ATENEO DE MANILA UNIVERSITY
LOYOLA SCHOOLS

COURSE SYLLABUS

COURSE NUMBER	: Sci10
TITLE	: Science and Society
SCHOOL	: Science and Engineering (SOSE)
SEMESTER AND SCHOOL YEAR	: 1st Semester, 2015-2016
NUMBER OF UNITS	: 3Units
FACULTY	: Charlotte Kendra Gotangco and Ian Navarrete
SCHEDULE & VENUE	: MWF 1:30-2:30am, SecC201A

A. COURSE DESCRIPTION

This course aims to present a synthesis of the most significant scientific principles of modern times, and in doing so, discuss the impact of science on culture and society and provide a more holistic understanding of the nature of science and technology. It also discusses the most significant theories of science. The approach is interdisciplinary and shall cover the various sciences, including physics, biology, chemistry, and earth and environmental science, as well as their sub-disciplines such as cosmology, material science, and molecular biology. In line with the Ateneo LS vision, examples show the global nature of S&T and how these affect the country and the Asian region, and bring into focus the values that a Filipino, Catholic, and Jesuit center of excellence of higher learning upholds. Activities highlight the opportunities for transforming social habits and cultural mindsets.

B. LEARNING OUTCOMES

By the end of the course, students should be able to:

- **Discuss general ideas about the practice of science**. Students are expected to recognize and explain scientific concepts and methods common to the different natural science disciplines.
- **Provide solutions to issues utilizing the learned concepts in science.** Students should be able to demonstrate the ability to situate issues in a particular context. They should be able to assess potential measures and propose solutions to these contextualized issues. Students are also expected to formulate these solutions using logical, analytical and critical thinking as shown in the practice and process of science.
- **Demonstrate knowledge in contemporary issues in the realm of S&T.** Students should be able to perceive the interplay of predominantly non-science factors, as well as the resulting outcomes, in providing insight to key issues in S&T. They are expected to distinguish the effects and implications of the practice and development of S&T on the society as a whole.
- **Advocate personal and social values, particularly those intrinsic and imbued in the study of scientific practices.** In line with the Ateneo LS vision, students should be able to display and commit to Ignatian values, especially values espoused in the discussions on S&T. They should exemplify the role of the self and the current generation in the transformation of the society through one's profession and leadership.

C. COURSE OUTLINE

WEEK	TOPIC OUTLINE	EXAM *(tentative date)*
1	Introduction	
1-4	The Practice of Science and Technology A. What is Science? What is Technology? B. The Scientific Method C. Technology and Development D. Intellectual Property Rights	1 *(Sept. 7)*
5-8	Science, Technology and Lifestyle A. Telecommunications B. Food Security and Genetic Engineering	2 *(Sept. 30)*
9-12	The Environment A. The State of the Environment B. Sustainable Development C. Case Studies in Contemporary Issues: Mining, Waste, Energy, Agriculture	3 *(Oct. 28)*
13-15	Our Origins A. Origins of Life and Evolution B. Origins of the Universe	4 *(Nov. 20)*
16-17	Reporting and Wrap-up	
18	Finals Week	

D. REQUIRED READINGS

Cuyegkeng, Ma. Assunta C., editor. Stellar Origins, Human Ways: Readings in Science, Technology, and Society. Quezon City: Ateneo de Manila University Press, 2011.

Other handouts will be assigned in class.

E. COURSE REQUIREMENTS

Long Exams: There will be 4 long exams during the semester; the specific coverage of which will be announced accordingly. This could either be written or oral

Plenary Lectures: Students are REQUIRED to attend and come on time for the big lectures scheduled during their class period. Students are to sign on the attendance sheet and sit at their designated area. Failure to sign during their class period will be marked as an absence. There will be times that the class will have to prepare before attending the lecture. These maybe in the form of reading assignments, prepared questions, materials etc. Taking notes and asking questions during the open forum is highly encouraged.

Class Activities: These may include homework, seatwork, and quizzes (may be unannounced).

Group Project: Each group will choose from (1) an oral debate on a pre-determined topic, to be done during the appropriate module in the semester; or (2) a written paper with a 15-min oral presentation to be done at the end of the semester.

Option 1: Debate (10 slots available)
Each group will be assigned as issue to either defend or reject. The group must prepare at (2) major arguments tackling the following the following dimensions: 1. Scientific/technical, 2. Socio-economic, cultural or ethical. The group must also be able to question or counter the opposing group's

argument, and deliver a closing argument to convince their audience. (See Attachment A on Debate Guidelines.)

Option 2: News Analysis (6 slots available)
Each group must look for a news article on a contemporary issue, and then discuss (1) the science/technology behind the issue, (2) the societal implications, and (3) recommendations for moving forward or, in the case of controversial issues, a position to support. (See Attachment B on News Analysis Guidelines.)

Final Exam: The final exam is comprehensive and integrates all the material in the course. Exemptions for the finals will be given to students with a pre-final class standing of B or better. Note, however, that students who are exempted may opt to take the finals but at a risk.

F. GRADING SYSTEM

Criteria:		Grade Equivalent:	
Long Exams	40%	92-100	A
Group Project	20%	87-91	B+
Class Activities	20%	83-86	B
Final Exam	20%	79-82	C+
	100%	72-78	C
		60-71	D
		<60	F

G. CLASSROOM POLICIES

Attendance: The maximum allowable number of cuts in this course is 9 (MWF classes) or 6 (T-Th classes). Beyond this limit, whether excused or not, you will be given a final grade of W. Two records of tardiness will be made equivalent to one absence. Tardiness is marked after the attendance is checked at the beginning of the class. Those who come after attendance has been checked are left responsible in informing the teacher/assistant/beadle of his/her tardiness by the end of the class, or else, the record will remain as a cut.

Compliance with Requirements: There will be NO make-up given for missed quizzes, exercises or exams unless the student has a valid excuse and can provide supporting documentation. Late submissions will NOT be entertained (e.g. If a requirement is due at the start of the class then submissions during or at the end of class will NOT be accepted. If a paper should have been emailed by 9:00am, then submissions time-stamped 9:01am will not accepted). Students are expected to provide all equipment needed for the oral reports in class.

Classroom Decorum: You are expected to follow standard regulations for behavior inside the classroom – that is, respect, courtesy and consideration for others. Cellular phone use is NOT allowed during the class period. Laptops and tablets may be allowed for note-taking as long as the student is not using it for any activity other than the class. If ANY student is caught doing something else (e.g. playing games, checking Facebook, watching videos), then laptops/tablets will be prohibited for EVERYONE.

Academic Integrity
Students who violate University rules on scholastic dishonesty will be subject to disciplinary penalties (Code of Discipline Part III, Section E, Student Manual, 2002 ed).

Class Beadle: The class beadle will be a helpful assistant to the Instructor. He or she will prepare the class directory and seat plan, assist in attendance-checking, and will be responsible for disseminating announcements and handouts over the semester. The class beadle may be given privileges such as first priority selection of group project topics.

H. CONSULTATION HOURS

Ian Navarrete	Office:	Environmental Science Dept (extension 5658)
	E-mail Address :	inavarreten@ateneo.edu
	Consultation hours :	MWF 3-4pm
Charlotte Kendra Gotangco	Office:	Environmental Science Dept (extension 5657)
	E-mail Address :	kgotangco@ateneo.edu
	Consultation hours :	MWF 2:30-4pm or by appointment

Your instructors are best contacted via email but kindly give us sufficient time during office hours to reply.

Attachment A: Debate Guidelines
Attachment B: News Article Analysis Guidelines

ATTACHMENT A: Debate Guidelines (10 groups)

Each group will be assigned as issue to either defend or reject. The group must prepare at (2) major arguments tackling the following the following dimensions: 1. Scientific/technical, 2. Socio-economic, cultural or ethical. The group must also be able to question or counter the opposing group's argument, and deliver a closing argument to convince their audience. The group's performance during the debate shall be graded accordingly:

Content of Arguments	30%
Cross-Examination	30%
Final Statement	20%
Professionalism	20%
Total:	100%

Peer Review (score out of 100)
Final grade = (Peer review/100)* Total

Format of Peer Review (to be prepared on a ½ sheet of intermediate pad):

Your Name	Tasks Assigned to You	Tasks You Completed	Your Score / 100
Your Groupmates 1. Member 1 2. Member 2 3. Member 3 …	Tasks Assigned to Each Groupmate	Task Each Groupmate Completed	Each Groupmate's Score/100

Debate Topics:
A sign-up sheet will be posted to assign groups to topics. Each topic requires (2) groups – one to take the affirmative stand, and one to take the negative stand. The dates of the debate will be scheduled in accordance with the module in which they are tackled. The topics are as follows (**tentative dates** in parenthesis):

1. *Do Intellectual Property Rights impede technological innovation and growth in developing countries??* ***(Module 1: Aug. 28)***
2. *Are recent developments in telecommunications technology harming interpersonal communication?* ***(Module 2: Sept. 16)***
3. *Is genetic engineering the answer to food security in developing countries? (Module 2:* ***Sept. 25)***
4. *Should Palawan be opened to mining concessions? (Module 3:* ***Oct. 14)***
5. *Should the Philippine government pursue waste-to-energy projects?? (Module 3:* ***Oct. 23)***

Debate Mechanics:

1. Each group must assign the following roles to its members:
    - Researchers
    - Speakers (Scientific/technical, Socio-economic, cultural or ethical)
    - Speaker (closing argument)
    - Cross-examiners
2. Each speaker will only be given (3) minutes to deliver his argument.
3. This will be followed by a (5)-minute cross-examination by the opposing team.
4. The affirmative team will always speak first.
5. The scientific/technical arguments and cross-examinations will be held first, followed by the socio-economic, cultural or ethical.
6. Each team is then given the (3) minutes to summarize their points and address/rebut any questions in their closing argument.

ATTACHMENT B: News Article Analysis Guidelines (6 groups)

Each group must look for a news article on a contemporary issue, and then discuss:

(1) the scientific and/or technological principles behind the issue,
(2) the societal implications (including social, economic, political, cultural or ethical impacts); &
(3) recommendations for moving forward or, in the case of controversial issues, a position to support.

Example 1:
Last April 2015, Rappler featured an article entitled "Regulatory body pushed to study Bataan Nuclear Power Plant revival. [1]" A group analyzing this article would research on the science and technology behind nuclear energy, the history of the BNPP, and the socio-economic and ethical implications on Philippine society of its revival. Then, the group must take a stand on whether revival of the BNPP should be pursued and explain why.

Example 2:
Last March 2015, the Daily Inquirer featured an article entitled "Close Payatas landfill now, SC urged.[2]" A group analyzing this article would research on how landfills are operated, what their environmental impacts are, and what the alternative technologies would be for dealing with waste. The group should look into how the Payatas landfill, in particular, has been managed, including the socio-economic and ethical issues associated with the landfill. The group should then make a recommendation on whether the landfill should be closed. If it should remain open, are there any conditions or caveats? If it should be closed, what alternatives should be pursued?

A sign-up sheet will be posted for groups to wanting to select this option for their group project.

A 15-minute oral presentation will be delivered to the class, and a written paper will be submitted via email by the start of the class on the day of the presentation. Written reports should be single-spaced, using 11-point TNR font, and APA format of citations. The oral presentation dates are tentatively scheduled for the ***week of Nov. 23, 2015***. Groups should consult with instructors to have a selected article approved by ***October 16, 2015***.

The project shall be graded according to the following:

Content: Analysis of the Science and Technology	25%
Content: Analysis of Societal Implications	25%
Content: Clarity and Soundness of Position/ Recommendations	25%
Organization (both of paper and presentation)	15%
Professionalism (conduct during presentation and attention to formatting and citations in paper)	10%
	___ Total: 100%

Peer Review (score out of 100)

Final grade = (Peer review/100)* Total

Format of Peer Review (to be prepared on a ½ sheet of intermediate pad):

Your Name	Tasks Assigned to You	Tasks You Completed	Your Score / 100
Your Groupmates 1. Member 1 2. Member 2 3. Member 3 …	Tasks Assigned to Each Groupmate	Task Each Groupmate Completed	Each Groupmate's Score/100

[1] http://www.rappler.com/business/industries/173-power-and-energy/90525-regulatory-body-bataan-nuclear-power-plant-revival
[2] http://newsinfo.inquirer.net/679049/close-payatas-landfill-now-sc-urged