



# **325 PHYS COURSE SPECIFICATION**

**201٤**

# Course Specification

<b>Institution:</b> King Khalid University
<b>College/Department :</b> Faculty of Science / Physics Department

## A Course Identification and General Information

<b>1. Course title and code:</b> Electronics, 325 PHYS-2
<b>2. Credit hours:</b> 2
<b>3. Program(s) in which the course is offered.</b> <b>(If general elective available in many programs indicate this rather than list programs)</b>  The Academic program at the Department of Physics
<b>4. Name of faculty member responsible for the course</b>  Aijaz Rasool Chaudhry
<b>5. Level/year at which this course is offered:</b> Level VI /Third year
<b>6. Pre-requisites for this course (if any) :</b>  Electronics, Phys 324  Electricity and Magnetism I (221 Phys)
<b>7. Location if not on main campus:</b>  Department of Physics / Building C / Main Campus / Grigar / Abha.

## B Objectives

### 1. Summary of the main learning outcomes for students enrolled in the course.

This course gives an experimental view of the electronic devices, which were introduced to them theoretically in the course PHYS-324. The main out comes for the students are :-

1. To distinguish between A.C and D.C current by using C.R.O
2. Understanding of P-N junction diodes and resistors
3. Understanding of Bi-junction Transistors
4. Understanding of Uni-junction Transistors
5. Understanding of Operational Amplifier
6. Students are trained to make potential divider as well as handling of various instruments used in the study of experiments.

### 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
Cathode Ray Oscilloscope	२	६
Study the properties of resistors), VDR, LDR, Thermistors (NTC & PTC)	३	६
Characteristics and applications of Junction Diode	६	६
Characteristics and applications of Zener Diode Use of Zener diode as stabilizer	०	६
Input and output Characteristics of Bi-junction Transistor	०	६
Bijunction Transistor as an Amplifier	१	६
Characteristics and applications of Field Effect Transistor (FET)	१	६
Characteristics and applications of Unijunction Transistor (UJT)	१	६
Operational Amplifier	१०	६

<b>2 Course components (total contact hours per semester):</b>			
<b>Lecture: 0</b>	<b>Tutorial: 0</b>	<b>Practical: 36 hours</b>	<b>Other: Office Hours</b>

**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)**  
 3 hours per week.

<p><b>4. Development of Learning Outcomes in Domains of Learning</b></p> <p><b>For each of the domains of learning shown below indicate:</b></p> <ul style="list-style-type: none"> <li>• A brief summary of the knowledge or skill the course is intended to develop;</li> <li>• A description of the teaching strategies to be used in the course to develop that knowledge or skill;</li> <li>• The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned</li> </ul>
<p><b>a. Knowledge</b></p>
<p><b>(i) Description of the knowledge to be acquired</b></p> <p>This course gives an experimental view of the electronic devices, which were introduced to them theoretically in the course PHYS-324, like C.R.O Resistors, Diodes, Transistors and Operational Amplifier</p>
<p><b>(ii) Teaching strategies to be used to develop that knowledge</b></p> <ol style="list-style-type: none"> <li>1. Structured course materials delivered through a sequential short lecturers, with an introductory lecturer focusing on the significance of the experiments</li> <li>2. Interactive learning through questions and answers in the class</li> <li>3. Circuit diagram sheet is provided to each student at the beginning of the lecture</li> </ol>

<p><b>(iii) Methods of assessment of knowledge acquired</b></p> <ol style="list-style-type: none"> <li>1- Mid-term exams</li> <li>2- Reports</li> <li>3- Final Practical examination</li> </ol>
<p><b>b. Cognitive Skills</b></p>
<p><b>(i) Cognitive skills to be developed</b></p> <ol style="list-style-type: none"> <li>1. Students will be able to apply this knowledge in understanding the basic concept of Electronics and modern devices. Also it will help them to handle the research equipment (like, XRD, SEM etc) properly while accomplishing their undergraduate research project</li> </ol>
<p><b>(ii) Teaching strategies to be used to develop these cognitive skills</b></p> <ol style="list-style-type: none"> <li>1. Short lectures followed by experiments demonstration</li> <li>2. Questions / Answers session</li> </ol>
<p><b>(iii) Methods of assessment of students cognitive skills</b></p> <p>Exams and homework will include the problems related to the experiments which requires critical thinking</p>
<p><b>c. Interpersonal Skills and Responsibility</b></p>
<p><b>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</b></p> <ol style="list-style-type: none"> <li>1- Punctuality towards their lectures</li> <li>2- Carry out experiments independently</li> <li>3- Sharing their data with other students to validate its accuracy</li> <li>4- Management of lecture time</li> </ol>

<p><b>(ii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</b></p> <p>Regular evaluation of acquired knowledge by assignments, quizzes and group task</p>
<p><b>d. Communication, Information Technology and Numerical Skills</b></p>
<p>None</p>
<p><b>e. Psychomotor Skills (if applicable)</b></p>
<p><b>(i) Description of the psychomotor skills to be developed and the level of performance required</b></p> <p>None</p>
<p><b>(ii) Teaching strategies to be used to develop these skills</b></p> <p>None</p>
<p><b>(iii) Methods of assessment of students psychomotor skills</b></p> <p>None</p>

<b>5. Schedule of Assessment Tasks for Students During the Semester</b>			
<b>Assessment</b>	<b>Assessment task (eg. essay, test, group project, examination etc.)</b>	<b>Week due</b>	<b>Proportion of Final Assessment</b>
1	Mid term 1	After 6 weeks	15%
2	Mid term 2	After 12 weeks	15%
3	Reports	Every week	20%
4	Final practical 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)**

Office hours: 10 hours per week.

## **E Learning Resources**

<b>1. Essential References</b>  Fundamentals of Electronic devices. Tocci Digital Fundamentals. Floyd
<b>2- Other learning material such as computer-based programs/CD, professional standards/regulations</b>  E-Learning Black Board www.hyperphysics.phy-astr.gsu.edu

## **F. Facilities Required**

None
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## **G Course Evaluation and Improvement Processes**

<b>1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching</b>  Students course evaluation at the end of the course
<b>2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department</b>  1- Evaluating the course outside the department. 2- Evaluating the course at the departmental levels.
<b>3. 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)</b>  1- Course committee will review sample of student work 2- An external faculty member will evaluate the course works and grades etc. to check the standard with other universities in the country (on the recommendations of the department of Physics)