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|  | **Hashemite University****College of Engineering****Department of Electrical Engineering****EE 203-Electrical circuit 2 (3 Credit Hours/Dept. compulsory )[[1]](#footnote-1)** |  |
|  |  | **Grading info** |  | **Class Info** |
| **Instructor** | Eng: Zahra Ghanem |  | Mid exam | 40% |  | Days  | Sun/Tue/ThuMon ,Wed |
| Email:  | zahray@Hu.edu.jo |  |  |  |  | Time | 11-121-2 |
| participating , Hw, and quizes | 20% |
| Office:  | Eng. 3050 |  | Final  | 40% |  | Location  | Eng. building |
| Office hours: |  |  |  |  |  |  |  |
| **Course** |
| Course Number: | 0409203 |
| Prerequisite: | Electrical circuit 1 (0409201), covering the following topics: * Voltage and current laws; series and parallel connected sources; voltage and current division.
* Nodal and Mesh analysis
* Circuit analysis techniques, Thevenin and Norton equivalent circuits; Delta-Wye conversion.
* Basic RL and RC circuits; natural and forced response and Basic RLC circuits.
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| Textbook:  | “Engineering Circuit Analysis”, 9th Edition, Authors: Willian H. Hayt; Jack E. Kemmerly, and Steven M. Durbin. McGraw-Hill |
| Course Description: | Sinusoidal steady-state response, phasor concept, A.C power analysis. Three phase circuits, magnetically coupled circuits, complex frequency, circuit analysis in s-domain, Bode plot, one-port and two-port networks, and passive filters.  |
| Specific Outcomes of Instruction (Course Learning Outcomes): |  * Solve AC circuits for voltage, current and power calculations.(a,e)
* Analyze 3-phase AC circuits (a, e).
* Analyze magnetically coupled circuits and linear transformers.(a,e)
* Solve circuits in the S-domain (Laplace transform) to determine the time and frequency domain responses..(a,e)
* Analyze passive filters (LPF, HPF, and BPF) and resonant circuits.(a,e)

Analyze two port networks and calculate Z, and Y Parameters.(a,e) |
| Important material | * Lecture notes
* References
* Internet resources
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| **References:** |
| 1. Electric Circuits, [James W. Nilsson](http://www.amazon.com/exec/obidos/search-handle-url/105-4278600-6824400?%5Fencoding=UTF8&search-type=ss&index=books&field-author=James%20W.%20Nilsson) , [Susan Riedel](http://www.amazon.com/exec/obidos/search-handle-url/105-4278600-6824400?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Susan%20Riedel) , Prentice Hall; 9 *edition*.
2. Schaum's Outline of Electric Circuits, [Mahmood Nahvi](http://www.amazon.com/exec/obidos/search-handle-url/105-4278600-6824400?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Mahmood%20Nahvi) , [Joseph A. Edminister](http://www.amazon.com/exec/obidos/search-handle-url/105-4278600-6824400?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Joseph%20A.%20Edminister), McGraw-Hill; 4th ,2002
3. Electrical Circuit Theory and Technology, [John Bird](http://www.amazon.com/exec/obidos/search-handle-url/105-4278600-6824400?%5Fencoding=UTF8&search-type=ss&index=books&field-author=John%20Bird), Newnes; 3 edition , 2007
4. Fundamentals of Electric Circuits, by Charles Alexander and Matthew Sadiku, 5th, 2008.
5. Introduction to Electric Circuits, by [Richard C. Dorf](http://www.amazon.com/Richard-C.-Dorf/e/B001H6N422/ref%3Dsr_ntt_srch_lnk_1?qid=1295253088&sr=1-1) and James
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| **Major Topics Covered and Schedule in Weeks:** |
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| **Topic** | **# Weeks** | **# Contact hours\*** |
| Sinusoidal functions, phasors, phasor relations for RLC, impedance, admittance, phasor diagrams.  | 3 | 9 |
| Instantaneous power, average power active power, apparent power, power factor and complex power. | 3 | 9 |
| Single-phase 3-wire system, 3-phase system, Y-connection, delta-connection, power in 3-phase circuits. | 2 | 6 |
| Mutual inductance, energy considerations, transformers, magnetically coupled circuit equivalent and analysis. | 2 | 6 |
| Types of responses, Laplace Transform, Inverse transform.. | 2 | 6 |
|  Frequency response, parallel resonance, series resonance, Bode diagrams, Filters. | 2 | 6 |
| Network impedance, Y-parameters, Z-parameters | 1 | 3 |
| Total  | **15** | **45** |
| **Course Policy** |
| * If you miss class, there won’t be a makeup test, quiz, etc. and you WILL get a zero unless you have a valid excuse.
* Cheating and plagiarism are completely prohibited.
* If you miss more than 15% of classes you will automatically fail the class.

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| **Student Outcomes (SO) Addressed by the Course:** |
| ***#*** | ***Outcome Description*** | ***Contribution*** |
| ***General Engineering Student Outcomes*** |
| (a) | An ability to apply knowledge of mathematics, science, and engineering | ***H*** |
| (b) | An ability to design and conduct experiments, as well as to analyze and interpret data |  |
| (c) | An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability |  |
| (d) | An ability to function on multidisciplinary teams |  |
| (e) | An ability to identify, formulate, and solve engineering problems | ***H*** |
| (f) | An understanding of professional and ethical responsibility |  |
| (g) | An ability to communicate effectively |  |
| (h) | The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context |  |
| (i) | a recognition of the need for, and an ability to engage in life-long learning |  |
| (j) | A knowledge of contemporary issues |  |
| (k) | An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice |  |
|  **H**=High, **M**= Medium, **L**=Low |

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1. summer Semester (2019/2020) [↑](#footnote-ref-1)