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**Course Plan**

**Face-to-Face Learning**

General information:

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| **College** | College of engineering | | |
| **Department** | Department of computer engineering | | |
| **Semester** | Summer | **Academic year** | 2023 |

Course details:

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| **Course name** | **Network Security** | | | | | | **Course number** | | | 0512442 | | |
| **Credited hours** | 3 | | **Theoretical** | | 3 | | | **Practical** | | -- | **Actual** | 3 |
| **Course Level** | **Year** | | 4 | | | | | | | | | |
| **Prerequisite** | Computer networks | | | | | **Concurrent Requirement** | | | -- | | | |
| **Course type** | | | | Compulsory | | | | | | | | |
| **The link of the course’s page on the Web** | | E-learning website | | | | | | | | | | |

Instructor’s Information:

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| **Name of the instructor** | Dr. Bilal Alqudah |
| **E-mail** | [Alqudah@ahu.edu.jo](mailto:Alqudah@ahu.edu.jo) |
| **Course time** | 10:30-11:30 am |
| **Office hours** | 11:30 – 12:30 am |
| **Office phone number** | AHU Number , Ext 7041 |
| **Name of the lab supervisor (laboratory)** | NA |

**Textbook** (if any): Title of the book, author(s), edition, year, ISBN, publisher, book website.

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| * Charlie Kaufman, Radia Perlman, and Mike Speciner, "**Network Security: Private Communication in a Public World**," 2nd Edition, Prentice Hall, 2002, ISBN: 0130460192. |

**Main references**: reference title, author(s), edition, year, ISBN, publisher, book website.

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| * Ankit Fadia, "**Network Security : A Hacker's Perspective**," Course Technology Ptr, May-06, 415 pp., ISBN:1598631632. * Vincent J. Nestler, et al, "**Computer Security Lab Manual**," McGraw-Hill, 2006, 755 pp., ISBN:0072255080. |

**Secondary references**: reference title, author(s), edition, year, ISBN, publisher, book website.

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| * Jan Harrington, "**Network Security : A Practical Approach**," Morgan Kaufmann Pub, Mar-05, 365 pp., ISBN:123116333. * William Stallings, "**Cryptography and Network Security**," 4th Edition, Prentice-Hall, 2006, 680 pp., ISBN:0131873164. |

**Description of the course:**

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| A comprehensive treatment of network security. Topics include remote access security, DMZ, firewalls, VPNs, PKI architecture, X.509 Public key infrastructure, web security, S-HTTP, SSL, TTLS, intrusion detection systems, extrusion detection systems, Electronic mail security, PGP, PEM, S/MIME, routing protocol security, wireless network security, traffic analysis tools and alert tools. |

Learning objectives:

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Learning Outcomes (LO):

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Course topics:

| **Learning Outcome Number** | **Topic** | **Topic Number** |
| --- | --- | --- |
|  | [**Course Overview**](https://www.cse.wustl.edu/~jain/cse571-07/l_01int.htm)  [**Security Concepts**](https://www.cse.wustl.edu/~jain/cse571-07/l_02sec.htm) | 1 |
|  | 2 |
|  | [**TCP/IP Security Attacks**](https://www.cse.wustl.edu/~jain/cse571-07/l_03tcp.htm)  [**Operating Systems Security Attacks**](https://www.cse.wustl.edu/~jain/cse571-07/l_04oss.htm) | 3 |
|  | 4 |
|  | [**Secret Key Cryptography**](https://www.cse.wustl.edu/~jain/cse571-07/l_05skc.htm) | 5 |
|  | [**Modes of Operation**](https://www.cse.wustl.edu/~jain/cse571-07/l_06moo.htm) | 6 |
|  | [**Hashes and Message Digest**](https://www.cse.wustl.edu/~jain/cse571-07/l_07hsh.htm) | 7 |
|  | [**Number Theory and Public Key Cryptography**](https://www.cse.wustl.edu/~jain/cse571-07/l_08pka.htm) | 8 |
|  | [**Authentication**](https://www.cse.wustl.edu/~jain/cse571-07/l_09oas.htm) | 10 |
|  | [**Kerberos V4**](https://www.cse.wustl.edu/~jain/cse571-07/l_10kr4.htm) | 11 |
|  | [**Kerberos V5**](https://www.cse.wustl.edu/~jain/cse571-07/l_11kr5.htm) | 12 |
|  | [**Public Key Infrastructure**](https://www.cse.wustl.edu/~jain/cse571-07/l_12pki.htm) | 13 |
|  | [**IPsec**](https://www.cse.wustl.edu/~jain/cse571-07/l_13ips.htm) | 14 |
|  | [**Internet Key Exchange (IKE)**](https://www.cse.wustl.edu/~jain/cse571-07/l_14ike.htm) | 15 |
|  | [**Web Security: SSL/TLS**](https://www.cse.wustl.edu/~jain/cse571-07/l_15tls.htm) | 16 |
|  | [**Email Security**](https://www.cse.wustl.edu/~jain/cse571-07/l_16eml.htm) | **17** |
|  | [**Virtual Private Networks (VPNs)**](https://www.cse.wustl.edu/~jain/cse571-07/l_17vpn.htm) | **18** |
|  | [**Authentication, Authorization, and Accounting (AAA)**](https://www.cse.wustl.edu/~jain/cse571-07/l_18aaa.htm) | **19** |
|  | [**AAA Part II**](https://www.cse.wustl.edu/~jain/cse571-07/l_19aaa.htm) | **20** |
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**\*** Midterm exam : TBD

Final Exam ; TBD

**\***Practical exam (if there is any). Calculating scores for quizzes, assignments, participation, and project discussions.

**Course policies:**

The instructor can elaborate/ modify the following generic policies to suit the course’s requirements:

| **Policy** | **Topic** |
| --- | --- |
| - Not giving make-up quizzes.  - 4 quizzes, at least, are conducted.  - 10 marks are given for each quiz.  - If five or more quizzes are taken, the lowest mark is excluded. | **Quizzes** |
| The exam is generally composed of general definitions, multiple choice, true/false, problem analysis, and essay questions. | **Exams** |
| Resit exams should not be given unless a legitimate excuse is submitted. | **Resit exams** |
| The dropout period according to the University’s instructions. | **Dropping period** |
| - Cheating/ coping in exams or quizzes is unethical and illegal.  - AHU University instructions are applied.  - All assignments must be from your own work and in your own language. | **Integrity** |
| - The student is expected to attend all lectures.  - The policy of AHU University requires a faculty member to give a zero mark in case the student misses 15% of the lectures without an accepted excuse.  - If a student misses a lecture, it is his responsibility to follow up any announcement/ assignment given to students. | **Attendance** |
| It is the student's responsibility to constantly follow up on the electronic information resources related to the course. | **Course resources** |
| The student is expected to spend an average of 3 hours per week preparing for the course. | **Workload** |
| The instructor must return the marked exam papers within a week from the date of the exam. | **Marked exams** |
| - Participation and contribution to the discussions during the lecture will positively affect the final grade. Raise your hand if you have any question.  - Any kind of distracting, indecent, or side conversations in the lecture will negatively affect you. | **Participation** |
| - Required homework assignments are shown in the previous table.  - Students organize themselves into groups; each group consists of (2-3) male and female students. Each group makes at least one presentation in the lecture on a specific topic, with the entire work submitted thereafter.  - Regarding the course project, more details about its stages and topics will be given at a later time. | **Assignments and projects** |

Course evaluation (Dates and marks):

| **Evaluation Tool** | **Expected Date** | Mark | |
| --- | --- | --- | --- |
| **Undergraduate** | **Postgraduate** |
| **Midterm Exam** | Week 9 | **30%** | **30%** |
| **Assignments and other related activities** \* | Next lecture | **20%** | **30%** |
| **Final examination** | Week 16 | **50%** | **40%** |

\* The distribution here accordingly depends on the course itself; it may, but not exclusively, include homework assignments/ activities, attendance, quizzes......etc.