Course Specification

Name of institution	Mahidol University
Campus/faculty/department	Salaya campus
	Mahidol University International College
	Science Division

Section 1 General Information

1. Course code and course title

Thai	ICNS	133	ดาราศาสตร์เบื้องต้น
English	ICNS	133	Introduction to Astronomy

2. Number of credit 4 (3-2-7) (Lecture/lab/Self-study)

3. Curriculum and type of subject

3.1 Curriculum	General Education
3.2 Type of subject	Natural Science

4. Responsible faculty member Tara Chalermsongsak

5. Trimester / year of study

5.1 Trimester	3rd trimester
5.2 Number of students	5-25 students

6. Pre-requisites -

7. Co-requisites -

8. Venue of study Mahidol University, Salaya campus

9. Date of latest revision August 2018

Section 2 Goals and Objectives

1. Goals

Students should be able to
1. Understand how Astronomy can be a portal for scientific research.
2. Use a simple telescope for sky observation.
3. Do research, observation to answer some basic astronomy questions

2. Objectives of development/revision

To revise course in order to be up-to-date and relevant to the current situation

Section 3 Course Management

1. Course descriptions

พื้นฐานความรู้ทางดาราศาสตร์ฟิสิกส์; การเรียนรู้เอกภพของมนุษยชาติและการพัฒนาความเข้าใจจาก กระบวนการทางวิทยาศาสตร์; โลก พระจันทร์ และ ระบบสุริยะ; วงจรชีวิตของดวงดาว; กาแลกซี่; หลุมดำ; และการค้นคว้าทางดาราศาสตร์ในปัจจุบัน

Basic ideas of astronomy, astrophysics and cosmology; the progress of human understanding of the universe; the impact of scientific method on astronomical observation; the Earth & Moon; the Solar System; the lifecycle of stars; Black Holes; galaxies; and the current understandings about the origins and future of the universe.

2. Credit hours / trimester

Lecture	Additional class	Laboratory / field trip/ internship	Self study
36 hours (3 hour x 12 weeks)	-	24 Hr (2 hours x 12 weeks)	84 hours (7 hours x 12 weeks)

3. Number of hours that the lecture provides individual counseling and guidance

2 hours / week

Section 4 Development of Students' Learning Outcome

1. **Expected outcome on students' skill and knowledge**

   Student can read standard science textbooks and understand it. Student can setup a basic telescope for sky observation.

2. **Teaching Methods**
   - Lecture
   - Self-study
   - Practical laboratory exercises.

3. **Evaluation methods**

   1. **Morality and Ethics**

      1.1 ***Expected outcome on morality and ethics:***

      - To posses morality and ethics.
      - To have self-discipline, honesty, kindness, self- responsible and social responsibility
      - To demonstrate academic ethical behavior
      - To respect others' rights and be a good listener
      - To respect rules and regulations
      - To have good attitude toward professors/career
      - To demonstrate Leadership, team player

      1.2 ***Teaching method:***

      Learning Centered Education: Emphasis on knowledge development, important skills in career development and living, encourage students to use their full potentials

      1.3 ***Evaluation methods:***

      - Written examination
      - Presentation
      - Class attendance, class participation and behavior in class
      - On-time submission of reports and assignments and their quality

   2. **Knowledge development**

2.1 ***Expected outcome on knowledge development:***

- To be able to ask questions about a natural phenomenon. Why does it happen?
- To be able to apply basic science knowledge and explain a natural phenomenon.
- To be able to do research and study more about unanswered questions

2.2 ***Teaching method:***

- Lecture
- Group discussion
- Hand on Experience

2.3 ***Evaluation methods:***

- Written examination
- Presentation
- Class attendance
- Assignments

3. Intellectual development

I don't see the difference between knowledge development and intellectual development, read section 2.

4. Interpersonal relationship and responsibility

4.1 ***Expected outcome on interpersonal relationship and responsibility:***

- - To posses good interpersonal relationship skills (self esteem and dignity) and have respect for the rights and value of others
- - To possess leadership and initiative in problem solving
  - To be constructive team member (in various roles) and be responsible for assignment tasks, professional and society

4.2 ***Teaching method:***

- Group discussion
- Group lab work

4.3 ***Evaluation methods:***

- Presentation, and submission of group report.

5. Mathematical analytical thinking, communication skills and information technology skills

5.1 ***Expected outcome on mathematical analytical thinking, communication skills and information technology skills:***

-To be able to select and apply appropriate statistical and mathematical methods to research problems

- To be able to apply information technology for data gathering, processing, interpreting and presenting information/results
- To have the ability to communicate effectively and select appropriate methods of presentation

5.2 ***Teaching method:***

- Lecture

5.3 ***Evaluation methods:***

- Written examination

Section 5 Teaching and Evaluation Plans

1. Teaching plan

Week	Topic	Number of Hours		Teaching Activities/ Media	Lecturer
		Lecture Hours	Lab/ Field Trip/ Internship Hours		
1	Astronomy and Civilization	3	2	Lecture, real-life examples, small-group discussion, class discussion, hands on demonstration.	Tara C.
2	Gravitational Force and Circular motion	3	2		
3	Earth, Moon, Sun and Solar System	3	2		
4	Surveying the Sky	3	2		
5	Optical Instrument	3	2		
6	Spectroscopy of Stars	3	2		
7	The Sun	3	2		
8	Stellar Evolution	3	2		
9	White Dwarf and Neutron stars	3	2		
10	The beginning of Universe	3	2		
11	Relativity in a nutshell	3	2		
12	Review	3	2		
	Total	36	24		

2. Evaluation plan

Expected outcomes	Methods / activities	Week	Percentage
1. (1) to (4)	Attendance	1-12	10
2. (1) to (5)	Assignment	1-12	50
3. (2) to (3)	Examination	12	40 (Midterm: 20; Final: 20)

Section 6 Teaching Materials and Resources

1. Texts and main documents

2. Documents and important information

3. Documents and recommended information

Section 7 Evaluation and Improvement of Course Management

1. **Strategies for effective course evaluation by students**
   - 1.1 Evaluation of peers by students
   - 1.2 Student evaluation
     - 1.2.1 Course content
     - 1.2.2 Course management
     - 1.2.3 Suggestions
     - 1.2.4 Overall opinion

2. **Evaluation strategies in teaching methods**
   - 2.1 Student evaluation
   - 2.2 Presentation
3. **Improvement of teaching methods**

   Workshop on course improvement with the participation of all instructors in the course
4. **Evaluation of students' learning outcome**

   Analysis of students' learning outcomes using scores from class attendance, group activity and presentation of project and poster presentation
5. **Review and improvement for better outcome**

   Review the course before trimester starts and before each teaching period