



Benha University
Faculty of Science
Department of Mathematics



M.Sc. Computer Science PROGRAM PROGRAM SPECIFICATION



Program Specification

A. Basic Information

Program Title: M.Sc. Computer science
Program Type: Single
Department: Mathematics
Coordinator:
Assistant Co-ordinator:
Dates of program specifications approval: 14/11/2012

B. Professional Information

1. Program Aims

- a) Extend student's comprehension of key Computer science concepts and provide them with an indepth understanding of specialized areas of Computer science and their applications.
- b) Prepare students effectively to doctoral studies in Computer science and to professional employment in related area.
- c) Understand the significance ability for sustaining learning throughout his/her career, whether in an academic role, or in other employment.
- d) Offer students a flexible educational framework that enables them to specialize or maintain a broad course of study.
- e) Offer advanced courses in Computer science to help establishing the necessary background needed for scientific research in Computer science.
- f) Develop students' skills to recognize and use various types of reasoning within an environment committed to excellence in research.
- g) Provide students with a broad and balanced foundation of knowledge and practical skills in mathematics, computer sciences, statistics and computing.
- h) Provide the necessary skills and training for further study or research in Computer science.
- i) Introduce students to a wide range of applications of Computer science.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

By the end of the master's program in Computer science graduate must be able to:

- a1. Explain main concepts, fundamentals, specialized knowledge and professional practice in Computer science.



- a2. Identify mutual influence between professional practice and its impacts on the environment.
- a3. Understand scientific developments in the area of Computer science.
- a4. Explain legal and ethical principles for professional practice in Computer science.
- a5. Express theories, principles and fundamentals of quality in professional practice in Computer science.
- a6. Discuss the basics and ethics of scientific research.

b. Intellectual Skills

By the end of the master's program in Computer science graduate must be able to:

- b1. Analyze and evaluate the information in the field of Computer science and analogies to solve real world problems.
- b2. Solve specialized problems in case of non-availability of some data.
- b3. Link between different knowledge to solve professional problems.
- b4. Conduct a research study and / or write a methodology of a scientific study on a research problem in the field of computer science.
- b5. Perform risk assessment in professional practices in the area of computer science.
- b6. Plan to improve performance in the area of specialization.

c. Professional and Practical Skills

By the end of the master's program in Computer science graduate must be able to:

- c1. Present and evaluate research results objectively.
- c2. Use an understanding of the limits of accuracy of theoretical and problems applicable in the disciplines of Computer Science.
- c3. Apply rules and techniques of Computer Science to model and solve real world problem.
- c4. Write and present professional reports.
- c5. Use mathematical software to solve different applications.

d. General Skills

By the end of the master's program in Computer science graduate must be able to:

- d1. Effective communication in its different forms.
- d2. Use of information technology to serve the professional practice.
- d3. Self-evaluation and ability to identify personal learning needs.



- d4. Use different sources for information and knowledge in Computer science.
- d5. Assess the relevance and importance of ideas of others.
- d6. Evaluate own performance and working standards and those of others.
- d7. Work in a team, and leading teams in various professional contexts.

3- Academic standards of the program

The Academic Reference Standards (ARS) of this program compile with the Standard Criteria for Postgraduate Programs published by the National Authority of Quality Assurance and Accreditation of Education in (2009). Specific Academic Reference Standards for M.Sc. in Goology were approved by the Council of Faculty of Science, Benha University in --/--/2015 (**Appendices 1, 2, 3, 4, 5 and 6**).

4- Reference indices (Benchmarks)

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5- Curriculum structure and contents of program

a- Program duration: 2 years

b- Program structure:

- 15 compulsory credit hours.
- 9 elective credit hours.
- 24 credit hours for the preparation of final thesis.
- Total crd hrs. 48

d- Program Courses:

Compulsory courses:

No.	Code No.	Course Title	No. of hours		
			Lectures	Practical	Credit hours
1	661 MC	Selected Topics in databases	3	-	3
2	662 MC	Distrubution systems (1)	3	-	3
3	663 MC	Artifical intelegent	3	-	3
4	664 MC	Compiler language	3	-	3
5	665 MC	Computional theory	3	-	3
6	699 MC	Master Thesis.		-	24

Elective courses:

No.	Code No.	Course Title	No. of hours		
			Lectures	Practical	Credit hours
1	666 MC	Selected topics in computional methods	3	-	3
2	667 MC	Image processing (1)	3	-	3
3	668 MC	Information security(1)	3	-	3



4	669 MC	Mathematical logic for computer science	3	-	3
5	670 MC	Parallel systems	3	-	3
6	671 MC	Abstract algebra and its application	3	-	3
7	672 MC	Selected topics in computer science	3	-	3
8	673 MC	cyncloization	3	-	3
9	674 MC	Coplex theory	3	-	3
10	675 MC	Information security(2)	3	-	3
11	676 MC	Cryptography	3	-	3
12	677 MC	Distrubution systems (2	3	-	3
13	678 MC	Image processing (2)	3	-	3
14	679 MC	Selected topics in computer science	3	-	3
15	681 M	Scientific research skills	2	-	2
16	682 M	Special Course	3	-	3
17	690 M	seminar	2	-	2

6- Contents of the Courses

See course specification (**Appendix 7 and 8**)

7- Program admission requirements

Admission is achieved on the basis of:

- Completion of a B.Sc. degree or any equivalent Arabic or international certificate.
- Passing the TOFEL test with the score determined by the University Council.
- Meeting any additional conditions the college and university deems necessary to register for the M.Sc. degree.

8- Regulations for progression and program completion:

- According to the law of Benha Faculty of Science - the regulations for progression and program completion - the graduate must pass:
 - 15 compulsory credit hours.
 - 9 elective credit hours.
 - 24 credit hours for preparing the M.Sc. Thesis.
- 3 computer courses.
- 2 seminars approved by Department Council.
- Student is considered absent, if he/she misses the final written exam with no acceptable excuse.



9- Methods and rules of evaluation of students in rolled in the program:

▪ Courses evaluation:

Method of Assessment		Percent
1-	Final Oral Exam	20%
2-	Final Term Examination	80%
Total		100%

▪ Master's Thesis evaluation:

5-1. The senior supervisor reports.

5-2. Individual Reports of the Judging Committee (Three specialist professors including the senior supervisor).

5-3. The Public Discussion

5-4. The Common Report of the Judging Committee.

5-5. Department, Faculty and University Boards.

• Assessment Recommendations:

-The Judging Committee has to recommend one of the following:

- Accepting the thesis as it is.

- Accepting the thesis and recommends awarding after correction performing.

- Delaying awarding for maximum three months to perform corrections.

- Re-displaying the thesis to the judging committee within limited period.

- Rejecting the thesis at all.

10- Methods of program evaluation:

Samples	Tool
1- Senior Students	Questionnaire
2- Alumni	Questionnaire
3- External Evaluators	Reports
4- Stakeholders	Questionnaire, workshops, seminars, conferences

Head of the Department: Prof. Dr. Abdel Kareem Soliman

Program coordinator:

Date: 2015/2016



Benha University
Faculty of Science
Department of Mathematics



M.SC. PURE MATHEMATICS PROGRAM PROGRAM SPECIFICATION



Program Specification

A. Basic Information

Program Title: M.Sc. Pure Mathematics
Program Type: Single
Department: Mathematics
Coordinator:
Assistant Co-ordinator:
Dates of program specifications approval: 14/11/2012

B. Professional Information

1. Program Aims

- a) Extend student's comprehension of key mathematical concepts and provide them with an indepth understanding of specialized areas of mathematics and their applications.
- b) Prepare students effectively to doctoral studies in mathematical sciences to professional employment in related area.
- c) Understand the significance ability for sustaining learning throughout his/her career, whether in an academic role, or in other employment.
- d) Offer students a flexible educational framework that enables them to specialize or maintain a broad course of study.
- e) Offer advanced courses in pure mathematics to help establishing the necessary background needed for scientific research in mathematics.
- f) Develop students' skills to recognize and use various types of reasoning within an environment committed to excellence in research.
- g) Provide students with a broad and balanced foundation of knowledge and practical skills in mathematics, computer sciences, statistics and computing.
- h) Provide the necessary skills and training for further study or research in pure mathematics.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

By the end of the master's program in pure mathematics graduate must be able to:

- a1. Explain main concepts, fundamentals, specialized knowledge and professional practice in mathematics.
- a2. Identify mutual influence between professional practice and its impacts on the environment.



- a3. Understand scientific developments in the area of mathematics.
- a4. Explain legal and ethical principles for professional practice in mathematics.
- a5. Express theories, principles and fundamentals of quality in professional practice in mathematics.
- a6. Discuss the basics and ethics of scientific research.

b. Intellectual Skills

By the end of the master's program in pure mathematics graduate must be able to:

- b1. Analyze and evaluate the information in mathematics to solve problems.
- b2. Use integrated approaches to problem solving in various subjects in mathematics.
- b3. Think logically by using the appropriate scientific methods.
- b4. Conduct a research study and/or write a methodology of a scientific study on a research problem.
- b5. Plan to improve performance in the area of mathematics.

c. Professional and Practical Skills

By the end of the master's program in pure mathematics graduate must be able to:

- c1. Present and evaluate research results objectively.
- c2. Use an understanding of the limits of accuracy of theoretical and problems applicable in the disciplines of mathematics.
- c3. Apply rules and techniques of mathematics to model and solve real world problem.
- c4. Write and present professional reports.
- c5. Use mathematical software to solve different applications.

d. General Skills

By the end of the master's program in pure mathematics graduate must be able to:

- d1. Interpret the information, discuss and communicate ideas effectively both orally and in writing using a range of formats.
- d2. Use of information technology to serve the development of mathematics.
- d3. Self-evaluation and ability to identify personal learning needs.
- d4. Use different sources for information and knowledge in mathematics.
- d5. Assess the relevance and importance of ideas of others.
- d6. Evaluate own performance and working standards and those of others.



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d- Program Courses:

Compulsory courses:

No.	Code No.	Course Title	No. of hours		
			Lectures	Tutorial	Credit hours
1	601 MP	Abstract Algebra (1)	3	-	3
2	602 MP	Functional Analysis.	3	-	3
3	603 MP	Mathematical Logic.	3	-	3
4	604 MP	Differential Geometry.	3	-	3
5	605 MP	Topology.	3	-	3
6	699 MP	Master Thesis.		-	24

Elective courses:

No.	Code No.	Course Title	No. of hours		
			Lectures	Tutorial	Credit hours
1	606 MP	Numerical Analysis	3	-	3
2	607 MP	Number theory	3	-	3
3	608 MP	Partial Differential Equations	3	-	3
4	609 MP	Measure theory	3	-	3
5	610 MP	Abstract Algebra (2)	3	-	3
6	611 MP	Complex Analysis	3	-	3
7	612 MP	Groups theory	3	-	3



8	613 MP	Theory of Differential and difference equations	3	-	3
9	681 M	Scientific research skills	2	-	2
10	682 M	Special Course	3	-	3
11	690 M	seminar	2	-	2

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Head of the Department: Prof. Dr. Abdel Kareem Soliman

Program coordinator:

Date: 2015/2016