|  |  |
| --- | --- |
| **Course Title:**  | **General Astronomy I** |
| **Course Code:** | **ASTR 201** |
| **Program:** | **ASTR-MATH** |
| **Department:**  | **Astronomy** |
| **College:** | **Science** |
| **Institution:** | **King AbdulAziz University** |

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# A. Course Identification

|  |  |
| --- | --- |
| **1. Credit hours:** |  |
| **2. Course type** |
| **a.** | University | **✓** | College |  | Department | **✓** | Others |  |  |
| **b.** | Required | **✓** | Elective | **✓** |  |
| **3. Level/year at which this course is offered:** | **Start from 2nd year – Level 3** |
| **4. Pre-requisites for this course** (if any)**: None** |
| **5. Co-requisites for this course** (if any)**: None** |
|  |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage**  |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | **4** | **100%** |
| **2** | **Blended**  |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Correspondence** |  |  |
| **5** | **Other**  |  |  |

**7. Actual Learning Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Learning Hours** |
| **Contact Hours** |
| **1** | **Lecture** | **45** |
| **2** | **Laboratory/Studio** | **15** |
| **3** | **Tutorial**  |  |
| **4** | **Others** (specify) |  |
|  | **Total** | **60** |
| **Other Learning Hours\*** |
| **1** | **Study**  | **90 (minimum)** |
| **2** | **Assignments** |  |
| **3** | **Library** |  |
| **4** | **Projects/Research Essays/Theses**  |  |
| **5** | **Others** **(Lab reports + experiments)** | **30 (minimum)** |
|  | **Total** | **120** |

**\*** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description This course study the following topics: The celestial sphere; apparent and real motions of the Earth and other celestial objects; celestial coordinates; measurements of time and calendars; solar system components and origin, Kepler’s laws; solar and lunar eclipses; tides. |
|  |
| 2. Course Main ObjectiveThe objective of the course (for both elective and compulsory students) is to provide students with the fundamental principles of general astronomy such as celestial sphere, time and calendar, and solar system components, origin, and motion. This information will help students to be familiar with the most of astronomical phenomena that appear through our daily, monthly, annual life. By completing this course, students will be able to study other advanced courses in the field of astronomy.  |
|  |

## 3. Course Learning Outcomes

| **CLOs** | **Aligned****PLOs** |
| --- | --- |
| 1 | **Knowledge:** |  |
| 1.1 | List the solar system components  | K3, K4 |
| 1.2 | Define the celestial sphere structure. | K9 |
| 1.3 | Outline the Earth and planetary structures. | K3, K11 |
| 1.4 | Define the equation of time, sidereal and solar days,  | K9 |
| 1.5 | Define the different phenomena relating Earth, Moon, and Sun. | K9, K3 |
| 1.6 | Define the sidereal and solar day, month, and year. | K9 |
| 1.7 | Describe the apparent daily and annual motions of the Earth and other planets. | K9 |
| **2** | **Skills :** |  |
| 2.1 | Explain the relation between the time and longitude lines. | S7, S11 |
| 2.2 | Explain the relation between the sidereal and solar motions of planetary bodies. | S7, S11 |
| 2.3 | Apply the theodolite device. | S10 |
| 2.4 | Write a laboratory report includes text, diagrams, figures and tables. | S12 |
| 2.5 | Apply computer software in the Lab.  | S13, S14 |
| **3** | **Competence:** |  |
| 3.1 | Work in a laboratory group. | C1 |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Chapter 1: Celestial sphereLab. 1: A presentation in the astronomical dome | 4 |
| 2 | Chapter 1: Celestial sphereLab. 2: Training on the use of the theodolite | 4 |
| 3 | Chapter 1: Celestial sphereLab. 3: Measuring the angular size of the Sun and determining its distance from us using the theodolite | 4 |
| 4 | Chapter 1: Celestial sphereLab. 4: Celestial coordinates | 4 |
| 5 | Chapter 2: Time and calendarLab. 5: Calculating prayer time using the Astronomical Almanac | 4 |
| 6 | Chapter 2: Time and calendarLab. 6: Calculating moonset using the Astronomical Almanac | 4 |
| 7 | Chapter 2: Time and calendarLab. 7: Determining the beginning of lunar months | 4 |
| 8 | Chapter 3: Introduction to the solar systemLab. 8: Stellar parallax | 4 |
| 9 | Chapter 3: Introduction to the solar systemLab. 9: Angular size | 4 |
| 10 | Chapter 3: Introduction to the solar systemLab. 10: Orbital motion of planets | 4 |
| 11 | Chapter 3: Introduction to the solar systemLab. 11: Kepler’s laws and the orbits of moons | 4 |
| 12 | Chapter 4: Earth and MoonLab. 12: Planetary ring system | 4 |
| 13 | Chapter 4: Earth and MoonLab. 13: Orbital motion of the moon | 4 |
| 14 | Chapter 4: Earth and MoonLab. 14: Orbit of the moon and Kepler’s 2nd law | 4 |
| 15 | Chapter 4: Earth and Moon | 4 |
| **Total** | **60** |

# D. Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| **Code** | **Course Learning Outcomes** | **Teaching Strategies** | **Assessment Methods** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge** |
| 1.1 | List the solar system components  | Lecture & PowerPoint presentation. | Exams |
| 1.2 | Define the celestial sphere structure. |
| 1.3 | Outline the Earth and planetary structures. |
| 1.4 | Define the equation of time, sidereal and solar days,  |
| 1.5 | Define the different phenomena relating Earth, Moon, and Sun. |
| 1.6 | Define the sidereal and solar day, month, and year. |
| 1.7 | Describe the apparent daily and annual motions of the Earth and other planets. |
| **2.0** | **Skills** |
| 2.1 | Explain the relation between the time and longitude lines. | Lecture & PowerPoint presentation. | Exams |
| 2.2 | Explain the relation between the sidereal and solar motions of planetary bodies. |
| 2.3 | Apply the theodolite device. | Group work | Lab. Exam |
| 2.4 | Write a laboratory report includes text, diagrams, figures and tables. |
| 2.5 | Apply computer software in the Lab.  |
| **3.0** | **Competence** |
| 3.1 | Work in a laboratory group. | Group discussion | Lab. Exam |

##

## 2. Assessment Tasks for Students

| **#** | **Assessment task\***  | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Exam 1 | 4th | 20% |
| **2** | Exam 2 | 9th | 20% |
| **3** | Lab attendance + Lab experiment reports  | 13th | 20% |
| **4** | Final exam | 15th | 40% |
| **5** |  |  |  |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Student Academic Counseling and Support

|  |
| --- |
| **Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :** |
| Office hours: 4 hours per week |

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | General Astronomy I book (offer by Astronomy department) |
| **Essential References Materials** | Active learning site – Handouts & PowerPoint slides https://sciences.kau.edu.sa/Pages-astr201-HOMEPAGE.aspx |
| **Electronic Materials** | Active learning site – questions bank.https://sciences.kau.edu.sa/Pages-astr201-HOMEPAGE.aspx |
| **Other Learning Materials** | General Astronomy I - Laboratory exercise book |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**(Classrooms, laboratories, demonstration rooms/labs, etc.) | Class room with 35 seats, Computer Lab, Theodolite Lab. |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | Data show, Visual Astronomy Lab. software |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Theodolites & Telescopes. |

# G. Course Quality Evaluation

| **Evaluation****Areas/Issues**  | **Evaluators**  | **Evaluation Methods** |
| --- | --- | --- |
| Course contents | Students | Course evaluation questionnaire (Direct) |
| Learning resources and equipment | Students | Student experience questionnaire (Direct) |
| Effectiveness of teaching and assessment | Students | Student experience questionnaire (Direct) |
| Course contents and materials  | Faculty members | By department council discussion (Indirect) |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

**Assessment Methods** (Direct, Indirect)

# H. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** |  |
| **Reference No.** |  |
| **Date** | September 2017 |