Course Outline

Department : Foreign Languages - Higher Secondary (Bilingual) **Name of Subject: Astronomy** **Code :** ว33283

Teacher's name : Ms. Charlou Asares

Level : **Mathayom 6**

☐ Primary …/….. ☒ Secondary ….…. **1st Semester / 2014**

Subject :

☐ Main Subject ☒ Optional Subject ☐ Development Activities for Students ☐ Others

1) Course Description (1st Semester)

This course is a basic concept of astronomy that emphasizes appreciation of the earth's relationship to the universe. This provides knowledge and understanding of the chemical, physical properties and evolution of the celestial objects and other cosmic phenomena. The course covers the topics/units such as Stars, Galaxies, The Universe, The Solar system, and Observing and Exploring Space. Laboratory activities will include real and virtual astronomical viewing and experiments.

2) Learning Objectives (1st Semester)

Indicators of Semester	In accordance with government curriculuma
1. To define constellation and classify star based on their properties.	1. Search for relevant information and explain formation and evolution of the solar system, galaxies and universe. 2. Search for relevant information and explain nature and evolution of stars.
2. To explain the speed of light and the concept of light years.	
3. To outline the chronological life cycle of a star.	
4. Describe the structure of Milky Way galaxy and the heavenly bodies in this galaxy.	
5. To describe the historical views of the solar system	
6. To name the planets and describe their motion around the Sun.	
7. To explain how the solar system was formed.	

8. To define, name and discuss different steroid mission and its importance.	
9. Differentiate meteoroids, meteors and meteorites from one another.	
10. To define a comet and its characteristics	

3) Contents of subjects

1st Semester

Time Duration	Subject Contents
Beginning of the session – Mid-term	■ Introduction and brief history of Astronomy ■ Constellations - Big dipper - Ursa Minor or Little Dipper - Orion or Hunter - Other known constellations ■ Light year ■ Apparent Versus Real Distances ■ Energy of the stars -Nuclear Fusion ■ How stars are classified -Colour and temperature -Classifying stars by colour ■ Birth and death of stars -Formation of stars -Main sequence star -Red giants and white dwarfs -Supergiants -Red supergiants -Supernova

	-Neutron stars and black holes ■ Measuring star distances -Parallax Method ■ Star system and star clusters ■ Type of Galaxies -Spiral galaxies -Elliptical galaxies -Irregular galaxies -Dwarf galaxies ■ Milky way Galaxy ■ Expansion of the Universe -Redshift -The expanding universe ■ Formation of the Universe -Big bang theory -Dark matter -Dark energy
Post – Midterm – Final	■ Changing views of the solar system -The geocentric universe -The heliocentric universe ■ The modern solar system -Planets and their motions -Sizes of objects in the solar system relative to the earth -Planets and dwarf planets -Size and shape of orbits -The role of gravity ■ Formation of the solar system

	-Nebular theory -Formation of the sun and planets -Formation of the sun -Formation of the planets ■ Inner planets of the solar system ■ Mercury, Venus, Earth, Mars ■ Outer planets of the solar system ■ Jupiter, Saturn, Uranus and Neptune ■ Other objects in the Solar system ■ Asteroids, Meteroids, and Meteorites ■ Comets ■ Dwarf Planets

4) Evaluation

Average marks for evaluation

Authentic Assessment: Written / Practical Exam = 70 : 30

Evaluation of Learning Objectives

Semester	Learning Objectives (Items)
1	Items 1 - 10

5) Details of Evaluation

1st Semester/2014

Pre-test marks: 35 Marks (Authentic Assessment)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
1	Labeling, Illustration, Oral Presentation, Quiz	10
2	Internet Research, Group Work, Illustration, Problem Solving, Quiz, Textbook exercises	15
3	Illustration, Video Analysis, Oral Recitation, Homework,	10

Mid-term marks: 15 Marks (Written/Practical Exam)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
4	Concept mapping, Illustration, Essay	10
5	Fill in the Blanks, Group discussion, and Essay, Illustration	15

Post-Test marks : 35 Marks (Authentic Assessment)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
6	Brain storming, Illustration, Research, Oral Presentation, Textbook exercises	15
7	Oral Presentation, Illustration, Quiz	10
8	Oral Presentation, Essay	10

Final marks : 15 Marks (Written/Practical Exam)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
9	Identification, Essay, Problem Solving, Presentation	7
10	Identification, Calculations, Illustrations, Projects	8

Resources

1. http://www.enchantedlearning.com/subjects/astronomy/
2. http://www.astronomy.com/
3. http://www.skyandtelescope.com/online-resources/
4. http://hubblesite.org/explore_astronomy/
5. http://aspire.cosmic-ray.org/

Course Outline

Department : Foreign Languages - Higher Secondary (Bilingual) **Name of Subject: Astronomy** **Code :** ว33283

Teacher's name : Ms. Charlou Asares

Level : **Mathayom 6**

☐ Primary …/….. ☐ Secondary ….…. **2nd Semester / 2014**

Subject :

☐ Main Subject ☐ Optional Subject ☐ Development Activities for Students ☐ Others

1) Course Description (2nd Semester)

This course is about the basic concepts of space technology. This will provide the students sufficient knowledge about cosmic bodies and their relationship to people's life and environment. Thus, students will have a clear understanding about the importance of the developments of space exploration. The course is divided into three main units, namely: Telescopes, Early Space Explorations and Recent Space Explorations.

2) Learning Objectives (2nd Semester)

Indicators of Semester	Accordance with governmental Curriculums
1. Define the unit of light year	1. Search for relevant information and explain the launching of satellites, and calculate the velocity of satellites revolving around the earth. 2. Search for relevant information and explain benefits of satellites in various respects. 3. Search for relevant information
2. Explain the use of electromagnetic spectrum in exploring the universe	
3. Identify the different types of telescopes	
4. Explain the role of absorption spectrum in the study of stars	
5. Explain the principle of working of a rocket	
6. State Newton's laws of motion and gravitation	
7. Describe the different types of satellites	
8. Describe the different types of orbits	
9. Sketch the history of space stations and space shuttles	
10. Describe the recent developments in space exploration	

	and explain the launching of space ships, and space exploration by utilizing space ships and space stations.

3) Contents of subjects

2nd Semester

Time Duration	Subject Contents
Beginning of the session – Mid-term	■ Electromagnetic Radiation -Speed of light -Light year ■ Electromagnetic Waves ■ Electromagnetic Spectrum ■ Types of Telescopes -Optical Telescopes -Radio Telescopes ■ Observations with Telescopes -Ancient Astronomers -Galileo's observations -Observations with modern telescopes ■ Early Space Explorations ■ Rockets -Important milestones in rocket science ■ Satellites -Newton's law of Universal Gravitation -Types of Satellites

	-Types of Orbits ■ Space explorations by the USSR and the USA -Missions by USSR -Missions by USA -The early space missions -Exploration of the Moon -Exploring other planets
Post – Midterm – Final	■ Recent Space Explorations ■ Early space stations -Salyut -Skylab ■ Modular Space Station -Mir -The International Space Station ■ Space shuttles -Stages of a space shuttle mission -Space shuttle disasters ■ Recent space missions -Earth science satellites -Space telescopes -Solar system exploration -Future missions

4) Evaluation

Average marks for evaluation

Authentic Assessment: Written / Practical Exam = 70 : 30

Evaluation of Learning Objectives

Semester	Learning Objectives (Items)
2	Items 1 - 10

5) Details of Evaluation

2nd Semester/2014

Pre-test marks: 35 Marks (Authentic Assessment)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
1	Labeling, Illustration, Oral Presentation, Quiz	10
2	Internet Research, Group Work, Illustration, Problem Solving, Quiz, Textbook exercises	15
3	Illustration, Video Analysis, Oral Recitation, Homework,	10

Mid-term marks : 15 Marks (Written/Practical Exam)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
4	Concept mapping, Illustration, Essay	5
5	Fill in the Blanks, Group discussion, and Essay, Illustration	10

Post-Test marks : 35 Marks (Authentic Assessment)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
6	Brain storming, Illustration, Research, Oral Presentation, Textbook exercises	15
7	Oral Presentation, Illustration, Quiz	10
8	Oral Presentation, Essay	10

Final marks : 15 Marks (Written/Practical Exam)

Learning Objectives (Items)	Criteria Followed for Assessment	Maximum marks
9	Identification, Essay, Problem Solving, Presentation	8
10	Identification, Calculations, Illustrations, Projects	7

Resources

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3. http://www.skyandtelescope.com/online-resources/
4. http://hubblesite.org/explore_astronomy/
5. http://aspire.cosmic-ray.org/