ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)

Mathematical Physics -1- (Phys 501) ; Sec. 47880; 1st semester – 1438-1439 H;

Prof. Awatif A. Hendi

Course Specifications

Institution: King Saud University   Date: 7-1-2018
College/Department : Science College – Physics &Astronomy Department

A. Course Identification and General Information

1. Course title and code: Mathematical Physics -1- (Phys 501) ; Sec. 47880
2. Credit hours: 2(2+0)
3. Program(s) in which the course is offered: Master Program   (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course: Prof. Awatif A. Hendi
5. Level/year at which this course is offered: 1st semester in the program
6. Pre-requisites for this course (if any): Non
7. Co-requisites for this course (if any): Non
8. Location if not on main campus:
9. Mode of Instruction (mark all that apply):   a. traditional classroom   X   What percentage?   60%   b. blended (traditional and online)   X   What percentage?   10%   c. e-learning   X   What percentage?   10%   d. correspondence   X   What percentage?   10%   f. other   X   What percentage?   10%   Comments:

B Objectives

1. What is the main purpose for this course?
Having successfully completed this module, you will be able to demonstrate knowledge and understanding of:

•   The important theories -equations of Vector Analysis
•   The use of the relations of   Vector Analysis in Curved Coordinates
•   Functions of Complex variable I
•   Differential equations
•   Sturm-Liouville Theory-Orthogonal Functions

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)
It will be nice if we teach the students how to use Mathematica Program in drawing , fitting curve and using it in our calculations .
After we teach the student the steps of scientific method, we must give the students Problem in Mathematical Physics -1-solving by Mathematica Package.
All of the information's in Mathematical Physics -1-can do it through simple problems and has a very good applications in our day life .
Using Programs to solve Problems in Mathematical Physics -1 -   by Mathematica

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

Course Description:

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Vector Analysis	3 weeks	
Vector Analysis in Curved Coordinates and Tensors	1 week	
Functions of Complex variable I	2 weeks	
Functions of Complex variable II,	3 weeks	

Differential equations	**2 weeks**	
Sturm-Liouville Theory-	**2 weeks**	
Orthogonal Functions.	**1 week**	
Total	**14 weeks**	

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

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	2	--	--	--	--	2
	Actual	2	--	--	--	--	
Credit	Planed	2	--	--	--	--	2
	Actual	2	--	--	--	--	

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3. Additional private study/learning hours expected for students per week. :   1   hr

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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	**To learn the fundamentals in Mathematical Physics -1- vectors**	1-lectures	1-Oral tests
1.2	**To improve the logical thinking functions of complex variable I**	2-Research and survey	2-Duties
1.3	**To improve their ability to explain some theorems in Vector Analysis II in curved coordinates and tensors**	3-discusion and dialogue	3-written tests
1.4	**To improve their ability to understand**	4-do the work	

	Sturm Liouville		
1.5	To improve their knowledge orthogonal functions.	5- household duties and assignments	
2.0	**Cognitive Skills**		
2.1	**Analyze and explain theorems** **Ability to apply knowledge of physical and**	**1. Research and survey learning**	**1. oral and written tests and practical**
2.2	**Ability to explain the idea with the student own words**	**2. Self-learning**	**2. interaction and discussion**
2.3	**To find and seek information**	**3. cooperative**	**3. Assessment of academic papers**
2.4	**Represent the problems mathematically.**	**4. Brainstorming**	**4. Assessment of duties**
2.5	**Ability to interpret results of the problems in mathematical physics -1- whether graphically or algebraically.**	**5. Workshops**	
3.0	**Interpersonal Skills & Responsibility**		
3.1	**Cooperation and ability of dealing with others as a team** **To put the benefit of the group above the individual**	**1. collective academic papers**	**1. Note the interaction of the students in the lecture and exercises**
3.2	**Students have the necessary skills to evaluate answers and solutions to correct their mistakes**	**2. Display Collective informations**	
3.3	**Students can complete all assignments on time**	**3. Working as groups**	
3.4	**Students can participate in class discussion to improve their logic and skills**		
3.5	**Students should be responsible and ethical in carrying out individual and group Projects**		
3.6	**Students have the necessary skills to communicate, listen, negotiate, and evaluate the strengths and weaknesses as members of a team**		
3.7	**Students have the necessary skills to define or propose solutions to any problem based on the acquired knowledge**		**2. Assessment of individual and collective actions**
4.0	**Communication, Information Technology, Numerical**		
4.1	**Know the basic mathematical principles**	**1.practical exercises**	
4.2	**Use the web for research discuss the student**	**2.Learning model**	
4.3	**Use software program to deal with different theorems and problems**	**3.Search the Internet**	
4.4	**Use of the advanced features in scientific calculators(CASIO,fx-991ES), and how to use it correctly**		**Showing research or scientific presentation or movies that have reached the student.**
4.5	**Use of PowerPoint and laptop – projector systems**		
4.6	**Use of Excell**		

4.7	**Use of PowerPoint and laptop – projector systems**		
4.9	writing reports and projects		
4.10	Use Mathematica Package		
5.0	**Psychomotor**		
5.1	Not applicable	Not applicable	Not applicable
5.2			

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	**Homework Assignments,participants**	All along	10%
2	**Project and Presentations**	Week 3&8	10%
3	**Pop Quizzes & web tests**	All along	10%
4	Exam 1	Week no.4	15 %
5	Exam 2	week no.10	15%
6	Final exam	week no.14	40%
8	Total		100 %

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)
One office hour per week

E Learning Resources

1. List Required Textbooks
1-G.Arfken,Mathematical Methods for Physicist ;Academic Press ;New York ;1970

2. List Essential References Materials (Journals, Reports, etc.)
1.R.P.Kanwal;Linear Integral Equations "Theory and Techniques";Burkhauser,Boston ;1997
2.G.stephenson ;Mathematical Methods for sciences Students   2nd edition ;Longman,U.K.;1992

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
1. **http://physics.org**
2. **http://www.ocw.mit.edu/coursephysics/index.html**
3. **http://www.dir.yahoo.com/science/physics**
4. **http://en.wikipedia.org/math.**
5. **http://aapt.scitation.org/**

4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
Mathematica package
Maple package

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.) Classroom ; lab
2. Technology resources (AV, data show, Smart Board, software, etc.) software
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) •   wireless technology (is a plus) •   PC laptop devices – printer + Scanner + Projectors (Data Show)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching 1-Filling Student Feedback Form by all of the attendance students 2-The distribution of questionnaires to the student at the end of the semester to get the special assessment to the decision . 3-Interview a sample of student enrolled in the course to take their views
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department Job performance
3. Processes for Improvement of Teaching   •   Using Mathematica Package or Maple •   Training sessions •   Workshops to facilitate the exchange of experiences amongest faculty members •   Regular meetings where problems are discussed •   Attending professional development conferences Use of the Internet – provision of computers to modern- to provide regular maintenance of devices and equipment – work under the guidance of the commission study plans and schedules on the course the instructions of head section on the performance of a faculty member.
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)
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Sources of learning this course and keep up with rapid development in the field by the use of new technologies

Name of Course Instructor: _ *Prof. Awatif A. Hendi*

Signature: Date Specification Completed: 7-1-2018

Program Coordinator: _____

Signature: _____   Date Received: _____