

T-104 2022

Course Specification

Course Title: Introduction to Stellar and Solar	Systems
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Course Code: Astro 102

Program: B.Sc. in Physics

Department: Department of Physics and astronomy

College: College of Science

Institution: King Saud University

Version: 2.0.0

Last Revision Date: Sep 2023





Table of Contents:

Content	Page		
A. General Information about the course	3		
 Teaching mode (mark all that apply) Contact Hours (based on the academic semester) 	3		
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4		
C. Course Content			
D. Student Assessment Activities			
E. Learning Resources and Facilities	5		
1. References and Learning Resources	5		
2. Required Facilities and Equipment	6		
F. Assessment of Course Qualit	6		
G. Specification Approval Data	6		





A. General information about the course:						
Co	urse Identificati	on				
1.	Credit hours:	3(2+0+2)				
2.	Course type					
a.	University	College 🗆	Dep	partment⊠	Track	Others□
b.	Required 🖂	Elective				
3. off	Level/year at where the second s	nich this course	is	third level / seco	ond year.	
4. Course general Description The course aims to introduce students to the basic concepts of astronomy, especially those related to our Solar System. The main topics are: Units of cosmic distances, Astronomy in Islamic civilization, EM spectrum and Telescopes, Characteristics of solar system and Kepler's laws, Moon-Earth-Sun and related phenomena, Terrestrial planets: Mercury, Venus and Mars, Jovian planets: Jupiter, Saturn, Uranus and Neptune, Asteroids and Comets and their origins within the solar system.						
5. Pre-requirements for this course (if any): Math 101						
6.	Co- requiremen	ts for this cours	se (if a	any):		
7. Course Main Objective(s)						
	1. Cosmic units of m	neasure (distances and	d angles	5).		

- 2. The main contributions of famous Arab/Muslim astronomers.
- 3. Basic types of telescopes and their use in observing celestial objects.
- 4. Kepler's and Gravitational laws and their applications to the motion of the celestial bodies.
- 5. The Sun-Earth-Moon system and related phenomena (exp: Seasons; Eclipses).
- 6. Inner and Outer planets of our solar system (main characteristics; satellites..etc.)
- 7. Asteroids and comets (properties and origins).

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	60	100%
2.	E-learning	0	0
3.	HybridTraditional classroomE-learning	0	0
4.	Distance learning	0	0





No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	0
4.	Tutorial	0
5.	Others (specify)	0
	Total	60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and unde	rstanding		
1.1	Knowing the laws governing the motion of the Planets: Kepler's laws and Newton's gravitational law	K1	• Give extensive examples during lecture.	• Hold Class discussion, tutorial sessions.
1.2	Knowing the main properties of the Planets/Members constituting our Solar System	К2	• Give problem sheets to be discussed during lecture	 Give quizzes, mid-term exam and final exam.
2.0	Skills			
2.1	The ability to manipulate formulae for unit conversions; and estimate distances, masses	S1	 Give extensive examples during lecture Give problem sheets to be 	• Hold Class discussion, tutorial and lab sessions.
2.2	The ability to describe and understand the Celestial sphere (Maps, Time; Seasons; Motions)	S2	discussed during lecture and labs.assignments.Discussions in the classes	• Give quizzes, mid-term exam and final exam.
2.3		\$3		
3.0	Values, autonomy, ar	nd responsibility		
3.1	Work as a team to manipulate the different parts of a simple optical telescope	V1	 assignments. Homework Preform experiments 	Hold Class discussion





C. Course Content

No	List of Topics	Contact Hours
1.	General introduction to modern Astronomy. Units of measuring the sizes (angles) and cosmic distances (a.u.; Ly & Parsec).	2
2.	Astronomy through Arabic-Islamic civilization: the main contributions of famous Arab/Muslim astronomers.	2
3.	Telescopes: main parts; light gathering power; magnification; resolving power; properties of observational sites. Difference between optical and radio telescopes. Examples of modern telescopes.	4
4.	General properties of solar system and Kepler's laws; Kepler's modified law.	6
5.	Earth (interior + atmosphere + properties). The moon (interior + atmosphere + properties). Sun-Earth-Moon system and related phenomena: Seasons; Eclipses.	5
6.	Terrestrial inner planets (descriptions and properties of each planet). Jovian outer planets (descriptions and properties of each planet).	8
7	Asteroids and Comets (properties, distributions and origins).	3
8.		
	Total	30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First Midterm examination	Approx. б	15%
2.	Second Midterm examination	Approx. 12	15%
3.	Labs	Weekly	30%
4.	Final examination	From 16 to 18	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities **1. References and Learning Resources**

Introduction to Astronomy (in Arabic)

Essential References

مقدمة في علم الفلك

Authors: M. Nawawy, A. Kordi and H. Al-Trabulsy





	King Saud University Publisher, 2011
Supportive References	 * Astronomy Today, eds. E. Chaisson and S McMillan, Publisher: Pearson; 8 edition (17 Sep 2014) * Astronomy: The evolving Universe, M Zeilik, Jhon Wiley and sons, Inc.
Electronic Materials	
Other Learning Materials	Internet websites relevant to the course (provided by the course coordinator; when needed)

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	A classroom which accommodates 25 students. For Labs: classrooms with some basic Astronomy tools (close to Astronomy unit facilities).
Technology equipment (projector, smart board, software)	Whiteboard and Smart board
Other equipment (depending on the nature of the specialty)	Not applicable

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students\ Peer Reviewer	Indirect \ direct
Effectiveness of students assessment	Students- Faculty	Direct
Quality of learning resources	Students	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify) Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Physics Department's council
REFERENCE NO.	6 th (1 st term/1445)
DATE	28/04/1445

