### Subject Description Form

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>GEC225</th>
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<tbody>
<tr>
<td>Subject Title</td>
<td>Exploration of the Cosmos 宇宙的探索</td>
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<tr>
<td>Credit Value</td>
<td>3</td>
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<tr>
<td>Level</td>
<td>2</td>
</tr>
<tr>
<td>Pre-requisite/ Co-requisite/ Exclusion</td>
<td>Nil</td>
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**Objectives**

This subject is a descriptive survey of modern astronomy. It introduces the student to the study of phenomena outside the confines of the earth.

**Intended Subject Learning Outcomes**

Upon completion of the subject, students will be able to:

1. have a basic understanding of the scientific method and be able to apply it;
2. understand the underlying scientific principles by which astronomical observations and research are carried out;
3. understand the structure and order of the solar system; and
4. understand the evolution of stars and how science can come to know this; and have been exposed to the some current work in such study areas as planetary geoscience, stellar evolution, galactic evolution, cosmology, and the search for extraterrestrial life.

**Subject Synopsis/ Indicative Syllabus**

**Keyword Syllabus (Indicative):**

1. **Introduction**
   - Syllabus
   - The Celestial Sphere
   - Motions of the Earth

2. **The Scientific Method**
   - Empiricism
   - Theory
   - Dialog

3. **Some Basic Science Concepts**
   - The Copernican Revolution (the origin of science as a way of thinking)
   - The Nature of Light and Matter
   - Telescopes

4. **Stellar Evolution**
   - The Sun
   - Measuring the Stars
   - The Interstellar Medium
   - Stellar Evolution
   - Neutron Stars and Black Holes

5. **The Solar System**
   - Overview of the Solar System
   - The Earth-Moon System
   - The Terrestrial Planets (i.e. “Earth-like”)
   - The Jovian Planets (i.e. “Jupiter-like”)
   - Solar System Debris (moons, rings, and Pluto)

6. **Beyond the Solar System**
   - Cosmology
   - Life in the Universe Measuring the Stars
### Teaching/ Learning Methodology

The analytic procedure of the scientific method will be emphasized. It will be demonstrated throughout as the means by which we can come to know so much about ourselves and the universe around us. Through a series of participatory lectures, based upon pre-assigned readings as well as highly interactive tutorials, the fundamental scientific principles used to explore the universe will be introduced. This will be followed a systematic survey of the cosmos. Extensive use of multimedia visualization aides in the form of computer-based presentation of astronomical phenomena will be made to include graphs, drawings, and photographs. Additionally, software will be used to visually introduce students to objects of interest on the celestial sphere as well as the graphical presentation of important astronomical and physical laws. Throughout the semester, students will participate in exercises that not only teach astronomy but learning-to-learn so as to better prepare themselves for success in the university and after graduation.

Tutorial topics include:
1. Introduction to Stellar Evolution
2. Organization
3. The Sun
4. Measuring the Stars
5. The Interstellar Media
6. Stellar Evolution
7. Neutron Stars and Black Holes

### Alignment of Assessment and Intended Subject Learning Outcomes

<table>
<thead>
<tr>
<th>Specific Assessment Methods/Tasks</th>
<th>% Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tutorial Performance</td>
<td>40%</td>
</tr>
<tr>
<td>2. Participation</td>
<td>20%</td>
</tr>
<tr>
<td>3. Mid-term Quizzes</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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### Student Study Effort Expected

- **Class contact (time-tabled):**
  - Lecture: 28 Hours
  - Tutorial: 14 Hours

**Total student study effort:** 42 Hours

### Reading List and References

#### Essential Reading:


#### Reference List:

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