment, as well as relevant due dates.

On-line Discussions	TBA	15%
Term Exam	14 February	25%
Term Paper	8 April	25%
Final Exam	TBA	35%
Total		100%

*A grade of C- is required for progression or transfer.*

**On-line Discussions**

At five points throughout the term I will post discussion topics for students to comment on. The total value of the assignment is 15%, and therefore 3% for every post. Your response does not have to be lengthy – between 150-300 words - but must exhibit understanding, clarity, accuracy, good reflections and focus only on relevant material. Each topic will be available for only week and late submissions will not be accepted.

**First Exam**

The first exam will include multiple choice questions, short-answer questions and an essay question. The essay question will be provided before the exam, and it will follow the same format as the term paper. Students will be given a specific outline of the exam, including mark distribution, before the exam occurs. The value of this exam is 25% of the total grade.

**Term Paper**

The term paper should be between 8-10 pages (or 2400-3000 words), contain two references from the course textbook and one external source. The external source must be a peer reviewed academic source. A topics list will be provided for the term paper. Students must pick their term paper topic from this topic list or otherwise suffer a significant penalty. A basic format for the term paper, that also indicates the method evaluation, will be provided early in the term. The value of the term paper is 25% of the total grade.

**Final Exam**

The final exam will cover material considered after the first exam. This exam will include short answer questions and two essay questions. More details will be offered concerning this exam as it approaches. The value of the final exam is 35% of the total grade.

**Grading System**

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	
	B	3.0	74 – 76.9	

	B-	2.7	70 – 73.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
Satisfactory <b>Progression</b>	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
	C-	1.7	60 – 63.9	
Poor <b>Minimum Pass</b>	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

### Proposed Schedule of Topics and Readings

#### 1. The Scientific Method

1.1 **Francis Bacon**, Excerpts from *The New Organon*, pp.2-3, 6-20.

1.2 **David Hume**, Excerpts from An Enquiry Concerning Human Understanding, pp.322-333.

1.3 **Carl Hempel**, “Scientific Inquiry: Invention and Test,” pp.3-18.

1.4 **Karl Popper**, “Science: Conjectures and Refutations,” pp.33-59.

1.5 **Thomas Kuhn**, “The Nature of Normal Science,” pp.23-35.

1.6 **Thomas Kuhn**, “Normal Science as Puzzle-Solving.” Pp.35-42.

1.7 **Thomas Kuhn**, “Objectivity, Value Judgment and Theory Choice,” pp.320-339.

1.8 **Gregory Cajete**, “Philosophy of Native Science.” Pp.45-96.

#### 2. Science and Ethics

2.1 **A. J. Ayer**, “Critique of Ethics,” pp.353-359.

3.2 **David B. Resnik**, “Standards of Ethical Conduct in Science,” pp.53-73.

1.3. **Heather Douglas**, “Inductive Risk and Values in Science,” pp.559-579.

### Performance Requirements

A late penalty of 3 marks per day, on a scale of 100, will apply to all late assignments, but will be waived for legitimate reasons if supporting documentation is provided. If an assignment is late, and not handed-in during class time, arrangements must be made with the instructor to hand-in the assignment. Late penalties do not apply to on-line discussions, as they cannot be submitted late. No term papers are accepted after the last day of classes. Should an assignment go missing, and the student is unable to produce another copy, the assignment will be considered not submitted. Likewise, if a grade is not recorded for an assignment the onus is on the student to demonstrate that the assignment was completed and graded. No changes can be made to the class schedule.

**Student Responsibilities**

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College credit calendar.

More specific details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

**Laboratory Safety**

In the science laboratories, safety is important and therefore students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Before entering the lab, students are responsible reviewing the lab manual and relevant Safety Data Sheets for the purpose of evaluating risks associated to health. Some hazards used in the laboratory may have additional risks to those with pre-existing medical conditions.

**Student Attendance**

Class attendance is useful for two reasons. First, class attendance maximizes a students' learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

**Academic Misconduct**

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found on [ilearn.keyano.ca](http://ilearn.keyano.ca). Then print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate.

### **Specialized Supports**

The Student Academic Support Services (SASS) department: Accessibility Services, Skill Centre, Wellness Services and Student Life Department work together to support student success at Keyano College.

**Accessibility Services (CC167)** supports student success through group and individualized instruction of learning, study and test taking strategies, and adaptive technologies. Students with documented disabilities, or who suspect a disability, can meet with the Learning Strategists to discuss accommodation of the learning barriers that they may be experiencing. Students who have accessed accommodations in the past are encouraged to visit our office at their earliest opportunity to discuss the availability of accommodations in their current courses. Individual appointments can be made by calling 780-791-8934.

**Skill Centre (CC119)** provides a learning space where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff. Students visiting the centre have access to one-to-one or group tutoring, facilitated study groups, and assistance in academic writing. The Skill Centre's Peer Tutor program provides paid employment opportunities for students who have demonstrated academic success and want to share what they have learned. Tutoring is available free to any students registered at Keyano College on a drop in basis, from 8:30 am to 5:00 pm Monday through Friday. Additional evening hours are subject to tutor availability and are posted in the Skill Centre.

**Wellness Services (CC260)** offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators offer a safe and confidential environment to seek help with personal concerns. The Mindfulness Room in CC260 is available as a quiet space for students to relax during regular office hours. Wellness Service welcomes students to participate in any of the group sessions offered throughout the academic year addressing such topics as Mindfulness and Test Anxiety. Individual appointments can be made by calling 780-791-8934.

**Student Life Department (CC210)** is a place for students to go when they don't know who else can answer their questions. The staff will help students navigate barriers to success and if they don't know the answer, they will find it out. Student success is directly affected by how connected a student feels to their college. The student life department is there to help students get connected.

**Please watch your Keyano email for workshop announcements from our Student Academic Support Services team.**