



Zarqa University
Faculty of Engineering Technology
Mechanical Engineering Department

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| Course Information | 0905556 Heat Transfer (II) | | |
| | 3 Credits | Compulsory | Fall 2014 |
| | Prerequisites by Course: Heat Transfer (I) | | |
| | Co-requisites by Course: - | | |
| | Prerequisites for: | | |
| | Schedule: Lecture, 9:30-11:00, MW, L314 | | |
| Instructor | Prof. Dr. Bassam Al-Helou | | |
| Contact Information | heloub@zu.edu.jo, Office L240, Phone: 05-3821100-2083 | | |
| Office hours | 12:30-14:00M, 12:00-13:00T, 08:30-09:30W; or by appointment | | |
| Textbook | Principles of Heat and Mass Transfer. Frank P. Incropera, Dewitt. | | |
| References and Resources | 1. P. Holman, "Heat Transfer", Mc Grow Hill, 10 ed. 2. John H Lienhard V, John H Lienhard IV "A Heat Transfer Textbook" Fourth Edition, 2011. | | |
| Evaluation Criteria | Activity | Percent (%) | |
| | Quizzes and Homework | 10 | |
| | First Exam | 20 | |
| | Second Exam | 20 | |
| | Final Exam | 50 | |
| Course Description | Introduction to modes of heat transfer. Two-Dimensional, Steady-State Conduction. Transient Conduction, Spatial Effects, The Plane Wall with Convection. Free Convection. Boiling and Condensation. Radiation: Processes and Properties. Radiation Exchange Between Surfaces. Diffusion mass transfer. | | |
| Intended Learning Outcomes | Course Outcome | | [%] |
| | 1. To make students familiar with fundamental heat transfer concepts: Free convection. | | 20% |
| | 2. Calculate temperature and heat flux in one and two-dimensional conduction. | | 20% |
| | 3. Understand radiation properties and surfaces for heat transfer. | | 20% |
| | 4. To enable students to make analysis of practical problems using these concepts. | | 20% |
| | 5. To enable students to make analysis and understanding the diffusion mass transfer. | | 20% |
| Relationships to Program Outcomes | a. Ability to apply knowledge of mathematics, science, and engineering (H) c. Design a system, components, or process to meet desired needs (H). e. Ability to identify, formulate, and solve mechanical engineering problems (H) | | |

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| | j. Possess knowledge of contemporary issues. (H) k. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (L) | | |
| Contribution to the Professional Components | Mathematics and Basic Sciences | | - |
| | Engineering Topics | Engineering Sciences | 50% |
| | | Engineering Design | 50% |
| | General Education | | - |
| Course Outline | Subject | | Hours |
| | Introduction to modes of heat transfer. Two-Dimensional, Steady-State Conduction | | 10 |
| | Transient Conduction, Spatial Effects, The Plane Wall with Convection. Exam I (up to end of week 5) | | 10 |
| | Free Convection. | | 5 |
| | Boiling and Condensation Exam II (up to end of week 11) | | 5 |
| | Radiation: Processes and Properties | | 5 |
| | Radiation Exchange Between Surfaces | | 5 |
| | Diffusion mass transfer | | 5 |
| | Review, Final Exam | | 3 |
| Policies: | <p style="text-align: center;">Attendance</p> <p>Attendance will be checked each class. <i>Students are expected to attend each lecture.</i> University regulations will be strictly followed for students exceeding the maximum number of absences.</p> <p style="text-align: center;">Homework</p> <ul style="list-style-type: none"> - Homework assignments are due at the beginning of class the day they are due. - No late homework will be accepted unless prior arrangement have been made with the instructor - <i>No make-up allowed on homework.</i> - You can consult each other regarding homework solution s however each assignment must be your own solution. Verbatim or duplicates assignments will be <i>regarded as cheating.</i> <p style="text-align: center;">Class participation and behavior</p> <ul style="list-style-type: none"> - Classroom participation is a part of learning; it is only by asking questions and talking through ideas that you can come to fully understand the material - Please do not engage in behavior which detracts from the ability of other students to learn. Such behaviors include arriving at class late, speaking or whispering while the instructor and students are discussing ideas or asking questions, reading messages newspapers in class, cell-phones ringing, etc. | | |

| Week | Date | Sec | Topic | Homework | Due date |
|------|------------|-----|-------|----------|----------|
| 1 | 13/10/2014 | | | | |
| 2 | 22/10/2014 | | | | |

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| 3 | 27/10/2014 | | | | |
| 4 | 3/11/2014 | | | | |
| 5 | 10/11/2014 | | | | |
| 6 | 17/11/2014 | | | | |
| 7 | 24/11/2014 | | Exam I (up to end of week 6) | | |
| 8 | 1/12/2014 | | | | |
| 9 | 8/12/2014 | | | | |
| 10 | 15/12/2014 | | | | |
| 11 | 22/12/2014 | | | | |
| 12 | 29/12/2014 | | Exam II (up to end of week 12) | | |
| 13 | 5/01/2015 | | | | |
| 14 | 12/01/2015 | | | | |
| 15 | 19/01/2015 | | | | |
| 16 | 26/01/2015 | | Final Exam | | |