

Course specification
(4102 Network Programming)

Faculty: HICIT- Higher Institute for Computers & Information Technology

Programme(s) on which the course is given: Under graduate program in Computer Science

Major or minor element of programme: Compulsory

Department offering the programme: Department of Computer Science

Department offering the course: Department of Computer Science

Year / Class: 4th Year – 1st semester

Date of specification approval: 22/9/2015

A- Basic Information

Title: Network Programming

Code: 4102

Weekly Hours:

Lecture: 3

Exercise: -

Practical: 3

Total: 6

B- Professional Information

1- Course Objectives:

Network programming basic concepts; Java I/O streams; Internet addressing; the Socket class; the Datagram Socket class; Communication primitives; protocol specification, design, and implementation; multithreaded client/server applications; Java network programming API will be used to implement some practical networking aspects.

2- Program ILOs Covered by Course

Program Intended Learning Outcomes			
Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
a2, a6, a13, a14, a20	b3, b4, b18	c1, c2, c5, c7, c8, c10, c16	d5

3- Intended learning outcomes of course (ILOs)

After completing this course, the student should be able to:

a: Knowledge and Understanding

- a1) Understand the basic concepts associated with network programming.
- a2) Define the role of a protocol in controlling the communication between hosts in a network
- a3) Clarify the advantages of multithreaded applications

b: Intellectual skills

- b1) distinguish between transport layer protocols.
- b2) recognize the significance of flexibility, extendibility, simplicity, and efficiency in protocol design and implementation

c: Professional and practical skills

- c1) use Java I/O streams and Java exception handling primitives
- c2) implement practical network protocols, for clients and servers, using Java networking API

d: General and transferable skills

- d1) write a technical report.
- d2) work with a team to implement a network programs

4- Contents

Topic	Hours	Lecture	Practical
Network Basics	6	3	3
Basic Web Concept	6	3	3
Basic Web Concept	6	3	3
Java Overview(Streams)	6	3	3
Java Overview(Threading)	6	3	3
Internet Addressing	6	3	3
Socket Programming.	6	3	3
Socket Programming(TCP/IP)	6	3	3
Socket Programming(UDP)	6	3	3
PHP(Basics)	6	3	3
PHP(GUI)	6	3	3
PHP(MYSQL)	6	3	3
Course Project	6	3	3

5 -Teaching and learning methods

- 4.1 Lectures
- 4.2 Tutorial Exercises
- 4.3 Practical Lab
- 4.4 Discussions.

6- Student assessment methods

- 6.1 Midterm Exam: To assess the knowledge and understanding achieved by the student during the previous weeks.
- 6.2 Final Exam: To evaluate what the student gain at the end of the course, and to assess: the knowledge and understanding, general skills, and intellectual skills.
- 6.3 Course Project: To allow students work in team, and to evaluate knowledge, understanding, intellectual, and transferable skills.
- 6.4 Course Work &Quizzes: To keep the student always in the course, and to evaluate knowledge, understanding, intellectual, and transferable skills.

Assessment Schedule

Assessment	Week #
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Mid Term Exam	8
Final Exam	16
Course Project	3-14
Course Work & Quizzes	2-14

Assessment Weight

Assessment	Weigh %
Mid Term Exam	5%
Final Exam	80%
Course Project	10%
Course Work & Quizzes	5%
Total	100

Course Work & Quizzes: (Short Exams, Assignments, Researches, Reports, Presentations, Class/Project discussion)

7 -List of references

7.1 Text Book

- 1-Elliotte Rusty Harold, **Java Network Programming**, 3rd edition, O'Reilly 2004.
- 2-D. Reilly and M. Reilly, *Java™ Network Programming and Distributed Computing*, 2002, Addison-Wesley Professional.
- 3- D. Comer, *Internetworking with TCP/IP Vol. 1: Principles, Protocols, and Architecture*, 4th edition, Prentice Hall 2000.
- 4- U. Black, *TCP/IP and related protocols*, McGraw-Hill 1998.
- 5- **Java Network Programming, 4th Edition** By [Elliotte Rusty Harold](#)

8- Required Facilities

- 8.1 Tools/Software
 - NetBeans
 - XAMPP(PHP Server)

9- Course Matrices

9.1-Course Content/ILOs Matrix

Course Contents	a1	a2	a3	b1	b2	c1	c2	d1	d2
Network Basics	√	√		√					
Basic Web Concept	√	√		√					
Basic Web Concept	√	√		√					
Java Overview(Streams)	√	√				√			
Java Overview(Threading)	√	√	√			√			
Java Overview(Threading)	√	√	√			√			
Internet Addressing	√				√	√	√		

Socket Programming.	√				√	√	√		
Socket Programming(TCP/IP)	√				√	√	√		
Socket Programming(UDP)	√				√	√	√		
PHP(Basics)						√	√		
PHP(GUI)						√	√		
PHP(MYSQL)						√	√		
Course Project								√	√

9.2- Learning Method /ILOs Matrix

Learning Methods	a1	a2	a3	b1	b2	c1	c2	d1	d2
Lecture	√	√	√	√	√	√	√		
Tutorial Exercises				√	√	√	√		
Practical Lab				√	√	√	√		
Discussion				√	√	√	√	√	√

9.3-Assessment Methods /ILOs Matrix

Assessment Methods	a1	a2	a3	b1	b2	c1	c2	d1	d2
Mid Term Exam	√	√	√	√	√	√	√		
Final Exam	√	√	√	√	√	√	√		
Course Project	√	√	√	√	√	√	√	√	√
Course Work &Quizzes	√	√	√	√	√	√	√	√	√

Course Coordinator: Dr. Fahima Maghraby ()
Head of Department: Dr. Farouk Shabaan ()
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