FACULTY OF COMPUTERS AND INFORMATION
COMPUTER SCIENCE DEPARTMENT
MENOUFIYA UNIVERSITY

BACHELOR OF COMPUTERS AND INFORMATION
(COMPUTER SCIENCE)

Program Specifications

Sept.2021

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
كلية الحاسبات والمعلومات
قسم علوم الحاسب

Bachelor of Computers and Information (Computer Science)

Teaching Institution: **Faculty of Computers and Information Menoufiya University, Menoufiya, Egypt**

Awarding Institution: **Menoufiya University**

Degree Award: **Bachelor of Computers and Information (Computer Science)**

Length and Mode: **4 Years/ Full Semester Time**

Program Coordinator: **Dr. Gamal Farouk**

Assistant Coordinator: **Dr.Mahmoud Hussien**

Contents:

PROGRAMME

SPECIFICATIONS

Programme Specifications

A- Basic Information

1- Programme title:	Computer Science
2- Programme type:	Single
3- Department (s):	Computer Science
4- Coordinator:	Prof. Gamal Farouk
5- External evaluator(s):	Not assigned yet
6- Programme specifications approval:	/ 9 / 2021

B- Professional Information

1- Programme aims

The programme aims to:

1- Enable graduates to exhibit a high level of practical and theoretical skills in computer science with knowledge of currently available techniques and technologies.
2- Explore the principles that support developments in a rapidly changing subject.
3- Provide opportunities for students to understand the wide range of research challenges facing Computer Science.
4- Develop competent professionals able to play a leading part in many different commercial,
5- Industrial and academic activities and adapt rapidly to changing technology.
6- Prepare students for the social, organizational and professional context in which they will be working.
7- Teach students basic mechanisms for following and learning the continuous progress in the field independently.
8- Further the personal and professional development of individual students.
9- Continue to attract students from Egypt.

2- Intended learning outcomes (ILOs)

a- Knowledge and understanding:

On completion of this programme the successful student will able to:

a1 Know and understand the essential mathematics relevant to computer science.
a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.
a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication.
a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.
a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.
a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.
a7 Understand the basics of the software life cycle, from requirements definition to development and evaluation.
a8 Professionalism for software system developers – their role in society and their legal ethical responsibilities.

b- Intellectual skills

On completion of this programme the successful student will able to:

b1) Solve a wide range of problems related to the analysis, design and construction of computer systems.
b2) Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.
b3) Identify a range of solutions and critically evaluate and justify proposed design solutions.
b4) Solve computer science problems with pressing commercial or industrial constraints.
b5) Integrate and evaluate information and data from a variety of sources.
b6) Be creative in the solution of problems and in the development of designs.
b7) Work with and model computer systems at different and appropriate levels of abstraction.
b8) Critically evaluate the quality of a given software system, applying theories and methods of software validation and verification.

c- Professional and practical skills

On completion of this programme the successful student will able to:
c1) Plan and undertake a major individual project.
c2) Prepare and deliver coherent and structured verbal and written technical reports.
c3) Give technical presentations suitable for the time, place and audience.
c4) Use the scientific literature effectively and make discriminating use of Web resources.

c5) Design, write and debug computer programs in appropriate languages.
c6) Use appropriate computer-based design support tools.
c7) Apply computer science skills in a commercial or industrial environment.
c8) Appreciate the features of complex computing hardware and software and operate them effectively.
c9) Use advanced validation and verification techniques to devise and implement a test plan for a given software system.

d- General and transferable skills

On completion of this programme the successful student will able to:

d1) Display an integrated approach to the deployment of communication skills.
d2) Use IT skills and display mature computer literacy.
d3) Work effectively with and for others.
d4) Strike the balance between self-reliance and seeking help when necessary in new situations.
d5) Display personal responsibility by working to multiple deadlines in complex activities
d6) Employ discrete mathematical skills as appropriate.
d7) Demonstrate significantly enhanced group working abilities.
d8) Retrieve information from a variety of sources such as libraries, printed or electronic sources.
d9) Choose and formulate suitable strategies to accomplish well-defined goals.
d10) Use project management, risk analyze, quality assurance and system validation skills for a variety of project in different fields.

3- Academic standards

3a External references for standards (Benchmarks)

We referred to ACM and IEEE Computing curricula recommendations

3b Comparison of provision to external references

Owing to lack of national academic reference standards, we referred to ACM and IEEE Computing curricula recommendations. These standards include several knowledge and understanding, intellectual, professional, practical skills and general and transferable skills besides different methods of teaching and learning of student assessment. This section provides a comparative view of the performance capabilities expected of the graduates of each degree program. Tables H1, H.2 in annex (A) list nearly 60 performance capabilities across 11 categories. For each capability, each discipline is assigned a value from 0 to 5. The value 0 represents no expectation whatsoever, while 5 represents the highest relative expectation. As with the values of Tables H.1 and H.2 in annex (A), these values are fuzzy numbers. Table H.3 in annex (A) shows that Computer Science should be prepared to work in a broad range of positions involving tasks from theoretical work to software development; As we have seen, computer science has its own character.

Any reputable computing degree program should include each of the following elements.

1) Essential and foundational underpinnings of its discipline. These may be abstract, for example, formal theory rooted in mathematics, or they may

address professional values and principles. Regardless of their form or focus, the underpinnings must highlight those essential aspects of the discipline that remain unaltered in the face of technological change. The discipline's foundation provides a touchstone that transcends time and circumstance, giving a sense of permanence and stability to its educational mission. Students must have a thorough grounding in that foundation.

2) A foundation in the concepts and skills of computer programming. The foundation has five layers:

a) an intellectual understanding of, and an appreciation for, the central role of algorithms and data structures;

b) an understanding of computer hardware from a software perspective, for example, use of the processor, memory, disk drives, display, etc.

c) fundamental programming skills to permit the implementation of algorithms and data structures in software;

d) skills that are required to design and implement larger structural units that utilize algorithms and data structures and the interfaces through which these units communicate;

e) software engineering principles and technologies to ensure that software implementations are robust, reliable, and appropriate for their intended audience.

3) Understanding of the possibilities and limitations of what computer technology (software, hardware, and networking) can and cannot do. There are three levels:

a) an understanding of what current technologies can and cannot accomplish;

b) an understanding of computing limitations, including the difference between what computing is inherently incapable of doing vs. what may be accomplished via future science and technology;

c) the impact on individuals, organizations, and society of deploying technological solutions and interventions.

4) Understanding of the concept of the lifecycle, including the significance of its phases (planning, development, deployment, and evolution), the implications for the development of all aspects of computer-related systems (including software, hardware, and human computer interface), and the relationship between quality and lifecycle management.

5) Understanding of the essential concept of process, in at least two meanings of the term:

a) process as it relates to computing especially program execution and system operation;

b) process as it relates to professional activity especially the relationship between product quality and the deployment of appropriate human processes during product development.

6) Study of advanced computing topics that permits students to visit and understand the frontiers of the discipline. This is typically accomplished through inclusion of learning experiences that lead students from elementary topics to advanced topics or themes that pervade cutting-edge developments.

7) The identification and acquisition of skill sets that go beyond technical skills. Such skill sets include interpersonal communication skills, team skills, and management skills as appropriate to the discipline. To have value, learning experiences must build such skills (not just convey that they are important) and teach skills that are transferable to new situations.

8) Exposure to an appropriate range of applications and case studies that connect theory and skills learned in academia to real-world occurrences to explicate their relevance and utility.

9) Attention to professional, legal, and ethical issues so that students acquire, develop, and demonstrate attitudes and priorities that honor, protect, and enhance the profession's ethical stature and standing.

10) Demonstration that each student has integrated the various elements of the undergraduate experience by undertaking, completing, and presenting a capstone project.

- For general standards and their relationship to the reference standards. The Faculty council in accordance with QAAP management team decided to take ACM and IEEE as a reference academic standards since no national academic standards were developed yet. The general standards are attached as annex (A-2) of this report. The programme standards extracted from these reference standards with a slight modification in the non computing topics. A selection based on necessity and importance of courses to community needs was implement on computing topics to convey the available time schedule of maximum 14 weeks per semester in five topics.

4- Curriculum Structure and Contents

4.a- Programme duration Four Years

4.b- Programme structure

4.b.i- No. of hours per week: Lectures [١٠٠] Lab./Exercise [44] total [144]

4.b.ii- No. of hours: Compulsory [111] Elective [33] Optional [-]

4.b.iii- No. of hours of basic sciences courses: No. [72] % [18]

4.b.iv- No. of hours of courses of social sciences and humanities No. [12] % [15]

4.b.v- No. of hours of specialized courses: No. [63] % [28]

4.b.vi- No. of hours of other courses: % [8]

4.b.vii- Practical/Field Training: % [6]

Programming & application skills

4.b.viii-Programme Levels (in credit-hours system):

5- Programme courses

5.1- 1st year Semester 1

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours/week	Lab. Hours/week	Programme ILOs Covered (By No.)
CS111	Computer Introduction	٣	2	2	A2, C8, D7, D8
GN160	Fundamentals of quality	1	1	-	A3, A5, A7, B2, C1, C2, C3, D1, D2
MA111	Mathematics-1	٣	2	2	A1, B1, D6
MA111	Discrete Mathematics	٣	2	2	A1, A4, B1, D6
CS110	Semiconductors	٣	2	2	A3, A5, B2, C1, C2, C3, D1, D2
GN170	Scientific & Technical Report Writing	3	3	-	C4

b- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours/week	Lab. Hours/week	Programme ILOs Covered (By No.)
GN150	Fundamentals of Economics	٣	٣	-	**C4 D1 B6**
GN140	Professional Ethics	٣	٣	-	
GN130	Communication & Negotiation Skills	٣	٣	-	**D1**
GN120	Innovation and entrepreneurship	٣	٣	-	
GN180	Creative Thinking and Problem Solving	٣	٣	-	**B6**

C- Optional number required

Code No.	Course Title	No. of units	Lecturer Hours/week	Lab. Hours/week	Exercise. Hours/week	Programme ILOs Covered (By No.)
None						

5.2- 1st year Semester 2

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
IT181	Logic Design-1	٣	2	2	B1, B2, C6, C8, D4, D7
PH111	Fundamentals of Programming	٣	2	2	A2, A4, B2, B7, C5, D1, D2, D3, D6, D7
MA112	Mathematics-2	٣	2	2	A1, B1, D6
IS111	Introduction to IS	٣	2	2	A3, B4
ST190	Statistics & Probabilities	٣	2	2	A1, A4, B1, D6
HM110	Human Rights	٠	1	-	
GN112	Fundamentals of Management	3	3	-	

b- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise. Hours /week	Programme ILOs Covered (By No.)
None						

c- Optional number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise. Hours /week	Programme ILOs Covered (By No.)
None						

5.3- 2nd year Semester 1

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
IS251	Web Design and Development	٣	٢	2	B1, B2, C6, C8, D4, D7
CS231	Programming language-1	٣	٢	2	A4, B1, B4, B5, D1, D2, D3, D9
CS211	Computer Architecture	٣	٢	2	A3, B2, C8, D2
CS212	Data Structure	٣	٢	٢	A2, B1, B2, B6, C5, D1, D2, D3, D9
IT261	Multimedia-1	3	٢	٢	A2, A7, B7, D6
OD213	Introduction to Operation Research & Decision Support	3	2	2	

b- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise. Hours /week	Programme ILOs Covered (By No.)
None						

c- Optional number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise. Hours /week	Programme ILOs Covered (By No.)
None						

5.4- 2nd year Semester 2

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS261	Operating Systems-1	٣	٢	٢	A4, B1, B2, B7, C5, C6, C8, D1,D2
IT211	Computer Networks-1	٣	٢	٢	A2, A3, B5, B6, C5, C8, D8, D9
IS212	System Analysis-1	٣	٢	٢	A2, A3, B2, B3, B4, C1, C2, C3, C7, D1, D2, D7, D8
OD342	Modeling & Simulation	٣	٢	٢	A1, A7, B1, D6
CS233	Programming language-2	٣	٢	٢	A2, A7, B7, D6

b- Elective- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
MA213	Mathematics-3	**3**	٢	٢	A1, B1, D6
CS313	Analysis and Design of Algorithms	**3**	**2**	**2**	
CS232	File Organization and Processing	**3**	**2**	**2**	

ST291	Statistical Methods	**3**	**2**	**2**	
OD251	Operation Research Systems & Applications	**3**	**2**	**2**	
IT383	Scientific Programming	**3**	**2**	**2**	
IT384	Web Services	**3**	**2**	**2**	
IS324	Database Application Programming	**3**	**2**	**2**	
IS373	E-Business	**3**	**2**	**2**	

c-Optional number required

Code No.	**Course Title**	**No. of units**	**Lecturer Hours /week**	**Lab. Hours /week**	**Exercise. Hours /week**	**Programme ILOs Covered (By No.)**
None						

2- 3rd year Semester 1

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS251	Software Engineering-1	3	٢	٢	A2, A5, A7, B3, B5, B6, C1, C2, C3, C7, D1, D2, D7, D8
IS221	Database Systems-1	3	٢	٢	A4, B1, B4, B5, C5, C6, D1, D2, D3, D9
CS334	Computer Programming - 3	3	٢	٢	A2, A6, B1, B2, B5, B6, B7, C5, C6, C7, D1, D3, D4, D5, D8
CS321	Artificial Intelligence	3	٢	2	A3, A4, B1, B4, B5, B7, C1, C3, C6, C7, D3, D4

b- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS341	Internet Computing	3	2	2	A3, A6, B3, B6, C4, C6, C8, D4, D5, D7
CS336	Microprocessors and Assembly language	3	2	2	

c- Optional number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise. Hours /week	Programme ILOs Covered (By No.)
None						

3- 3rd year Semester 2

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS352	Software Engineering-2	3	٢	٢	A2, A5, A7, B3, B5, B6, C1, C2, C3, C7, D1, D2, D7, D8
CS362	Operating Systems-2	3	٢	٢	A4, B1, B4, B5, C5, C6, D1, D2, D3, D9
CS424	Knowledge Based Systems	3	٢	٢	A3, B1, B4, B5, C5, C6, D1, D2, D3, D9
CS323	Machine learning	3	٢	٢	A3, A6, B3, B6, C4, C6, C8, D4, D5, D7

b- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours/week	Programme ILOs Covered (By No.)
CS322	Advanced Artificial Intelligence	3	٢	٢	A3, B2, C4, D2, D4
CS314	Formal Languages and Automata Theory	3	٢	٢	A2, B3, C5, C6, D5, D6

b- Optional number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise Hours /week	Programme ILOs Covered (By No.)
None						

4- **4th year Semester 1**

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS471	Compiler Design	3	٢	2	A2, A6, B2, B3, B4, C1, C2, C3, C7, D1, D2, D7, D8
CS443	Parallel Program	3	٢	٢	A4, B1, B2, C5, C6, C8, D1, D2
CS415	Computer Security	3	٢	2	A3, A6, B3, B6, C4, C6, C8, D4,D5, D7
CS481	Project	1.5	1.5	3	A5, A6, A7, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4, C7, D1, D2, D3, D4, D7, D8, D9

b- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS425	Game Programming	3	2	2	A6, B6, C7, C8, D1, D2
CS473	Human Computer Interaction	3	2	2	A6, B6, C4, C7, C8, D1, D2
CS426	Robotics	3	2	2	A6, B4, B5, B6, C4, C7, C8, D1, D2, D7, D8
CS485	Selected Topics-1	3	٢	2	A3, A6, B3, B6, C4, C6, C8, D4, D5, D7

c- Optional number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise Hours /week	Programme ILOs Covered (By No.)
None						

5- 4th year Semester 2

a- Compulsory

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS442	Distributed Systems	3	٢	2	A2, A7, B1, B2, C4, C5, C6, D1, D2, D6, D9
CS472	Natural Language processing	3	٢	٢	A6, B3, B6, C1, C4, C5, C7, D1, D2, D9
	Project	1.5	1.5	3	A5, A6, A7, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4, C7, D1, D2, D3, D4, D7, D8, D9

b- Elective- number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Programme ILOs Covered (By No.)
CS437	Advanced Computer Programming	**3**	**2**	**2**	A3, A6, B3, B6, C4, C6, C8, D4, D5, D7
CS463	Embedded Systems	**3**	**2**	**2**	
IS469	Bioinformatics	**3**	**2**	**2**	

c- Optional number required

Code No.	Course Title	No. of units	Lecturer Hours /week	Lab. Hours /week	Exercise. Hours /week	Programme ILOs Covered (By No.)
None						

1- Programme admission requirements

General Secondary School Certificate with Major in Mathematics with high academic reference, at secondary school marks of > 91%, or an equivalent certificate from a foreign institute recognized by the university. The programme is studied for a minimum of four years full-time.
The programme is arranged normally in 8 x 14 week semesters (2 semesters per year). There are normally 28 (2 x 14) study weeks (excluding examination periods and summer session) in each year. The programme is divided into 246 hours per week: 36 basic science hours per week, 162 specialized hours per week, 12 sciences and humanities hours per week, and 36 other hours per week. Currently there are no Optional courses on this programme.

2- Regulations for progression and programme completion

(For the students to be transferred from one academic year to the next, he/she is required to have successfully passed in all subjects. However, the student may still be transferred if he/she has failed in not more than two basic subjects from the same academic year or from previous years. In such cases, students " carrying" subjects from one year to the next should re-sit for

their "failed" subjects in their proper respective semesters. Final year students who have failed in a maximum of two basic complementary ones in that year or from previous years can re-sit for their exams in those subjects in September of the same year. Should the student failed again, he/she has to re-sit for his/her exams in those subjects in their proper respective semesters thereafter as many times as necessary until he/she succeeds). Marks from the first year to the fourth year are weighted so that determination of overall marks of the degree.
The final overall marks determine the degree classification as follows:

- Less than 50% Fail
- At least 50% and less than 65% Pass
- At least 65 and less than 75 % Good
- At least 75 and less than 85 % very good
- At least 85 and more Excellent

First Year/Level/Semester

- Moved to second Semester Passing in all courses of the year or fail in not more than two compulsive subjects

Second Year Semester 1, and 2

- Passing in all courses the year but at least tow related to first and second years

Third Year Semester 1, and 2

- Passing in all courses the year but at least tow related to first, second, and/or third years

Forth Year Semester 1, and 2

Passing in all courses or fail in not more than two compulsive subjects. In this case, the student is allowed to enter a September Exam in the same year.

By laws and Regulations for Undergraduate Students "Enrollment opportunities/or "regular" and "external" students:

Academic year	Enrollment opportunities	
	Regular students	External students
First	Two opportunities	None
Second	Two opportunities	Two opportunities
Third	Two opportunities	Two opportunities

Fourth	Two opportunities	Number of subjects, he/she would Be allowed to re-sit for the exam the subjects he/she has failed in indefinitely until He/she is graduated.

Once the student exhausts the number of opportunities of a being a regular" student, he/she becomes an "external" student for a certain number of times according to the above table. Once an "external" student in a certain year succeeds in his/her exams for that year to allow him/her to be transferred to the following year, he/she automatically becomes registered as a regular student again.

3- Evaluation of programme intended learning outcomes

Evaluator	Tool	Sample
1- Senior students	questionnaire	1000 Samples
2- Alumni	Feed back from graduates network workgroups	www.mufic.com
3- Stakeholders (Employers)	None	
4-External Evaluator(s) (External Examiner(s))	Review Report	External evaluator not assigned yet
5- Other	None	None

Annex A

Attach course specifications

Annex A
1- Academic Standards

The following Figures Illustrates the Faculty programs Academic Standards compared with the IEEE& ACM 2005 Reference Standards. The programs Bench Marks could be concluded through the margins between both the standards

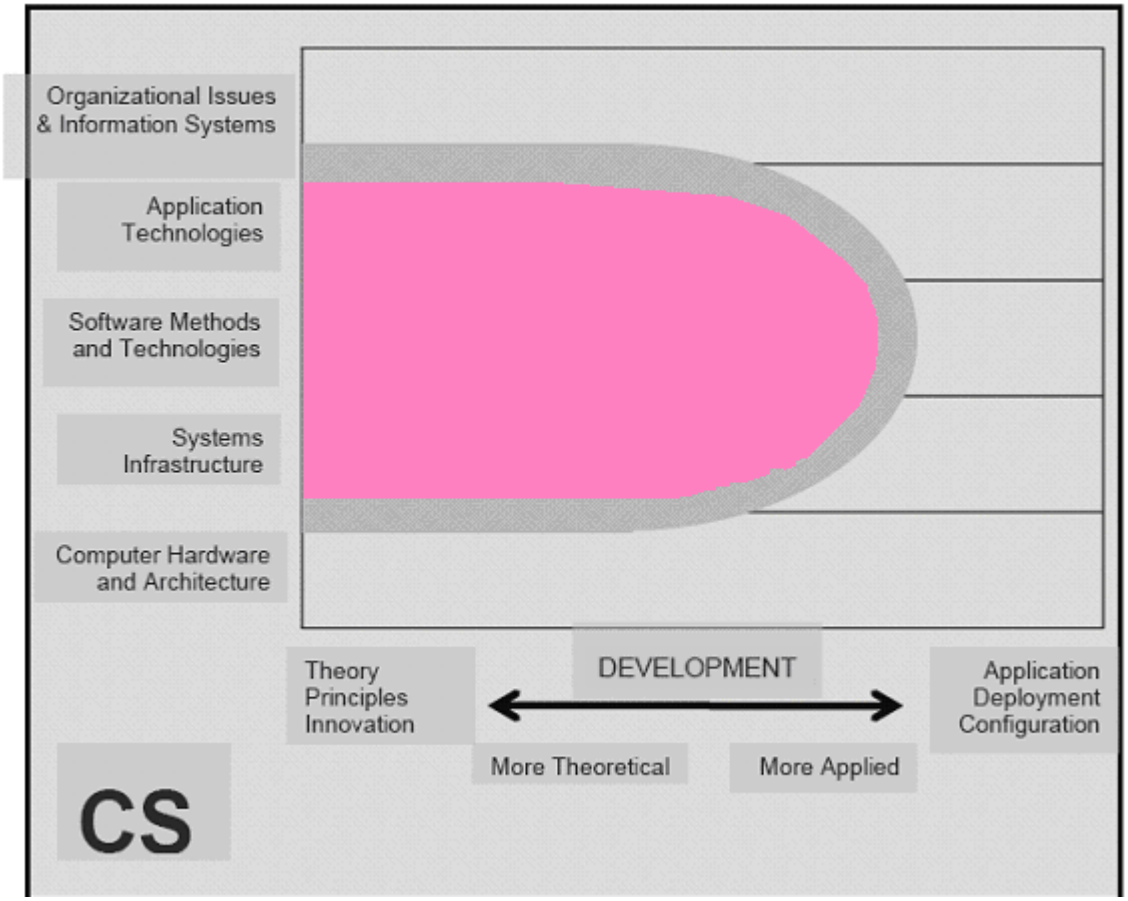


FIGURE H-1. COMPUTER SCIENCE PROGRAM

Reference standards

Program Academic standards

Table H.1: Comparative weight of computing topics across the five kinds of degree programs

Knowledge Area	*CS*		*IS*		*IT*		*OR*	
	min	*max*	*min*	*max*	*min*	*max*	*min*	*max*
Programming Fundamentals	4	5	2	0	0	4	5	5
Integrative Programming	1	3	2	0	2	5	1	3
Algorithms and Complexity	4	5	1	0	1	2	3	4
Computer Architecture and Organization	2	4	1	0	0	2	2	4
Operating Systems Principles & Design	3	5	1	0	2	2	3	4
Operating Systems Configuration & Use	2	4	2	0	1	5	2	4
Net Centric Principles and Design	2	4	1	0	0	4	2	4
Net Centric Use and configuration	2	3	2	0	2	5	2	3
Platform technologies	0	2	1	0	1	4	0	3
Theory of Programming Languages	3	5	0	0	0	1	2	4
Human-Computer Interaction	2	4	2	0	2	5	3	5
Graphics and Visualization	1	5	1	0	1	1	1	3
Intelligent Systems (AI)	2	5	1	0	0	0	0	0
Information Management (DB) Theory	2	5	1	0	2	1	2	5
Information Management (DB) Practice	1	4	4	0	1	4	1	4
Scientific computing (Numerical methods)	0	5	0	0	0	0	0	0
Legal / Professional / Ethics / Society	2	4	2	0	2	4	2	5
Information Systems Development	0	2	5	0	1	3	2	4
Analysis of Business Requirements	0	1	5	0	0	2	1	3
E-business	0	0	4	0	2	2	0	3
Analysis of Technical Requirements	2	4	2	0	1	5	3	5
Engineering Foundations for SW	1	2	1	0	0	0	2	5
Engineering Economics for SW	0	1	1	0	2	1	2	3
Software Modeling and Analysis	2	3	3	0	1	3	4	5
Software Design	3	5	1	0	0	2	5	5
Software Verification and Validation	1	2	1	0	2	2	4	5
Software Evolution (maintenance)	1	1	1	0	1	2	2	4
Software Process	1	2	1	0	0	1	2	5

Software Quality	1	2	1	0	2	2	2	4
Comp Systems Engineering	1	2	0	0	1	0	2	3
Digital logic	2	3	1	0	0	1	0	3
Embedded Systems	0	3	0	0	2	1	0	4
Distributed Systems	1	3	2	0	1	3	2	4
Security: issues and principles	1	4	2	0	0	3	1	3
Security: implementation and mgt	1	3	1	0	2	5	1	3
Systems administration	1	1	1	0	1	5	1	2
Optimization	0	2	0	0	0	2	4	6
Decision analysis	0	1	0	0	2	1	4	6
Support system	0	0	0	0	1	0	5	8
Simulation and modeling	0	2	0	0	0	2	3	5
Risk analysis	0	1	0	0	2	1	3	7
Multi objective decision making	0	0	0	0	1	0	4	8
Management of Info Systems Org.	0	0	3	0	0	0	0	0
Systems integration	1	2	1	0	2	5	1	4
Digital media development	0	1	1	0	1	5	0	1
Technical support	0	1	1	0	0	5	0	1

Table H.2: Comparative weight of non-computing topics across the five kinds of degree programs

Knowledge Area	***CS***		***IS***		***IT***		***OR***	
	min	***max***	***min***	***max***	***min***		***max***	
Organizational Theory	0	0	1	4	1	2	0	0
Decision Theory	0	0	3	3	0	1	0	0
Organizational Behavior	0	0	3	5	1	2	0	0
Organizational Change Management	0	0	2	2	1	2	0	0
General Systems Theory	0	0	2	2	1	2	0	0
Risk Management (Project, safety risk)	1	1	2	3	1	4	2	4
Project Management	1	2	3	5	2	3	4	5
Business Models	0	0	4	5	0	0	0	0
Functional Business Areas	0	0	4	5	0	0	0	0
Evaluation of Business Performance	0	0	4	5	0	0	0	0
Circuits and Systems	0	2	0	0	0	1	0	0
Electronics	0	0	0	0	0	1	0	0
Digital Signal Processing	0	2	0	0	0	0	0	2
VLSI design	0	1	0	0	0	0	0	1
HW testing and fault tolerance	0	0	0	0	0	2	0	0
Mathematical foundations	4	5	2	4	2	4	3	5
Interpersonal communication	1	4	3	5	3	4	3	4

Table H.3. Relative performance capabilities of computing graduates by discipline

Area	*Performance Capability*	*CS*	*IS*	*IT*	*OR*
Algorithms	Prove theoretical results	5	1	0	3
	Develop solutions to programming problems	5	1	1	3
	Develop proof-of-concept programs	5	3	1	3
	Determine if faster solutions possible	5	1	1	3
Application programs	Design a word processor program	4	1	0	4
	Use word processor features well	3	5	5	3
	Train and support word processor users	2	4	5	2
	Design a spreadsheet program (e.g., Excel)	4	1	0	4
	Use spreadsheet features well	2	5	5	3
	Train and support spreadsheet users	2	4	5	2
Computer programming	Do small-scale programming	5	3	3	5
	Do large-scale programming	4	2	2	5
	Do systems programming	4	1	1	4
	Develop new software systems	4	3	1	5
	Create safety-critical systems	3	0	0	5
	Manage safety-critical projects	2	0	0	5
Hardware and devices	Design embedded systems	1	0	0	1
	Implement embedded systems	2	1	1	3
	Design computer peripherals	1	0	0	1
	Design complex sensor systems	1	0	0	1
	Design a chip	1	0	0	1
	Program a chip	1	0	0	1
	Design a computer	1	0	0	1
Human-computer interface	Create a software user interface	4	4	5	4
	Produce graphics or game software	5	0	0	5
	Design a human-friendly device	2	0	1	3
Information systems	Define information system requirements	2	5	3	4
	Design information systems	3	5	3	3
	Implement information systems	3	4	3	5
	Train users to use information systems	1	4	5	1
	Maintain and modify information systems	3	5	4	3
Information management (Database)	Design a database mgt system (e.g., Oracle)	5	1	0	4
	Model and design a database	2	5	5	2
	Implement information retrieval software	5	3	3	4
	Select database products	3	5	5	3
	Configure database products	2	5	5	2
	Manage databases	2	5	5	2
	Train and support database	2	5	5	2

	users				
IT resource planning	Develop corporate information plan	0	5	3	0
	Develop computer resource plan	2	5	5	2
	Schedule/budget resource upgrades	2	5	5	2
	Install/upgrade computers	3	3	5	3
	Install/upgrade computer software	3	3	5	3
Intelligent systems	Design auto-reasoning systems	4	0	0	2
	Implement intelligent systems	4	0	0	4
Networking and communications	Design network configuration	3	3	4	2
	Select network components	2	4	5	2
	Install computer network	1	3	5	2
	Manage computer networks	3	3	5	3
	Implement communication software	4	1	1	4
	Manage communication resources	0	3	5	0
	Implement mobile computing system	3	0	1	3
	Manage mobile computing resources	2	2	4	2
Systems Development Through Integration	Manage an organization's web presence	2	4	5	2
	Configure & integrate e-commerce software	3	4	5	4
	Develop multimedia solutions	3	4	5	3
	Configure & integrate e-learning systems	2	5	5	3
	Develop business solutions	2	5	3	2
	Evaluate new forms of search engine	4	4	4	4

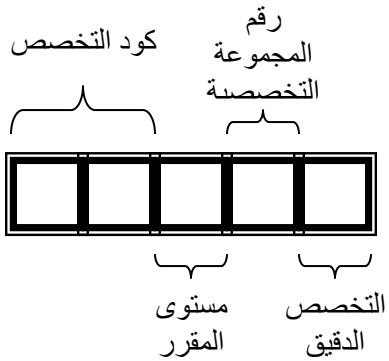
2- General standards

أولا : قواعد النظام الكودى لأرقام المقررات

يتكون كود أى مقرر (Course Code) من خمس خانات ؛ الخانتين فى أقصى اليسار يمثلان الرمز الكودى للتخصص، يلى ذلك عدد مكون من ثلاثة أرقام، تفصيلها كالتالى:

- رقم المئات يمثل مستوى المقرر. يدل الرقم ١ على الفرقة الأولى، والرقم ٢ على الفرقة الثانية، والرقم ٣ على الفرقة الثالثة، والرقم ٤ على الفرقة الرابعة، كما يدل الرقم ٥ على مقررات المستوى الأول وهى مقررات دبلوم الدراسات العليا، والرقم ٦ على مقررات المستوى الثانى والتى تضم مقررات السنة التمهيدية للماجستير ودكتوراه الفلسفة.
- الرقم فى خانة العشرات يمثل المجموعة التخصصية للمقرر داخل التخصص العام، وجدول-١ يوضح تلك المجموعات وأرقامها المستخدمة فى الترميز.

- رقم الآحاد يمثل التخصص الدقيق للمقرر داخل المجموعة التخصصية. انظر الشكل التالى للإيضاح:



بالنسبة للمقررات التى يدرسها الطلاب ولا تقع ضمن تخصصات الكلية (أى متطلبات الجامعة) فلها جميعا نفس الرمز الكودى GN ولها نفس القواعد المذكورة أعلاه بالنسبة للجزء الرقمى من كود المقرر الدراسى. والجدول التالى يوضح رموز التخصصات المختلفة.

رموز التخصصات المختلفة

الرمز	Major	التخصص
	General Science:	العلوم الأساسية :
MA	Mathematics	رياضيات
ST	Statistics	إحصاء
PH	Physics	فيزياء
CS	Computer Science	علوم حاسب
IS	Information Systems	نظم المعلومات
IT	Information Technology	تكنولوجيا المعلومات
OD	Operations Research & Decision Support	بحوث العمليات ودعم القرار

ثانيا : جدول-١ المجموعات التخصصية

Major	رقم المجموعة	اسم المجموعة التخصصية (a)		التخصص
Computer Science (CS)	0	Fundamentals of CS	أساسيات علوم الحاسب	علوم الحاسب
	1	Hardware	عتاد الحاسب	
	2	Logic Design	التصميم المنطقى	
	3	System Software	برمجيات النظام	
	4	Programming	البرمجة	
	5	Software Engineering	هندسة البرمجيات	
	6	Computer Networks	شبكات الحاسبات	
	7	AI and Expert Systems	الذكاء الاصطناعى والنظم الخبيرة	
	8	Selective Topics	موضوعات مختارة فى التخصص	
Information Systems (IS)	0	Fundamentals of IS	أساسيات نظم المعلومات	نظم المعلومات
	1	System Analysis	تحليل وتصميم نظم المعلومات	
	2	Office Automation	ميكنة المكاتب	
	3	Database Systems	نظم قواعد البيانات	
	4	Library Automation	ميكنة المكتبات	
	5	Administration of ICs	إدارة مراكز المعلومات	
	6	Advanced IS	نظم المعلومات المتقدمة	
	7	IS Applications	تطبيقات نظم المعلومات	
	8	Selective Topics	موضوعات مختارة	
Information Technology (IT)	0	Fundamentals of IT	أساسيات تكنولوجيا المعلومات	تكنولوجيا المعلومات
	1	Pattern Recognition	التعرف على الأنماط و الأحرف و...	
	2	Signal Processing	معالجة الإشارات الرقمية	
	3	Computer Vision	الرؤية بالحاسب	
	4	Data Mining	تنقيب البيانات	
	5	Multimedia & Virtual Reality	الوسائط المتعددة و الواقع الافتراضى	
	6	Information Networks	شبكات المعلومات	
	7	Information Engineering	هندسة المعلومات	
	8	Selective Topics	موضوعات مختارة	
OR & Decision Support (OD)	0	Fundamentals of Systems	أساسيات ومفاهيم علم النظم	بحوث العمليات ودعم القرار
	1	Operations Research	بحوث العمليات	
	2	Programming	البرمجة (خطية وغير خطية)	
	3	Project Planning	تخطيط المشروعات	
	4	Queuing Systems	نظم صفوف الانتظار	
	5	Quality Control	مراقبة المخزون والإنتاج	
	6	Decision Support	أدوات وأساليب دعم القرار	
	7	Applications	تطبيقات (سياسية، اجتماعية، ...)	
	8	Selective Topics	موضوعات مختارة	

ثالثا : مقررات مرحلة البكالوريوس

الفرقة الأولى

جدول –٢ (أ)

أ. الفرقة: الأولى	الفصل الدراسى: الأول	التخصص : عام

□□ □□	اسم المقرر Course Name	عدد الساعات الدراسية أسبوعيا			النهاية العظمى للدرجات		
		محاضرة	تمارين عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
GN160	مدخل في علم الجوده Fundamentals of quality	1	-	1	5	-	15
MA111	رياضيات-١ Mathematics-1	2	2	4	٣٠	-	٧٠
MA131	تراكيب محددة Discrete Mathematics	2	2	4	٣٠	-	٧٠
CS110	اشباه موصلات Semiconductors	2	2	4	20	20	60
CS101	مقدمة فى الحاسبات وتطبيقاتها Computer Introduction	2	2	4	٢٠	٢٠	٦٠
	صياغه التقارير Report Writing						
GN140	اخلاقيات المهنه Professional Ethics						
	إجمالى عدد الساعات الأسبوعية :	١٥	١١	٤	٣٠		

جدول –٢ (ب)

أ. الفرقة: الأولى	الفصل الدراسى: الثانى	التخصص : عام

□□ □□	اسم المقرر Course Name	عدد الساعات الدراسية أسبوعيا				النهاية العظمى للدرجات		
		محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
CS121	تصميم منطقى-١ Logic Design-1	٣	١	٢	٦	٢٠	٢٠	٦٠

MA112	رياضيات-٢	Mathematics-2	٣	٣	-	٦	٣٠	-	٧٠
CS141	الخوارزميات وخرائط التدفق	Algorithms & Flowcharts	٣	٣	-	٦	٣٠	-	٧٠
PH111	فيزياء	Physics	٣	١	٢	٦	٢٠	٢٠	٦٠
ST111	إحصاء واحتمالات	Statistics & Probabilities	٣	٣	-	٦	٣٠	-	٧٠
	إجمالى عدد الساعات الأسبوعية :		١٥	١١	٤	٣٠			

الفرقة الثانــية

جدول –٣(أ)

i.	الفرقة: الثانية	**الفصل الدراسى: الأول**						**التخصص : عام**	
	اسم المقرر	**Course Name**	**عدد الساعات الدراسية أسبوعيا**				**النهاية العظمى للدرجات**		
			محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
CS222	تصميم منطقى-٢	Logic Design-2	٣	١	٢	٦	٢٠	٢٠	٦٠
CS132	برمجيات الحاسب-١	Computer Software	٣	-	٣	٦	٢٠	٢٠	٦٠
	الاعمال الالكترونيه	E-business	٣	١	٢	٦	٢٠	٢٠	٦٠
IT261	وسائط المتعدده-١	Multimedia-1	٣	٣	-	٦	٣٠	-	٧٠
IS212	تحليل وتصميم نظم-١	Systems Analysis & Design -1	٣	٣	-	٦	٣٠	-	٧٠
	تنظيم الحاسبات	Computer Organization							
	مقدمه في بحوث العمليات	Introduction to Operation Research &							
	إجمالى عدد الساعات الأسبوعية :		١٥	١١	٤	٣٠			

جدول –٣(ب)

الفرقة: الثانية	الفصل الدراسى: الثانى	التخصص : عام

□□ □□	اسم المقرر	Course Name	عدد الساعات الدراسية أسبوعيا				النهاية العظمى للدرجات		
			محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
CS232	نظم تشغيل-١	Operating Systems-1	٣	-	٣	٦	٢٠	٢٠	٦٠
IT211	شبكات الحاسب- ١	Computer Networks-1	٣	٣	-	٦	٣٠	-	٧٠
CS251	برمجه حاسبات-٢	Computer programming-2	٣	-	٣	٦	٢٠	٢٠	٦٠
OD342	النمذجه والمحاكاه	Modeling & Simulation	٣	٣	-	٦	٣٠	-	٧٠
CS212	هياكل البيانات	Data Structure	٣	٣	-	٦	٣٠	-	٧٠
IS251	تصميم وتطوير الويب	Web Design and Development							
	إجمالى عدد الساعات الأسبوعية :		١٥	٩	٦	٣٠			

الفرقة الثالثة : تخصص علوم الحاسب

جدول – ٤ (أ)

i. الفرقة: الثالثة	الفصل الدراسى: الأول	التخصص : علوم الحاسب

□□ □□	اسم المقرر	Course Name	عدد الساعات الدراسية أسبوعيا				النهاية العظمى للدرجات		
			محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
CS352	هندسة البرمجيات-١	Software Engineering-1	٣	٣	-	٦	٣٠	-	٧٠
IS331	نظم قواعد البيانات-١	Database Systems-1	٣	-	٣	٦	٢٠	٢٠	٦٠
CS344	لغات الحاسب-١	Computer Language-1	٣	-	٣	٦	٢٠	٢٠	٦٠
IT361	شبكات الحاسبات-١	Computer Networks-1	٣	١	٢	٦	٢٠	٢٠	٦٠
-	اختيارى كلية-١	College Elective-1	٣	٣	-	٦	٣٠	-	٧٠
	إجمالى عدد الساعات الأسبوعية :		١٥	٧	٨	٣٠			

جدول – ٤ (ب)

أ.	الفرقة: الثالثة	**الفصل الدراسى: الثانى**						**التخصص : علوم الحاسب**			
		اسم المقرر	**Course Name**	**عدد الساعات الدراسية أسبوعيا**				**النهاية العظمى للدرجات**			
				محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى	
CS353		هندسة البرمجيات-٢	Software Engineering-2	٣	-	٣	٦	٢٠	٢٠	٦٠	
CS323		تعلم الاله	Machine larning	٣	١	٢	٦	٢٠	٢٠	٦٠	
CS345		لغات الحاسب-٢	Computer Languages-2	٣	-	٣	٦	٢٠	٢٠	٦٠	
CS424		نظم قواعد المعرفه	Knowledge Base Systems	٣	-	٣	٦	٢٠	٢٠	٦٠	
CS415		أمن الحاسب	Computer Security	٣	٣	-	٦	٣٠	-	٧٠	
		إجمالى عدد الساعات الأسبوعية :		١٥	٤	١١	٣٠				

يختار الطالب مقرر اختيارى كلية من بين مقررات الأقسام الأخرى بالكلية، أما المقررات الاختيارية التخصصية فيتم اختيارها من الجدول التالى ، وقد يؤدى ذلك إلى تغيير ساعات التمارين والعملى ولكن لا يخل بإجمالى ساعات المادة ولا الساعات الأسبوعية.

جدول –٤(ج)

		اسم المقرر	**Course Name**	**عدد الساعات الدراسية أسبوعيا**				**النهاية العظمى للدرجات**			
				محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى	
CS312		تنظيم الحاسبات	Computer Organization	٣	٣	-	٦	٣٠	-	٧٠	
CS347		البرمجة المنطقية	Logic Programming	٣	٣	-	٦	٣٠	-	٧٠	
CS313		المعالجات الدقيقة	Microprocessors	٣	٣	-	٦	٣٠	-	٧٠	
CS482		موضوعات مختارة	Selected Topics	٣	٣	-	٦	٣٠	-	٧٠	

الفرقة الرابعة : تخصص علوم الحاسب

جدول –٥(أ)

أ.	الفرقة: الرابعة	**الفصل الدراسى: الأول**	**التخصص : علوم الحاسب**

□□ □□	**اسم المقرر**	**Course Name**	**عدد الساعات الدراسية أسبوعيا**				**النهاية العظمى للدرجات**		
			محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
CS471	نظم قواعد المعرفة	Knowledge Base Systems	٣	٣	-	٦	٣٠	-	٧٠
IT451	الوسائط المتعددة	Multimedia	٣	-	٣	٦	٢٠	٢٠	٦٠
CS434	نظم تشغيل-٢	Operating Systems-2	٣	-	٣	٦	٢٠	٢٠	٦٠
CS4xx	اختيارى تخصصى-٢	Elective-2	٣	٣	-	٦	٣٠	-	٧٠
	اختيارى كلية-٢	College Elective-2	٣	٣	-	٦	٣٠	-	٧٠
CS481	المشروع	Project	١	-	٥	٦	-	-	-
	إجمالى عدد الساعات الأسبوعية :		١٦	٩	١١	٣٦			

جدول –٥(ب)

أ.	الفرقة: الرابعة	**الفصل الدراسى: الثانى**	**التخصص : علوم الحاسب**

□□ □□	**اسم المقرر**	**Course Name**	**عدد الساعات الدراسية أسبوعيا**				**النهاية العظمى للدرجات**		
			محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
CS435	بناء المترجمات	Compiler Design	٣	٣	-	٦	٣٠	-	٧٠
CS436	معالجة اللغات	Language processing	٣	-	٣	٦	٢٠	٢٠	٦٠
CS454	النظم الموزعة	Distributed Systems	٣	٣	-	٦	٣٠	-	٧٠
CS4xx	اختيارى تخصصى-٣	Elective-3	٣	٣	-	٦	٣٠	-	٧٠
CS481	المشروع	Project	١	-	٥	٦	٤٠	٦٠	-
	إجمالى عدد الساعات الأسبوعية :		١٣	٩	٨	٣٠			

يختار الطالب مقرر اختيارى كلية من بين مقررات الأقسام الأخرى بالكلية، أما المقررات الاختيارية التخصصية فيتم اختيارها من الجدول التالى ، وقد يؤدى ذلك إلى تغيير ساعات التمارين والعملى ولكن لا يخل بإجمالى ساعات المادة ولا الساعات الأسبوعية.

جدول –٥(ج)

□□ □□	**اسم المقرر**	**Course Name**	**عدد الساعات الدراسية أسبوعيا**				**النهاية العظمى للدرجات**		
			محاضرة	تمارين	عملى	مجموع	أعمال فصل	عملى وشفهى	تحريرى
CS472	تعليم الحاسب	Computer learning	٣	٣	-	٦	٣٠	-	٧٠

CS467	حسابات الإنترنت	Internet Computing	٣	١	٢	٦	٢٠	٢٠	٦٠
CS482	موضوعات مختارة	Selected Topics	٣	٣	-	٦	٣٠	-	٧٠

COURSES

SPECIFICATIONS

Contents of Courses reports:

Module	Course Name	Code
1	Computer Introduction	CS101
	Logic Design-1	CS121
	Algorithms & Flowcharts	CS141
2	Computer Peripherals	CS211
	Logic Design-2	CS222
	Computer Software	CS231
	Operating Systems-1	CS232
	Data Structure	CS241
	System Analysis-1	CS243
	File Organization	CS251
3	Computer Organization	CS312
	Microprocessors	CS313
	Computer Graphics-1	CS333
	Computer Language-1	CS344
	Computer Languages-2	CS345
	Assembly Language	CS346
	Logic Programming	CS347
	Software Engineering-1	CS352
	Software Engineering-2	CS353
4	Operating Systems-2	CS434
	Compiler Design	CS435
	Language processing	CS436
	Distributed Systems	CS454
	Internet Computing	CS467
	Knowledge Base Systems	CS471
	Computer learning	CS472
	Project	CS481
	Selected Topics	CS482
3	Artificial Intelligence	CS373
3	Computer Networks-2	CS361
4	Expert systems development	CS473
3	Database Systems-1	IS331
3	Computer Networks-1	IT361
4	Multimedia	IT451
1	Mathematics-1	MA111
1	Mathematics-2	MA112
1	Discrete Mathematics	MA131
1	Statistics and Probability	ST111
2	Statistical Methods	ST221
1	Physics	PH111
2	Operations Research-1	OD211
2	Organization Fundamentals	OD221
1	English Language	GN111

Contents:

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
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COURSE SPECIFICATION

(COMPUTER INTRODUCTION)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	1st Year /1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer Introduction			Code	CS101	
Credit Hours	Lecture	3	Tutorial	1	Practical	2
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the computer generations and categories.
- Understand the computer software.
- Understand the main components inside the computer.
- Understand the storage technologies and the types of files.
- Understand Java computer language.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

2b- Intellectual skills

b5 Integrate and evaluate information and data from Varity of

sources.

2c- Professional and practical skills

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d7 Demonstrate significantly enhanced group working abilities.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No of hours	Lecture	Tutorial/Practical
1 Computer Essentials • Basic terms and definitions. • Categories of computers. • Computer software. • PC configuration. • Computer operations. • Computer applications.	12	6	6
2 Inside the Computer • Digitization. • Computer Units. • Computer work. • The processor descriptions. • The processor design. • Input and output devices.	12	6	6
3 Mass Storage and Files • Storage technologies. • Magnetic disks. • Computer viruses. • Backup. • Optical laser disks. • Storage forecast.	12	6	6
4 Using the PC: Popular Application Software • Personal computing with popular productivity packages. • Word processing. • Desktop publishing. • Presentation software. • Spreadsheet. • Database.	18	9	9
5 Java Programming Language • Introduction. • Java programming structure. • The basic elements of programming. • Data types. • Input and output functions.	6	3	3

6 Java Operators, Expressions, and Statements • Operators. • Relational, equality, and logical expressions. • Branching control statements. • The loop and its types.	12	6	6
7 Java Methods and Arrays • Methods. • Arrays.	12	6	6
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Case study

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] Kamin Samuel N, An Introduction to Computer Science Using Java, New Jersey: Prentice Hall, 1998.
[2] Microsoft, Getting Started Microsoft Windows 98, 2nd Edition, Turkey: Arkadas, 1999.
[3] E. Turban, R. Rainer and R. Potter, Introduction to Information Technology, USA: John Wiley, 2001.
A book prepared and edited by the lecturer, and approved by the department council.

6-d Periodicals, Web sites, … etc

IEEE transactions on computers, software,

7- Facilities required for teaching and learning

- Teaching rooms with equipments.
- Laboratory equipments, apparatus, and kits.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Nabil Abd El-Wahed Ismail

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

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COURSE SPECIFICATION

(LOGIC DESIGN-1)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	1st year / 2nd semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Logic Design-1			Code	CS121	
Credit Hours	Lecture	3	Tutorial	1	Practical	2
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the principles and operations of combinational circuits, starting from gates till complete combinational circuits.
- Understand the design of decoders, encoders, multiplexer, demultiplexer, and their applications
- Understand the digital electronics and logic families.

2- Intended learning outcomes of course (ILOs)

2a-Knowledge and understanding

a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

2b-Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction

of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

2c- Professional and practical skills

c6 Use appropriate computer-based design support tools

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d4 Strike the balance between self-reliance and seeking help when necessary in new situations.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No of hours	Lecture	Tutorial/ Practical
1 Introduction	3	3	-
2 Number systems and Codes • Binary, Octal and Hex Number Systems • Number Systems Conversions. • BCD, Gray and Alphanumeric Codes. • Error Detection.	12	6	6
3 Digital Arithmetic • Binary addition and Subtraction. • Binary Multiplication and Division. • BCD Addition and Hex. Arithmetic	6	3	3
4 Logic Gates • Boolean Constants and Variables. • Truth Tables. • OR, AND, and NOT Operations. • Logic Algebra and Logic Implementation. • NOR and NAND Gates.	9	6	3
5 Boolean Algebra and Logic Simplification • Boolean and Demorgan's Theorems. • Universality of NAND and NOR Gates. • Alternative Representations. • Labeling Logic Signals. • SOP and POS Forms. • Simplifying Logic Circuits using algebra and K-maps.	15	9	6
6 Combinational Logic • Introduction • Basic Circuits and Design Procedure.	6	3	3

• Using NAN and NOR gates in Design. • Display Devices			
7 Programmable Logic • Introduction • Programmable arrays • Programmable Array logic • Generic Array Logic • The GALs 22V10 and 16V8 • Introduction to CPLDs and FPGAs	6	3	3
8 Combinational Circuits • Introduction. • Arithmetic Circuits and Comparators. • Decoders, and Encoders. • Multiplexers and Demultiplexers.	12	6	6
9 Combinational Logic Programming. • Introduction • Describing Logic circuits • Development Software • Description languages and Programming Languages • Implementing Logic Circuits using PLDs • VHDL Format and Syntax • Intermediate signals in VHDL • Representing Data in VHDL • Truth Tables using VHDL • Decision Control Structures • Implementing Adders, Decoders, Encoders, Multiplexers, Demultiplexers, Magnitude Comparators, Code Converters.	12	-	12
10 Logic Families • Introduction. • Diode, RTL, DTL, ECL, and TTL Logic. • CMOS Logic.	**3**	**3**	**-**
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures.
4.2 Practical experiments in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b **Essential books (text books**)

None

6-c Recommended books

[1] R. Tocci, Digital Systems Principles and Applications, six edition, 1991, Prentice-Hall, Inc.

[2] B. Holdsworth, Digital Logic Design, Third edition, 1993, Butterworth-Heinemann Ltd.

[3] R. Tocci, Digital Circuits, Prentice-Hall Inc., 2001.

[4] A book prepared and edited by the lecturer, and approved by the department council.

6-d Periodicals, Web sites, … etc

IEEE transactions on computers and software.

7- Facilities required for teaching and learning

- Digital Design and logic programming laboratories.
- Laboratory equipments, apparatus and kits.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Fawzy Ali Torkey

Head of Department:

Prof. Nabil Abd-El-Wahid Ismail

Date: / /

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COURSE SPECIFICATION

(ALGORITHMS & FLOWCHARTS)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	1st year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Algorithms & Flowcharts**			**Code**	**CS141**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**3**	**Practical**	**0**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Understand the principles of algorithms, flowcharts and pseudocode.
- Understand the modules
- Understand how to design a complete program

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence

2b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

b7 Work with and model computer systems at different and appropriate levels of abstraction

c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

d3 Work effectively with and for others.

d6 Employ discrete mathematical skills as appropriate.

d7 Demonstrate significantly enhanced group working abilities

3- Contents

Topic	No of hours	Lecture	Tutorial/ Practical
1 Computers and Flowcharts • algorithms • program design • flowcharts • data memory • error messages	6	3	3
2 Understanding Structure • understanding unstructured code • using the priming read • recognizing structure • printing tables	12	3	3
3 Modules and Hierarchy Charts • Modularizing a program • Modules calling other modules. • Understanding documentation	6	3	3
4 Designing a complete program • Mainline logical flow of program • Housekeeping tasks • Main loop • End of job task	12	6	6
5 Reading data from input file • File input • Accumulating totals	12	3	3
6 Decision and Looping • Making decision • Using logical comparison operators • Using decision tables	12	6	6

• looping			
7 Arrays manipulation • manipulating an array • run time and compile time arrays • Loading array • Searching in array	12	6	6
8 Object-oriented approach • Defining classes • Using objects • Inheritance. • Polymorphism	12	6	6
9 Event-driven approach with graphical user interfaces. • Event driven programming • GUI components. • Designing GUI • Planning the logic	12	6	6
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures.
4.2 Experiments in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, exercises, and final written exam to assess knowledge and understanding.
5.a.2 Regular oral and written quizzes to assess intellectual skills.
5.a.3 Oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (Oral)
Assessment 5	17th -18th weeks (final written exam)

5-c Weighting of assessments

Mid-term examination	15%
Final-term examination	70%
Oral examination.	0
Practical examination	0
Semester work	10%
Other types of assessment	5
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

[1] Algorithms and flowcharts Prof. Nabil Abd-El-Wahid Ismail

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

IEEE transactions on computers and software.

7- Facilities required for teaching and learning

- Modeling and simulation laboratories.
- Software programs specified in system analysis and design
- Datashow, screen, and laptop computer

Course coordinator:

Prof. Nabil Abd-El-Wahid Ismail

Head of Department:

Prof. Nabil Abd-El-Wahid Ismail

Date: / /

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COURSE SPECIFICATION

(COMPUTER PERIPHERALS)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	2nd year/ 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Computer peripherals**			**Code**	**CS211**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**1**	**Practical**	**2**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Know about range of technologies available for peripheral design.
- Explain and demonstrate the basic use of input and output devices.
- Explain and demonstrate the use of external and internal storage devices.
- Identify the major factors to be considered in the purchase of a computer system
- Ability to install and configure add-on items such as CD-ROM drives, tape backup units, scanners, sound cards, digital camera,...
- Diagnose hardware problems and provide simple maintenance.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

2b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine

the design alternatives based on the constraints imposed by society, organizations, and technology.

2c- Professional and practical skills

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No of hours	Lecture	Tutorial/ Practical
1 Introduction	6	3	3
2 Personal Computers • The main components of a typical desktop computer • Defining a PC • Ports • Internet/network connection	6	3	3
3 Motherboards • Background • Content of the motherboard • BIOS Chip	6	3	3
4 Basic Input/Output System (BIOS) • The Function of BIOS • Booting the Computer	6	3	3
5 Interface Buses • Pc Bus • Industry Standard Architecture (ISA) Bus • Other types of Buses • Summary of Interface Bus types • The Integrated Drive Electronics interface (IDE) Bus	6	3	3
6 Microprocessors • Microprocessor History • Inside a Microprocessor • RAM and ROM • Microprocessor Instructions • Microprocessor Performance	6	3	3
7 CMOS and Memories • CMOS • Memory • Read-Only-Memory (ROM) • Dynamic random access memory (DRAM) • Static RAMs (SRAM)	6	3	3

• Dynamic RAMs (DRAM) • Random Access Memory (RAM) • Other types of Memories • Memory Modules • Memory Cache			
8 PC Power Supplies • Power Supply • Power Supply Standardization • Advanced Power Management • Power Supply Wattage • Power Supply Problems • Power Supply Improvements	6	3	3
9 Inputs Devices • Computer Keyboards • Computer Mice • Scanners • Power Supply Wattage • Power Supply Problems • Power Supply Improvements	6	3	3
10 Outputs Devices • Computer Monitors • Liquid Crystal Displays (LCDs) • Laser Printers	6	3	3
11 Storage Devices • The Hard Disks • Floppy disk drives • Compact disk drives • DVD and DVD players	6	3	3
12 Graphics Cards • Graphics card Basics • Graphics card components • Graphics card History and Standards	6	3	3
13 Sound Cards • Anatomy of a Sound card • Producing sound • Sound Card Upgrades • Graphics card components	6	3	3
14 Modems • The Origin of Modems • Faster Modems	6	3	3
15 Computer Networking • Networking Basics • Routers and Firewalls • Ethernet Networking • Other Types of Networks	6	3	3
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1- Lectures
4.2- Practical experiments in the laboratory.
4.3- Exercises and tutorials.
4.4- Research assignments.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

[1] Kamel Ali Arram, Computer Peripherals, 2005/2006

6-b Essential books (text books)

[1] William Buchanan, and Austin Wilson, Advanced PC Architecture, Sixth Edition, 2003.

6-c Recommended books

[1] JohnL.Hennessy, David A.Patterson, Computer Architecture, Aquantitive Approach, Third Edition 2003.

[2] William Stallings, Computer Organization & Architecture, Sixth Edition, 2003.

6-d Periodicals, Web sites, … etc

IEEE transactions on computer software

7- Facilities required for teaching and learning

- Peripherals Laboratory.
- Software programs specified in Peripherals.
- Data show, screen, and laptop computer.

Course coordinator:

Dr. Kamel Ali Arram

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

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Department of Computer Science

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COURSE SPECIFICATION

(LOGIC DESIGN-2)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	2nd Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Logic Design-2				Code	CS222	
Credit Hours	Lecture	3	Tutorial	1	Practical	2	
	Total				6		

B- Professional Information

1- Overall aims of course

- Understand the principles and operations of sequential circuits, starting from Flip flops till complete sequential circuits.
- Understand the principles and operations of sequential circuits, starting from Flip flops till complete sequential circuits.
- Understand the principles and operations of sequential circuits, starting from Flip flops till complete sequential circuits.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

2c- Professional and practical skills

c6 Use appropriate computer-based design support tools

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d4 Strike the balance between self-reliance and seeking help when necessary in new situations.

d7 Demonstrate significantly enhanced group working abilities.

3- Contents

Topic	No of hours	Lecture	Tutorial /Practical
1 Introduction • Combinational and Sequential Circuits. • Synchronous and asynchronous Sequential Circuits. • State Diagram and State Variables.	3	3	-
2 Flip Flops • Introduction • The Bistable Element • The SR Flip-Flop • The Clocked SR Latch • The D-Type Latch • The JK Flip-Flop • Triggering the Flip-flops	15	9	6
3 Counters • Introduction • Asynchronous Ripple Counters • Arbitrary Count Asynchronous Counters • Synchronous Counters • Arbitrary Count Synchronous Counters • IC Synchronous Counters • Up/Down Synchronous Counters • Cascaded Counters • Counter Decoding • Counter Applications	12	6	6
4 Registers • Introduction • Shift Register • Bidirectional Shift Registers • The Universal Shifts Counters	15	9	6

• The use of Shift Registers as Counters • Sequence Generators • The Ring Counter • The Johnson Counter • MLS Shift Registers			
5 Synchronous Sequential Circuits • Introduction • Analysis Procedure • Design Examples • Design Procedure	15	9	6
6 Sequential Logic Programming • Introduction • The FPGA and sequential programming • Implementing counters and registers • Using the VHDL language to implement a general sequential circuit.		-	18
7 The Main Memory • Introduction • Read Only Memory • Programmable ROMs • ROM Applications • Read Write Memories • Dynamic RAMs • Memory Expansion	6	6	-
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures.
4.2 Practical experiments in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

[1] R. Tocci, Digital Systems Principles and Applications, six editions, 1991, Prentice-Hall, Inc.

6-c Recommended books

[1] B. Holdsworth, Digital Logic Design, Third edition, 1993, Butterworth-Heinemann Ltd.

[2] R. Tocci, Digital Circuits, Prentice-Hall Inc., 2001.

[3] A book prepared and edited by the lecturer, and approved by the department council.

6-d Periodicals, Web sites, … etc

IEEE transactions on computers and software.

7- Facilities required for teaching and learning

- Digital Design and logic programming laboratories.
- Laboratory equipments, apparatus and kits.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Fawzy Ali Torkey

Head of Department:

Prof. Nabil Abd-El-Wahid Ismail

Date: / /

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COURSE SPECIFICATION

(COMPUTER SOFTWARE)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Compute Science
Academic year / Level	2nd Year / 1ft Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Computer Software**			**Code**	**CS231**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**-**	**Practical**	**3**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Understand the concepts of Programming Techniques.
- Understand the Object-oriented programming.
- Know the primitives of data types of Java Language.
- Understand the concepts of inheritance and polymorphism.
- Implement the graphical user interface programming.
- Implement the Abstract classes, Interfaces and OO Model.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

2b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

2c- Professional and practical skills

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No of hours	Lecture	Tutorial/ Practical
1 A Survey of Programming Techniques • Introduction. • Unstructured Programming. • Procedural Programming. • Structured Programming. • Modular Programming. • Modular Programming Problems. • Java. • Visual Basic, Visual C++ and C#. • Other High-Level Languages. • Object-Oriented Programming. • Object-Oriented Concepts.	12	6	6
2 Primitives Data Types and Operations • Introduction. • Writing Simple Programs. • Identifiers. • Variables. • Assignment Statements and Assignment Expressions. • Constants. • Numeric Data Types and Operations. • Characters Data Types and Operations. • Boolean Data Types and Operations. • Operator Precedence. • Getting Input From Input Dialogs. • Case Study. • Formatting Output. • Programming Errors.	12	6	6
3 Methods • Introduction. • Creating a Methods. • Calling a Methods. • Passing Parameters by Values. • Overloading Methods. • The Scope of Local Variables. • Method Abstraction. • The Math Class.	12	6	6

• Case Study: Generating Random Characters. • Recursion.			
4 Objects and classes • Introduction. • Defining Classes for objects. • Constructing Objects using Constructors. • Accessing Objects via Reference Variables. • Visibility Modifiers, Accessors and Mutators. • Passing Objects to Methods. • Static Variables, Constants and Methods. • The Scope of variables. • The this keyword. • Array of Objects. • Case Study: The Loan class. • Inner Classes.	6	3	3
5 Arrays • Introduction. • Array Basic. • Copying Arrays. • Passing Arrays to Methods. • Returning an Array from a Method. • Sorting Arrays. • Multidimensional Arrays.	6	3	3
6 Strings • Introduction. • The String Class. • The Character Class. • The StringBuffer Class. • The StringTokenizer Class. • The Scanner Class. • Implementing MyIput using Scanner. • Command-Line Arguments.	6	3	3
7 Inheritance and Polymorphism • Introduction. • Super classes and Subclasses. • Using the keyword super. • Overriding Methods. • Polymorphism, Dynamic Binding and Generic Programming. • Casting Objects and instanceof Operator. • The protected Data and Methods. • The final Classes, Methods and variables.	6	3	3
8 Getting Started with GUI Programming • Introduction • GUI Components. • The Java GUI API. • Frames. • Layout Managers. • The Color Class.	12	6	6

• The Font Class. • Drawing Graphics on Panels. • Case Study: MassagePanel Class. • Case Study: The StillClock Class.			
9 Abstract Classes and Interfaces • Introduction. • Abstract Classes. • Interfaces. • Processing Primitives Data Type Values as Objects. • Automatic Conversion between Primitives Types and Wrapper Class Types.	6	3	3
10 Object-Oriented Modeling • Introduction • The software Development Process. • Discovering Relationships among Classes. • Case Study: A Class Design Example. • Case Study: The Rational Class. • Framework-Based Programming using Java	6	3	3
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lecture
4.2 Programs and Tutorials.
4.3 Research Assignments.
4.4 Cases Study in the Laboratory.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] Liang, Y. Daniel, Introduction to Java Programming, Comprehensive version, Fifth Edition, 2005, Pearson Education Inc.
[2] H. M. Deitel and P. J. Deitel , Java: How to Program, Fifth Edition, 2003 , Pearson Education Inc.
[3] A book prepared and edited by the lecturer, and approved by the department council.

6-d Periodicals, Web sites, … etc

IEEE transactions.

7- Facilities required for teaching and learning

- Personal Computers Laboratories.
- Software programs specified in Java Programming Language.
- Data Show, Screen, and Laptop Computer.

Course coordinator:

Prof. Nabil Abd-El-Wahid Ismail

Head of Department:

Prof. Nabil Abd El-Wahid Ismail

Date: / /

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
كلية الحاسبات والمعلومات
قسم علوم الحاسب

COURSE SPECIFICATION

(OPERATING SYSTEMS-1)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	2nd Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Operating Systems-1			Code	CS232	
Credit Hours	Lecture	3	Tutorial	-	Practical	3
	Total				6	

B- Professional Information

1- Overall Aims of Course

- Understand the principles and operations of operating systems.
- Understand the design goals for systems and users.
- Understand the different methods for building operating systems.

2- Intended Learning Outcomes of Course (ILOs)

2a- Knowledge and understanding

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

b7 Work with and model computer systems at different and appropriate levels of abstraction.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
1 Introduction	3	3	-
2 Computer System Structures • Computer System Operation. • I/O Structure • Storage Hierarchy. • Hardware Protection. • General System Architecture	6	3	3
3 Operating System Structures • System Components. • Operating System Services. • System Calls. • System Structure. • Virtual Machine. • System Design and Implementation	6	3	3
4 Processes • Process Concept. • Process Scheduling. • Operation in Process. • Cooperating Process. • Threads. • Interprocess Communication	12	6	6
5 Threads • Overview. • Multithreading Models. • Threading Issues. • Pthreads. • Windows XP Threads. • Linux Threads. • Java Threads.	12	6	6
6 CPU Scheduling • Basic Concepts. • Scheduling Criteria. • Scheduling Algorithms. • Multiple-Processor Scheduling.	12	6	6

• Real-Time Scheduling. • Thread Scheduling. • Operating Systems Examples. • Java Thread Scheduling. • Algorithm Evaluation.			
7 Synchronization • Background. • The Critical-Section Problem. • Synchronization Hardware. • Semaphores. • Classical Problems of Synchronization. • Monitors.	12	6	6
8 Memory Management • Background. • Swapping. • Contiguous Allocation. • Paging. • Segmentation. • Segmentation with Paging.	6	3	3
9 Virtual Memory • Background. • Demand Paging. • Process Creation. • Page Replacement. • Allocation of frames • Thrashing. • Demand Segmentation. • Operating System Examples	12	6	6
Total sum	**81**	**42**	**39**

4- Teaching and Learning Methods

4.1- Lectures
4.2- Practical experiments in the laboratory
4.3- Exercises and tutorials
4.4- Research assignments

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of References

6-a Course notes

Lectures in operating systems", selected by A. Elsisi, 2nd Semester 2006.

6-b Essential books (text books)

[1] S. Abraham, Operating system concepts, fifth edition, 1998, Addison Wesley, Inc.
[2] MCSE Training Kit Microsoft Windows 2000 Professional.

6-c Recommended books

[1] William Stallings, "Operating Systems: Internals and Design Principles", Fourth Edition Prentice Hall, 2001
[2] Andrew Tanenbaum; Modern Operating Systems (Second Edition); Prentice Hall; 2001.

6-d Periodicals, Web sites, … etc

IEEE transactions.

7- Facilities required for teaching and learning

- Personal Computers Laboratories.
- Software programs specified in Java Programming Language.
- Data Show, Screen, and Laptop Computer.

Course coordinator:

Dr. Ashraf Elsisi

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

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Department of Computer Science

جامعة المنوفية
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COURSE SPECIFICATIONS

(DATA STRUCTURE)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	2nd Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Data Structure			Code	CS241	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the concepts of data representation
- Design different algorithms for data structure
- Understand arrays, stacks and queues
- Understand linked lists and trees.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations,

and technology.

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

d3 Work effectively with and for others.

d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction and Overview	6	3	3
2 Arrays, Record and Pointers • Linear Arrays • Control Structures. • Sub-algorithms. • Linear Arrays in Memory.	6	3	3
3 Basic Operations Done on Linear Arrays • Traversing Linear Arrays. • Inserting and Deleting. • Sorting • Linear Search • Binary Search	12	6	6
4 Multidimensional Arrays • Two Dimensional (2D) Arrays. • Representation 2D Arrays in Memory. • Pointer Arrays. • Record Structures. • Parallel Arrays.	6	3	3
5 Stacks and Queues • Stacks. • Array Representation of Stacks. • The Stack Abstract Data Type. • Queues and Priority Queues. • Array Representation of Priority Queues. • The Queue Abstract Data Type. • Multiple Stacks and Queues	12	6	6
6 Linked Lists • Introduction • Linked Lists in Memory • Basic Operations on Linked Lists • Traversing A Linked List	6	3	3
7 Linked Lists Operation	12	6	6

• Introduction • Searching A Linked List • Memory Allocation • Insertion into A Linked Lists • Deletion from A Linked Lists • Header Linked Lists			
8 A Linked Lists Abstract Data Types • Introduction. • Pointers. • Singly Linked Lists. • Case Studies. • Doubly Linked Lists	6	3	3
9 Mathematical Functions and Trees • Introduction • Performance Analysis • Complexity of Algorithms • Performance Measurement • Binary Trees • Representing Binary Trees in Memory • Traversing Binary Trees • Traversal Algorithms Using Stacks • Path Lengths • General Trees	12	6	6
10 Trees Abstract Data Structure • Introduction and Terminology. • The Abstract Data Type of Binary Trees. • Binary Tree Representations. • Binary Tree Operations	6	3	3
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

5.a.1 Reports, assignments, exercises, and final written exam to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, exercises, and final written exam to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5-b Assessment schedule

Assessment 1	7th week.
Assessment 2	16th week (Oral and practical)
Assessment 3	17th -18th weeks *(final written exam*

5-c Weighting of assessments

Mid-term examination	10%
Final-term examination	70%
Oral examination.	5%
Practical examination	10%
Semester work	5%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book given by the Lecturer

6-b Essential books (text books)

[1] Robert Lafore, Data Structures and Algorithms, SAMS,2000

6-c Recommended books

Aron M. Tennen-Baum & others, Data Structure using C, Prentice Hall, 1992

6-d Periodicals, Web sites, … etc

IEEE transactions on computers software

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.
- PC lab connected to the Internet
- Lab equipped with programming languages.

Course Coordinator:

Dr. Waiel Shawkey

Head of Department:

Prof. Dr. Nabil Abd-El-Wahid Ismail

Date: / /

COURSE SPECIFICATION

(SYSTEM ANALYSIS-1)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	Second Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	System Analysis-1			Code	CS243	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course.

- Give the student an introduction to system analysis and design concepts.
- Understanding the software development life cycle (SDLC), specification, analysis, design, implementation and testing
- Build of Modular top-down analysis, design and testing, CASE tools for system analysis and design.
- Understanding the requirements of I/O design, input validation and user interface design (GUI).

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a3 Demonstrate a grasp of the principles of computer systems, including

architecture, networks and communication

2b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

b4 Solve computer science problems with pressing commercial or industrial constraints.

2c- Professional and practical skills

c1 Plan and undertake a major individual project.

c2 Prepare and deliver coherent and structured verbal and written technical reports.

c3 Give technical presentations suitable for the time, place and audience.

c7 Apply computer science skills in a commercial or industrial environment.

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

d7 Demonstrate significantly enhanced group working abilities.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction to Systems Analysis and Design	6	3	3
2 Information Systems Building Blocks	6	3	3
3 Information System Development (System Development Life Cycle) (SDLC)	12	6	6
4 System Analysis, structured analysis, prototyping, JAD, and OOA	12	6	6
5 Introduction to CASE tools	6	3	3
6 Rapid Application Development (RAD) Tools (Visual Basic Programming)	6	3	3
7 Data Modeling (Entity Relationship Modeling)	6	3	3
8 Process Modeling, Data Flow Diagrams, functional decomposition, Object Modeling	6	3	3
9 Database Design (Data Analysis,	6	3	3

intro to normalization)			
10 Introduction to MS-ACCESS	6	4	2
11 Input and Output Design	6	3	3
12 User interface Design	6	3	3
Total sum	**84**	**43**	**41**

4- Teaching and learning methods

4.1 Information collection
4.2 Lecture
4.3 Class activities
4.4 Practical training / lab
4.5 Case study

5- Student assessment methods

5-a Methods

5.a.1 Case Study . ***to assess*** … Fundamental concepts gained
5.a.2 Project ……. ***to assess*** …Understanding...
5.a.3 Mid term…… …. ***to assess*** Understanding the Cases studies
5.a.4 Final Exam … ***to assess*** course outcomes

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (Oral)
Assessment 5	17th -18th weeks *(final written exam*

5-c Weighting of assessments

Mid-term examination	10%
Final-term examination	70%
Oral examination (project).	10%
Practical examination	-
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

None

6-b Essential books (text books)

Jeffrey A. Hoffer, et. al. *Modern Systems **Analysis** and Design, 3rdEdition*. Prentice Hall. 2002

6-c Recommended books

[1] Kenneth E. Kendall, "Systems Analysis & Design", Prentice Hall PTR, 2002.

[2] Systems Analysis & Design Methods Jeffrey L. Whitten System Analysis 2000 McGraw Hill.

6-d Periodicals, Web sites, … etc

IEEE transactions on computers and software,

7- Facilities required for teaching and learning

- Modeling and simulation laboratories.
- Software programs specified in system analysis and design
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Hatem Mohammed Said Ahmed

Head of Department:

Prof. Gamal Farouk

Date: / /

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Department of Computer Science

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COURSE SPECIFICATION

(FILE ORGANIZATION)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	2nd Year/ 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**File Organization**			**Code**	**CS251**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**-**	**Practical**	**3**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Design Internal File Structures and Formats.
- Use Modern Keyed Access Methods, Indexes & Hashing..
- Build the Structure, Retrieve Selected Data, Update and Maintain the Structure.
- Understand the storage data in memory & media storage..
- Reduce the access time as much as possible.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

2b- Intellectual skills

b5 Integrate and evaluate information and data from a variety of sources.
b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.
c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.
d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topics	No of hours	Lecture	Tutorial /Practical
1 Introduction	6	3	3
2 Fundamental of file processing • Introduction • Physical & Logical Files. • File Opening, Reading and Writing. • Seeking	6	3	3
3 Secondary Storage and System Software • Disks. • Magnetic Tape. • Disk versus Tape. • Physical Organization of CD-ROM	6	3	3
4 Fundamental File Structure Concepts • Field and Record Organization. • Using Classes to Manipulate Buffers. • Managing Fixed-Length Buffers. • An Object-Oriented Class for Record Files	12	6	6
5 Managing Files of Records • Record Access. • More about Record Structures. • File Access and File Organization. • Beyond Record Structures • Portability and Standardization.	6	3	3
6 Organizing Files for Performance • Introduction • Reclaiming Space in Files • Internal Sorting and Binary Searching. • Key Sorting.	12	6	6

7 Indexing • Introduction • A Simple Index for Entry-Sequential Files • Large Indexes to Hold in Memory • Indexes Access by Multiple Keys • Improving The Secondary Index Structure • Selective Indexes • Binding	6	3	3
8 Consequential Processing & the Sorting • Implementing Consequential Process. • Extension the Model by Multiway Merging. • A Second Look at Sorting in Memory. • Merging for Sorting Large Files on Disk.	6	3	3
9 Multilevel Indexing, B-Trees and B+ Trees • Introduction. • Statement of the Problems. • Indexing with Binary Search Trees. • Multilevel Indexing. • B-Trees and B+ Trees. • B-Trees and B+ Trees Methods Search.	12	6	6
10 Hashing • Introduction. • A simple Hashing Algorithm. • Hashing Functions and Record Distributions. • Collision Resolution • Buckets • Making Deletions	12	6	6
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures
4.2 Practical programs in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.

5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are an electronics lectures notes given by the Lecturer.

6-b Essential books (text books)

[1] File Structures, An object oriented approach with C++ by Folk, Zoellick, Riccardi.

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

IEEE transactions on computers software.

7- Facilities required for teaching and learning

- Computer laboratories.
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Hatem Mohammed Said Ahmed

Head of Department:

Prof. Gamal Farouk

Date: / /

COURSE SPECIFICATION

(COMPUTER ORGANIZATION)

Programme(s) on which the course is given	Computer science
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	3rd Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer Organization				Code	CS312	
Credit Hours	Lecture	3	Tutorial	3	Practical	-	
	Total				6		

B- Professional Information

1- Overall aims of course

- Understand the design of computer hardware from the register level.
- Understand the various components of a computer processor unit and a design of control unit by using hardwired and microprogramming methods.
- Understand the memory organization.
- Understand the interfacing between the processor and the input/output ports and devices.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

2b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

2c- Professional and practical skills

c4 Use the scientific literature effectively and make discriminating use of Web resources.

2d- General and transferable skills

d2 Use IT skills and display mature computer literacy.

d4 Strike the balance between self-reliance and seeking help when necessary in new situations.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction	3	3	-
2 Computer Operations • Introduction. • Register transfer and Microoperations. • Bus transfer and Processor unit. • Arithmetic, logic, and shifter units. • Control word.	12	6	6
3 Control Logic Design • Introduction. • Microprogramed control. • Processor unit control. • Design of simple computer.	15	6	9
4 Computer Instructions • Introduction. • Address field. • Addressing modes. • Stack organization. • Data transfer instructions. • Data manipulation instructions. • Floating point operations. • Program control instructions. • Programs interrupt.	12	6	6
5 CPU Design • Introduction. • Arithmetic logic shift unit. • Processor unit. • Instruction and microinstruction formats. • Microprogram for computer cycle. • Microprogram routine. • Control unit. •	18	9	9

6 Memory Organization • Memory hierarchy. • Special types of memory. • Magnetic and optical memories. • Associative memories. • Cache memory. • Virtual memory. • Memory management hardware.	12	6	6
7 I/O Organization • Introduction. • Parallel interfacing. • CPU-initiated data transfer. • Interfacing data converters. • I/O-initiated data transfer. • Serial I/O.	12	6	6
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Case study

5- Student assessment methods

5-aMethods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (*oral exam*)
Assessment 5	17th -18th weeks *(final written exam)*

5-c Weighting of assessments

Final-term examination	70%
Mid-term examination	10%
Oral examination.	10%
Practical examination	-
Semester work	10%

Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

Fawzy Torkey, "Computer Organization", 2nd Semester. 2006.

6-b Essential books (text books)

[1] R. Tocci, L. P., Microprocessors and Microcomputers, Prentice-Hall Inc., 1996.

6-c Recommended books

[1] B. Holdsworth, Digital Electronic Design, Butterworth-Heinemann Ltd, Great Britain, 1993.
[2] Cragon Harvey, Computer Architecture, and Implication, 2000.

6-d Periodicals, Web sites, … etc

IEEE transactions on computers, software,

7- Facilities required for teaching and learning

- Teaching rooms with equipments.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Fawzy Ali Torkey

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(MICROPROCESSORS)

Programme(s) on which the course is given	Computer science
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	3rd Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Microprocessors			Code	CS313	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the computer generations and categories
- Understand Latches and Flip-Flops.
- Understand Counters and Registers.
- Understand stable and mono-stable multi-vibrators.
- Understand Digital-to-Analog and Analog-to-Digital Converters.
- Understand Programmable Logic Devices.
- Understand Memory Devices
- Understand Microprocessor/microcomputer Structure and Organization.
- Understand Troubleshooting of the Microprocessor Support Circuits.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

2b- Intellectual skills

b7 Work with and model computer systems at different and appropriate levels of abstraction.

2c- Professional and practical skills

c7 Apply computer science skills in a commercial or industrial environment.

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction to Microprocessors and Microcomputers • Evolution of Programmable computer systems. • Architecture of a microcomputer system. • Intel microprocessors, benchmarking.	6	3	3
2 Real-Mode Software Architecture of the 80386DX Microprocessors • The internal architecture of 80386DX. • Real-mode software architecture. • Real-mode memory space and data organization. • Data alignment in memory. • Convert 2's complement integer format among hexadecimal, decimal and binary. • Convert data to ASCII. • Segment registers and memory segmentation. • Instruction Pointer. • General-purpose data registers. • Pointer and index registers. • Flag register and typical flags. • Real-mode memory addresses generation. • The operation of stack. • Real-mode I/O addresses space.	12	6	6
3 Real-Mode Assembly Language Programming Methodology • The concept of software. • The steps of assembly language program development. • The evolution of 8086 family instruction set. • The addressing modes of 80386DX.	6	3	3

• Real-mode 80386DX Programming • Data transfer instructions. • Arithmetic instructions. • Logic instructions. • Shift instructions. • Rotate instructions. • Bit test and bit scan instructions. • Flag-control instructions. • Compare set instructions. • Jump instructions. • Subroutine instructions. • Loop instructions. • String instructions.	18	9	9
4 Memory and I/O Interfaces of the 80386DX Microprocessors • System clock and bus cycles. • Hardware organizations of memory address space. • Memory interface circuitry. • Types of I/O.	6	3	3
5 Memory Devices, Circuits and Subsystem Design • Program and data-storage memory. • Read only memory (ROM). • Random access memory (RAM). • Parity checking and related circuit. • The operation of cache. • Hit ratio of cache. • Direct-mapped and two-way associative cache.	12	6	6
6 I/O Circuits and LSI Peripheral Devices • Core and special-purpose I/O. • The operation of isolated I/O. • The operation of 8255A programmable peripheral interface (PPI). • 82C54 programmable interval timer. • The operation of 82C37A programmable direct memory access (DDMA) controller.	12	6	6
7 Interrupt and Exception Processing of 80386DX • Types of interrupts and exceptions. • Interrupt vector and descriptor tables. • Interrupt instructions • Interrupt enabling. • The operation of 82C59A programmable interrupt controller.	12	6	6
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection

4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Case study

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (*oral and practical*)
Assessment 5	17th -18th weeks *(final written exam)*

5-c Weighting of assessments

Final-term examination	70%
Mid-term examination	10%
Oral examination.	10%
Practical examination	-
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

None

6-b Essential books (text books)

[1]Tocci Roland, Microprocessors and Microcomputers, Prentice-Hall Inc., 1996.

6-c Recommended books

[1] Corporaal Henk,Microprocessors Architecture, Prentice-Hall Inc.,1998.
[2] Johnson Mike, Superscalar microprocessor Design, Prentice-Hall Inc., 1991.

6-d Periodicals, Web sites, … etc

IEEE transactions on computers

7- Facilities required for teaching and learning

- Teaching rooms with equipments.
- Laboratory equipments, apparatus, and kits.
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Mohamed Shoala

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(COMPUTER GRAPHICS)

Programme(s) on which the course is given	Computer science
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	3rd Year, 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer graphics				Code	CS333	
Credit Hours	Lecture	3	Tutorial	-	Practical	3	
	Total				6		

B- Professional Information

1- Overall aims of course

- Describe the components of the 2D graphics pipeline.
- Design and manipulate simple 2D curves and shape.
- Perform transformations on points in the plane using suitable matrices and homogeneous coordinates.
- Explain the principles of hidden line removal.
- Implementing 3d – drawing, projections and viewpoints.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

2c- Professional and practical skills

c4 Use the scientific literature effectively and make discriminating use of Web resources.
c5 Design, write and debug computer programs in appropriate languages.
c6 Use appropriate computer-based design support tools
c7 Apply computer science skills in a commercial or industrial environment.
c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d2 Use IT skills and display mature computer literacy.
d6 Employ discrete mathematical skills as appropriate.
d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topics	No. of Hours	Lecture	Tutorial/Practical
1 Introduction	6	3	3
2 Concepts, Terms and Definitions • Introduction • Low Level Concepts. • 2D Drawing.	6	3	3
3 A First Graphics Program • The Features of a Simple Graphics Program. • Organizing your Work for Java. • Graphics Primitives.	6	3	3
4 Graphics Primitives • Introduction. • Drawing Straight Lines Algorithms. • Digital Differential Analysis. • Bresenham's Algorithm for Lines • Drawing Circles Algorithms. • Digital Differential Analysis. • Bresenham's Algorithm for Circles.	12	6	6
5 Data Structures and Drawing • The Basic 2D data Structure. • Adding Methods. • The Completed System. • The Dry Run • Further Methods.	12	6	6
6 2D Transformations • Translation • Rotation around the Origin. • Scaling.	6	3	3

• Rotation around the Local Origin			
7 Transformations as Matrices • Rotation • Scaling • Translation • Homogenous Rotation, Scaling & Translation • Implementing Matrices	6	3	3
8 Simple Animation and Interaction • Introduction. • Drawing Changes. • Continuous Animation. • Animation Changes.	6	3	3
9 Curves • Introduction. • Parametric Equations. • Splines. • Bezier Curves. • Other Curves. • The Co-existence of Multiple Kinds of Lines.	12	6	6
10 3D Graphics • Introduction. • Implementing 3D. • Projections – Viewing 3D on a Flat Screen. • Implementing 3D – The Data Model	12	6	6
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures
4.2 Practical programs in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are an electronics lectures notes prepared by the lecturer

6-b Essential books (text books)

[1] Ian Ferguson, Computer Graphics Via Java, Ab-libris

6-c Recommended books

[1] Foley, J., van Dam, A., Feiner, S., Hughes, J. , Phillips, R., *Introduction to Computer Graphics*, Addison-Wesley, 1996.

[2] Leen Ammeraal, Computer Graphics for Java Programmers, Wiely, 1998.

6-d Periodicals, Web sites, … etc

IEEE transactions.

7- Facilities required for teaching and learning

- Computer laboratories with Java Language.
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Hatem Mohammed Said Ahmed

Head of Department:

Prof. Gamal Farouk

Date: / /

COURSE SPECIFICATION

(COMPUTER LANGUAGE-1)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer Language-1				CS344	
Credit Hours	Lecture	3	Tutorial	-	Practical	3
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the Fundamentals of Java Programming Language.
- Understand the Object-oriented programming.
- Implement the graphical user interface programming.
- Implement the Applets, Images Viewer, and Playing Audio.
- Implement Exception Handling and Input Output Handling.
- Design different Layout Managers for program.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b4 Solve computer science problems with pressing commercial or industrial

constraints.

b5 Integrate and evaluate information and data from a variety of sources.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .

d2 Use IT skills and display mature computer literacy.

d3 Work effectively with and for others.

d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction • Primitive Data Types and Operations. • Control Statements. • Methods. • Arrays. • Strings. • A simple Java Program.	12	6	6
2 Objects and classes • Introduction. • Defining Classes for objects. • Constructing Objects using Constructors. • Accessing Objects via Reference Variables. • Visibility Modifiers, Accessors and Mutators. • Passing Objects to Methods. • Static Variables, Constants and Methods. • The Scope of variables. • The this keyword. • Array of Objects. • Case Study: The Loan class. • Inner Classes.	6	3	3
3 Inheritance and Polymorphism • Introduction. • Super classes and Subclasses. • Using the keyword super. • Overriding Methods. • Polymorphism, Dynamic Binding and Generic Programming. • Casting Objects and instanceof Operator. • The protected Data and Methods. • The final Classes, Methods and	6	3	3

variables.			
4 Abstract Classes and Interfaces • Introduction. • Abstract Classes. • Interfaces. • Processing Primitives Data Type Values as Objects. • Automatic Conversion Between Primitives Types and Wrapper Class Types.	6	3	3
5 Object-Oriented Modeling • Introduction • The software Development Process. • Discovering Relationships among Classes. • Case Study: A Class Design Example. • Case Study: The Rational Class. • Framework-Based Programming using Java API.	6	3	3
6 Getting Started with GUI Programming • Introduction • GUI Components. • The Java GUI API. • Frames. • Layout Managers. • The Color Class. • The Font Class. • Drawing Graphics on Panels. • Case Study: MassagePanel Class. • Case Study: The StillClock Calss.	6	3	3
7 Event-Driven Programming • Introduction. • Event and Event Source. • Listeners, Registrations and Handling Events. • Mouse Events. • Keyboard Events. • The Timer Class.	6	3	3
8 Creating User Interfaces • Introduction • Common Features of Swing GUI Component. • Buttons. • Check Boxes. • Radio Buttons. • Labels. • Text Fields. • Text Areas. • Combo Boxes.	6	3	3

• Lists. • Scroll Bars. • Sliders. • Creating Multiple Windows.			
9 Applets, Images and Audio • Introduction. • The Applets Class. • The JApplets Class. • The HTML File and the <applet>Tag. • Passing Strings to Applets. • Case Study: Tic Tac Toe. • The URL Class. • Displaying Images. • Case Study: The ImageViewer. • Playing Audio.	6	3	3
10 Exceptions • Introduction. • Exceptions and Exception Types. • Understanding Exception Handling. • Rethrowing Exceptions. • The finally Clause. • When to use Exceptions. • Creating Custom Exception Classes.	6	3	3
11 Simple Input and Output • Introduction. • The File Class. • How is I/O Handled in Java? • Text I/O. • Case Study: Text viewer. • Binary I/O. • Case Study: Copy File. • More on Text Files and Binary Files.	6	3	3
12 Containers, Layout Managers and Borders • Introduction. • Swing Containers Structures. • Layout Managers. • Creating Custom Layout Manager. • JScrollPane. • JTabbedPane. • JSplitPane. • Swing Borders.	6	3	3
13 Menus, Toolbars, Dialog and Internal Frames • Introduction. • Menus. • Popup Menus. • JToolbar.	6	3	3

• JOptionPane Dialogs. • Creating Custom Dialog. • JColorChooser. • JFileChooser. • Creating Internal Frames.			
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lecture
4.2 Programs and Tutorials.
4.3 Research Assignments.
4.4 Cases Study in the Laboratory.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department.

6-b Essential books (text books)

None

6-c Recommended books

[1] Liang, Y. Daniel, Introduction to Java Programming, Comprehensive version, Fifth Edition, 2005, Pearson Education Inc.
[2] H. M. Deitel and P. J. Deitel , Java: How to Program, Fifth Edition, 2003 , Pearson Education Inc.
[3] A book prepared and edited by the lecturer, and approved by the department council.

6-d Periodicals, Web sites, … etc

IEEE transactions.

7- Facilities required for teaching and learning

- Personal Laboratories.
- Software programs specified in Java Programming Language.
- Data Show, Screen, and Laptop Computer.

Course coordinator:

Prof. Nabil Abd El-Wahed Ismail

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(COMPUTER LANGUAGE-2)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year /2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer Language-2			Code	CS345	
Credit Hours	Lecture	3	Tutorial	-	Practical	3
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the concepts of multithreading.
- Describe the similarities and differences between beans and regular objects.
- Understand the concepts of java database programming.
- Understand the concepts servlets and how it runs with Tomcat.
- Develop database applications using JSP.
- Implement low-level socket network programming and high-level remote method invocation.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of

computer systems

b4 Solve computer science problems with pressing commercial or industrial constraints.

b5 Integrate and evaluate information and data from a variety of sources.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

d3 Work effectively with and for others.

d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction to Java Programming • GUI Components. • Event Driven Programming. • The Applet class. • Exception Types. • Simple input and output.	6	3	3
2 Multithreading • Introduction. • Thread Concepts. • Creating threads by extending the thread class. • Creating threads by implementing the Runnable Interface. • Thread Controls and Communications. • Thread Groups. • Synchronization and Cooperation among Threads. • Controlling Animation using threads. • Running Audio on a Separate Thread.	6	3	3
3 Java Beans and Bean Events • Introduction. • JavaBeans. • Bean Properties. • Bean Events. • Creating custom Event sets. • Creating custom Source Components. • Event Adapters.	6	3	3
4 Advanced Swing Components • Introduction. • JSpinner. • JList. • JComboBox. • JTable.	6	3	3

• JTree.			
5 Java Database Programming • Introduction • Relational Database Systems. • SQL. • JDBC. • PreparedStatement. • Retrieving Metadata. • Bath Processing. • Storing and Retrieving Images in JDBC.	12	6	6
6 Servlets • Introduction • HTML and Common Gateway Interface. • Creating and Running Servlets. • HTML Forms. • Database Programming in Servlets. • Session Tracking. • Sending Images from Servlets.	12	6	6
7 Java Server Pages • Introduction. • A Simple JSP Page. • How is a JSP Page Processed? • JSP Scripting Constructs. • Predefined Variables. • JSP Directives. • Using Java Beans in JSP. • Getting and Setting Properties. • Associating Properties with input Parameters. • Forwarding Requests from Java Server Pages.	12	6	6
8 Networking • Introduction • Client/ Server Computing. • The InetAddress Class. • Serving Multiple Clients. • Applet Clients. • Sending and Receiving Objects. • Retrieving Files from Web Servers. • Case Study: Distributed Tic Tac Toe. • Datagram Socket.	12	6	6
9 Remote Method Invocation • Introduction. • RMI Basic. • Developing RMI Applications. • RMI vs. Socket-Level Programming. • Developing Three-Tier Applications using RMI. • RMI Callbacks.	12	6	6

Total sum	84	42	42

4- Teaching and learning methods

4.1 Lecture
4.2 Programs and Tutorials.
4.3 Research Assignments.
4.4 Cases Study in the Laboratory.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] Liang, Y. Daniel, Introduction to Java Programming, Comprehensive version, Fifth Edition, 2005, Pearson Education Inc.

[2] H. M. Deitel and P. J. Deitel , Java: How to Program, Fifth Edition, 2003 , Pearson Education Inc.
[3] A book prepared and edited by the lecturer, and approved by the department council.

6-d Periodicals, Web sites, … etc

IEEE transactions.

7- Facilities required for teaching and learning

- Personal Laboratories.
- Software programs specified in Java Programming Language.
- Data Show, Screen, and Laptop Computer.

Course coordinator:

Prof. Nabil Abd El-Wahed Ismail

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(ASSEMBLY LANGUAGE)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year/ 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Assembly Language			**Code**	CS346	
Credit Hours	**Lecture**	**3**	**Tutorial**	**-**	**Practical**	**3**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Understand the Intel IA-32 processor architecture.
- Understand the assembly language fundamentals.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b4 Solve computer science problems with pressing commercial or industrial constraints.

b5 Integrate and evaluate information and data from a variety of sources.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.
d2 Use IT skills and display mature computer literacy.
d3 Work effectively with and for others.
d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Basic Concepts • Welcome to Assembly Language • Virtual Machine Concept. • Data Representation. • Boolean Operations	**6**	**3**	**3**
2 IA-32 Processor Architecture • General Concepts. • IA-32 Processor Architecture. • IA-32 Memory Management. • Components of an IA-32 Microcomputer. • Input-Output System	**12**	**6**	**6**
3 Assembly Language Fundamentals • Basic Elements of Assembly Language. • Assembling, Linking, and Running Programs. • Defining Data. • Symbolic Constants. • Real-Address Mode.	**6**	**3**	**3**
4 Data Transfers, Addressing, and Arithmetic • Data Transfer Instructions. • Addition and Subtraction. • Data-Related Operators and Directives. • Indirect Addressing. • JMP and LOOP Instructions.	**12**	**6**	**6**
5 Procedures • Linking to an External Library. • The Book's Link Library. • Stack Operations. • Defining and Using Procedures. • Program Design Using Procedures.	**12**	**6**	**6**
6 Conditional Processing • Boolean and Comparison Instructions. • Conditional Jumps. • Conditional Loop Instructions. • Conditional Structures. • Finite State Machines (Application). • Using the .IF Directive.	**12**	**6**	**6**
7 Integer Arithmetic	**12**	**6**	**6**

• Shift and Rotate Instructions. • Shift and Rotate Applications. • Multiplication and Division Instructions. • Extended Addition and Subtraction. • ASCII and Packed Decimal Arithmetic.			
8 Advanced Procedures • Local Variables. • Stack Parameters. • Stack Frames, Recursion. • Creating MultiModule Programs	**6**	**3**	**3**
9 Strings and Arrays. • String Primitive Instructions. • Selected String Routines. • Two-Dimensional Arrays. • Searching and Sorting Integer Arrays.	**6**	**3**	**3**
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures.
4.2 Practical experiments in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There is an experimental manual prepared by the instructor

6-b Essential books (text books)

[1] K.R. Irvine, Assembly Language for Intel-Based Computers, Prentice Hall Inc., 2002.

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

IEEE transactions on computers software.

7- Facilities required for teaching and learning

- Microprocessor laboratory.
- Laboratory equipments, apparatus and kits.
- Datashow, screen, and desktop computer.

Course coordinator:

Dr. Mohamed Shoala

Head of Department:

Prof. Dr. Nabil Abd-El-Wahid Ismail

Date: / /

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
كلية الحاسبات والمعلومات
قسم علوم الحاسب

COURSE SPECIFICATION

(LOGIC PROGRAMMING)

Programme(s) on which the course is given	Computer science
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	3rd Year
Date of specification approval	9/5/2006

A- Basic Information

Title	Logic Programming			Code	CS347	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the logic Programming theory.
- Understand the Programming techniques, database programming, recursive programming, and non-deterministic, programming, incomplete data structures.
- Understand the pure Prolog programming language and its semantics.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

2b- Intellectual skills

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

2d- General and transferable skills

d5 Display personal responsibility by working to multiple deadlines in complex activities

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction	3	3	-
2 Theory of logic Programming • Introduction. • Least Herbrand models. • Unifcation. • Database programs with relations over constants (Datalog). • Proof trees and search trees. • Operational semantics& SLD-resolution.	12	6	6
3 3 Logic Programming Techniques • Recursive data structures. • Recursive definitions on terms and lists. • Good programming style. • Built in arithmetic.	15	6	9
4 Advanced logic Programming • Introduction. • Accumulating parameters and differential structures. • Abstract data types in LP. • Search and Control. • Cut and negation in Prolog. • Concurrent and parallel logic programming models. • State space programming. • Puzzle-solving, game playing. • Example of meta-programming. • An interpreter of the programming language Basic.	30	15	15
5 Grammars. • Parsing with DCGs. • Translating DGCs into definite clauses. • Program transformation techniques.	12	6	6

• Partial evaluation.			
6 Metaprogramming. • Introduction. • Structure inspection. • metalogical primitives. • Expert systems.	12	6	6
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Case study

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (*oral exam*)
Assessment 5	17th -18th weeks *(final written exam)*

5-c Weighting of assessments

Final-term examination	70%
Mid-term examination	10%
Oral examination.	10%
Practical examination	-
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

None

6-b Essential books (text books)

[1] Farrell Joyce, Programming Logic and Design, 2002.

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

IEEE transactions on computers software

7- Facilities required for teaching and learning

- Teaching rooms with equipments.
- Data show, screen, and laptop computer.

Course coordinator:

Prof. Nabil Abd El-Wahed Ismail

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(SOFTWARE ENGINEERING-1)

Programme(s) on which the course is given	CS and IT
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Software Engineering-1			Code	CS352	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Define the principles of software engineering
- Explain the principles of software quality and quality attributes
- Differentiate between the phases of software project.
- Describe and apply the principles of software modeling and modeling techniques
- Explain the concept and the principles of software specifications
- Describe and perform the principles of software design techniques
- Illustrate the principles of software implementation issues
- Apply and perform Software verification
- Describe and write Software documentation
- Explain the rules of software project management
- Describe and perform Software maintenance.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

a7 Understand The basics of the software life cycle, from requirements definition to development and evaluation.

2b- Intellectual skills

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

b5 Integrate and evaluate information and data from a variety of sources.

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c1 Plan and undertake a major individual project.

c2 Prepare and deliver coherent and structured verbal and written technical reports.

c3 Give technical presentations suitable for the time, place and audience.

c7 Apply computer science skills in a commercial or industrial environment.

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

d7 Demonstrate significantly enhanced group working abilities.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction • The emergence of software engineering • The term software engineering • Quality attributes of software products • Software quality attributes • The importance of quality criteria • The effects of quality criteria on each other • Quality assurance measures • The phases of a software project • The classical sequential software life-cycle model • The waterfall model • The prototyping-oriented life-cycle model • The spiral model • The object-oriented life-cycle model • The object-and prototyping-oriented life-cycle model	12	6	6
2 Software Specification • Structure and contents of the requirements definition • Quality criteria for requirements definition	12	6	6

• Fundamental problems in defining requirements • Algebraic specification • Model-based specification • References and selected reading			
3 Software Design • Design techniques • Top-down design • Bottom-up design • Systems design • Design decomposition • User interface design • Function-oriented design • Object-oriented design • The Abbott Method • Design of class hierarchies • Generalization • References and selected reading	12	6	6
4 Implementation • Programming environments • Programming style • Portability and reuse • Software portability • Machine Architecture dependencies • Operating system dependencies • Software reuse • Computer-aided software engineering • CASE workbenches • Text editing systems • Language processing systems • Incremental implementation • References and selected reading	12	6	6
5 Software Verification • Test methods • Verification of algorithms • Static program analysis • Dynamic testing • Black-box and white-box testing • Top-down and bottom-up testing • Mathematical program verification • Debugging • References and selected reading	12	6	6
6 Documentation • User documentation • System documentation • Document quality • Document maintenance • Document portability • References and selected reading	12	6	6
7 Project Management • The goal and tasks of project management			

• Difficulties in project management • Cost estimation • Project organization • Hierarchical organizational model • The chief programmer team • Software maintenance • Maintenance costs • System restructuring • Program evolution dynamics • References and selected reading	12	6	6
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures
4.2 Practical Assignments
4.3 Exercises and tutorials.
4.4 Research assignments and computer applications.

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week, Mid term exam.
Assessment 3	10th week.
Assessment 4	14th week *(Quiz)*
Assessment 5	15th -18th weeks *(final written exam)*

5-c Weighting of assessments

Final-term examination	70%
Mid-term examination	20%
Semester reports, practical work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

Mohiy M. hadhoud, "Software Engineering (1)", 1st semester, 2005.

6-b Essential books (text books)

[1]Introduction To Software Engineering, Ronald J. Leach, © 2004

CRC Press LLC, 0-8493-1445-3

6-c Recommended books

[1] Software Engineering Processes, Principles and applications, Yingxu Wang, Graham King, © 2000 CRC Press LLC, 0-8493-2366-5

[2] Software Engineering, Theory and Practice, Second Edition, Shari Lawrence Pfleeger, © 2001 by Prentice-Hall, Inc., 0-13-029049-1

6-d Periodicals, Web sites, … etc

IEEE transactions on computers and software, Related web sites

7- Facilities required for teaching and learning

- Computer Lab.
- Datashow, screen, and laptop computer.
- White board and colored pens

Course coordinator:

Prof. Mohiy M. hadhoud

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(SOFTWARE ENGINEERING-2)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Software Engineering-2**			**Code**	**CS353**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**-**	**Practical**	**3**
	Total				**6**	

B- Professional Information

1- Overall Aims of Course

- Complete understanding the principles and operations of software engineering-1 (CS352).
- To provide students with a team development experience.

2- Intended Learning Outcomes of Course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

a7 Understand The basics of the software life cycle, from requirements definition to development and evaluation.

2b- Intellectual skills

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

b5 Integrate and evaluate information and data from a variety of sources.

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c1 Plan and undertake a major individual project.

c2 Prepare and deliver coherent and structured verbal and written technical reports.

c3 Give technical presentations suitable for the time, place and audience.

c7 Apply computer science skills in a commercial or industrial environment.

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

d7 Demonstrate significantly enhanced group working abilities.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction	3	3	-
2 Software Metrics • Definition of Software Metrics. • Classification of Software Metrics. • Process Metrics, Models, and Empirical Validation. • Implementation of a Metrics Program	6	3	3
3 Program Metrics • Measures. • Metrics.	6	3	3
4 Software Maintenance • Definition. • Maintenance and Costs. • Maintenance Estimation Models.	6	3	3
5 Line of Code and Function Metrics • Measuring Line of Code (LOC). • Advantages and Disadvantages of LOC. • Function Point. • Adjustment Factor. • Calculation Total Function Point	12	6	6
6 Software Cost Estimation • Software Productivity. • Estimation Techniques. • Algorithmic Cost Modeling	12	6	6
7 Object Oriented Development, Metrics, and Testing • Introduction • Identifying Objects. • Identifying Associations.	18	9	9

• Metrics Suite for Object Oriented Design. • Object Oriented Testing			
8 Software Testing • Examining the Specification. • Testing with Blinders On. • Examining the Code. • Testing with X-Ray Glasses	18	9	9
Total number of Hours for the course	**81**	**42**	**39**

4- Teaching and Learning Methods

4.1- Lectures
4.2- Practical projects in the laboratory
4.3- Exercises and tutorials
4.4- Research assignments

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of References

6-a Course Notes

"Lectures in Software Engineering ", selected by A. Elsisi, 2nd Semester 2006.

6-b Essential Books (Text Books)

Shari Pfleeger, "Software Engineering - Theory and Practice", 2nd Edition, 2001, Prentice Hall

6-c Recommended Books

Leach Roland, “Introduction to Software Engineering”, 2000.

6-d Periodicals, Web Sites, … etc

IEEE transactions on computers, software

7- Facilities Required for Teaching and Learning

- PC laboratory.
- Datashow, screen, and laptop computer

Course coordinator:

Dr. Ashraf Elsisi

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
كلية الحاسبات والمعلومات
قسم علوم الحاسب

COURSE SPECIFICATION

(OPERATING SYSTEM-2)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year/ 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Operating System-2			Code	CS434	
Credit Hours	Lecture	3	Tutorial	-	Practical	3
	Total				6	

B- Professional Information

6- Overall aims of course

- Understanding how to install and configure Linux as well as know basic shell programming and other Linux utilities.
- Explain how to use the Linux operating system to manage files and documents.
- Customize the Linux operating system to suit their needs.
- Create a simple interactive web page on the Linux operating system running the Apache web server.
- Create a simple device deriver for USB on the Linux operating system.

6- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

6- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Linux Essentials • Introduction. • Differences in Linux and Unix. • Operating Systems Overview.	3	3	-
2 Linux Installation • Install Steps. • Hardware Requirements • Linux Device Names. • Partitioning the Hard Drive. • Network Settings. • Language Support. • Packages to Install. • Graphical Interface Configuration. • First Boot following Installation.	12	6	6
3 Linux Utilization • Introduction. • Login Screens. • Linux Resources. • Types of Commands. • Processes. • Linux communications.	6	3	3
4 Linux File System. • Introduction • Types of Files • File Systems Characteristics. • File System Commands. • Directory Commands. • File Manipulation Commands. • Printing Files.	6	3	3

5 Linux Text Editing • Editing Modes. • Entering & Exiting VI. • Navigating within VI. • Creating Text. • Modifying Text. • Text Substitution. • VI Shortcuts. • VI Options.	6	3	3
6 Linux Shell • Shell Overview. • Shell Functions. • Shell Variables. • I/O Redirection. • Pipes. • User Environment.	12	6	6
7 Shell Programming • Creating a Shell Program. • Executing the Shell Program. • Comments. • Debugging Shell Programming. • Functions. • Aliases. • Conditional Testing. • IF Statement. • Looping.	12	6	6
8 Linux Utilities • Regular Expressions. • Printing File Information. • Extracting Information. • Translating Information. • Counting Words. • File Differences. • Finding Files.	6	3	3
9 Network Commands • Ping Command. • Telnet Command. • FTP Command.	6	3	3
10 Devices Derivers • Introduction. • Kernel module. • Character device deriver. • Block device deriver. • File system driver • System calls • Network Drivers. • Register and unregister device.	15	6	9
Total number of Hours for the course	**84**	**42**	**42**

6- Teaching and learning methods

4.1 Lecture
4.2 Programs and Tutorials.
4.3 Research Assignments.
4.4 Cases Study in the Laboratory.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5^{th} week.	Mid term exam
Assessment 2	8^{th} week.	
Assessment 3	10^{th} week.	
Assessment 4	16^{th} week (Oral and practical)	
Assessment 5	17^{th} -18^{th} weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form electronics by the Lecturer

6-b Essential books (text books)

[1] Christopher Negus, Red Hat Linux 7.3 Bible, 2002, Wiley Publishing, Inc.

6-c Recommended books

[1] Richard Pertersen, Linux: The Complete Reference, Fourth Edition, 2001 McGraw-Hill Companies.

6-d Periodicals, Web sites, … etc

IEEE transactions on computer software.

7- Facilities required for teaching and learning

- Modeling and simulation laboratories.
- Software programs specified in operating system (Red Hat Linux9.1)
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Hatem Mohammed Said Ahmed

Head of Department:

Prof. Gamal Farouk

Date: / /

COURSE SPECIFICATION

(COMPILER DESIGN)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	4th Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Compiler Design			Code	CS435	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall Aims of Course

- To be aware of the distinctions among language translation systems (Compilers, interpreters).
- To understand how language design and implementation are related
- To gain experience with formal language-theoretic techniques
- To understand how storage is managed during the execution of a program.

2- Intended Learning Outcomes of Course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a7 Understand The basics of the software life cycle, from requirements definition to development and evaluation.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

2c- Professional and practical skills

c4 Use the scientific literature effectively and make discriminating use of Web resources.

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .

d2 Use IT skills and display mature computer literacy.

d6 Employ discrete mathematical skills as appropriate.

d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction	6	3	3
2 Lexical Analysis • Formal Languages. • Implementation with Finite State Machines. • Lexical Tables	6	3	3
3 Syntax Analysis • Grammars, Languages, and Pushdown Machines. • Ambiguities in Programming Languages. • The Parsing Problem.	12	6	6
4 Top Down Parsing • Relations and Closure. • Simple Grammars. • Quasi-Simple Grammars. • LL(1) Grammars. • Parsing Arithmetic Expressions Top Down. • Syntax-Directed Translation. • Attributed Grammars. • An Attributed Translation Grammar for Expressions.	12	6	6
5 Bottom Up Parsing • Shift Reduce Parsing. • LR Parsing With Tables	12	6	6
6 Code Generation • Introduction to Code Generation. • Converting Atoms to Instruction. • Single Pass vs. Multiple Passes.	12	6	6

• Register Allocation.			
7 Optimization • Introduction and View of Optimization. • Global Optimization. • Local Optimization.	12	6	6
8 Implementation Projects in Compiler Design	12	6	6
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and Learning Methods1

4.1- Lectures
4.2- Exercises and tutorials
4.3- Research assignments

5- Student Assessment Methods

5-a Methods

5.a1- Reports, assignments, exercises, and final written exam to assess knowledge and understanding.
5.a2- Regular oral , and written quizzes to assess intellectual skills.
5.a3- Practical projects, final practical and oral exams to assess professional skills.
5.a4- Reports, assignments, and discussions to assess general and transferable skills

5-b Assessment Schedule

Assessment 1	7th week
Assessment 2	16th week *(Oral).*
Assessment 3	17th -18th weeks *(final written exam)*

5-c Weighting of Assessments

Reports, practical projects, assignments, punctuality and individual class activity	10%
Mid-Term Examination	10%
Final oral exams	10%
Final written exam	70%
Total	100%

6- List of References

6-a Course Notes

"Lectures in Compiler Design ", selected by A. Elsisi, 2nd Semester 2006.

6-b Essential Books (Text Books)

[1] Andrew W. Appel Modern Compiler Implementation in Java, Cambridge University Press, 1998.

6-c Recommended Books

[1] Alfred V. Aho, Ravi Sethi, and Jeffrey D. Ullman, Compilers: Principles, Techniques, and Tools Addison-Wesley, 1986.

6-d Periodicals, Web Sites, … etc

IEEE transactions on computers, software

7- Facilities Required for Teaching and Learning

- PC laboratory. .
- Datashow, screen, and laptop computer

Course coordinator:

Dr. Ashraf Elsisi

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(COMPUTER ARABIZATION)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	4th Year/ 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer Arabization			Code	CS437	
Credit Hours	Lecture	3	Tutorial	1	Practical	2
	Total				6	

B- Professional Information

1- Overall aims of course

- Define computer Arabization.
- Understand the computer Arabization layout.
- Understand Localization and Internationalization problems for the Arabic language
- Understand Arabic language structure and features.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

2b- Intellectual skills

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c7 Apply computer science skills in a commercial or industrial environment.

c8 Appreciate the features of complex computing hardware and software and operate

them effectively

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Localization and Internationalization problems for the Arabic language • Character codeset and standard encoding. • Character Shaping and text direction algorithms. • Character fonts. • Global Screen direction and mirror effect . • Numerals and Hindi Digit shapes . • Arabic vowels and collating sequences . • Neutral characters . • Dual keyboard management. • Optical Character Recognition .	10	6	4
2 Arabic Standards and Culture • Handwriting . • Codeset uses . • Local differences . • No abbreviations . • Justification of text .	14	8	6
3 Local expectation and DOS based solutions • PC user habits . • Calligraphic styles .	26	16	10
4 Implementation case study and specific problems for applications • LANGBOX-ARA : The Character based Arabization support . • XLANGBOX-ARA : The Graphical based Arabization support . • LANGBOX-ARA and XLANGBOX-ARA Availability • Other User Interfaces .	20	10	10
5 Future implementation	8	4	4
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection

4.2 Research assignment

4.3 Lecture

4.4 Class activities

4.5 Practical training / lab
4.6 Case study

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of electronics by the lecturer

6-b Essential books (text books)

[1] Elisa M. del Galdo (Editor), Jakob Nielsen (Editor) **International User Interfaces** ISBN: 0-471-14965-9.

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

IEEE transactions on computer software

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Nabil Abd El-Wahed Ismail

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

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COURSE SPECIFICATION

(DISTRIBUTED SYSTEMS)

Programme(s) on which the course is given	CS and IT
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	4th Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Distributed Systems			Code	CS454	
Credit Hours	Lecture	3	Tutorial	3	Practical	
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the main concepts of distributed systems.
- Understand the principles, issues, paradigms and challenges of distributed systems
- Equipped with hands-on experience in some aspects of distributed systems development
- Understand how to design and implementing distributed systems utilizing the CORBA

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating

system, programming languages and artificial intelligence.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

b7 Work with and model computer systems at different and appropriate levels of abstraction.

2c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

c7 Apply computer science skills in a commercial or industrial environment.

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .

d2 Use IT skills and display mature computer literacy.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Characterization of Distributed Systems • Introduction • Examples of distributed systems • Resource sharing and the Web • Challenges • Summary	6	3	3
2 System models • Introduction • Architectural models • Fundamental models • Summary	6	3	3
3 Networking and Internetworking • Introduction • Types of network • Network principles • Internet protocols • Case studies • Summary	12	3	3
4 Inter-process Communication • Introduction • The API for the Internet protocols • External data representation and marshalling	6	3	3

• Client-server communication • Group communication • Case studies • Summary			
5 Distributed Objects and Remote Invocation • Introduction • Communication between distributed objects • Remote procedure call • Events and notifications • Case studies • Summary	6	3	3
6 Operating System support • Introduction • The operating system layer • Protection • Processes and threads • Communication and invocation • Operating system architecture • Summary	6	3	3
7 Security • Introduction • Overview of security techniques • Cryptographic algorithms • Digital signatures • Cryptography pragmatics • Case studies • Summary	6	3	3
8 Distributed File Systems • Introduction • File service architecture • Enhancements and further developments • Case studies • Summary	6	3	3
9 Transactions and Concurrency Control • Introduction • Transactions • Nested transactions • Locks • Optimistic concurrency control • Timestamp ordering • Comparison of methods for concurrency control • Summary	12	6	6
10 Distributed Transactions • Introduction • Flat and nested distributed transactions • Atomic commit protocols • Concurrency control in distributed	12	6	6

transactions • Distributed deadlocks • Transaction recovery • Summary			
11 Replication • Introduction • System model and group communication • Fault-tolerant services • Transactions with replicated data • Case studies • Summary	6	3	3
12 CORBA Case Study • Introduction • CORBA RMI • CORBA services • Summary	6	3	3
Total number of Hours for the course	84	42	42

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lectures
4.4 Class activities
4.5 Practical training / lab
4.6 Case study

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, exercises, and final written exam ***to assess*** knowledge and understanding
5.a.2 Regular oral, practical and written quizzes ***to assess*** intellectual skills
5.a.3 Practical projects, final practical and oral exams ***to assess*** professional skills.
5.a.4 Reports, assignments, and discussions ***to assess*** general and transferable skills.

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	16th week (Oral and practical)
Assessment 3	17^{th} -18^{th} weeks *(final written exam*

5-c Weighting of assessments

Mid-term examination	15%
Final-term examination	70%
Oral examination.	5%
Practical examination	-
Semester work	5%
Other types of assessment	5%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of electronics by the Lecturer

6-b Essential books (text books)

[1]George Coulouris, Jean Dollimore and Tim Kindberg, Distributed Systems: Concepts and Design, Fourth edition, 2005, Addison-Wesley, Inc.

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

IEEE transactions on distributed systems.

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.
- White board and color pens

Course coordinator:

Dr. Arabi Keshk

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(INTERNET COMPUTING)

Programme(s) on which the course is given	Computer science
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	4th Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Internet Computing				Code	CS467	
Credit Hours	Lecture	3	Tutorial	1	Practical	2	
	Total				6		

B- Professional Information

1- Overall aims of course

- Understanding of the essential features of the Internet Computing Architecture, how it is now used and how it has been redefined for the Next Generation. .
- Establishing a practical understanding of related applications, such as the World Wide Web and the Network File System, which are empowering remarkable changes in business and industrial computing practice.
- Developing the emergent subject of real-time networked applications (notably including Voice-Over-IP and entertainment/multimedia services, and the associated Quality of Service issues).
- Introducing the developing areas of mobile computing technology and applications.
- Creating an appreciation of the practical limitations of the technology, and knowledge of how it can best be adapted to serve non-traditional applications.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a6 Know and understand the principles and techniques of a number of

application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

2b- Intellectual skills

b4 Solve computer science problems with pressing commercial or industrial constraints.

b5 Integrate and evaluate information and data from a variety of sources.

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c4 Use the scientific literature effectively and make discriminating use of Web resources.

c7 Apply computer science skills in a commercial or industrial environment.

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .

d2 Use IT skills and display mature computer literacy.

d7 Demonstrate significantly enhanced group working abilities.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction • The Internet Architecture: past, present and future • Key features of the new Internet: Convergence (support for voice and multimedia), and Mobility • Limitations of the current generation • The industry's paradigm shift to the Internet Architecture • Review network connectivity issues	6	3	3
2 The Internet Layer (IP): Core Features • Connectionless vs. connection-oriented networking • The Version 4 IP header, features and options • Version 6 header details - summary comparison • Datagram fragmentation issues • Internet Control Message Protocol (ICMPv4 and ICMPv6). • IPv4 options and IPv6 extension headers.	6	3	3
3 The Internet Layer (IP) - Addressing and Auxiliary Topics. • Addressing conventions: Versions 4 and 6	6	3	3

• Version 4 addressing limitations: Sub-networks and masking • Version 6 addressing features compared • Comparing IPv6 addressing options and strategies • Address Resolution Protocol • Relating IP addresses to physical addresses • Dynamic Host Configuration Protocol • The Domain Name System. • IPv6 transition strategies.			
4 The Physical Layer and Access Protocols • Serial line protocols; SLIP, PPP, MLPPP and PPTP • IP over WAN technologies; Frame Relay and ATM • IP over ATM; features and challenges • IP over LANs; IEEE 802.x, SNAP and FDDI networks. • Broadband Internet access	6	3	3
5 Routing Topics • Characteristics of a routable environment • IP routing philosophy • Distance Vector Routing: A case study based on Routing Information Protocol • Link State Routing: A case study based on Open Shortest Path First protocol • Border Gateway Protocol features • Inter-domain routing with IDRP • Route coordination in WAN environments. • LAN/MAN switching developments: Compared and contrasted with routing	12	6	6
6 The Host Layer (TCP and UDP) • Transmission Control Protocol (TCP) • Upper layer protocols and well known ports • Data service primitives and connection control • Sliding window flow control • The Slow Start Algorithm • Congestion and uncertain network delay • The User Datagram Protocol (UDP). • Next generation issues with TCP and UDP	12	6	6
7 Security Concerns and Firewall Solutions • Characterizing security vulnerabilities and threats • The vital role of standards • Data encryption technologies; private and public keys • Firewalls configurations and limitations • Packet filtering and proxy firewalls • Network address translation • Cisco's "Self-Defending Networks" • IP layer security: IPSEC and the PKI.	12	6	6

• Virtual private networks.			
8 Administrative and Support Features • The Internet Society and IETF • IAB, NIC, ICANN and IANA • Domain naming and DNS functions • Managing the DNS Environment • Network time coordination. • Administrating systems with DHCP and /or WINS	12	6	6
9 Internet Applications • File transfer (FTP/TFTP) and file sharing alternatives with NFS and RPC • Simple Mail Transfer Protocol and enhancements; MIME, POP and IMAP • The ubiquitous World Wide Web, extensions and developing features. • Making the link to non-web applications	12	6	6
10 Network Management Issues and Automation Tools • Network management responsibility • Capacity planning issues • Network management tools and RMON Probes • SNMP and SNMP-II • The Management Information Base: MIB-I, MIB-II and extensions. • Web-based management.	6	3	3
11 Mobile IP; Technology and Applications • Mobile, portable computing • Radio propagation issues • Wireless Application Protocol • IP connectivity to mobile hosts • Foreign Agent discovery and registration	6	3	3
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures
4.2 Exercises and tutorials.
4.3 Research assignments

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.

5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of an electronics

6-b Essential books (text books)

[1] Musciano & Kennedy: HTML & XHTML: The Definitive Guide (5th ed), O'Reilly, 2002

6-c Recommended books

[1] Flanagan: JavaScript: The Definitive Guide (4th ed), O'Reilly, 2002

[2] Hunter & Crawford: Java Servlet Programming (2nd ed), O'Reilly, 2001

[3] Harold: XML 1.1 Bible (3rd ed), Wiley, 2004

6-d Periodicals, Web sites, … etc

IEEE transactions on computers software.

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.
- PC lab connected to the Internet
- Lab equipped with programming languages.

Course Coordinator:

Prof. Nabil Abd El-Wahed Ismail

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(KNOWLEDGE BASE SYSTEMS)

Programme(s) on which the course is given	CS and IT
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	4th Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Knowledge Base Systems			Code	CS471	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall Aims of Course

- Understand the principles and operations of knowledge base systems
- Understand the design of knowledge base
- Understand the applications of knowledge base

2- Intended Learning Outcomes of Course (ILOs)

2a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

2b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

b3 Identify a range of solutions and critically evaluate and justify proposed design

solutions.

b4 Solve computer science problems with pressing commercial or industrial constraints.

2c- Professional and practical skills

c1 Plan and undertake a major individual project.

c2 Prepare and deliver coherent and structured verbal and written technical reports.

c3 Give technical presentations suitable for the time, place and audience.

c7 Apply computer science skills in a commercial or industrial environment.

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

d7 Demonstrate significantly enhanced group working abilities.

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction	3	3	3
2 Fundamentals of Expert Systems • History of Expert Systems • Basic Concepts of Expert Systems • Structure of Expert Systems. • The Human Element in Expert Systems. • How Expert Systems Work. • Problem Areas Addressed by Expert Systems. • Benefits of Expert Systems • Problems and Limitations of Expert Systems • Types of Expert Systems.	12	6	6
3 Knowledge Acquisition and Validation • Knowledge Engineering. • Scope of Knowledge. • Difficulties in Knowledge Acquisition. • Methods of Knowledge Acquisition • Interviews • Tracking Methods • Selecting an Appropriate Knowledge Acquisition Method • Validation and Verification of the Knowledge Base	18	9	9
4 Knowledge Representation • Introduction. • Representation in Logic and Other Schemas. • Semantic Networks.	12	6	6

• Production Rules. • Frames. • Multiple Knowledge Representation • Experimental Knowledge Representations. • Representing Uncertainty			
5 Inferences, Explanations and Uncertainty • Reasoning in Artificial Intelligence. • Forward and Backward Chaining. • The Inference Tree. • Inferencing with Frames. • Case-based Reasoning. • Explanation and Metaknowledge. • Inferencing with Uncertainty	12	6	6
6 Building Expert Systems • Introduction • The Development Life Cycle. • Organizing the Development Team. • The Future of Expert Systems. • Case study	24	12	12
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and Learning Methods

4.1- Lectures
4.2- Exercises and tutorials
4.3- Research assignments

5- Student Assessment Methods

5-a Methods

5.a1- Reports, assignments, exercises, and final written exam to assess knowledge and understanding.
5.a2- Regular oral , written quizzes to assess intellectual skills.
5.a3- Practical projects, final oral exams to assess professional skills.
5.a4- Reports, assignments, and discussions to assess general and transferable skills

5-b Assessment Schedule

Assessment 1	7th week.
Assessment 2	16th week *(Oral)*
Assessment 3	17th -18th weeks *(final written exam).*

5-c Weighting of assessments

Reports, practical projects, assignments, punctuality and individual class activity	10%
Mid-Term Examination	10%

Final oral exams	10%
Final written exam	70%
Total	100%

6- List of References

6-a Course Notes

None

6-b Essential Books (Text Books)

[1] Efraim Turban and Jay E. Aronson "Decision Support Systems and Intelligent Systems", Prentice Hall, 1998

6-c Recommended Books

[1] Cornelius T.Leondes "Knowledge-Base System" K-Theoey 2000 Academic Press.

[2] John V. Richardson "Knowledge Based System for General Reference ", 1995

6-d Periodicals, Web Sites, … etc

IEEE transactions on computers, software, Expert systems

7- Facilities Required for Teaching and Learning

- PC laboratory.
- Datashow, screen, and laptop computer

Course coordinator:

Dr. Ashraf Elsisi

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(COMPUTER LEARNING)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	4th Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Computer Learning**			**Code**	**CS472**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**3**	**Practical**	**-**
	Total				**6**	

B- Professional Information

1- Overall Aims of Course

- Understand the general principles of computer learning
- Understand the primary algorithms and approaches to machine learning

2- Intended Learning Outcomes of Course (ILOs)

2a- Knowledge and understanding

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

2b- Intellectual skills

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c4 Use the scientific literature effectively and make discriminating use of Web resources.

c7 Apply computer science skills in a commercial or industrial environment.

c8 Appreciate the features of complex computing hardware and software and

operate them effectively

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction	6	3	3
2 Concept Learning and the General to Specific Ordering • A Concept Learning Task. • Concept Learning as Search • Find S Finding a Maximally Specific Hypothesis. • Version Spaces and the Candidate. Elimination Algorithm.	12	6	6
3 Decision Tree Learning • Decision Tree Representation. • Appropriate Problems for Decision Tree Learning. • The Basic Decision Tree Learning. • Hypothesis Space Search in Decision Tree Learning.	12	6	6
4 Artificial Neural Networks • Neural Network Representations. • Appropriate Problems for Neural Network Learning. • Multilayer Networks and the Back propagation Algorithm. • An Illustrative Example Face Recognition	18	9	9
5 Instance-Based Learning • Introduction. • K-Nearest Neighbor Learning. • Locally Weighted Regression. • Radial Basis Functions. • Case Based Reasoning. • Remarks on Lazy and Eager Learning	12	6	6
6 Genetic Algorithms • Motivation. • Genetic Algorithms. • Genetic Operators. • Genetic Programming	12	6	6
7 Research Projects in Machine Learning	12	6	6

Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and Learning Methods

4.1- Lectures
4.2- Exercises and tutorials
4.3- Research assignments

5- Student Assessment Methods

5-a Methods

5.a1- Reports, assignments, exercises, and final written exam to assess knowledge and understanding.
5.a2- Regular oral, and written quizzes to assess intellectual skills.
5.a3- Practical projects, final practical and oral exams to assess professional skills.
5.a4- Reports, assignments, and discussions to assess general and transferable skills

5-b Assessment Schedule

Assessment 1	7th week.
Assessment 2	16th week *(Oral)*
Assessment 3	17th -18th weeks *(final written exam).*

5-c Weighting of assessments

Reports, practical projects, assignments, punctuality and individual class activity	10%
Mid-Term Examination	10%
Final oral exams	10%
Final written exam	70%
Total	100%

6- List of References

6-a Course Notes

None

6-b Essential Books (Text Books)

[1] Tom M Mitchell, " Machine Learning", McGraw Hill, 1997.

6-c Recommended Books

[1] Marco Russo, " Fuzzy Learning and Applications". Computer Science Fuzzy System 2001

6-d Periodicals, Web Sites, … etc

IEEE transactions on computers, software, AI, machine learning

7- Facilities Required for Teaching and Learning

- PC laboratory.
- Datashow, screen, and laptop computer.

Course coordinator:

The course not teach

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(PROJECT)

Programme(s) on which the project is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the project	Computer Science
Academic year / Level	4th Year / 1st and 2nd semesters
Date of specification approval	9/5/2006

A- Basic Information

Title	Project				Code	CS481	
Credit Hours	Lecture	1	Tutorial	-		Practical	5
	Total					6	

B- Professional Information

1- Overall aims of course

By completing this project the student should able to:

- Train the students to work within a teamwork environment.
- Get some experience in implementing the theoretical theorems practically.
- Enhance practical skills of both the hardware and software stuff.
- Apply the theoretical knowledge to build practical projects in one of the following fields; logic design, software engineering, programming, system software, networking or expert systems.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial

intelligence, databases and computer graphics.

2b- Intellectual skills

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c4 Use the scientific literature effectively and make discriminating use of Web resources.

c6 Use appropriate computer-based design support tools

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d4 Strike the balance between self-reliance and seeking help when necessary in new situations.

d7 Demonstrate significantly enhanced group working abilities.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
The student must submit a project report to the department for evaluation and discussion by the oral examination committee. This committee must contain internal and external examiners. The report may include the following units: **1 Introduction** • Here the goal and methodology of the project should be stated.	2	2	-
2 Previous work • This part may contain some of the previous work (if any), to train the student to have the ability to read and understand some related material.	4	4	-
3 Theoretical considerations • The theoretical background of the project may be considered in this part. It may include the theorems, rules and methodology for the project implementation. When using programming, this part should include the program analysis and data structure.	10	10	-
4 Practical work • The software or hardware implementation of the project is considered here. It may include the program development and hardware analysis of the project. It also contains the circuit diagrams used in the implementation.	110	10	100
5 Results, Discussions,…, etc. • The achieved results of the project and its operation are demonstrated in this section. The	41	1	40

results justification and discussion are also presented.			
6 Conclusions • This part concludes the project work and its applicability and scalability are presented.	1	1	-
Total number of Hours for the course	**168**	**28**	**140**

4- Teaching and learning methods

The department assigns a supervisor for each project group. External supervisor(s) may also participate in the supervision depending upon the nature of the project.

4.1 Lectures.
4.2 Practical experiments in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final dissertation to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Periodical reports
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	23rd weeks (final dissertation)	

5-c Weighting of assessments

Semester work	20%
Periodical reports	20%
final dissertation	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared by project advisor.

6-b Essential books (text books)

Any related books. It depends upon the field of the project**.**

6-c Recommended books

Depends upon the project field.

6-d Periodicals, Web sites, … etc

IEEE transactions on computers and software.

7- Facilities required for teaching and learning

- Library contains the essential references.
- Laboratory equipments, apparatus and kits.
- Datashow, screen, and laptop computer.

Course coordinator:

No Coordinator

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(SELECTED TOPICS)

Programme(s) on which the course is given	Computer science
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	4th Year / Elective
Date of specification approval	9/5/2006

A- Basic Information

Title	Selected Topics			Code	CS482	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Give students a foundation for advanced study and other related applications.
- The course outlined below is designed to provide a coherent and broad-based coverage of the discipline of computer science, giving a reasonable level of understanding in one of the following areas; software engineering, system software, expert systems, artificial intelligence, networking or logic design and other related applications.
- Creating an appreciation of the importance of the research and development in different areas of computer science.
- Enhance thinking skills of understanding new theoretical and practical work.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

2b- Intellectual skills

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

b6 Be creative in the solution of problems and in the development of designs.

2c- Professional and practical skills

c4 Use the scientific literature effectively and make discriminating use of Web resources.

c6 Use appropriate computer-based design support tools

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d4 Strike the balance between self-reliance and seeking help when necessary in new situations.

d5 Display personal responsibility by working to multiple deadlines in complex activities

d7 Demonstrate significantly enhanced group working abilities.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction • Course outlines are stated.	6	3	3
2 Reviewing previous work • Contains the history of the subject under study.	18	9	9
3 Basic concepts. • The basic concepts, theorems, and rules can be considered.	18	9	9
4 Core course • Analytical and practical implementation of recent research is considered.	24	12	12
5 Case Studies • Case study is assigned to different student groups applying variety of interlinked topics.	18	9	9
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures

4.2 Exercises and tutorials.

4.3 Research assignments (case studies)

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, exercises, and final written exam to assess knowledge and understanding.

5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.

5.a.3 Practical projects, final practical and oral exams to assess professional skills.

5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (Oral and practical)
Assessment 5	17th -18th weeks *(final written exam*

5-c Weighting of assessments

Mid-term examination	10%
Final-term examination	70%
Oral examination.	10%
Practical examination	10%
Semester work	-%
Other types of assessment	-%
Total	100%

6- List of references

6-a Course notes

none

6-b Essential books (text books)

Any related books. It depends upon the field of the course

6-c Recommended books

Depends upon the field of the course

6-d Periodicals, Web sites, … etc

IEEE transactions on computers and software.

7- Facilities required for teaching and learning

- Library contains the essential references.
- Data show, screen, and laptop computer.
- PC lab connected to the Internet
- Lab equipped with programming languages.

Course Coordinator:

No Coordinator

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(ARTIFICIAL INTELLIGENCE)

Programme(s) on which the course is given	IT and IS
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Artificial Intelligence			Code	CS373	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Learn fundamental concepts of Artificial Intelligence.
- Understand Artificial Intelligence searching Techniques
- Gain hands-on experience with programming techniques for Artificial Intelligence.
- Obtain background for applied applications of Artificial Intelligence.

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

2b- Intellectual skills

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.
b5 Integrate and evaluate information and data from a variety of sources.
b7 Work with and model computer systems at different and appropriate levels of abstraction.

2c- Professional and practical skills

c3 Give technical presentations suitable for the time, place and audience.
c6 Use appropriate computer-based design support tools

2d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .
d5 Display personal responsibility by working to multiple deadlines in complex activities
d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction to Artificial Intelligence	6	3	3
2 Prolog Programming	6	3	3
3 Blind Searching	6	3	3
4 Heuristic Searching	6	3	3
5 Intelligent Agent	6	3	3
6 Neural Network Basics	12	6	6
7 Neural Network Learning	12	6	6
8 Genetic Algorithms	12	6	6
9 Genetic Algorithms Modeling	12	6	6
10 Fuzzy Systems	6	3	3
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Practical training / lab
4.6 Case study

5- Student assessment methods

5-a Methods

5.a.1 Discussions ……. ***to assess*** … Fundamental concepts gained
5.a.2 Mid term …… . ***to assess*** …gained outcomes
5.a.3 Reports …… …. ***to assess*** Research abilities
5.a.4 Final exam … ***to assess*** course outcomes

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (Oral and practical)
Assessment 5	17th -18th weeks *(final written exam*

5-c Weighting of assessments

Mid-term examination	10%
Final-term examination	70%
Oral examination.	10%
Practical examination	-
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

None

6-b Essential books (text books)

[1] Artificial Intelligence: A Modern Approach (2nd Edition), Stuart J. Russell, Peter Norvig, Prentice Hall, 2003.
[2] Prolog Programming for Artificial Intelligence , by Ivan Bratko

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

Related Web sites to Artificial Intelligence

7- Facilities required for teaching and learning

- Modeling and simulation laboratories.
- Software programs specified in crises simulation and analysis
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Hatem Mohammed Said Ahmed

Head of Department:

Prof. Gamal Farouk

Date: / /

COURSE SPECIFICATION

(COMPUTER NETWORKS-2)

Programme(s) on which the course is given	Information Technology
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer Networks-2			Code	CS361	
Credit Hours	Lecture	3	Tutorial	1	Practical	2
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand Internet architecture and its layers
- Compare and contrast the OSI and TCP/IP models
- Explain the service provided by IP and TCP protocols to upper layers and the specific functions performed to provide the service
- Explain network protocols for routing, flow control and congestion control
- Learn and understand the design, operation and management of TCP/IP based networks
- Know the details of TCP including its limitations and how to improve on those limitations

2- Intended learning outcomes of course (ILOs)

2a- Knowledge and understanding

a1 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

2b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

b7 Work with and model computer systems at different and appropriate levels of abstraction.

2c- Professional and practical skills

c6 Use appropriate computer-based design support tools

c8 Appreciate the features of complex computing hardware and software and operate them effectively

2d- General and transferable skills

d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction To TCP/IP • Layering • TCP/IP Layering • Internet Addresses • The Domain Name System • Encapsulation • Demultiplexing • Client-Server Model • Port Numbers • Standardization Process • RFCs • Standard, Simple Services • The Internet	6	3	3
2 Link Layer • Ethernet and IEEE 802 Encapsulation • Trailer Encapsulation • SLIP: Serial Line IP • Compressed SLIP • PPP: Point-to-Point Protocol • Loopback Interface • MTU and Path MTU	6	3	3
3 Internet Protocol • IP Header • IP Routing • Subnet Addressing • Subnet Mask • Special Case IP Address • A Subnet Example • ifconfig Command • netstat Command • IP Futures	6	3	3

4 ARP and RARP • Assessing Risk • Who's Ready for Crisis • Assessing Crisis Preparedness • Private Companies: Different Risks • Warning Signals • Who Owns the Radar • Communications Channels • Risk Associated with the Product	6	3	3
5 Internet Control Message Protocol • ICMP Message Types • ICMP Address Mask Request and Reply • ICMP Timestamp Request and Reply • ICMP Port Unreachable Error • Processing of ICMP Messages	6	3	3
6 Ping and Traceroute Programs • Ping Program • IP Record Route Option • IP Timestamp Option • Traceroute Program operation • LAN output • WAN output • IP Source Routing Option	12	6	6
7 IP Routing • Routing Principles • ICMP Host and Network Unreachable Errors • To Forward or Not to Forward • ICMP Redirect Errors • ICMP Router Discovery Messages	6	3	3
8 Dynamic Routing Protocols • Dynamic Routing • RIP: Routing Information Protocol • RIP Version 2 • OSPF: Open Shortest Path First • BGP: Border Gateway Protocol • CIDR: Classless Interdomain Routing	12	6	6
9 UDP: User Datagram Protocol • UDP Header • UDP Checksum • IP Fragmentation • ICMP Unreachable Error • Determining the Path MTU Using Traceroute • Path MTU Discovery with UDP • Interaction Between UDP and ARP • Maximum UDP Datagram Size • UDP Server Design	12	6	6
10 Broadcasting and Multicasting • Broadcasting	6	3	3

• Broadcasting Examples • Multicasting			
11 GMP and DNS • IGMP Message • IGMP Protocol • DNS Basics • DNS Message Format • Resourse Records • Caching • UDP or TCP	6	3	3
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Practical training / lab
4.6 Exercises and tutorials

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared by the lecturer

6-b Essential books (text books)

[1]TCP/IP Illustrated, Vol. 1. by Richard Stevens, Addison Wesley Publisher.

6-c Recommended books

[1] Internetworking with TCP/IP, Vol. 1, Principles, Protocols and Architecture by Douglas E. Comer. Fourth Edition, Prentice Hall, 2000, ISBN 0-13-018380-6.
[2] TCP/IP Network Administration by Craig Hunt, O'Reilly & Associates, Inc.
[3] High-Speed Networks: TCP/IP and ATM Design Principles by William Stallings, Prentice Hall, 1998.
[4] Comer, DE 2004, Computer networks and internets: with internet applications, 4th edn, Pearson Prentice Hall, Upper Saddle River, NJ.
[5] Stallings, W 2004, Data and computer communications, 7th edn, Pearson/Prentice Hall, Upper Saddle River, NJ.

6-d Periodicals, Web sites, … etc

IEEE and ACM transactions on computers, software, networks
http://www.cs.albany.edu/~maniattb/teaching/networks
http://eeclass.stanford.edu/ee384a/
http://eeclass.stanford.edu/ee384a/
http://www.acm.org/
http://www.ieee.org/portal/index.jsp
http://www.ietf.org/
http://ita.ee.lbl.gov/
http://www.isi.edu/nsnam/ns/

7- Facilities required for teaching and learning

- Networks laboratory.
- Software programs for network simulation and analysis.
- Datashow, screen, and laptop computer.

Course coordinator:

Dr.Waiel Shawkey

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(DATABASE SYSTEMS-1)

Programme(s) on which the course is given	CS, IT
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Information Systems
Academic year / Level	3rd Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Database Systems-1**			**Code**	**IS331**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**-**	**Practical**	**3**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Understand the fundamental concept and issues of database management.
- Obtain knowledge about the organization of database systems.
- Understand relational database theories, standard SQL, and database design.
- Use commercially available database systems.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

b5 Integrate and evaluate information and data from a variety of sources.

b6 Be creative in the solution of problems and in the development of designs.

b7 Work with and model computer systems at different and appropriate levels of abstraction.

c- Professional and practical skills

c5 Design, write and debug computer programs in appropriate languages.

c6 Use appropriate computer-based design support tools

c7 Apply computer science skills in a commercial or industrial environment.

d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d3 Work effectively with and for others.

d4 Strike the balance between self-reliance and seeking help when necessary in new situations.

d5 Display personal responsibility by working to multiple deadlines in complex activities

d8 Retrieve information from a variety of sources such as libraries, printed or electronic sources.

3- Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
1 An Overview of Database Management. • What is a database system? • Why database? • Data independence. • Relational systems and others. • Oracle: Intro to Oracle & SQL*Plus, create/modify tables	3	2	2
2 Database System Architecture • The three levels of the architecture. • Mappings. • The database administrator. • The database management system. • Data communications. • Client/server architecture.. • Distributed processing. • Oracle: SQL-Add, update, delete data	3	2	2
3 An Introduction to Relational Databases • An informal look at the relational model. • Relations and relvars. • What relations mean. • Optimization. • The catalog. • The suppliers-and-parts database. • Oracle: SQL-Retrieving data from a single table	3	2	2

4 An Introduction to SQL • Views. • Transactions. • Embedded SQL. • Dynamic SQL and SQL/CLI. • SQL is not perfect. • Oracle: Multitable queries	3	2	2
5 Types. • Values v Variables. • Types v Representations. • Type Definition. • Operators. • Type generators. • SQL facilities. • Oracle: Multiuser Environment;	3	2	2
6 Relations • Relation types. • Relation values. • Relation variables. • SQL facilities. • Oracle: PL/SQL Programs	3	2	2
7 Mid-term Exam, Relational Algebra • Closure revisited. • The original algebra: Syntax. • The original algebra: Semantics. • What is the algebra for? • Further points. • Additional operators. • Grouping and ungrouping. • Oracle: Advanced PL/SQL, Oracle Forms	3	2	2
8 Integrity • Predicates and propositions. • Relvar predicates and database predicates. • Checking the constraints. • Internal v external constraints. • Correctness v consistency. • Integrity and views. • A constraint classification scheme. • Keys. • Triggers (a digression). • SQL facilities. • Oracle: Oracle Forms	3	2	2
9 Views • What are views for? • View retrievals. • View updates. • Snapshots (a digression). • SQL facilities. • Oracle: Custom Forms (Selected Topics)	3	2	2
10 Functional Dependencies • Basic definitions. • Trivial and nontrivial dependencies. • Closure of a set of dependencies. • Closure of a set of attributes. • Irreducible sets of dependencies. • Oracle: Custom Forms (Selected Topics)	3	2	2

• Further Normalization I: 1NF, 2NF, 3NF, BCNF, • - First, second, and third normal forms. • Boyce/Codd normal form. • A note on relation-valued attributes. • The normalization procedure summarized. • A note on denormalization. • Orthogonal design (a digression). • Other normal forms. • Oracle: Report Builder (Selected Topics)	3	2	2
11 Semantic Modeling • The overall approach. • The E/R model. • E/R diagrams. • Database design with the E/R model. • A brief analysis. • Oracle: Creating an Integrated Application	3	2	2
12 Recovery • System recovery. • Media recovery. • Two-phase commit. • Savepoints (a digression). • SQL facilities. • Oracle: Project	3	2	2
13 Concurrency • Three concurrency problems. • The three concurrency problems revisited. • Deadlock. • Serializability. • Recovery revisited. • Isolation levels. • Intent locking. • ACID dropping. • SQL facilities. • Oracle: Project Presentations	3	2	2
Total number of Hours for the course	**42**	**28**	**28**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lectures
4.4 Class activities
4.5 Practical training / lab
4.6 Case study

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.

5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

None

6-b Essential books (text books)

[1] An Introduction to Database Systems, C.J. Date, Addison Wesley.
[2] A Guide to Oracle 9i, Morrison & Morrison. 2003.

6-c Recommended books

[1]Fundamentals of Database Systems, El Masri and Navathe, 3rd Edition, Addison Wesley.

6-d Periodicals, Web sites, … etc

Related web sites.

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.
- Database laboratory

Course coordinator:

Dr. Arabi Keshk

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
كلية الحاسبات والمعلومات
قسم علوم الحاسب

COURSE SPECIFICATION

(COMPUTER NETWORKS-1)

Programme(s) on which the course is given	CS and IT
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	3rd Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Computer Networks-1			Code	CS361	
Credit Hours	Lecture	3	Tutorial	1	Practical	2
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand Internet architecture and its layers
- Understand the fundamental concepts of computer network
- Understand the OSI and TCP/IP models

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

b4 Solve computer science problems with pressing commercial or industrial constraints.

b5 Integrate and evaluate information and data from a variety of sources.

b7 Work with and model computer systems at different and appropriate levels of abstraction.

c- Professional and practical skills

c1 Plan and undertake a major individual project.

c3 Give technical presentations suitable for the time, place and audience.

c6 Use appropriate computer-based design support tools

c7 Apply computer science skills in a commercial or industrial environment.

d- General and transferable skills

d3 Work effectively with and for others.

d4 Strike the balance between self-reliance and seeking help when necessary in new situations.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Computer Network Basics • Basics of Computer Hardware • Basics of Computer Software • Basic Networking Terminology	3	3	3
2 The OSI Model • General Model of Communication • The OSI Reference Model • Comparison of the OSI Model and the TCP/IP Model	6	6	12
3 Local Area Networks • Introduction • Topology • Network Devices	3	3	6
4 Layer 1 • Electricity Basics • Media • Cable Specification and Termination • Making and Testing Cable • Collisions and Collision Domains	6	6	12
5 Layer 2 • LANs and the Data Link Layer • MAC Addressing • Token Ring Basics • Layer 2 Devices	6	6	12
6 Data Transmission • Concepts and Terminology • Analog and Digital Data Transmission • Transmission Impairments • Channel Capacity	6	6	12
7 Data Encoding Techniques • Digital Data, Digital Signals • Encoding Schemes • Digital Data, Analog Signals • Modulation Techniques • Analog Data, Digital Signals • Analog Data, Analog Signals	6	6	12

8 Data Link Control • Flow Control • Error Detection • Error Control • Frame Structure • HDLC Operation	6	6	12
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Practical training / lab
4.6 Case study

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] Gallo Michael A, Computer Communications and Networking Technologies, 2002
[2] Heap Gary, CCNA Practical Studies, 2002
[3] A book prepared and edited by the lecturer, and approved by the department council

6-d Periodicals, Web sites, … etc

IEEE transactions on Networks

7- Facilities required for teaching and learning

- Networks laboratory.
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Waiel Shawkey

Head of Department:

Prof. Nabil Abd El-Wahed Ismail

Date: / /

COURSE SPECIFICATION

(MULTIMEDIA)

Programme(s) on which the course is given	IT and CS
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Information Technology
Academic year / Level	4th Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Multimedia				Code	IT451	
Credit Hours	Lecture	3	Tutorial	-	Practical	3	
	Total				6		

B- Professional Information

1- Overall aims of course

- Understand the mean of multimedia and how to use it.
- Understand each multimedia components formats and processing operation.
- Understand the problems of multimedia sources transmission, and the need to compression.
- Understand the different types of compression.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

b- Intellectual skills

b5 Integrate and evaluate information and data from a variety of sources.

b6 Be creative in the solution of problems and in the development of designs.

c- Professional and practical skills

c6 Use appropriate computer-based design support tools

c7 Apply computer science skills in a commercial or industrial environment.

d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction	9	3	6
2 Digitization Principles • Analog Signals • Encoders and Decoders • Quantization • HTML Language	12	3	9
3 Sound • The Nature of Sound • Digitizing Sound • Quantization • Dithering • Processing Sound • Noise Gate • Compression • Masking • MPEG Audio • MIDI Audio • Sound Waves • RIFF File Structure • Pulse Code Modulation	18	9	9
4 Video • Human Perception of color. • NTSC and PAL Systems • Digital sampling • HDTV format • SIF format • Higher resolution of CIF • QCIF format • Moving pictures • Video Digitization • Video Artifacts • Video Compression • Preparing Video for Multimedia Delivery • Streamed Video & Video Conference	15	9	6
5 Multimedia Communication Basics	21	9	12

• Introduction • Transmission Media • Sources of Signal Impairment • Asynchronous Transmission • Synchronous Transmission • Error Detection Method • Multimedia Editing Softwares			
6 Optical Communication Basics • Introduction • Optical Networks for Multimedia Applications • Types of optical fiber cables • Problems of Optical Networks • Laser compression	3	3	---
7 Animation • Sequence of image files • Animated GIF • key frame animation • Motion graphics • 3-D animation • Hybrid Forms of Animation • Applications	6	6	---
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures
4.2 Practical experiments in the laboratory.
4.4 Exercises and tutorials.
4.4 Research assignments.
4.5 Project.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	

Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1]Chapman, Nigel P. Chapman , Digital Multimedia , John wiley ans Sons LTD 2000 .

[2] Halsall Fred, Multimedia Communication: Techniques, Standards, and Networks.,Addison wesley 2000

[3] Fred T. Hofstetter, Patricia Fox ,Multimedia Literacy, McGraw-Hill Companies 1997

6-d Periodicals, Web sites, … etc

http://www.webstyleguide.com/multimedia/applications.html

7- Facilities required for teaching and learning

- Multimedia laboratory prepared to serve the course with computers, Softwares and multimedia devices.
- Digital Multimedia devices like as digital video camera, scanner, digitizers, etc.
- Multimedia Softwares to edit and combine the multi media sources. Data-show, screen, and laptop computer to facilitate the teaching process

Course coordinator:

Dr.Kamel Ali Arram

Head of Department:

Prof. Mohiy M. Hadhoud

Date: / /

COURSE SPECIFICATION

(MATHEMATICS-1)

Programme(s) on which the course is given	CS, IS, IT and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Operation Research & Decision Support
Academic year / Level	1st Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Mathematics-1**			**Code**	**MA111**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**3**	**Practical**	**-**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- learn the students a number of basic concepts en techniques and to learn them how to use these in a number of specific applications
- To present, after some preparation and revision, the basic mathematical methods of differential and integral calculus

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a1 Know and understand the essential mathematics relevant to computer science.

b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

c- Professional and practical skills

d- General and transferable skills

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial / Practical
1 Functions and Limits • Functions and Their Graphs • Operations on Functions • The Trigonometric Functions • Introduction to Limits • Limit Theorems • Continuity of Functions	12	6	6
2 The Derivative • The Derivative • Rules for Finding Derivatives • Derivatives of Sines and Cosines • The Chain Rule • Leibniz Notation • Higher-Order Derivatives • Implicit Differentiation	6	3	3
3 Applications of the Derivative • Maxima and Minima • Monotonic and Concavity • Local Maxima and Minima • Economic Applications • Limits at Infinity, Infinite Limits • Sophisticated Graphing • The Mean Value Theorem	9	6	3
4 The Integral • Ant derivatives • Differentials and Approximations • Introduction to Differential Equations • Integration by Substitution • Some Trigonometric Integrals • Integration by Parts	15	9	6
5 Applications of the Integral • The Area of a Plane Region • Volumes	6	3	3
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lecture
4.2 Class activities

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, exercises, and final written exam to assess knowledge and understanding

5.a.2 Regular oral and written quizzes to assess intellectual skills.

5.a.3 Reports, assignments, and discussions to assess general and transferable skills.

5-b Assessment schedule

Assessment 1	8th week.
Assessment 2	14th week.
Assessment 3	17th -18th weeks (final written exam).

5-c Weighting of assessments

Mid-term examination	20%
Final-term examination	70%
Oral examination.	--
Practical examination	--
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

[1]Zill Dennis G , Advanced Engineering mathematics , 2000
[2]Kreyszig Erwin , Advanced Engineering Mathematics, 1999
[3]Latorre Donald , Calculus Concepts, 1998
[4]Latorre Donald , Calculus Concepts an Informal Approach To the Math,1998

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

IEEE transactions on operation research

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Waiel Fathy

Head of Department:

Prof. Waiel Fathy

Date: / /

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
كلية الحاسبات والمعلومات
قسم علوم الحاسب

COURSE SPECIFICATION

(MATHEMATICS-2)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Operation Research & Decision Support
Academic year / Level	1st Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Mathematics-2			Code	MA112	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Solve ordinary differential equation
- Find the Laplace transform, inverse Laplace transform or Fourier series of a given function
- Use Laplace transforms to solve ODE's
- Understand the basic knowledge of the rules of matrix algebra
- Solve a system of linear equation

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a1 Know and understand the essential mathematics relevant to computer science.

b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

c- Professional and practical skills

d- General and transferable skills

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction	3	3	3
2 Ordinary differential equations • First order Speraple DE's. • First order homogeneous DE's. • First order exact DE's. • First order DE's with linear coefficients. • Non exact DE's. • Second order first degree DE's. • Homogeneous Equations with Constant Coefficients.	18	9	9
3 Laplace transforms • Transforms of standard functions. • Transforms of periodic functions. • Laplace transforms of some further special functions • Theorems relating to inversion. • Use of Laplace transforms in solving ODE's. • Applications	12	6	6
4 Fourier series • Periodic functions. • Fourier Theorem. • Calculating coefficients of Fourier series. • Even and odd functions. • Change of Interval.	12	6	6
5 Z Transforms • Definition of the Z-transform. • Transforms of simple sequences. • Solution of difference equations. • Relation between Laplace and Z transforms.	12	6	6
6 Matrices Algebra • Introduction • Special matrices. • Elementary operation for matrices. • Properties of determinant. • Inverse of matrices • Application of determinant to systems(Cramer's Rule)	12	6	6

7 Applications of matrices algebra • Matrix representation of a linear system. • System of Linear Equations: Gaussian Elimination. • System of equation in two variables. • System of equation in three variables. • Computation of eigenvalues • Computation of eigenvectors • Digitalization. • Matrices of power n	12	6	6
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Exercises and tutorials

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5^{th} week.
Assessment 2	8^{th} week.
Assessment 3	10^{th} week.
Assessment 4	17^{th} -18^{th} weeks *(final written exam)*

5-c Weighting of assessments

Mid-term examination	20%
Final-term examination	70%
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

http://archives.math.utk.edu
http://www.scottlan.edu/lriddle/women/

7- Facilities required for teaching and learning

- Matlab Software.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Waiel Fathy

Head of Department:

Prof. Waiel Fathy

Date: / /

COURSE SPECIFICATION

(DISCRETE MATHEMATICS)

Programme(s) on which the course is given	CS, IS, IT and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Operation Research & Decision Support
Academic year / Level	1st Year / 1st Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	Discrete Mathematics			Code	MA131	
Credit Hours	Lecture	3	Tutorial	3	Practical	
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand the logic, sets, function and relations.
- Understanding and applying of mathematical reasoning.
- Using the Boolean algebra and Logic circuits.
- Perform various operations with relations and functions (congruence, methods of proof, induction, recursion, etc...).
- Explain and use the concepts of graphs and trees.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a1 Know and understand the essential mathematics relevant to computer science.

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction

of computer systems

c- Professional and practical skills

d- General and transferable skills

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 Introduction	3	3	-
2 Logic, Sets and Function • Logic, propositions, and predicates. • Compound Statements. • Truth Tables • The Algebra of Propositions • Sets, Operations on Sets. • Functions. • One-to-One, and Onto Functions • Inverses and Composition of functions • One-to-One Correspondence • Sequences and summations. • Mapping.	18	9	9
3 Mathematical Reasoning • Rules of inference. • Methods of proofs, • Mathematical induction. • Recursive definitions, • recursive Algorithms • Proof by contradiction • Program correctness.	**12**	**6**	**6**
4 Relations • Relations and properties • representing relations • closures of relations, • equivalence of relations • Partial ordering.	**12**	**6**	**6**
5 Graphs • Introduction to graphs • Directed and undirected graphs • graph terminology, • representing graphs, • Connectivity. • Graph Isomorphism • Euler and Hamilton paths, • shortest path problems • Traveling Salesperson problems • CPM(Critical Path Method) • Planar graph.	**18**	**9**	**9**
6 Trees	12	6	6

• Introduction to trees. • Application of trees. • Tree traversal. • Trees and sorting. • Spanning trees. • Minimum spanning trees.			
7 **Boolean Algebra** • Boolean functions • representing Boolean functions • Logic gates • Simplification • Half, and full adders.	9	3	6
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Practical training / lab
4.6 Case study
4.7 Exercises and tutorials.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, exercises, and final written exam … ***to assess*** knowledge and understanding.
5.a.2 Regular oral and written quizzes ……. ***to assess*** …intellectual skills.
5.a.3 Reports, assignments, and discussions ……. ***to assess*** …general and transferable skills.

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (Oral)
Assessment 5	17th -18th weeks *(final written exam)*

5-c Weighting of assessments

Mid-term examination	10%
Final-term examination	70%
Oral examination.	10%
Practical examination	0%
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] Dossey, John A. et al, Discrete Mathematics, 3rd edition, Addison-Wesley, Reading, MA.
[2] Johnsonbaugh, Richard, Essential Discrete Mathematics, MacMillan Publishing Co., NY.
[3] Roman, Steven. An Introduction to Discrete Mathematics, 2nd edition, Saunders, NY.
[4] Rosen, Kenneth h. Discrete Mathematics and Its Applications, 2 ed, McGraw/Hill
[5] Barnett, Steven. Discrete Mathematics, Addison Wesley, Reading, MA .
[6].Discrete Mathematics and its Application, Kenneth H. Rosen, McGraw-Hill International Edition,1981. 6.4- Periodicals, Web Sites, … etc

6-d Periodicals, Web sites, … etc

IEEE transactions on Mathematics

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Waiel Fathy

Head of Department:

Prof. Waiel Fathy

Date: / /

COURSE SPECIFICATIONS

(STATISTICS AND PROBABILITY)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Information Technology
Academic year / Level	1st Year / 2nd Semester
Date of specification approval	9/5/2006

A- Basic Information

Title	**Statistics and Probability**			**Code**	**ST111**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**3**	**Practical**	**-**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Understand the principles and theories probability theories and basics of statistics
- Understand methods of processing statistical data
- Understand and application of statistical data.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a1 Know and understand the essential mathematics relevant to computer science.

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

c- Professional and practical skills

d- General and transferable skills

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial / Practical
1 Elementary probability and the binomial distribution • Introduction • Probabilities of Simple Events • Probabilities of Two Events • Probabilities for Combinations of Three or More Events • Permutations and Combinations • More Probability • The Binomial Distribution • The Theoretical Mean of the Binomial Distribution • The Theoretical Variance of the Binomial Distribution • Exercises	9	9	18
2 The normal distribution • Introduction • The Normal Distribution • Use of Standard Normal Tables • More Normal Probabilities • The Normal Approximation to the Binomial Theorem • Exercises	6	6	12
3 Statistics • The Present Importance of Statistics • Two Kinds of Statistics • Description of data. • Selecting a Random Sample • Classification of Data • Frequency Distributions and Cumulative Frequency Distributions • Graphical Representation of Data • Exercises	6	6	12
4 Measures of location • Introduction • The Mid-range • The Mode • The Median • The Arithmetic Mean • The Median of Classified Data • Summation Notation • The Mean of Classified Data • Exercises	6	6	12

5 Measures of variation • Introduction • The Range • The Mean Absolute Deviation • The Variance and the Standard Deviation • The Variance and Standard Deviation of Classified Data • Exercises	**3**	**3**	**6**
6 Some tests of statistical hypotheses • Introduction • The Nature of a Statistical Hypothesis—Two Types Error • Test of H0: $\pi = \pi_0$ versus a Specified Alternative • Tests about the Mean of a Normal Distribution • Exercises	**6**	**6**	**12**
7 Confidence LIMITS • Introduction • A Note on Inequalities • Confidence Intervals for μ • Confidence Interval for π • Exercises	**6**	**6**	**12**
8 Appendix: tables • Area of the Standard Normal Distribution • χ^2 -Distribution, • t-Distribution, and • F-Distribution	**-**	**-**	**-**
Total number of Hours for the course	**42**	**9 42**	**84**

4- Teaching and learning methods

4.1 Reports, assignments, exercises, and final written exam to assess knowledge and understanding.

4.2 Regular oral, practical and written quizzes to assess intellectual skills.

4.3 Reports, assignments, and discussions to assess general and transferable skills

4.4 Reports, assignments, exercises, and final written exam to assess knowledge and understanding.

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	17th -18th weeks *(final written exam*

5-c Weighting of assessments

Final-term examination	70%
Mid-term examination	20%
Semester practical work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] Advanced Engineering Mathematics, 8th edition, Erwin kreyszig, © 1999 by John wiley & sons, Inc., 0-471-33328-x
[2] Engineering Statistics, Second edition, Douglas C. Montgomery, George C. Runger, Norma F. Hubele, © 2001 by John wiley & sons, Inc., 0-471-38879-3
[3] Elementary Probability, David Stirzaker, © Cambridge Universty Press, 1994, 0-521-56694-0

6-d Periodicals, Web sites, … etc

None

7- Facilities required for teaching and learning

Computer Lab
Datashow, screen, and laptop computer.
White board and colored pens

Course coordinator:

Prof. Mohiy M. Hadhoud

Head of Department:

Prof. Mohiy M. Hadhoud

Date: / /

COURSE SPECIFICATIONS

(STATISTICAL METHODS)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Information Technology
Academic year / Level	2nd Year / 2nd Semester
Date of specification approval	9/5/2007

A- Basic Information

Title	Statistical Methods			Code	ST221	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Understand apply the principles of methods used to analyze and interpret data
- Understand and apply the methods of parameter estimation and testing hypothesis about these parameters
- Understand the principles of testing the goodness of fit.
- Understand and apply the principles of calculating and testing multiple regressions.
- Understand and apply the principles of random variables and how to calculate their parameters

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a1 Know and understand the essential mathematics relevant to computer science.

a4 Know and understand the fundamental concepts, principles and theories of computing and computer science covering topics such as algorithms, operating system, programming languages and artificial intelligence.

b- Intellectual skills

b1 Solve a wide range of problems related to the analysis, design and construction of computer systems

c- Professional and practical skills

d- General and transferable skills

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial / Practical
1 Estimation • Introduction • Estimation of a population mean: Large-sample case • Estimation of a population mean: small sample case • Estimation of a population proportion • Estimation of the difference between two population means: Independent samples • Estimation of the difference between two population means: Matched pairs • Estimation of the difference between two population proportions • Choosing the sample size • Estimation of a population variance • Exercises	18	9	9
2 Nonparametric statistics • Introduction • The sign test for a single population • Comparing two populations based on independent random samples: Wilcoxon rank sum test • Comparing two populations based on matched pairs: the Wilcoxon signed ranks test • Rank Correlation: Spearman's rs statistic • Exercises	12	6	6
3 Applications of Hypothesis Testing • Introduction • Hypothesis test about a population mean • Hypothesis tests of population proportions • Hypothesis tests about the difference between two population means • Hypothesis tests about the difference between two proportions • Hypothesis test about a population variance • Hypothesis test about the ratio of two population variances • Exercises	12	6	6
4 Categorical data analysis and analysis of variance • Introduction	12	6	6

• Tests of goodness of fit • The analysis of contingency tables • Contingency tables in statistical software packages • Design of experiments • Completely randomized designs • Randomized block designs • Multiple comparisons of means and confidence regions • Exercises			
5 Multiple regression • Introduction: the general linear model • Model assumptions • Fitting the model: the method of least squares • Estimating σ2 • Estimating and testing hypotheses about the B parameters • Checking the utility of a model • Using the model for estimating and prediction • Multiple linear regression: An overview example • Model building: interaction models • Model building: quadratic models • Exercises	18	9	9
6 Random Variables • Continuous Random Variables and Histograms • Probability Density Functions: Uniform, Exponential, and Normal. • Mean, Median, Variance, and Standard Deviation	12	6	6
7 APPENDIX: TABLES • Area of the Standard Normal Distribution • χ^2 -Distribution, • t-Distribution, and • F-Distribution			
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Research assignment
4.2 Lecture
4.3 Class activities
4.4 Sections.

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	17th -18th weeks *(final written exam*

5-c Weighting of assessments

Final-term examination	70%
Mid-term examination	20%
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

None

7- Facilities required for teaching and learning

- Software program.
- White board and colored pens.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Mohiy M. Hadhoud

Head of Department:

Prof. Mohiy M. Hadhoud

Date: / /

COURSE SPECIFICATION

(PHYSICS)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Information Technology
Academic year / Level	1st Year / 2st Semester
Date of specification approval	9/5/2007

A- Basic Information

Title	**Physics**			**Code**	**PH111**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**1**	**Practical**	**2**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Understand the electronic properties of semiconductors and other materials used in optoelectronic devices.
- Give a first acquaintance with the analysis and design of active electronic circuits.
- Illustrate the importance of power electronic devices in electrical systems by studying their characteristics, operation and application.
- Explain the single and simple multistage linear circuits using bipolar transistors.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including

architecture, networks and communication

b- Intellectual skills

b4 Solve computer science problems with pressing commercial or industrial constraints.

c- Professional and practical skills

d- General and transferable skills

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction	6	3	3
2 Diode Circuits • Characteristics of Germanium – and Silicon Diodes • Peak and Average Values Rectification • Amplitude Limiting with Zener diodes • Variable peak Limiting (Clipping) with Diodes • Voltage Doubling Connections • Voltage Multiplier Connections according to Greinacher	12	6	6
3 Zener Diode • Characteristics of Zener-Diodes • Voltage Stabilization With Zener-Diodes	6	3	3
4 Bipolar Transistors • Bipolar Junction Transistors • Output Characteristics of Transistors • AF Amplifier in Emitter circuits	6	3	3
5 Large-Signal Analysis of Bipolar Transistor Circuits • Voltage Stabilizing With Series Pass Transistor I • Differential Amplifier	6	3	3
6 Multivibrator • A stable Multivibrator • Bistable Multivbrator	6	3	3
7 Wien Bridge • Wien Bridge • Sine-Oscillator With Wine Bridge • Colpitts Oscillator	6	3	3
8 Photo Transistor • Characteristics of LDR	6	3	3

• Photo Transistor			
9 Field Effect Transistor Amplifier Circuits • Control Characteristic Of FETS • Output Characteristics Of FETS • Source Basic Circuit LH 11.2 • Monostable Multivibrator With FET	12	6	6
10 Logic Electronic Devices • MOSFETs • Enhancement	6	3	3
11 Electronic Devices for AC/DC control systems • Operational Behavior Of Thyristors • Thyristor In A Dc-Circuit • Sawtooth Generator With UJT • Operational Behavior Of Triacs • Phase-Angle Control with UJT and Triac	12	6	6
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures
4.2 Practical experiments in the laboratory.
4.3 Exercises and tutorials.
4.4 Research assignments.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] A book prepared and edited by the lecturer, and approved by the department council

6-d Periodicals, Web sites, ….. etc

IEEE transactions

7- Facilities required for teaching and learning

- Electronics laboratory.
- Software programs specified in physics.
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. kamel Ali Arram

Head of Department:

Prof. Mohiy M. Hadhoud

Date: / /

Menoufiya University
Faculty of Computers and Information
Department of Computer Science

جامعة المنوفية
كلية الحاسبات والمعلومات
قسم علوم الحاسب

COURSE SPECIFICATION

(OPERATIONS RESEARCH-1)

Programme(s) on which the course is given	CS, IS, IT and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Operation Research
Academic year / Level	2nd Year / 2nd Semester
Date of specification approval	9/5/2007

A- Basic Information

Title	Operations Research-1			Code	OD211	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Should have a working knowledge of the principle techniques and methods of operations research.
- Understand how to formulate problems, construct and solve mathematical models, and apply the systems approach to problem solving.
- Should be able to apply the general concepts of optimization to solve these models.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a7 Understand The basics of the software life cycle, from requirements definition to development and evaluation.

b- Intellectual skills

b7 Work with and model computer systems at different and appropriate levels of abstraction.

c- Professional and practical skills

d- General and transferable skills

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction to Operations Research • Definition and History. • Theoretical Underpinnings • The Interdisciplinary nature of OR. • Introduction to Optimization Models • The nature of LP problems. • Problem formulation. • Advantages, limitations, and solution methods. • The graphical method of solution.	**9**	**6**	**3**
2 LP Applications • Agriculture. • Paper manufacturing. • Finance. • Marketing. • Hospital schedule.	**6**	**3**	**3**
3 LP Solution Methods and Duality. • Preview of the Simplex method. • Formulating problems as mathematical programs. • Problem standardization. • Simplex method for LPs. • Simplex, special cases algorithms. • Duality: motivation, formulation • Strong duality theorem for LPs. • Complementary slackness conditions. • Economic interpretation. • Sensitivity analysis. • Relationship to duality theory. • Dual simplex method.	**12**	**6**	**6**
4 Network models • Transportation problems. • Assignment Problems. • Transshipment problems. • Shortest paths • Spanning trees • Max flows. • Min. cost flows. • Cycle canceling algorithm.	**12**	**6**	**6**

• Network simplex algorithm.			
5 Integer programming and extensions. • formulation techniques, examples • cutting-plane methods, related topics • branch-and-bound, related topics	**9**	**3**	**6**
6 Forecasting • The forecasting situation. • Judgmental Forecasting Methods. • Counting methods. • Moving average and Exponential smoothing • Forecasting Errors.	**6**	**3**	**3**
7 Inventory Models • Inventory systems and their structure. • Inventory costs. • The Economic Order Quantity (EOQ) Model and its application. • Material Requirement Planning (MRP).	**6**	**3**	**3**
8 Simulation • The nature of simulation. • The Methodology of simulation. • Types of simulation. • The Monte Carlo methodology. • Time independent, discrete simulation. • Time dependent, discrete simulation. • Risk analysis. • The role of computers in simulation.	**6**	**3**	**3**
9 Nonlinear programming, Special topics • Basic Notations. • Unconstrained Optimization. • Some search Techniques.	**6**	**3**	**3**
10 Dynamic programming(DP) • The nature of DP. • The sage coach problem. • Terminology and structure.	**6**	**3**	**3**
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities
4.5 Practical training / lab

4.6 Case study.
4.7 Exercises and tutorials

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, exercises, and final written exam ... ***to assess*** knowledge and understanding.
5.a.2 Regular oral and written quizzes ……. ***to assess*** …intellectual skills.
5.a.3 Practical projects, final practical and oral exams …. ***to assess*** professional skills.
5.a.4 Reports, assignments, and discussions …. ***to assess*** general and transferable skills.

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (Oral and practical)
Assessment 5	17th -18th weeks *(final written exam*

5-c Weighting of assessments

Mid-term examination	10%
Final-term examination	70%
Oral examination.	0%
Practical examination	10%
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] An Introduction to Management Science: Quantitative Approaches to Decision Making (7th edition), David R. Anderson, Dennis J. Sweeney, and Thomas A. Williams, West Publishing Co., 1994.
[2] Taha A. H., Operations Research, an Introduction, Macmillan, 1992.
[3] Winston W., Operations Research: Applications and Algorithms, Duxbury Press, 1997.

[4] A book prepared and edited by the lecturer, and approved by the department council.

6-d Periodicals, Web sites, … etc

None

7- Facilities required for teaching and learning

- Modeling and simulation laboratories.
- Software programs specified in operations research.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Waiel Fathy

Head of Department:

Prof. Waiel Fathy

Date: / /

COURSE SPECIFICATION

(ORGANIZATION FUNDAMENTALS)

Programme(s) on which the course is given	CS, IS, IT and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Operations Research
Academic year / Level	2nd Year /1st Semester
Date of specification approval	9/5/2007

A- Basic Information

Title	Organization Fundamentals			Code	OD201	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Explain and apply the principles and theories of organization
- Define the Quantitative analysis
- Explain the linear programming.
- Differentiate between the linear and goal programming.
- Describe the DEA

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.

a7 Understand The basics of the software life cycle, from requirements definition to development and evaluation.

b- Intellectual skills

b7 Work with and model computer systems at different and appropriate levels of abstraction.

c- Professional and practical skills

d- General and transferable skills

d6 Employ discrete mathematical skills as appropriate.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction to Quantitative Analysis • Introduction. • What is Quantitative analysis. • The Quantitative analysis approach. • Possible problem in QA approach. • Development of QA within an organization.	12	6	6
2 linear Programming • History of linear programming. • Model formulation and examples. • The generalized linear programming model. • Graphical interpretation of linear programming. • Special cases • Summary.	18	9	9
3 Analytic Hierarchy Process • Introduction. • The principle of identity and decomposition. • The principle of discrimination and comparative judgment. • Synthesis of priorities. • Hierarchies as representations of complexity. • Comments on dependence. • Summary.	18	9	9
4 Data Envelopment Analysis • Definitions & Notation. • Nonlinear programming model. • DEA LP model. • DEA Dual LP model. • Examples. • Summary of strengths & weaknesses.	18	9	9
5 Goal Programming • Introduction. • Modified simplex method of goal programming. • Computer based solutions of goal programming. • Advanced topics in goal programming. • Summary.	18	9	9
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Research assignment
4.2 Lecture
4.3 Class activities
4.4 Sections

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Problem Solving
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 5	17th -18th weeks *(final written exam)*

5-c Weighting of assessments

Final -term examination	70%
Mid-term examination	20%
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

None

7- Facilities required for teaching and learning

- Software program.
- White board and colored pens.
- Datashow, screen, and laptop computer.

Course coordinator:

Prof. Waiel Fathy

Head of Department:

Prof. Waiel Fathy

Date: / /

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COURSE SPECIFICATION

(ENGLISH LANGUAGE-1)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	English Dept., Faculty of Arts
Academic year / Level	1st year / 1st Semester
Date of specification approval	9/5/2007

A- Basic Information

Title	English Language-1			Code	GN111	
Credit Hours	Lecture	3	Tutorial	2	Practical	1
	Total				6	

B- Professional Information

1- Overall aims of course

- Reading comprehension and structure.
- Making conversation and writing.
- Can translate.
- Explain the Basic English language grammar.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

c- Professional and practical skills

c1 Plan and undertake a major individual project.
c2 Prepare and deliver coherent and structured verbal and written technical reports.
c3 Give technical presentations suitable for the time, place and audience.

d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills.
d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No. of Hours	Lecture	Tutorial/ Practical
1 Introduction	6	3	3
2 Reading comprehension and structure • A Blind Boy. • Omar Ibn Abdul-Aziz. • Saladin. • World History:Hiroshima. • American History. • Philosophy History. • Conservation. • College Library. • The computer Revolution. • Books and Newspapers.	60	30	30
3 Conversation and Writing • Conversation Basics. • Writing Basics.	12	6	6
4 Translation • Translation Basics.	6	3	3
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lecture
4.2 Case study
4.3 Exercises.
4.4 Class activities

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.

5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

None

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.
- White board and colored pens.

Course coordinator:

Dr. Mohamed Ashmawy

Head of Department:

English Department, Faculty of Arts

Date: / /

COURSE SPECIFICATION

(ARABIC LANGUAGE)

Programme(s) on which the course is given	CS, IT, IS and OR
Major or Minor element of programs	Minor
Department offering the program	Computer Science
Department offering the course	Arabic Dept., Faculty of Arts
Academic year / Level	1st Year / 1st Semester
Date of specification approval	9/5/2007

A- Basic Information

Title	Arabic language			Code	GN121	
Credit Hours	Lecture	3	Tutorial	3	Practical	-
	Total				6	

B- Professional Information

1- Overall aims of course

- Help students who are not specialists in Arabic language to know the true expression.
- Understand sentence structure.
- Understand grammar and morphology.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

a5 Recognize and appreciate the professional and ethical responsibilities of the practicing computer professional including understanding the need for quality.

a7 Understand The basics of the software life cycle, from requirements definition to development and evaluation.

b- Intellectual skills

b2 Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations,

and technology.

c- Professional and practical skills

c1 Plan and undertake a major individual project.

c2 Prepare and deliver coherent and structured verbal and written technical reports.

c3 Give technical presentations suitable for the time, place and audience.

d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .

d2 Use IT skills and display mature computer literacy.

3- Contents

Topic	No of hours	Lecture	Tutorial/ Practical
1 Introduction	4	2	2

2 Holy Quran
• Chapter of Al Rahman
• Interpretation of Al Rahman chapter
• Issues from Al Nour chapter
  ○ Rules of the crime of adultery
  ○ Rules of the crime of cursing
  ○ Rules of controlling eye contact
  ○ Rules of marriage
	15	8	7

3 The Prophet's saying • First saying • Second saying • Third saying • Fourth saying	10	5	5

4 Grammar
• Sentence structure
  ○ Noun
  ○ Verb
  ○ Letter
• Parsing
• Structure
• Definite and indefinite
	15	7	8

5 Morphology • Morphological meter • Roots and affixes • Transitive and intransitive • Active and passive	10	5	5
6 Linguistic Studies • Dictionary (expression and concept) • The classical Arabic is based on the Holy Quran. • Criteria of Lexicography	10	5	5
7 Common Errors	10	5	5

8 Poetry	10	5	5
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Information collection
4.2 Research assignment
4.3 Lecture
4.4 Class activities

5- Student assessment methods

5-a Methods

5.a.1 Class test (1) ……. ***to assess*** …Understanding...
5.a.2 Class test (2) ……. ***to assess*** …Understanding...
5.a.3 Reports …… …. ***to assess*** Additional Information
5.a.4 Mid term exam … ***to assess*** gains of completed topics….

5-b Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	17th -18th weeks *(final written exam)*

5-c Weighting of assessments

Mid-term examination	20%
Final-term examination	70%
Oral examination.	-
Practical examination	-
Semester work	10%
Other types of assessment	-
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

[1] book prepared and edited by the lecturer, and approved by the department council

6-d Periodicals, Web sites, … etc

None

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Osama Mousa

Head of Department:

Department of Arabic, Faculty of Arts

Date: / /

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Faculty of Computers and Information
Department of Computer Science

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COURSE SPECIFICATION

(EXPERT SYSTEMS DEVELOPMENT)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer science
Department offering the course	Computer science
Academic year / Level	4th Year / 1st Semester
Date of specification approval	

A- Basic Information

Title	**Expert systems development**			**Code**	**CS473**	
Credit Hours	**Lecture**	**3**	**Tutorial**	**3**	**Practical**	**-**
	Total				**6**	

B- Professional Information

1- Overall aims of course

- Understand the key fundamental concepts and techniques of expert systems
- Covering the topics of expert systems methodology including knowledge engineering, knowledge representation, inference, conflict resolution, languages, and tools.
- Understand the architecture of expert systems.
- Assess a range of methods available to support expert systems development
- Apply a range of techniques for knowledge elicitation and knowledge representation

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

a1 Understand the concepts and characteristics of an Expert System.
a2 Understand the concepts and characteristics of an Artificial Intelligence.
a3 Having knowledge of theoretical foundation of representation.

a4 Understand different knowledge representation formalisms.
a5 Having knowledge with different software tools and architectures used in Expert Systems.
a6 Having knowledge with advanced topics in Expert Systems.

b- Intellectual skills

b1 Capable of solving problems.
b2 Evaluating outcomes and alternatives.
b3 Analyzing an real world application to develop an Expert System.
b4 Identify different current and new Expert System shells.

c- Professional and practical skills

c1 Ability to utilize Expert System shells to design expert systems for business related applications
c2 Able to design and develop a prototype Expert System.
c3 Able to use a well known Expert Systems shell.

d- General and transferable skills

d1- Communication skills to build an Expert Systems
d2 Use of technological tools to build an Expert System
d3 Working in group for practical problem solving.
d4 Computing skills to produce systems for problem solving.

3- Contents

Topic	No. of Hours	Lecture	Tutorial /Practical
1 What are Expert Systems? • The characteristics of an expert system. • Overview of the text • Research topics in expert systems • What is the state of the art	3	1:30	1:30
2 An overview of Artificial Intelligence • The Classical period: game playing and theorem proving • The Romantic period: computer understanding • The Modern period: techniques and applications	3	1:30	1:30
• Representation and Control • Representation and artificial intelligence • Representation in STRIPS • Knowledge representation and expert systems	3	1:30	1:30
3 Automated Reasoning • Normal forms • The resolution principle • Proof search in resolution systems	6	3	3

• Some formal properties of logistic systems			
4 Representing Uncertainty • Sources of uncertainty • Expert systems and probability theory • Vagueness and possibility • Uncertainty in AI systems	6	3	3
5 Symbolic Computation • Symbolic representation • Physical symbol systems • Implementing symbol structures in LISP • Why LISP is almost wonderful	3	1:30	1:30
6 Production Systems • Canonical systems • Producing systems for problem solving • Controlling the behavior of the interpreter	3	1:30	1:30
7 Associative Nets and Frame Systems • Graphs, trees and networks • The rise of associative networks • Representing typical objects and situations	3	1:30	1:30
8 Object-Oriented Programming • Prototypes, perspectives and procedural attachment • FLAVORS and LOOPS • Common LISP Object System	3	1:30	1:30
9 Procedural Deduction • Procedural deduction in PLANNER • PROLOG and MBASE • Meta-level inference in MRS	3	1:30	1:30
10 Comparison of Representations • The pros and cons of production rules • The pros and cons of structured rules • The pros and cons of procedural rules	3	1:30	1:30
• Knowledge Elicitations • Theoretical analyses of Knowledge acquisition • Expert system shells • Automating Knowledge elicitation in OPAL	3	1:30	1:30
11 Heuristic Classification • Classifications of expert system tasks • Classifications problem solving • Classifications versus construction • Mapping tools to tasks • Heuristic classification in MUD and MORE • Evaluating MORE	6	3	3

12 Hierarchical Hypothesize and Test • Motivation and overview • Structured objects in CENTAUR • Model-based reasoning in INTERNIST • TDE as Knowledge Engineering workbench	3	1:30	1:30
13 Constructive Problem Solving • Motivation and Overview • A case study: RI/XCON • Elicitation, evaluation and extensibility • Construction strategies • An architecture for planning and meta-planning • Eliciting, representing and applying design knowledge • Summary of constructive problem solving	6	3	3
14 Designing for Explanation • Survey of early work on explanation • Explanation in CENTAUR • Explanation and automatic programming • Explanation facilities and future research	3	1:30	1:30
15 Tools for Building Expert Systems • Overview of expert system tools • Expert system shells • High-level programming languages • Multiple-paradigm programming environments • Abstract architectures • Additional modules	6	3	3
16 Potential Implementation Problems • common pitfalls and how to avoid them • Selecting a software tool • How easy is it to use these tools? • What is good programming style? • More maxims on expert system development	6	3	3
17 Truth Maintenance Systems • Keeping track of dependencies • Revising propositional theories • Nonmonotonic justifications • Maintaining multiple contexts • Summary and comparison of TMSs	3	1:30	1:30
18 Diagnosis from First Principles • Basic assumptions of the approach • Reiter's theory of diagnosis • Comparison with other approaches	3	1:30	1:30
19 Formal Models of Plausible inference • Dempster-Shafer theory • Pearl's theory of evidential reasoning in a hierarchy	3	1:30	1:30

• Comparing methods of inexact reasoning • Summarizing the state of uncertainty			
20 Rule Induction by Machine Learning • Overview of learning • Early work: META-DENDRAL • Induction of decision rules in PLANT/DS • Induction of decision trees in ID3 • Recent work in tuning rule sets.	3	1:30	1:30
Total sum	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Lectures
4.2 Practical programs in the laboratory.
4.3 Research assignments

5- Student assessment methods

5-a- Methods

5.a.1 Reports, assignments, exercises, and final written exam to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.

5-b- Assessment schedule

Assessment 1	5th week.
Assessment 2	8th week.
Assessment 3	10th week.
Assessment 4	16th week (Oral and practical)
Assessment 5	17^{th} -18^{th} weeks *(final written exam*

5-c- Weighting of assessments

Mid-term examination	15%
Final-term examination	70%
Oral examination.	5%
Practical examination	-%
Semester work	5%
Other types of assessment	5%
Total	100%

6- List of references

6-b- Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-c- Essential books (text books)

None

6-d- Recommended books

[1] Peter jackson, “Introduction to Expert Systems”, Addison Wesley, 1990

6-e- Periodicals, Web sites, … etc

IEEE transactions on computers, software

7- Facilities required for teaching and learning

- Datashow, screen, and laptop computer.
- White board and colored pens

Course Coordinator:

Dr. Hatem Mohammed Said Ahmed

Head of Department:

Prof. Gamal Farouk

Date: / /

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COURSE SPECIFICATIONS

(LANGUAGE PROCESSING)

Programme(s) on which the course is given	Computer Science
Major or Minor element of programs	Major
Department offering the program	Computer Science
Department offering the course	Computer Science
Academic year / Level	4th Year / 2nd Semester
Date of specification approval	9/5/2007

A- Basic Information

Title	Language Processing			Code	CS436	
Credit Hours	Lecture	3	Tutorial	-	Practical	3
	Total				6	

B- Professional Information

1- Overall aims of course

- Brings together theories and techniques from linguistics, psycholinguistics and computer science
- Understand computational aspects of the human language faculty
- Develop formal models that reflect aspects of the human language faculty and to implement these models in computational form.
- Brings theoretical models into a mutually beneficial interaction with engineering and software design issues.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding

a6 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics.

b- Intellectual skills

b3 Identify a range of solutions and critically evaluate and justify proposed design solutions.

b6 Be creative in the solution of problems and in the development of designs.

c- Professional and practical skills

c1 Plan and undertake a major individual project.

c4 Use the scientific literature effectively and make discriminating use of Web resources.

c5 Design, write and debug computer programs in appropriate languages.

c7 Apply computer science skills in a commercial or industrial environment.

d- General and transferable skills

d1 Display an integrated approach to the deployment of communication skills .

d2 Use IT skills and display mature computer literacy.

d9 Choose and formulate suitable strategies to accomplish well-defined goals.

3- Contents

Topic	No. of Hours	Lecture	Tutorial / Practical

1 Introduction
• The Role of Knowledge in Speech and Language Processing
• Models and Algorithms
• Language, Thought, and Understanding
  • The Turing Test
• The State of the Art and the Near-Term Future
• A Short History of Speech and Language Processing
  • Foundational Insights: 1940s and 1950s
  • The Two Camps: 1957-1971
  • Natural Language Processing: 1972-1983
  • Generation and Finite-State Models: 1983-1993
  • The Field Comes Together: 1994-1999
  • A Brief Note on Psychology
• Summary
• Bibliographical And Historical Notes
• Exercises
	18	9	9

2 Regular Expressions and Automata Regular Expressions Basic Regular Expression Patterns Disjunction, Grouping and Precedence Memory Advanced Operators Finite State Automata Using an FSA to Recognize Sheeptalk Formal Languages Nondeterministic FSAs Using and NFSA to Recognize Strings Recognition as Search Relating Deterministic and Nondeterministic Automata Regular Languages and FSAs Summary Bibliographical And Historical Notes Exercises	18	9	9
3 Morphology and Finite-State Transducers Summary of (Mostly) English Morphology Inflectional Morphology Derivational Morphology Finite-State Morphological Parsing The Lexicon and Morphotactics Morphological Parsing with Finite-State Transducers Orthographic Rules and Finite-State Transducers Combining an FST Lexicon and Rules Lexicon-Free FSTs: The Porter Stemmer Human Morphological Processing Summary Bibliographical and Historical Notes Exercises	12	6	6
4 Computational Phonology and Pronunciation Modeling Introduction Speech Sounds and Phonetic Transcription The Vocal Organs	18	9	9

Consonants: Places of Articulation Consonants: Manner of Articulation Vowels The Phoneme and Phonological Rules Phonological Rules and Transducers Mapping Text to Phones for TTS Pronunciation Dictionaries Beyond Dictionary Lookup: Text Analysis An FSA-Based Pronunciation Lexicon English Pronunciation Variation Summary Bibliographical And Historical Notes Exercises			
5 N-gram Models of Syntax Counting Words in Corpora Simple (Unsmoothed) N-grams Smoothing Add-One Discounting Witten-Bell DIscounting Good-Turing Discounting Backoff Combining Backoff with Discounting Deleted Interpolation N-grams for Spelling and Pronunciation Real Word Spelling Errors N-grams for Pronunciation Modeling Entropy Cross Entropy for Comparing Models The Entropy of English Summary Bibliographical And Historical Notes Exercises	18	9	9
Total number of Hours for the course	**84**	**42**	**42**

4- Teaching and learning methods

4.1 Research assignment
4.2 Lecture
4.3 Class activities
4.4 Sections.

5- Student assessment methods

5-a Methods

5.a.1 Reports, assignments, and exercises to assess knowledge and understanding.
5.a.2 Regular oral, practical and written quizzes to assess intellectual skills.
5.a.3 Practical projects, final practical and oral exams to assess professional skills.
5.a.4 Reports, assignments, and discussions to assess general and transferable skills.
5.a.5 Final written exam to assess knowledge and understanding.

5-b Assessment schedule

Assessment 1	5th week.	Mid term exam
Assessment 2	8th week.	
Assessment 3	10th week.	
Assessment 4	16th week (Oral and practical)	
Assessment 5	17th -18th weeks (final written exam)	

5-c Weighting of assessments

Semester work	10%
Mid-term examination	10%
Oral / Practical examination.	20%
Final-term examination	60%
Total	100%

6- List of references

6-a Course notes

There are lectures notes prepared in the form of a book authorized by the department

6-b Essential books (text books)

None

6-c Recommended books

None

6-d Periodicals, Web sites, … etc

None

7- Facilities required for teaching and learning

- Software program.
- White board and colored pens.
- Datashow, screen, and laptop computer.

Course coordinator:

Dr. Hatem Mohammed Said Ahmed

Head of Department:

Prof. Gamal Farouk

Date: / /