# Syllabus*: Course Title and Code (Electronics 110102232)

## First/Second Semester 202- /202-

| COURSE INFORMATION | |
|---|---|
| **Course Name:** Electronics **Semester:**<br>**Department:** Department of Physics<br>**Faculty:** Science | **Course Code:**<br>**Section:**<br>**Core Curriculum**: |
| **Day(s) and Time(s):** Sunday: 11:00-12:00<br>Tuesday : 11:00-12:00<br>Thursday: 11:00-12:00<br>**Classroom:** | **Credit Hours:** 3<br>**Prerequisites**: 110102102 |

## COURSE DESCRIPTION

Passive and active elements of electric circuits, DC and AC circuits analysis, introduction to semiconductors, P–n junction, rectifying diode models, diode applications, Zener diode and its applications , bipolar junction transistor , transistor biasing circuits, small signal bipolar transistor amplifier.

## DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom based discussion
- Collaborative learning through small groups acting in an interdisciplinary context.
- Relevant films and documentaries
- Video lectures
- E-learning resources: e-reading assignments and practice quizzes through Model and Microsoft Team

## FACULTY INFORMATION

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|---|---|
| **Name** | **Akram Aqili** |
| **Academic Title:** | **Associated Professor** |
| **Office Location:** | **Ph 219** |
| **Telephone Number:** | |
| **Email Address:** | **akramaq@staff.hu.edu.jo** |
| **Office Hours:** | Sunday: 12:00-13:00<br>Tuesday: 12:00-13:00<br>Thursday: 12:00-13:00 |

## REFERENCES AND LEARNING RESOURCES

**Required Textbook :** Electronic Devises, Thomas L. Floyd, Prentice Hall, $8^{th}$ Edition.

**Suggested Additional Resources**:

**. References:**

- Electronic Principles, Albert P. Malvino, McGraw-Hill.
- Electronic Fundamentals, Thomas L. Floyd, Prentice Hall.
- Electric circuits, J. A. Edminister, McGraw-Hill.
- Electronic Devices and circuit theory $9^{th}$ Edition, R. Boylestad and L. Nashelsky, Pearson Prentice Hall.
- Computer software: Electronic Workbench.

## STUDENT LEARNING OUTCOMES MATRIX*

| Core Curriculum Learning Outcomes | Program Learning Outcomes | Course Objectives | Course Student Learning Outcomes | Assessment Method |
|---|---|---|---|---|
| CC-LO-5<br>Think critically and creatively in a variety of methods in order to make decisions and solve problems. | CHEM-LO-1: Apply critical thinking and demonstrate problem-solving skills in two or more of the major fields of chemistry. | 1. Develop an understanding of the basic principles of the major branches of chemistry. | 1. Identify and characterize chemical compounds | • Exams<br>• Quizzes<br>• "On-line' reading assignments<br>• homework assignments |
| | | 2. Obtain a thorough foundation in the various fields of chemistry. | 2. Explain natural phenomena using chemical concepts. | • Exams<br>• Quizzes<br>• "On-line' reading assignments |
| | | 3. Learn to solve chemical problems using basic mathematics. | 3.1 Carry out chemical calculations, including mass relations in chemical reactions, limiting reagent and reaction yield calculations, and calculations involving reactions taking place in solution.<br>3.2 Apply the ideal gas law in solving problems involving the gas phase.<br>3.3 Solve problems in chemical thermodynamics and calorimetry. | • Exams<br>• Quizzes<br>• "On-line' reading assignments<br>• homework assignments |
| | | 4. Develop an understanding of chemical models and theories | 4.1 Describe the electronic structure of the elements using quantum numbers, orbital diagrams and electron configurations.<br>4.2 Predict the geometry of the electron pairs and the shape of molecules using VSEPR theory, predict bond polarity and molecular dipoles.<br>4.3 Describe the valence bond theory, predict the hybridization of atoms in molecules and describe bonding in molecules with single, double and triple bonds in terms of and π bonds, and delocalized molecular orbitals<br>4.4 Describe the principles of chemical bonding and write Lewis structures | • Exams<br>• Quizzes<br>• "On-line' reading assignments<br>• homework assignments |
| .CC-LO-4. | CHEM-LO-4: Use | 5. Obtain an | 5. Acquire the ability to learn | • "On-line" |

| | | | | |
|---|---|---|---|---|
| Communicate competently with others using oral and written English skills<br><br>CC-LO-6. Demonstrate competency in the use of research skills and various information sources.<br><br>CC-LO-7. Identify the general concepts of humanities and natural sciences in a manner that reveals their value in life. | modern literature search methods to obtain information about chemistry topics and write reports.<br><br>CHEM-LO-6: Communicate results to chemists and non-chemists. | understanding of the role of chemistry in other disciplines, and its importance in society.<br><br>6. Acquire positive attitudes towards further studies in chemistry and towards the application of chemistry in other disciplines. | independently; articulate the importance of independent learning for future professional development<br><br>6. Develop a positive attitude towards chemistry and its applications in society, and towards further study and lifelong learning. | reading assignments<br>• Term project<br><br>• Term project |

*** يتم تعديلها وفقا لما يتم تحديده لكل مساق بالتنسيق مع الكلية والقسم المعني**

## ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

**Special Needs Section:**
**Tel:**
**Location:**
**Email**:

## COURSE REGULATIONS

***Participation***

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A

student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

***Plagiarism***

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

**The instructor has the right to fail the coursework or deduct marks where plagiarism is detected**

***Late or Missed Assignments***

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

***Student Complaints Policy***

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

## COURSE ASSESSMENT

***Course Calendar and Assessment***

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

| Assessment | Grade Weighting | Deadline Assessment |
|---|---|---|
| | | |
| e.g. Exam 1 | e.g. 25% | Add date/time |
| e.g. Exam 2 | e.g. 25% | Add date/time |
| e.g. Quizzes | e.g. 5% | |
| e.g. Homework | e.g. 5% | |
| e.g. Final Exam (3) | e.g. 40% | Add date/time |

**Description of Exams**

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, match, true and false and/or descriptive questions.

**Homework:** Will be given for each chapter, while the chapter in progress you are supposed to work on them continuously and submit in next lecture when I finish the chapter.

You are also expected to work on in-chapter examples, self-tests and representative number of end of chapter problems. The answers of self-tests and end of chapter exercises are given at the end of the book.

**Quizzes:** Unannounced quizzes will be given during or/and at the end of each chapter based upon the previous lectures. It will enforce that you come prepared to the class.

No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines.

Grades are not negotiable and are awarded according to the following criteria*:

| Letter Grade | Description | Grade Points |
|---|---|---|
| A+ | Excellent | 4.00 |
| A | | 3.75 |
| A- | | 3.50 |
| B+ | Very Good | 3.25 |
| B | | 3.00 |
| B- | | 2.75 |
| C+ | Good | 2.50 |
| C | | 2.25 |
| C- | | 2.00 |
| D+ | Pass | 1.75 |
| D | Pass | 1.50 |
| F | Fail | 0.00 |
| I | Incomplete | - |

*** يمكن التعديل حسب طبيعة البرنامج ( بكالوريوس/دراسات عليا)**

## WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

***مثال على التوزيع : مساق الكيمياء العامة 101***

***"Lecture hours and weeks are approximate and may change as needed"***

Note: For Chem 101 sections with 2 lecture periods per week (S/T, M/W or T/R), one lecture period covers 1.5 lecture hours (80 minutes). The course content specifies the sections in chapters 1-10 of the textbook that will be included in quizzes, homework and exams.

| | | | |
|---|---|---|---|
| DC circuits | | **Week 1-2** | **6 lecture hours** |
| AC circuits | | **Week 3** | **3 lecture hours** |
| ***Chapter 1*** | Introduction to Semiconductors | **Week 4-5** | **6 lecture hours** |
| ***Chapter 2*** | Diode Applications | **Week 6-7** | **6 lecture hours** |
| ***Chapter 3*** | Special–Purpose Diodes | **Week 7-8** | **6 lecture hours** |
| ***Chapter 4*** | Bipolar Junction Transistors | **Week 9-10** | **6 lecture hours** |
| ***Chapter 5*** | Transistor Bias Circuits | **Week 11-12** | **6 lecture hours** |
| ***Chapter 6*** | BJT Amplifiers | **Week 13-14** | **6lecture hours** |
| ***Review*** | | ***Week 15*** | |
| **University Exams** | | ***Week 16*** | |

| Classroom Participation: Assessment Criteria | |
|---|---|

## ASSESSMENT RUBRICS

| Criteria | Quality | | | | Sco |
|---|---|---|---|---|---|
| | Excellent | Good | Satisfactory | Needs Improveme | |

| Classroom Participation: Oral Presentation | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Element | Excellent | | | Satisfactory | | | Needs Improvement | | | Points |
| | | | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| **into classroom participation** | - often articulates "fit" of readings with topic at hand. | | | articulates "fit" of readings with topic at hand . | | "fit" of readings with topic at hand | topic at hand . | | | |
| **Interaction / participation in classroom discussions** | -always a willing participant, responds frequently to questions;<br>- routinely volunteers point of view . | | | -often a willing participant,<br>- responds occasionally to questions;<br>- occasionally volunteers point of view . | | -rarely a willing participant,<br>- rarely able to respond to questions;<br>- rarely volunteers point of view . | -never a willing participant.,<br>- never able to respond to questions;<br>- never volunteers point of view . | | | |
| **Interaction /participation in classroom learning activities** | -always a willing participant;<br>-acts appropriately during all role plays;<br>- responds frequently to questions;<br>- routinely volunteers point of view. | | | -often a willing participant;<br>-acts appropriately during role plays;<br>- responds occasionally to questions;<br>-occasionally volunteers point of view. | | -rarely a willing participant.<br>-occasionally acts inappropriately during role plays;<br>- rarely able to respond to direct questions;<br>-rarely volunteers point of view . | -never a willing participant<br>- often acts inappropriately during role plays;,<br>- never able to respond to direct questions;<br>- never volunteers point of view. | | | |
| **Demonstration of professional attitude and demeanor** | -always demonstrates commitment through thorough preparation;<br>- always arrives on time;<br>- often solicits instructors' perspective outside class. | | | - rarely unprepared; rarely arrives late;<br>- occasionally solicits instructors' perspective outside class . | | -often unprepared; occasionally arrives late;<br>- rarely solicits instructors' perspective outside class . | -rarely prepared;<br>- often arrives late;<br>-never solicits instructors' perspective outside class | | | |

***Assessment Rubrics to be determined by the department. Add samples below.***

| | 8 | 7 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Organization** | ▪ There is a logical sequence of information.<br>▪ Title slide and closing slide are included appropriately. | | | ▪ There is some logical sequence of information.<br>▪ Title slide and closing slides are included. | | | ▪ There is little or no logical sequence of information.<br>▪ Title slide and/ or closing slides are not included. | | | |
| **Slide Design** (text, colors, background, illustrations, size, titles, subtitles) | ▪ Presentation is attractive and appealing to viewers. | | | ▪ Presentation is somewhat appealing to viewers. | | | ▪ Little to no attempt has been made to make presentation appealing to viewers. | | | |
| **Content** | ▪ Presentation covers topic completely and in depth.<br>▪ Information is clear, appropriate, and accurate. | | | ▪ Presentation includes some essential information.<br>▪ Some information is somewhat confusing, incorrect, or flawed. | | | ▪ Presentation includes little essential information.<br>▪ Information is confusing, inaccurate, or flawed. | | | |
| **Language** | ▪ Spelling, grammar, usage, and punctuation are accurate<br>▪ Fluent and effective | | | ▪ There are minor problems in spelling, grammar, usage, and/or punctuation. | | | ▪ There are persistent errors in spelling, grammar, usage, and/or punctuation.<br>▪ Less or not fluent and effective. | | | |
| **Delivery** | ▪ Ideas were communicated with enthusiasm, proper voice projection and clear delivery.<br>▪ There was sufficient eye contact with audience.<br>▪ There were sufficient use of other non-verbal communication skills.<br>▪ Appropriate delivery pace was used. | | | ▪ There was some difficulty communicating ideas due to voice projection, lack of preparation, incomplete work, and/or insufficient eye contact.<br>▪ Insufficient use of non-verbal communication skills.<br>▪ Delivery pace is somewhat appropriate. | | | ▪ There was great difficulty communicating ideas due to poor voice projection, lack of preparation, incomplete work, and/or little or no eye contact.<br>▪ No use of non verbal communication skills.<br>▪ Inappropriate delivery pace was used. | | | |
| **Interaction with Audience** | ▪ Answers to questions are coherent and complete.<br>▪ Answers demonstrate confidence and extensive knowledge. | | | ▪ Most answers to questions are coherent and complete.<br>▪ Answers somehow demonstrate confidence and extensive knowledge. | | | ▪ Answers to questions are neither coherent nor complete.<br>▪ Is tentative or unclear in responses. | | | |
| | **Total Score (Y x 5/16 ) =** | | | | | | | | | |

- ***يمكن اجراء التعديلات المناسبة حسب طبيعة المقرر وبالتنسيق مع الكلية المعنية وتحديد أنواع التعلم بوضوح (الكتروني، مدمج، وجاهي) ونماذج التعلم (نسبة التعلم الوجاهي الى الألكتروني ونسبة التعلم المتزامن الى غير المتزامن) التي سوف يتم اتباعها أثناء تدريس المساقات وبما يتوائم مع نسب الادماج المشار اليها في كتاب مجلس التعليم العالي رقم مع/1427. .***