

## T6. Course Specification (CS)

Institution: <b>Najran University</b>	Date of Report 6/1439
College: College of Arts and Sciences	Department : <b>Physics Department</b>

### A. Course Identification and General Information

1. Course title and code: <b>Classical mechanics 2 (310 phys 2)</b>			
2. Credit hours: <b>2 Hours</b>			
3. Program(s) in which the course is offered. <b>Physics Program</b>			
4. Name of faculty member responsible for the course <b>Dr :Zainab Mohamed &amp;Dr.Hateem Omar</b>			
5. Level/year at which this course is offered: <b>Third Level</b>			
6. Pre-requisites for this course: <b>Classical mechanics 1 (110 phys 3)</b>			
7. Co-requisites for this course : <b>NO</b>			
8. Location if not on main campus: This course is offered in both males and females division			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
b. Blended (traditional and online)	<input checked="" type="checkbox"/>	What percentage?	<b>100</b>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
f. Other	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
Comments: <b>NO Comments</b>			

## B Objectives

1. What is the main purpose for this course? This course cares with rigid body mechanics, Rotating Frames, friction (dry friction, static friction, Kinetic, rolling friction, and fluid friction) and a brief on classical mechanics.
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) <ul style="list-style-type: none"> <li>● Use Black board system</li> <li>● Increased use of IT or web-based reference material</li> <li>● Increased use of power-point and projector in lecture</li> <li>● Put Bank of questions for course and announcement it to students in multiple ways</li> <li>● Convert course to the electronic form and put it on a page of professor on the site of the university.</li> </ul>

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

<b>Course Description</b> This course is concerned with the mechanics of the rigid body, rapid coordinate systems and motion resistance - dry friction, friction of rotation and rolling, and then a profile in traditional mechanics such as coordinates and general forces - Lagrange equations - the least-done principle - Hamilton equations.		
1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Rigid body: Torque and equilibrium, force couple, center of mass (its movement and its theories) and rotational motion, Moment of inertia( parallel axis theorem, orthogonal axes theorem).	3	6
Dynamics of rigid body rotation: Applications on simple pendulum, compound (physical) pendulum and kater pendulum.	3	6
Rotating Frames: equations of translatory and rotational motions, Coriolis theorem, Centrifugal and Coriolis Forces, applications projectile motion in accelerated systems.	3	6
Friction: dry friction, static friction, Kinetic, rolling friction, and fluid friction.	3	6
Introduction to classical mechanics: generalized coordinates and forces, Lagrange equations, principle of least action and Hamilton equations.	3	6

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30					30
Credit	2					2

3. Additional private study/learning hours expected for students per week.	<b>2 Hours.</b>
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
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	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
<b>1.0</b>	<b>Knowledge:</b> The student must be able to		
1.1	state the basic laws and relations contained in chapters of Rigid body Mechanics ,Accelerated coordinates, Friction and Lagrange and Hamilton equations.	Modified Lecture Brainstorming Dialogue and discussion	Written exam
<b>2.0</b>	<b>Cognitive Skills:</b> The student must be able to		
2.1	Drive the laws and equation contained in chapters of Rigid body Mechanics ,Accelerated coordinates, Friction and Lagrange and Hamilton equations	Modified Lecture Brainstorming Dialogue and discussion	Written exam
2.2	Applied theories and facts contained in chapters of Rigid body Mechanics ,Accelerated coordinates, Friction and Lagrange and Hamilton equations by Solving the problems	Modified Lecture Brainstorming Dialogue and discussion	Written exam
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility:</b> The student must be able to		
3.1	Express his /her opinion and accept the opinions of others	Dialogue and discussion Cooperative learning	Observation card
3.2	Take responsibility and participate effectively	Cooperative learning	Observation card

	as a team member		
4.0	Communication, Information Technology, Numerical: The student must be able to		
4.1	Demonstrate effective Communicate with the others.	Dialogue and discussion Cooperative learning	Observation card
4.2	Research by using Information Technology and analyze numerical values to get information behind them	Cooperative learning	Observation card
5.0	Psychomotor		
	Not exist		

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First semester exam	5-6	20%
2	Second semester exam	11-12	20%
3	Observation card	during semester	10%
4	Final exam	16-18	50%

#### 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)

1-Three office hours per a week

2-Faculty member will generally be available after class and during regular office hours for extra help

3-Communication with faculty member through the forum of the course on the blackboard

#### E. Learning Resources.

1. List Required Textbooks

Stephen T. Thornton and Jerry B. Marion, Classical dynamics of a particle and systems, 5th Edition, -

Thomson publisher USA, 2004.
2. List Essential References Materials (Journals, Reports, etc.) -  Serway, R. A. Principles of Physics. Orlando, Florida: Saunders College Publishing, 1992. .
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)  Tom W.B. Kibble and Frank H. Berkshire, Classical Mechanics, 5th Edition, Imperial College Press, London, 2004. Herbert Goldstein, Charles Poole and John Safko, Classical Mechanics, 3th Edition, AddisonWesley.
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) <a href="http://sciencebooksonline.info/physics.html">http://sciencebooksonline.info/physics.html</a> <a href="http://www.physicsclassroom.com/Class/refrn/u14l2b.html">http://www.physicsclassroom.com/Class/refrn/u14l2b.html</a> <a href="http://www.physicsclassroom.com/Class/refrn/u14l2c.html">http://www.physicsclassroom.com/Class/refrn/u14l2c.html</a> <a href="http://www.physicsclassroom.com/Class/refrn/u14l2d.html">http://www.physicsclassroom.com/Class/refrn/u14l2d.html</a> <a href="http://www.hazemsakeek.com/Physics_Lectures/Laser/LaserDescription.htm">http://www.hazemsakeek.com/Physics_Lectures/Laser/LaserDescription.htm</a>
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.  There is a CD that contains the course book, PowerPoint presentations, and explanatory videos for the faculty member of course

#### 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.)  Class room (40 seats) with viewers, data show and computer
2. Computing resources (AV, data show, Smart Board, software, etc.)  <b>Data show,</b>
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)  <b>Not exist</b>

#### G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
1-University online questionnaire evaluation of course by students
2- Questionnaire evaluate Effectiveness of E-learning .
3- Review a samples of classroom work for students
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor
1- Course report at the end of semester
2- Evaluation of Peer teaching observation
3- Evaluation of Course file
3 Processes for Improvement of Teaching
1-Attending workshops to facilitate the exchange of experiences.
2-Discussing the challenges in the classroom with colleagues and members of the Department Counsel.
3-Encouraging faculty members to attend conferences on professional development.
4-Setting goals for achieving excellence in teaching at the beginning of each new semester after reviewing previous semester's teaching strategies and results and after considering students' feedback.
5-Keeping up to date with refereed articles and books related to the topics of the course.
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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)
1-Review a set of random answer papers from a peer program committee
2- Review a samples of classroom work for students
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
1- course report which contain all what was stated or planned in the course specification and what was implemented in the last semester plan and the plans of improvement for the next semester and is one of the most important procedures used to verify the effectiveness of the course and planning for improvement.
2-Studying the questioners and staff member remarks to improve the course.
3-Updating the course topics.
4-Compare syllabus and course description to those found in other universities (including those on the those on the Internet)
5-make trend analysis to student results for many years and analyzing this results

**Faculty or Teaching Staff: Dr :Zainab Mohamed &Dr.Hateem Omar**

**Signature:** \_\_\_\_\_ **Date Report Completed 6/1439H**

**Received by:** \_\_\_\_\_ **Dean/Department Head**

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_