



Course Specification

— (Bachelor)

Course Title: Astrophysics
Course Code: 2034220-3
Program: BSc. of Physics
Department: Physics
College: College of Science
Institution: Science
Version: 2023
Last Revision Date:



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

2. Course type

A. University College Department Track Others
B. Required Elective

3. Level/year at which this course is offered: (8th Level / 4th Year)

4. Course general Description:

Stars : magnitude – luminosity – introduction to spectra – stellar spectra – stellar parallax , stellar velocities – HR diagram – binary stars and stellar masses – star formation – series of stellar nuclear reaction and stellar ages- stellar evolution and structure

5. Pre-requirements for this course (if any):

Non

6. Co-requisites for this course (if any):

Non

7. Course Main Objective(s):

- Advance in some fundamental in Astronomy and Astrophysics
- Radiation production in astronomical objects
- Get familiarize with some basic concepts of Stellar physics
- Applying physical laws and principles to interpret stars properties

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		





3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		45

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 understanding			
1.1	Define the basics of Stellar Astrophysics, stars structures and evolution, Stars life related events		Lecture	Quizzes
1.2	Introducing Star formation theories	K2	Lecture Group discussion	Written exam
2.0	Skills			
2.1	Advanced knowledge in Astrophysics life of stars		Lecture Group discussion	Written exam
2.2	Justify Stars properties in terms of physical concepts and laws	S2	Lecture Group discussion	Written exam
3.0	Values, autonomy, and responsibility			
3.1	Manage resources and time for needed information		Group discussion	Essays
3.2	Communicate results of the work to others		Group discussion	Essays

C. Course Content

No	List of Topics	Contact Hours
1.	Stars : magnitudes – spectra – HR diagram	6





2.	Stellar distances , parallax , stellar velocities and stellar masses	6
3.	Star formation	4
4.	Series of nuclear reactions	4
5.	Stellar evolution	8
6.	Introduction to stellar structure	2
7.	Physics and chemistry of Planetary nebulae	6
8.	Galaxies: types – physics	6
9.	Final Review	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Activities	continuous	10%
2.	Midterm exam	6th	30%
3.	Short exam	9th	10%
4.	Final exam	12th	50%

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

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	An introduction to modern Astrophysics Authors : Bradly Carroll and Dale Ostile , Addison Wesley Publisher : PeRSON ; 2 edition (July 28 , 2006)
Supportive References	Introduction to Astronomy (in Arabic) Authors : M.Nawawy , A.Kordi and H. Al – Trabulsy King Saud University Publisher , 2011
Electronic Materials	Astrophysics – Stars web sites of interest, provided by the instructor
Other Learning Materials	Multimedia materials accompanying the text books and the relevant websites

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room with max 80 seats. Library





Items	Resources
Technology equipment (projector, smart board, software)	Data show, Smart Board , Software
Other equipment (depending on the nature of the specialty)	New Telescope with higher facilities

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of Students assessment	Peer reviewer Program coordinator Departmental council Faculty council	Indirect
Quality of learning resources	Program coordinator Relevant committee	Direct
The extent to which CLOs have been achieved	Students Instructor Faculty	Indirect
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	PHYSICS DEPARTMENT COUNCIL
REFERENCE NO.	NO. 4-45
DATE	27/09/2023 (12/03/1445)

