

## T6. Course Specification (CS)

Institution	Najran University	Date of Report	6/1439
College/Department:	College of Science and Arts,	Physics Department	

### A. Course Identification and General Information

1. Course title and code: Heat and thermodynamics (241phys-3)			
2. Credit hours <b>3Hours</b>			
3. Program(s) in which the course is offered. <b>Physics program</b>			
4. Name of faculty member responsible for the course Dr. <b>Zainab Mohamed</b> Dr.Eesam Nasr			
5. Level/year at which this course is offered : <b>second level</b>			
6. Pre-requisites for this course (if any) <b>(101 Phys-3.)</b>			
7. Co-requisites for this course (if any ) <b>Not exist</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?	<input type="checkbox"/> 100
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? <b>This course care with Learning and understanding the basic principles of heat and thermodynamic, thermal ,estimates laws of thermodynamics and their technical applications..</b>
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>●Using audio and video material related to each topic as appropriate.</li> <li>●Convert course to the electronic form and put it on professor's page on the website of the university.</li> <li>●Increasing the use of modern references and the World Wide Web through a student research.</li> <li>●Put Bank of questions for course and announcement it to students in multiple ways</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 includes the basic principles of heat and thermodynamics namely heat transfer, thermodynamic laws and their applications. It includes all the thermal phenomena, methods of temperature measurement, kinetic theory of gases, work, motion, quaternary thermal cycles,		
1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Thermodynamic system : Thermodynamic variables - temperature and methods of measurement - thermodynamic temperature	4	12
Heat transfer: heat transfer methods - thermal conductivity - load current - thermal radiation	3	9
The kinetic theory of gases: ideal gas - the equation of the state to Vandr Val , liquefaction of gases - Humidity and its measurement methods	3	9
Work and Thermal energy: internal thermal energy of gas - zero law of thermodynamics - thermal equilibrium - specific temperature at constant pressure and fixed volume and the ratio between them - thermodynamic changes and their types - the first law of thermodynamics.	3	9

Second law of thermodynamics and Thermodynamic Functions : cooling machine - internal combustion machines thermal machines exemption - entropy - change in entropy - the principle of increased entropy.: Helmholtz Function - Gypsum Function - Maxwell Relationships - Application	2	6

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.
3 Hours

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
1.0	Knowledge: The student must be able to		
1.1	State all detentions , theories and the basic principles contained in Thermodynamic system, Heat transfer, The kinetic theory of gases, Work and Thermal energy, Second law of thermodynamics and Thermodynamic Functions	Modified Lecture Brainstorming Dialogue and discussion	Written exam
1.2	Explains theories and facts contained in Thermodynamic system, Heat transfer, The kinetic theory of gases, Work and Thermal energy, Second law of thermodynamics and Thermodynamic Functions	Modified Lecture Brainstorming Dialogue and discussion	Written exam
2.0	Cognitive Skills: The student must be able to		

2.1	Interprets theories and facts contained in Thermodynamic system, Heat transfer, The kinetic theory of gases, Work and Thermal energy, Second law of thermodynamics and Thermodynamic Functions	Modified Lecture Brainstorming Dialogue and discussion	Written exam
2.2	Drive the laws and equation contained in Thermodynamic system, Heat transfer, The kinetic theory of gases, Work and Thermal energy, Second law of thermodynamics and Thermodynamic Functions	Modified Lecture Brainstorming Dialogue and discussion	Written exam
2.3	Applied theories and facts contained in Thermodynamic system, Heat transfer, The kinetic theory of gases, Work and Thermal energy, Second law of thermodynamics and Thermodynamic Functions by solving 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 as a team member	Dialogue and discussion Cooperative learning	Observation card
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b> :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	Dialogue and discussion Cooperative learning	Observation card
<b>5.0</b>	<b>Psychomotor</b> <b>Not exist</b>		
5.1			
5.2			

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

Remonde A. Seroaa Physics for scientists and engineers, , Robert c. Bactr , John O. jewett, translation by Dr. Mohamed Mahmoud Ammar and others, Mars Publishing House, Riyadh, 2004

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

T. D. Eastop and A. Mcconkey, Applied Thermodynamics for Engineering Technologists;, 5th edition, Amazon.com, 1996.

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

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

<http://sciencebooksonline.info/physics.html>

##### 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.)

Data show, sound communication system

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

1-University online questionnaire evaluation of course by students

2- Questionnaire evaluate Effectiveness of E-learning

3- Questionnaire of Self assessment of learning outcomes

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.

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: Zainab Mohamed Dr.Eesam Nasr**

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

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

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