

COURSE SPECIFICATION

King Khalid University – Faculty of Science
Physics Department
Phys 354

2014

Institution: King Khalid University
College/Department : Faculty of science/ physics department

A Course Identification and General Information

1. Course title and code: 354Phys.
2. Credit hours: 3
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) The Academic program at the Dept. Physics,
4. Name of faculty member responsible for the course Dr. Fethi Mohamed Maiz
5. Level/year at which this course is offered : 6
6. Pre-requisites for this course (if any) : 353 Phys.
7. Co-requisites for this course (if any): 352 Phys.
8. Location if not on main campus: Department of physics /C building / university city/ Girigr /Abha.

B Objectives

<p>1. Summary of the main learning outcomes for students enrolled in the course.</p> <ul style="list-style-type: none"> • Origins of Quantum Physic. • Postulates of Quantum Mechanics. • The Schrödinger equation: infinite and finite square well. • Harmonic oscillator and delta function potentials. • 3D Schrödinger equation solution, box potential. • Schrödinger equation solutions in spherical coordinates system, hydrogen atomic.
<p>2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)</p> <ul style="list-style-type: none"> - Using some conventional textbooks or from Internet. - Executing all objectives - Tutorials (Theoretical and digital problems) by encouraging the student to use graphics and computers facilities.

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		
Topic	No of Weeks	Contact hours
1- Origins of Quantum Physic	3	9
2- Postulates of Quantum Mechanics	3	9
3- The Schrödinger equation: infinite and finite square well.	2	6
4- Harmonic oscillator and delta function potentials.	3	9
5- 3D Schrödinger equation solution, box potential.	3	9
6- Schrödinger equation solutions in spherical coordinates system, hydrogen atomic.	-	-

2 Course components (total contact hours per semester): 14			
Lecture: 42	Tutorial: 0	Practical/Fieldwork/Internship: 0	Other:0

3. Additional private study/learning hours expected for students per week. (This should be an average

:for the semester not a specific requirement in each week)

4. Development of Learning Outcomes in Domains of Learning

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

a. Knowledge

(i) Description of the knowledge to be acquired

- 1. Origins of Quantum Physic.**
- 2. Postulates of Quantum Mechanics.**
- 3. The Schrödinger equation: infinite and finite square well.**
- 4. Harmonic oscillator and delta function potentials.**
- 5. 3D Schrödinger equation solution, box potential.**

(ii) Teaching strategies to be used to develop these cognitive skills

- A number of homework is assigned to students.**
- Solving selected problems.**
- Aspects should cover some problems related to education and industry.**

<p>(iii) Methods of assessment of students cognitive skills</p> <ul style="list-style-type: none"> - A student follow-up is maintained using quick questions style. - Encouraging the student to increase the lecture attendance. - for fast and open book exams.
<p>c. Interpersonal Skills and Responsibility</p>
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</p> <p>The students should learn how to:</p> <ul style="list-style-type: none"> • Write a report • Think in solving problems • Search on the internet • Summarize the main points of the course • Deal with the lost lectures that he missed
<p>(ii) Teaching strategies to be used to develop these skills and abilities</p> <ul style="list-style-type: none"> • Students must learn how to prepare a scientific report. • Open a general discussion with students in the area of educational issues.
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <ul style="list-style-type: none"> - homework by BP
<p>d. Communication, Information Technology and Numerical Skills</p>
<p>(i) Description of the skills to be developed in this domain.</p> <ul style="list-style-type: none"> - Submitting reports or essays and exchanging information between the students through the conventional ways. - Or by using the databases and the electronic mail or course mail.

<p>(ii) Teaching strategies to be used to develop these skills</p> <p style="text-align: center;">- Using computers.</p> <p style="text-align: center;">- Using special educational packages.</p>
<p>(iii) Methods of assessment of students numerical and communication skills</p> <p style="text-align: center;">- Preliminary evaluation is required.</p> <p style="text-align: center;">- Final evaluation is subjected to various skills e.g. student communication until the final tests.</p>
<p>e. Psychomotor Skills (if applicable)</p>
<p>(i) Description of the psychomotor skills to be developed and the level of performance required</p> <p style="text-align: center;">- None</p>
<p>(ii) Teaching strategies to be used to develop these skills</p> <p style="text-align: center;">- None</p>
<p>(iii) Methods of assessment of students psychomotor skills</p> <p style="text-align: center;">- None</p>

5. Schedule of Assessment Tasks for Students During the Semester			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Attend graduation discuss research	End of the term	% 5
2	Homework	two time per month	% 5
3	Mid term 1	5	% 20
4	Mid term 2	10	% 20
5	Final examination	End of the term	% 50

D. Student Support

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

10 office hours in three days per week.

E Learning Resources

1. Required Text(s)
2. Essential References
3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)
4- Electronic Materials, Web Sites etc Springer , sciencedirect
5- Other learning material such as computer-based programs/CD, professional standards/regulations - You tube: selected lectures

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Lecture rooms, laboratories, etc.) Main hall for lecturing 50 students.
2. Computing resources 20 computer sets are needed for network connection.
3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list) Providing educational facilities and models in the lecture.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching The student should evaluate the course together with the instructor. - An academic evaluation is required continuously. - Renewing the course contents periodically.

<p>2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <ul style="list-style-type: none"> - Evaluating the whole educational system through R & D mechanism. - Evaluating the course at the departmental levels. - Evaluating the course outside the department.
<p>3 Processes for Improvement of Teaching</p> <ul style="list-style-type: none"> - A comparison of the course level should be made with similar courses at foreign universities.
<p>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)</p> <ul style="list-style-type: none"> - None
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none"> - Contributing to conferences related to essential and university educational systems.