

 **Jerash University**

 **Faculty of Computer Science and Information Technology**

 **Computer Sciences Department**

 **Semester**: Fall Semester 2018/2019

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| **Course symbol and number: 1003250**  | **Course Name:** مدخل الى الشبكات وتراسل البيانات |
| **Teaching Language:** English | **Prerequisites:** . **1002110** |
| **Credits:** 3 hours**.** | **Course Level:** 3 |

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| **Course Description**  |
| This course aims to introduce the main concepts of computer networks. This includes networks classifications, architectures, applications and standards. This course describes details of the OSI and TCP/IP reference models. In the physical layer, subjects such as the transmission media, wireless transmission, telephone system and mobile telephone system are discussed. The Data Link Layer describes framing, error and flow control, Error detection and correction, elementary data Link protocol and Sliding window protocol. Additionally, within this layer, the Medium Access Sub-layer is described covering channel allocation, multiple access protocols, collision detection protocols, IEEE standard 802 and Ethernet. Concepts of the wireless technology are introduced, covering WLANs protocols, broadband wireless and Bluetooth technology. Afterwards, the Network Layer handles subjects including routing algorithms, congestion control algorithms, QoS issues and Internetworking. The Transport Layer describes transport services, elements of transport protocols and the internet transport protocols: TCP and UDP. At last the Application Layer is described including network security issues, DNS, electronic email, The world wide web and multimedia applications |

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| **Course Objectives**  |
| * Introduce students with the networking concepts

Understanding the different sets of network classifications and applications* Allow the students to distinguish between circuit and packet switching as well as connectionless and connection oriented services.
* Introduce the students with OSI reference models and layered protocols.
* Allow the students to distinguish between the OSI and TCP/IP reference models.
* Introduce the students with the main concepts behind the wireless technology.
* Understanding the following main subjects:
1. The Data Link Layer.
2. The Transport Layer.
3. The MAC sub-Layer.
4. The Application Layer.
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| **Learning Outcomes**  |
| Upon completion of this course, the student will be able to: 1. Employ the physical security of network infrastructure components using National Institute of Standards and Technology (NIST) Guidelines and other best practices. 2. Develop backup procedures to provide for data security. 3. Use network operating system features to implement network security. 4. Identify computer and network threats and vulnerabilities and methods to prevent their effects. 5. Use tools to enhance network security. 6. Use encryption techniques to protect network data. |

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|  | **Text Book(s)**  |
| **Title**  | CCNA Routing and Switching: Introduction to Networks (2015 |
| **Author(s)**  | CCNA |
| **Publisher**  | 2015 |
| **Year**  | 2015 |
| **Edition**  | Fourth |

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|  | **References**  |
| **Books**  | CCNA Routing and Switching: Introduction to Networks (2015 |
| **Internet links**  |  http://www.jpu.edu.jo/lms |
| **Course link**  | [Click here](http://www.jpu.edu.jo/lms) |

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|  | **Instructors**  |
| **Instructor**  |   |
| **Office Location**  | الطابق السادس - 611 |
| **Office Phone**  | 666 |
| **E-mail**  |  |

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| **Topics Covered**  |
| **Topics**  | **Chapters in Text**  | **Week number**  | **Teaching hours**  |
| **Introduction**1.0 Exploring the Network1.1 Globally Connected1.2 LANs, WANs, and the Internet1.3 The Network as a Platform1.4 The Changing Network Environment1.5 Summary | **Chp.1**  | 1-3 | 2  |
| **Configuring a Network Operating System** 2.0 Configuring a Network Operating System2.1 IOS Bootcamp2.2 Getting Basic2.3 Address Schemes2.4 Summary | **Chp. 2** | 4, 5, 6  | 2  |
| **Network Protocols and Communications**3.0 Network Protocols and Communications3.1 Rules of Communication3.2 Network Protocols and Standards3.3 Moving Data in the Network3.4 Summary | **Chp.3** | 7 | 2  |
| **Network Access**4.0 Network Access4.1 Physical Layer Protocols4.2 Network Media4.3 Data Link Layer Protocols4.4 Media Access Control4.5 Summary | **Chp.4** | 8  | 3  |
| **Ethernet**5.0 Ethernet5.1 Ethernet Protocol5.2 Address Resolution Protocol5.3 LAN Switches5.4 Summary | **Ch.5** | 9  | 3  |
| **Network Layer**6.0 Network Layer6.1 Network Layer Protocols6.2 Routing6.3 Routers6.4 Configuring a Cisco Router6.5 Summary | **Ch.6** | 10 | 4 |
| **Transport Layer** 7.0 Transportation Layer7.1 Transport Layer Protocols7.2 TCP and UDP7.3 Summary | **Ch.7** | 11 | 3 |
| **IP Addressing**8.0 IP Addressing8.1 IPv4 Network Addresses8.2 IPv6 Network Addresses8.3 Connectivity Verification8.4 Summary | Ch.8 | 12 | 3 |
| **Subnetting IP Networks**9.0 Subnetting IP Networks9.1 Subnetting an IPv4 Network9.2 Addressing Schemes9.3 Design Considerations for IPv69.4 Summary | Ch.9 | 13 | 3 |
| **Application Layer**10.0 Application Layer10.1 Application Layer Protocols10.2 Well-Known Application Layer Protocols and Services10.3 The Message Heard Around the World10.4 Summary | Ch.10 | 14 | 2 |
| **It’s a Network**11.0 It’s a Network11.1 Create and Grow11.2 Keeping the Network Safe11.3 Basic Network Performance11.4 Managing IOS Configuration Files11.5 Integrated Routing Services11.6 Summary | Ch.11 | 15 | 2 |
|  | Handout |  |  |

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|  | **Evaluation**  |  |
| **Assessment Tool**  | **Expected Due Date**  | **Weight**  |
| Programming assignments and LMS |   | 20 %  |
| First Exam  |   | 20 %  |
| Second Exam  |   | 20 %  |
| Final Exam  | According to the University final examination schedule  | 40 %  |

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|  | **Policy**  |
| **Attendance**  | Attendance is very important for the course. In accordance with university policy, students missing more than the allowed absence rate of total classes are subject to failure. Penalties may be assessed without regard to the student's performance. Attendance will be recorded at the beginning or end of each class.  |
| **Exams**  | All exams will be CLOSE-BOOK; necessary algorithms/equations/relations will be supplied as convenient.  |

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| **Class Schedule & Room**  |

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| **Office Hours**  |
|  Sun: 11 – 12.30 Mon: 11 - 12:30  Tues: 11- 12.30  Wed: 11 – 12:30 |
|  | \* Or by an appointment through email |   |

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|  | **Teaching Assistant**  |
| To announced later on.  |  |

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|  | **Prerequisites**  |
| **Prerequisites by course**  |  |