COURSE SPECIFICATIONS
(CS)

Research Project

PHYS 499

June 2018

Course Specifications

Institution	King Saud University	Date of Report	December 2017

College/Department	Science/ Department physics and Astronomy

A. Course Identification and General Information

1. Course title and code: **Graduation Project - Phys 499**

2. **Credit hours   3(0+0+6)**
3. Program(s) in which the course is offered. **BSc program in Physics**
4. Name of faculty member responsible for the course - Final projects supervisors, department staff members, are assigned depending on the number of students in the 8th level. **-** The course has also general coordinators (Female and Male sections).   Dr. Abouazza ELMHAMDI

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        Dr. Abouazza ELMHAMDI

5. Level/year at which this course is offered 7th -8th level//Fourth year
6. Pre-requisites for this course (if any)   **Phys 490**

7. Co-requisites for this course (if any) :
8. Location if not on main campus:
9. Mode of Instruction (mark all that apply)

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a. Traditional classroom   [ ]   What percentage? [ ]

b. Blended (traditional and online)   [√]   What percentage? [ ]

c. e-learning   [ ]   What percentage? [ ]

d. Correspondence   [√]   What percentage? [ ]

e. Other   What percentage? [ ]

Comments:
The Bsc final project learning and work strategy consist of a direct contact with the assigned supervisor. Depending of the project nature, some projects require Lab presence and/or performing experiments.

B Objectives

1. What is the main purpose for this course?

The principle goal of the course is to guide the student to perform scientific project in a selected area, theoretical or experimental Physics and Astronomy, and to train her/him to write a scientific report using the necessary references.

1- Give the opportunity for students to work in groups under department staff direct close supervision.
2- Learn specified topic basic search: the library- the internet (References and Literature)
3- Be trained how to increase his physical and generic skills (knowledge – cognitive – interpersonal – communication – problem solving – IT)
4- Acquire scientific reasoning, logical arguments and draw conclusion supported by relevant results.
5- be trained and accompanied to conduct a small project, write a short thesis, present an oral essay and a poster.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

1- Group meeting for all the students starting the projects.
2- Providing relevant organizing details: main strategy, evaluation steps and timing.
3- Provide short trainings on some basic tools: manipulating data, writing, presenting
4- Introduce and encourage the students to go through details in the international web sites and reference books in the library.
5- Possible cooperation with different scientific institutions (mainly local)
6- Renew frequently the proposed projects topics and references.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1 Topics to be Covered		
List of topics *(It is a basic general view, as the main responsible remains the direct project supervisor)*	No. of Weeks	Contact Hours
Assigning Supervisors and the main project topic	1	3
Collect materials and first readings (Literature and Web-based)	2	6
Performing the project work steps (i.e. measurements, computations…ect)	5	15
Preparing the essay and the poster.	5	15

		1	6
General Revision and preparation for the evaluation week.			

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours		45				45
Credit		3				3

> 2. Additional private study/learning hours expected for students per week
>
> At least 4 to 6 hours per week is needed

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	- Learn how to approach and formulate a scientific problem, related to Physics and Astronomy topics, and then how to solve it. - - Understand the physical laws describing the studied phenomena and their corresponding mathematical formulation. - Learning and practicing appropriate technical writing and oral presentation skills. - Possible other specific intended learning outcomes that depend on the particularity and nature of the Bsc project.	- Direct interaction with the supervisor and research groups of the department (team work). - The student learns the ability to act *independently and take* up responsibility and decisions.	
2.0	**Cognitive Skills**		
2.1			

		- Real-life impact and applications of the studied topics. - Interesting experiments and applications in the field subject of the project. - How to use physical laws and principles to understand the subject, and subsequently analyze a phenomena. - Collect experiment data and measurements: analyze, process them (manipulating; graphing; reducing) and explain /interpret them.		-Tasks and discussions -Writing reports
3.0	**Interpersonal Skills & Responsibility**			
3.1	Description of the interpersonal skills and capacity to carry responsibility to be developed By the end of this course, the student should be able to: - Internet-based search and concrete use of the library/literature; Collection of the needed material/documents for the project. - Train on the techniques of oral and written presentations. - Develop English language and communication skills. - Independent and team work.	Work independently. The students learn independently and take up responsibility	

3.2	Methods of assessment of students interpersonal skills and capacity to carry responsibility
	
	  - Continuous Guiding, monitoring and instructing about the studied subject and approach methodology
	  - Solve and overcome difficulties in scientific searching and enhance educational skills
	  - Writing reports
	  - Tutorials and Practice in Laboratories (if applied)
	  - Internet collected information and Self-study and
	  - Increase the interest of the student in Science through :(deep reading, visits to scientific and research institutes; team work and close contact).
			Meetings and discussions
			
			Tasks and duties
			
			Checking reports

4.0	**Communication, Information Technology, Numerical**			
4.1	- Communication and interaction with others: supervisor – students-department research groups. - IT knowledge: the Internet – computer skills - Numerical skills: computation – data analysis – softwars. - Interpretation and feeling physical reality of result	- Advise the students to: work in team, help each- communicate with the supervisor to discuss difficulties and the way to approach them. - Ask students to: perform search on	Discussing written reports Making discussion on specified points to explore

		the internet on related interesting points – writing reports. Asking for how to collect the material of his study.	Comment on results and think about futureperspectives
5.0	**Psychomotor**		

Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
Cognitive Skills	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
Interpersonal Skills & Responsibility	
Communication, Information Technology, Numerical	1. Interaction with the lectures and discussions. 2. The reports of different asked tasks. 3. Results of computations and analysis. 4. Comments on results. 5. Presentations
Psychomotor	

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Interacting with the supervisor Performing duties and/or Experiments in Laboratories Internet collected information and Self-study approach of the project	Every week	60%
2	Oral Presentation	End of semester	20%
3	Scientific Poster	End of semester	10%
4	Discussion and Final Report	End of semester	10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Office hours 3 hours per week
Email contact

E. Learning Resources

1. List Required Textbooks

References are selected according to the subject of the project (specified by the supervisor).

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.) 45

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
Depending on the project nature:
   Laboratories; Telescope (for some specified Astro. projects)
   Demonstration Rooms
   Meeting Rooms

2. Computing resources (AV, data show, Smart Board, software, etc.)
Computer room connected to the internet
Data analysis Software (depending on the proposed topic)

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G   Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Confidential completion by the student of "the standard course evaluation" questionnaire
   - Group discussion with small groups of students.

2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department
   - Regular meetings by the general coordinators with the students.
   - Observations and assistance from other colleagues
   - Independent assessment of standards achieved by students
   - Independent advice on assignment tasks

3 Processes for Improvement of Teaching
   - Enhance supervising skills
   - Select variety of topics

- Review of recommended teaching/supervising strategies periodically
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) Under the guidance of the general coordinators (both in Female and Male sections) the instructors of the course follow an unique process of students evaluation.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Through survey results: strengths and weaknesses during each semester are highlighted • Feedback is gained also during the oral presentations/poster exams where difficulties are spotted. • According to the outcome of the projects and also students feedback difficulties and weakness points are highlighted and subject of handling and revision for the next semesters.

Faculty or Teaching Staff: The coordinator: Dr._Abouazza ELMHAMDI

Signature: _____   **Date Report Completed: June 2017**

Received by: _____   **Dean/Department Head**

Signature: _____   **Date: _____**