ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)

هيئة تقويم التعليم
Education Evaluation Commission

Course Specifications

Institution:	Date:
College/Department :	

A. Course Identification and General Information

1. Course title and code: Quantum Optics Laboratory (532 phys)
2. Credit hours:
3. Program(s) in which the course is offered. MSc degree in Physics
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course: Dr. Reem Alsaigh
5. Level/year at which this course is offered: 3rd semester (Second Year)
6. Pre-requisites for this course (if any): 505 phys
7. Co-requisites for this course (if any):
8. Location if not on main campus: Main Campus for Male and Female (Diriyah)
9. Mode of Instruction (mark all that apply):

a. traditional classroom		What percentage?	
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other (experimental)	X	What percentage?	100 %

Comments:

B Objectives

1. What is the main purpose for this course?
-The students should be able to do spectral measurements of some kind of laser and dye laser.
-The students should be able to understand the characteristic measurements of second and third harmonic generation of some lasers
-The students should be aware and deal with some optical instruments

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)

-Update the methods of learning, including questions, physical equipment's and data analysis
-Encourage students to read reference books and online sources to search about specific experiments and calculations.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:
Measurement of spectrum and pulse duration of YAG laser pumped by a semiconductor laser, characteristics measurements of SHG and THG of YAG laser, fiber optics characteristics measurements, spatial filtering, Raman scattering, characteristics of nitrogen laser, spectral measurement of dye laser, pumped dye laser system.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Laser safety	1	3
Determination of the Absorption Spectrum for Coumarin-500 Laser dye in the different Solvents	2	3
Spectroscopic Study of Fluorescence Coumarin 500 Laser dye in the different Solvents	2	3
Helium-Neon (HeNe) laser: Properties and Applications	1	3
Characterization of LD Pumped Nd :YAG Laser (Q-Switching and SHG)		3
Spectral analysis	1	3
Laser Induced breakdown spectroscopy (LIBS)	1	3
Glass fiber optics	1	3
Measuring the polarization properties of the pulsed laser	1	3

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	None	None	30	None	None	30
	Actual						
Credit	Planed	None	None	3	None	None	3
	Actual						

3. Additional private study/learning hours expected for students per week. 4

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	The physics of absorption and fluorescence spectrum of dye laser	Ask the student to search in the reference books and online sources about the absorption and fluorescence spectrum of some dye laser and how to use the spectroscopy devices	Discuss these questions during their working in the Lab- doing oral exams
1.2	How to use some optical tools to measure and understand the properties of some lasers	Doing experiment	Discuss the student work - doing theoretical and experimental exams
1.3	Learn some of the laser applications	Doing experiment	Discuss the student work - doing theoretical and experimental exams
1.4	Outline the good method for analyzing the data	Ask the students to read	Discuss the student

		some manuals of specific software that is useful to analyses their data	results and give them feedback
2.0	**Cognitive Skills**		
2.1	Explain the purpose of the experiment and the way to do it	Give motivated questions to the students	Discuss these questions during their working in the Lab- doing theoretical and experimental exams
2.2	Analyze the data	Observe how student analyses the data	Discuss the student results and give them feedback
2.3	Write a good experimental report	Discuss how to write a good report	Discuss the student results and give them feedback
3.0	**Interpersonal Skills & Responsibility**		
3.1	Description of the interpersonal skills and capacity to carry responsibility to be developed	Learn how to collect materials of the course	Through discussion during the lab
3.2	The students should learn how to: learn independently and take up responsibility through • Develop their English language • Think in solving problems that they faced during the experiments	Learn how to search the internet and use the library	Asking questions during the lab
4.0	**Communication, Information Technology, Numerical**		
4.2	Communication: between teacher and students during the class	Advice students to communicate with the teacher to discuss difficulties	Discussion on the difficulties
	Contribute to the team work and interaction with others	Encourage student to work together	Ask the student to solve the problem together
	Search skills in the internet Computer skills Data analysis skills	Asking for analyses the data by some software and search the internet to related topics	Disscuss the results analysis with students
5.0	**Psychomotor**		
5.1	Not applicable	Not applicable	Not applicable

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Write experimental report for each 8 experiment	1	80
2	Oral exam	-	20

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: 4 hours per week

E Learning Resources

1. List Required Textbooks Read in some boxes and search in the internet web pages about the experiment
2. List Essential References Materials (Journals, Reports, etc.) -----
3. List Electronic Materials, Web Sites, Facebook, Twitter, etc. -----
4. 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.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Laboratory for postgraduate students
2. Technology resources (AV, data show, Smart Board, software, etc.) Computer lab and Simple software
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 Student feedback/evaluation is done electronically by the University
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department Asked students their opinion about the Lab and teaching methodology
3. Processes for Improvement of Teaching Self-analysis Course report
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) Teachers/instructors evaluate and check student achievement
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. The following points may help to get the course effectiveness Student evaluation Course report Program Self-study

Name of Course Instructor: Dr. Reem Alsaigh
Signature: _____ Date Specification Completed: 2/1/2018
Program Coordinator: _____

Signature: _____ Date Received: _____