**Philadelphia University Faculty of
Information Technology
Department of CS
First semester, 2022/2023**

	Course Syllabus
Course Title: Wireless Computer Networks	**Course code: 0790322**
Course Level: 3	**Course prerequisite (s): 0731340**
Lecture Time: 8:15 –9:45	**Credit hours: 3 H**

	Academic Staff Specifics		

Name	**Rank**	**Office Number and Location**	**Office Hours**	**E-mail Address**
Firas Najjar	**Assistance Professor**	**Room: 7318** **IT building**		fnajjar@philadelphia.edu.jo

Course module description:

This course provides a clear understanding of the wireless networks' concepts, architecture, protocols, and applications. It describes various security architectures for different wireless communication networks to design secure wireless networks. Finally, the course will discuss all different types of wireless networks: wireless LAN, wireless MAN, wireless PAN, and wireless WAN from design, use, and security point of view.

Course module objectives,

This course aims to provide:
- A solid understanding of wireless network principles and architecture.
- A basic knowledge of wireless application design and development.
- A basic knowledge on wireless services and protocols.
- A good understanding of wireless security architecture and protocols.
- The skill to build a secure wireless network with basic software and hardware components.

Course/ module components:
- **Books (title, author (s), publisher, year of publication)**
  1. Security in wireless communication networks, Yi Qian, Feng Ye, Hsiao, 2022
  2. Computer Networks a top-down approach, Kurose Ross, Pearson, 2020
  3. Wireless and mobile networks, Sunilkumar S. Manvi and Mahabaleshwar S. Kakkasageri, Wiley, 2010

- **Support material (s):** Textbook Slides

Teaching methods:
Duration: 16 weeks totalizing 48 hours
Lectures: 2 hours per week, totalizing 32 h ours
Tutorials: (0-1 hour per month, totalizing 4 hours
Laboratory: 3 hours per month, totalizing 12 hours

Learning outcomes:
A student completing this module should be able to:

- **Knowledge and understanding**
    - Understand the principles and techniques related to wireless data communications and wireless networks. (A)
    - Understand the professional and ethical responsibilities of the computer professional practice including understanding the need for quality. (A)
    - Understand the application of wireless networking in a business context (A)

- **Cognitive skills (thinking and analysis*)*
    - Evaluate, select, and implement different communication options within an organization. (B)

- **Communication skills (personal and academic).**
    - Plan and undertake a major individual project, and prepare and deliver coherent and structured verbal and written technical report. (C)
    - Be able to display an integrated approach to the deployment of communication skills, use IT skills and display mature computer literacy, strike the balance between self-reliance and seeking help when necessary, in new situations, and display personal responsibility by working to multiple in complex activities. (C).

- Practical and subject specific skills (Transferable Skills).
    - Install and configure Wireless LAN Access points, switches, routing

Assessment instruments
- Quizzes.
- Home works
- First exam
- Second exam
- Final exam

Allocation of Marks		
Assessment Instruments	**Due week**	**Mark**
Mid exam	**8**	**30%**
Final exam	**16**	**40%**
Assignments, Quizzes	**4,10,12**	**30%**
Total		**100%**

* Make-up exams will be offered for valid reasons only with consent of the Dean. Make-up exams may be different from regular exams in content and format.

Course/module academic calendar

Week	List of Topics	Description	Exams, Quiz Assignment	Contact Hours
1	**Wireless Network Introduction**			**3**
2	**Fundamentals of Wireless Communications (1)**			**3**
3	**Fundamentals of Wireless Communications (2)**			**3**
4	**Wireless LANs fundaments**		**Quiz**	**3**
5	**Wireless LANs Infrastructure**			**3**
6	**Wireless LANs Protocols**			**3**
7	**Wireless LANs**			**3**
8	**Wireless LAN Security**		**Mid Exam**	**3**
9	**Wireless PANs**			**3**
10	**Wireless PANs Security**			**3**
11	**Wireless MANs Security**			**3**
12	**Wireless WANs Networks**		**Quiz**	**3**
13	**Wireless WANs Security**			**3**
14	**Wireless AD Hoc Network**			**3**
15	**Wireless Ad Hoc Network Security**			**3**
16	**Revision & lessons learned**		**Final exam**	

Documentation and Academic Honesty

Submit your homework covered with a sheet containing your name, number, course title and number, and type and number of the home work (e.g. tutorial, assignment, and project).

Any completed homework must be handed in to my office (room IT ---) by 15:00 on the due date. After the deadline "zero" will be awarded. You must keep a duplicate copy of your work because it may be needed while the original is being marked.

You should hand in with your assignments:
1- A printed listing of your test programs (if any).
2- A brief report to explain your findings.
3- Your solution of questions.

For the research report, you are required to write a report similar to a research paper. It should include:

o **Abstract**: It describes the main synopsis of your paper.
o **Introduction**: It provides background information necessary to understand the research and getting readers interested in your subject. The introduction is where you put your problem in context and is likely where the bulk of your sources will appear.
o **Methods (Algorithms and Implementation)**: Describe your methods here. Summarize the algorithms generally, highlight features relevant to your project, and refer readers to your references for further details.
o **Results and Discussion (Benchmarking and Analysis)**: This section is the most important part of your paper. It is here that you demonstrate the work you have accomplished on this project and explain its significance. The quality of your analysis will impact your final grade more than any other component on the paper. You should therefore plan to spend the bulk of your project time not just gathering data, but determining what it ultimately means and deciding how best to showcase these findings.
o **Conclusion**: The conclusion should give your reader the points to "take home" from your paper. It should state clearly what your results demonstrate about the problem you were tackling in the paper. It should also generalize your findings, putting them into a useful context that can be built upon. All generalizations should be supported by your data, however; the discussion should prove these points, so that when the reader gets to the conclusion, the statements are logical and seem self-evident.
o **Bibliography:** Refer to any reference that you used in your assignment. Citations in the body of the paper should refer to a bibliography at the end of the paper.

• **Protection by Copyright**
1. Coursework, laboratory exercises, reports, and essays submitted for assessment must be your own work, unless in the case of group projects a joint effort is expected and is indicated as such.
2. Use of quotations or data from the work of others is entirely acceptable, and is often very valuable provided that the source of the quotation or data is given. Failure to provide a source or put quotation marks around material that is taken from elsewhere gives the appearance that the comments are ostensibly your own. When quoting word-for-word from the work of another person quotation marks or indenting (setting the quotation in from the margin) must be used and the source of the quoted material must be acknowledged.
3. Sources of quotations used should be listed in full in a bibliography at the end of your piece of work.

• **Avoiding Plagiarism**.
1. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.
2. Paraphrasing, when the original statement is still identifiable and has no acknowledgement, is plagiarism. A close paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable for you to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.

3. Direct quotations from an earlier piece of your own work, if not attributed, suggest that your work is original, when in fact it is not. The direct copying of one's own writings qualifies as plagiarism if the fact that the work has been or is to be presented elsewhere is not acknowledged.
4. Plagiarism is a serious offence and will always result in imposition of a penalty. In deciding upon the penalty the Department will take into account factors such as the year
of study, the extent and proportion of the work that has been plagiarized, and the apparent
intent of the student. The penalties that can be imposed range from a minimum of a zero mark for the work (without allowing resubmission) through caution to disciplinary measures (such as suspension or expulsion).

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Module References
Books

1. Business Data communications, William Stallings, Prentice Hall, 2005.
2. Data Communication and Network, Dave Miller, McGraw Hill, 2006.
3. Wireless communications and networks, William Stallings, 2nd
4. edition, Pearson, 2005.
5. Wireless Network Security: Second Edition, Wolfgang Osterhage,2018.
6. Business Data Communications, Forouzan, Behruz. A Fegan, Sophia Chung, McGraw Hill, 2007.
7. Computer Networks and internets: with Internet Applications, Comer Douglas E, Upper Saddle River, 2004.
8. Data Communication and Computer Networks, Gupta Prakash, Prentice
9. Hall, 2006.
10. Computer Communication and Network technologies, Gallo Michael A, Hancock William M, Pacific Group, 2001.
11. Communication Networks: Principles and Practice, Hasera Sumit, Narang
12. Nishit, Narang Sumita, McGraw Hill, 2005.