

Syllabus

Thai วทศร ๑๘๒ ธรรมชาติและปรัชญาของวิทยาศาสตร์

English SCID 182 Nature and Philosophy of Science

Number of Credits 3 (3-0-6)

(Lecture 3 – Laboratory 0 - Self-Study 6)

2018 2^{nt} Semester

Tuesday (8.30-11.30 am)

Course coordinator:

Assoc. Prof. Wannapong Triampo, Room R3/1 SC3-R3/1, (02) 441-9817 ext. 1131,

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Instructors:

1. Assoc. Prof. Wannapong Triampo (WT)
2. Invited instructors

Office Hours: Monday 10:00-11:00 AM or by appointment.

Course-level Learning Outcomes: CLOs

After successful completion of this course, students will be able to:

- 1) CLO1 Explain key laws, theories and principles of science
- 2) CLO2 Explain key concepts of philosophy of science
- 3) CLO3 Analyze scientific process used in solving problem in real life.
- 4) CLO4 Propose inquiry –based scientific model suitable for given situation or problem

Course Description:

Nature and philosophy of science; the history of and origin science; measurement and scientific discovery; from Galileo to Einstein; science and STEM as inquiry; biology: theory and lab; chemistry: theory and Lab; physics: theory and lab; integrated science; contemporary science and technology

Teaching Materials and Resources

Douglas Allchin, Teaching the Nature of Science: Perspectives & Resources, 2013
SHiPS Education Press, Saint Paul, MN, USA

HOMEWORK: Reading assignments will be made daily, and **homework exercises will be assigned every day in the classroom and/or on the course web site.** Collaboration on homework is encouraged, and questions are always welcome in class and outside of class. Although, if you work on the homework with other students, don't submit work that is not yours. Homework submissions that are absolutely identical will receive zero credit. Homework must be submitted at the beginning of the class. **Late homework will not be accepted, unless a justified excuse is validated.**

EXAMINATIONS & QUIZZES: There will be a midterm exam and a final exam. All exams are closed book without the aid of calculators. The midterms will be given during the regular class and will cover material incrementally through the semester, and the final exam will be materials over the second half of the course. **There will be no make-up exams or quizzes given for any tests in this course.** A missed exam probably will prevent you from passing unless you have approval from your professor before the exam because of an extreme emergency.

Attendance in the lectures and the quizzes are a factor in grading. They will not be announced in advance, and they will be given randomly. The quizzes will cover material discussed in the current and very recent lectures.

GRADING: Tentatively, your grade will be determined according to the following distribution.
(Part of the homework grade may be based on work done in class.):

Homework & Quizzes	- 10%,
Attendance & Participation	- 10%,
Project -	- 20%,
Midterm	- 30%,
Final Examination	- 30%.

Tentative grading criterion:

A = 85-100 C = 40-49

B+	=	70-84	D+	=	30-39
B	=	60-69	D	=	20-29
C+	=	50-59	F	=	Below 20

ACADEMIC INTEGRITY: The use of unauthorized material, communication with others during an examination or quiz, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination quiz, or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from nervous tensions accompanying examinations. Where a clear violation has occurred, however, the instructor may disqualify the student's work as unacceptable and assign a failing score on the paper. It is particularly important that you are aware of and avoid plagiarism, cheating on examinations and quizzes, fabricating data for a project assignment, submitting a paper to more than one professor, or submitting work authored by anyone but yourself. Violations will result in penalties, which may be severe such as resulting in a failing grade in the course, and will be reported to the Office of Student Conduct. If you have doubts about any of these policies, you must confer with the professor.

RETENTION OF PAPERWORK: Graded paperwork, if not distributed to a student in class, will be available, during regular university office hours, in room SC3-R3/1 the days following its availability in class.

IMPORTANT DATES

Classes begin Monday 14 January 2019

Mid-term examination Monday 11- Friday 15 March 2019

Classes end Friday 10 May 2019

Final examination Monday 13- Friday 24 May 2019

Second semester end Monday 27 May 2019

In addition to modifications of the proposed schedule, it may be necessary to make some other adjustments in the syllabus during the semester. The syllabus posted on the course website is the updated syllabus.

PROPOSED SCHEDULE

Teaching Plan

<i>Week</i>	<i>Topic</i>	<i>Hours</i>			<i>Teaching methods/ multimedia</i>	<i>Instructor</i>
		<i>Lecture</i>	<i>Laboratory</i>	<i>Self-study</i>		
<i>1 15 Jan</i>	<i>Introduction of course discipline and class orientation. What is nature and philosophy of Science?</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>2 22 Jan</i>	<i>What is nature and philosophy of Science?</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>3 29 Jan</i>	<i>The history of science</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>4 5 Feb</i>	<i>The history of science</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>5 12 Feb</i>	<i>Measurement for discovery in Science</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>6 19 Sep</i>	<i>Measurement for discovery in Science</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>7 26 Feb</i>	<i>From Galileo to Einstein</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>8 5 March</i>	<i>From Galileo to Einstein</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>9 12 March</i>	<i>Midterm examination</i>					
<i>10 19 Mar</i>	<i>Science and STEM as Inquiry</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>11 26 Mar</i>	<i>Science and STEM as Inquiry</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>12 2 April</i>	<i>Biology: Theory and Lab</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Group discussion Active lecture</i>	<i>Wannapong Triampo</i>
<i>13 9 April</i>	<i>Chemistry: Theory and Lab</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Active Lecture, Group discussion</i>	<i>Wannapong Triampo</i>
<i>14 23 April</i>	<i>Physics: Theory and Lab</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Active Lecture, Group discussion</i>	<i>Wannapong Triampo</i>
<i>15 30 April</i>	<i>Integrated science</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Active Lecture, Group discussion Project based learning</i>	<i>Wannapong Triampo</i>
<i>16 7 May</i>	<i>Contemporary science and technology</i>	<i>3</i>	<i>0</i>	<i>6</i>	<i>Active Lecture, Project-based learning</i>	<i>Wannapong Triampo</i>
<i>17 14 May</i>	<i>Final examination</i>					
	<i>Total hours</i>	<i>45</i>	<i>0</i>	<i>90</i>		

