



Benha University
Faculty of Science
Department of Chemistry



Applied Chemistry

B.Sc. Program Specification



Applied Chemistry B.Sc. Program Specification

A. Basic Information

Program Title: Applied Chemistry B.Sc. Program
Program Type: Single (undergraduate)
Department: Chemistry Department
Coordinator: Dr. Mostafa Y. Nassar

Assistant Co-ordinators: Prof. Wagdy El-Dougdog
Dr. Ayman A Ali
Dr. Hany I. Mohamed

The most recent date of the program specification approval: 9/12/2015 (Faculty council; meeting number, 390)

B. Professional Information

1. Program Aims

The overall aims of the applied chemistry program are to provide the graduate with the following:

- Good knowledge related to different branches of chemistry and industrial chemistry.
- Ability to conduct chemical experiments related to different industrial fields.
- Conducting experimental work and advanced laboratory techniques.
- Managing risks that might face in his practical work.
- Developing the skills and attitude necessary for independent learning and participating effectively in research activities or different areas of work.
- Participating effectively in quality control processes.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

On successful completion of the program, the graduate will be able to:

- Define different chemical concepts of inorganic chemistry.
- State different chemical concepts of analytical chemistry.
- Express different chemical concepts of organic chemistry.
- Identify some fundamentals of physical chemistry.
- Name organic and inorganic compounds.
- Identify chemical formulae of inorganic and organic compounds and units of some parameters.
- Describe characteristics of different states of the matter and elements including trends within the periodic table and the related theories.
- Recognise theories, facts, concepts, fundamentals and techniques related to applied organic and non-organic chemistry.
- Discover differences between natural soap and detergents.
- Describe different types of fats and oils.
- Recognise the polymer and polymerization processes.
- Characterize structure and morphology of different chemical compounds using different spectroscopic and analytical techniques.
- Recognize major types of chemical reactions, their characteristics and mechanisms as well as their kinetics including catalysis.
- State the principles of thermodynamics and quantum mechanics including their ap-



plications in chemistry.

- a.15 Describe the main synthetic pathways and the relation between the properties of individual atoms and molecules.
- a.16 Mention the current issues of chemical research and technological development.

b. Intellectual Skills

By the end of the chemistry program, the graduate will be able to:

- b.1 Differentiate between the different states of the matter, elements and compounds based on the recognition and quantification of the properties.
- b.2 Solve chemical problems using computational softwares.
- b.3 Classify the different types of surface-active agents.
- b.4 Compare between fats, oil, and their properties.
- b.5 Differentiate different polymerization processes.
- b.6 Analyse collected chemical data using some data processing skills.
- b.7 Point out different concepts in different branches of chemistry.
- b.8 Describe the efficiency of chemical systems by applying mathematical relationships.
- b.9 Analyze chemical data to identify the compositions and chemical structures of inorganic and organic compounds.
- b.10 Propose mechanisms for different chemical processes.

c. Professional and Practical Skills

By the end of the chemistry program, the graduate will be able to:

- c.1 Perform standard laboratory procedures in analytical, physical, organic and inorganic chemistry.
- c.2 Assess risk in laboratory work taking into consideration the specific hazards associated with the use of chemical materials as well as the safe and proper operation of the laboratory techniques.
- c.3 Prepare the soap, some selected surface-active agents and some polymers.
- c.4 Design some fats and oil structures.
- c.5 Report observations and measurements of different chemical properties.
- c.6 Report the application of using surface-active agents.
- c.7 Examine the physical and chemical properties of compounds.

d. General Skills

By the end of the chemistry program, the graduate will be able to:

- d.1 Use computers and internet for communication, data handling and word processing.
- d.2 Collaborate effectively with teamwork members to maintain independent and critical thinking, effective time-management and positive communication and cooperation with other members of the teamwork.
- d.3 Solve industrial problems on scientific basis.
- d.4 Effectively manage tasks, time, and resources.
- d.5 Search for information and engage in life-long self-learning discipline.
- d.6 Help raising public awareness of the benefits of conserving intellectual property rights and scientific patents on the individuals and communities.
- d.7 Assess the industrial safety.



3- Academic standards of the program

3.1. The program outcomes are derived from our Academic Reference Standards (ARS) for Single program in Science Faculties (Applied Chemistry).

4- Reference indices (Benchmarks)

4.1. The program outcomes are derived from our Academic Reference Standards (ARS) for Single programs in Science Faculties (Applied Chemistry).

5-Curriculum structure and contents of program

a-Program duration:

The period of study to obtain a B.Sc. degree is 4 academic years. The academic year is divided into two semesters. Each semester extends to 17 weeks. A summer semester extended for 8 weeks is a subject for approval by the faculty council.

b- Program structure:

No. of hours/No of units	Lectures	Practical	Total
	104	36	140

Program	Credit hours
Compulsory	123
Optional	12
Elective	5
Total	140

Program	Credit hours	Percentage
Basic sciences	31	22.14%
Humanities (including language)	5	3.57 %
Specialized courses	99	70.72%
Computer and IT	5	3.57%
Total	140	100 %

- Field training: 6 weeks

c- Program Courses:

- Symbols in the list and their meanings

Connotation	Symbol
University requirement	Ur
Faculty requirement	Fr
Botany	B
Chemistry	Ch
Entomology	E
Geology	G
Mathematics	M
Mathematical Statistics	MS
Physics	Ph
Zoology	Z



A. First level:

1. The student studies (8 credit hours) in first level from the following table (University requirement courses):

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	total
015 Ur	English (1)	-	2	-	2
030 Ur	Computer Science (1)	-	2	2	3
040 Ur	Computer Science (2)	030 Ur	1	2	2
050 Ur	Human Rights	-	1	-	1

2. The student studies (18 credit hours) in first level from the following table (Faculty requirement courses):

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	total
100 M	General Mathematics (1)	—	2	2/-	3
105M	General Mathematics (2)	100 M	2	2/-	3
100 Ph	General Physics (1)	—	2	-/-	2
105 Ph	General Physics (2)	100 Ph	2	-/-	2
180 Ph	Practical Physics (1)	—	-	-/3	1
181 Ph	Practical Physics (2)	180 Ph	-	-/3	1
100 Ch	General Chemistry (1)	—	2	-/-	2
105 Ch	General Chemistry (2)	100 Ch	2	-/-	2
181 Ch	Practical Chemistry (2)	—	-	-/3	1
180 Ch	Practical Chemistry (1)	181 Ch	-	-/3	1

3. The student studies (6 credit hours including two hours from general culture courses) in first level from the following table:

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	total
183 Ch	Applied inorganic chemistry (1)	-	-	2/-	1
183 Ph	Applied physics (1)	-	-	2/-	1
185 Ch	Applied organic chemistry (2)	-	-	2/-	1
185 Ph	Applied physics (2)	-	-	2/-	1
11 Fr	Business Administration	—	2	-	2
12 Fr	History of Science	—	2	-	2
13 Fr	Healthy Nutrition	—	2	-	2
15 Fr	Scientific Thinking	—	2	-	2
17 Fr	Principles of labor law	—	1	-	1
19 Fr	Selected topics from the history of modern Egypt	—	1	-	1



B. Second level:

The student studies the following credit hours in second level from the following table:

Code No.	Course Title		Pre. Req.	Hours		
				Lect.	Exer. / Prac.	total
First semester						
217 Ch	Aliphatic organic chemistry		105 Ch	2	-/3	3
237Ch	Chemical Thermodynamics & Electrochemistry		100 Ch, 105Ch	2	-/-	2
240Ch	Water treatment chemistry		100 Ch	2	-/2	3
235 G	Crystal and mineralogy		-	2	-/2	3
241M	Statistical and computer science		100 M	2	-/-	2
270 Ph	Physical optics		105 Ph	1	-/3	2
291 B	General Microbiology	Choose only one course	-----	2	-/3	3
323Ph	Biophysics		105 Ph	2	-/3	3
No. of Hours						18
Second semester						
210Ch	Small scale industrial chemistry		105 Ch	2	-/2	3
216Ch	Aromatic organic chemistry		105 Ch	2	-/2	3
222Ch	Inorganic Chemistry		100 Ch, 105Ch	2	-/-	2
242Ch	Analytical Chemistry		100Ch, 105 Ch	2	-/3	3
214 M	Differential equations		105 M	2	-/-	2
215 Ph	Modern physics		105 Ph	2	-/3	3
215Ch	Environmental green organic chemistry	Chooe only one course	105 Ch	2	-/-	2
336Ch	Chemistry of catalysis technology		100 Ch, 105 Ch	2	-/-	2
No. of Hours						18

C. Third level:

The student studies the following credit hours in third level from the following table:

Code No.	Course Title		Pre. Req.	Hours		
				Lect.	Exer. / Prac.	total
First semester						
313 Ch	Pesticides and poisons chemistry		-	2	-/-	2
315Ch	Polymer chemistry		216 Ch, 217Ch	2	-/2	3
317 Ch	Organic chemistry spectroscopy		217 Ch	2	-/3	3
319Ch	Petroleum chemisrty and Petrochemicals		105Ch	2	-/3	3
323 Ch	Transition elements & Coordination Chemistry		100 Ch	2	-/-	2
301M	Principles of account		-	2	-/-	2
321 Ch	Chemistry of Forgery and Counterfeiting	Choose only one course	222 Ch	2	-/3	3



337 Ch	Applied electrochemistry (1)		100 Ch, 105Ch	2	-/3	3
No. of Hours						18
Second semester						
310Ch	Organic reaction mechanism (2)		105Ch	2	1/-	2
316 Ch	Natural product & carbohydrates chemistry		105 Ch	2	-/3	3
321 Ch	Chemistry of Forgery and Counterfeiting		222 Ch	2	-/3	3
332 Ch	Surface chemistry, catalysis, colloids, and solid state		100 Ch, 105Ch	3	-/-	3
335 Ch	Chemistry thermodynamics of solutions		100 Ch, 105Ch	2	-/3	3
342 Ch	Analytical chemistry (2)		242Ch	2	-/3	3
324 Ch	Inorganic pigment chemistry	Chooe only one coure	323 Ch	2	-/-	2
350 Ch	Nuclear and radiochemistry		100 Ch	2	-/-	2
No. of Hours						19

D.Fourth level:

The student studies the following credit hours in fourth level from the following table:

Code No.	Course Title	Pre. Req.	Hours			
			Lect.	Exer. / Prac.	total	
First semester						
413 Ch	Petroleum additives chemistry	-	2	-/-	2	
417 Ch	Chemistry of fat and oil	-	2	-/3	3	
435Ch	Corrosion chemistry and metal inhibition	237Ch	3	-/3	4	
441 Ch	Instrumental analysis chemistry (1)	242 Ch	3	-/3	4	
447Ch	Ore preparation chemistry	240 Ch	2	-/-	2	
439 Ch	Quantum chemistry and statistical dynamic	Choose only one coure	100 Ch, 105Ch	2	1/-	2
440 Ch	Advanced analytical chemistry		240 Ch	3	-/-	3
No. of Hours						17
Second semester						
400 Ch	Research and Essay	-	2	-/-	2	
410 Ch	Textile and dyes chemistry	-	2	-/3	3	
412 Ch	Heterocyclic organic chemistry	105 Ch	2	-/3	3	
414 Ch	Industrial detergents chemistry	105 Ch	2	-/3	3	
420Ch	Applied inorganic chemistry	240 Ch	2	-/-	2	
432 Ch	Material science chemistry	100 Ch, 105Ch	2	-/2	3	
416 Ch	Paints technology chemistry	Chooe only one coure	105 Ch	2	-/3	3
430Ch	Metallurgy chemistry		100 Ch, 105Ch	2	-/-	2
436Ch	Refractory chemistry and Thermal analysis		-	2	-/-	2
No. of Hours						18



6- Contents of the Courses

See course specification forms (Appendix 4)

7- Program admission requirements:

- Faculty of Benha Science accepts students who have a high school (the scientific branches) or equivalent according to the admission requirements specified by the Supreme Council of Universities.
- Faculty of Benha Science accepts transfer students from other science faculties; provided that the number of credit hours that were studied not more than 50% of the total number of credit hours necessary for his graduation. The student is exempt from the courses studied by successfully whatever their level.

8- Regulations for progression and program completion:

According to the bylaw of the faculty of Benha Science, the regulations for progression and program completion are:

▪ Joining the Program:

1. Vice Dean for Education and Student Affairs supervises on the implementation of the registration rules and procedures and prepare menus for each of the study groups, schedule, distribute students gentlemen academic advisers, processing cards courses for students which is about cards individual for each course as well as cards total for each student, that academic record data in accredited private records, and the completion of enrollment of students in the first week of the start of the semester.
2. Students may register early, after announcing the results of the end of the spring.
3. Take into account when you log decision student success in Prerequisite if any.
4. A student who was not able to register for compelling reasons approved by the
5. Student Affairs Committee and approved by the College Board to register record late in the additional period for registration (the second week).
6. Student selects one branch to research and essay from two specialized branches.

▪ Study load:

Students are allowed to register in at least 14 credit hours and no more than 19 credit hours per semester. With the exception of the following cases:

1. A student can superior (who has a cumulative average of 3 or more) that adds to it two hours, certified in one semester and a maximum of 8 credit hours throughout the study period in decisions, additional optional requirements, specialization departments, college different, that is added appreciation where to CGPA It is not permitted to be an elective requirement for another decision.
2. The College Board may increase the maximum for the academic workload in the last semester of the student up to a maximum of four credit hours to complete graduation requirements.
3. Not allows the student who has a cumulative rate (1) to register in more than 12 credit hours in a semester.

▪ Additions, deletions, withdraw and modify the path:

1. Any student after the approval of the academic advisor to add or delete scheduled or two until the end of the second week only study and without prejudice to the burden stipulated.
2. Student may withdraw from the study any decision until the end of the seventh week of the start of registration for the semester with the approval of the academic advisor. The record of this decision in the student's academic record estimate "withdrawn" on the condition that the student does not have absenteeism overruns before the withdrawal. And cases before



the forced withdrawal over this period the Commission Education and Student Affairs for consideration and approval of the Faculty Council on the withdrawal shall be without prejudice boarding school student.

3. A student may alter the course of the specialization subject to the completion of the requirements of specialization desirable and not counting credit hours, which the student obtained by not located in the area of the requirements of the new specialization and after the approval of the academic advisor and the Committee on Education and Student Affairs and the College Board on this amendment.

▪ **Stop registration or drop out**

1. Stop registration: the student can apply to stop his registration for one semester and a maximum of four separate classes are connected and for compelling reasons approved by the College Board.
2. Dropout: the student can re-record if he dropouts for maximum two semesters and for compelling reasons approved by the College Board.

▪ **Attendance:**

1. The instructor shall register the presence of students at the start of each lecture theory or process in a practical period Prepared for by the Student Affairs and delivers this record at the end of the semester to manage the affairs of Students.
 2. When the student exceeds the absence of 10% of the scheduled hour's instructor shall notify the Department of Affairs Students to guide the first warning to the student.
 3. When the student exceeds the proportion of the absence of 20% of the scheduled hour's instructor shall notify the Department Student Affairs to direct second and final warning to the student.
 4. If increased absenteeism 25% of the total scheduled hours and the absence of a student without an acceptable excuse Student Affairs Committee and approved by the College Board, student records estimate" deprived" decision and intervention as a result of failure to calculate the cumulative average of the student.
 5. If increased absenteeism was 25% and the absence of the student excuse acceptable to the Commission, Education and Student Affairs and approved by the College Board, student records withdraw from the course.
 6. In the case of a request student Add a new decision attendance is calculated from the date of registration.

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

Rating: The exam is evaluated each courses at 100 degrees and distributed degrees scheduled as the follows:

9.1- courses which did not include the part "practical":

Method of Assessment	Marks	learning outcomes assessed	Weighting
Mid term exam & Semester work	10	Knowledge and understanding (a1-a10); intellectual (b1-b5); professional and general skills (c5, d1-d7)	10%
Final Oral Exam	10	Knowledge and understanding (a1-a11); intellectual skills (b1-b10)	10 %
Final Term Examination	80	Knowledge and understanding (a1-a16); intellectual skills (b1-b10).	80%
	100		100 %



9.2-courses practical separate

Method of Assessment	Marks	learning outcomes assessed	Weighting
Mid term exam & Semester work	20	Knowledge and understanding (a1-a5); intellectual (b1-b4); professional and practical (c5, d1-d3); and general (d3) skills.	20%
Final Oral Exam	20	Knowledge and understanding (a1-a11); intellectual skills (b1-b10)	20 %
Final practical Examination	60	Intellectual (b6,b7); professional (c1-c7) and practical; and general skills(d3).	60%
total	100		%100

9.3 courses which include part "practical":

Part	marks	Method of Assessment	learning outcomes assessed	Weighting
Practical part	8	Mid term exam & Semester work for practical part	Knowledge and understanding (a1-a5); intellectual (b1-b4); professional and practical (c5, d1-d3); and general (d3) skills.	8 %
	8	Final Oral Exam for practical part	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	8 %
	24	Final practical Examination	Intellectual (b6,b7); professional and practical (c1-c5); and general skills(d3).	24 %
Theoretical part	6	Mid term exam & Semester work for theoretical part	Knowledge and understanding (a1-a7); intellectual (b1-b5); professional and general skills (c5, d1-d6)	6 %
	6	Final Oral Exam for theoretical part	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	6 %
	48	Final Term Examination	Knowledge and understanding (a1-a14); intellectual skills (b1-b7).	48 %
	100			100

60% of the total score lecture semester work for final oral exam.

9.4 Course search and essay

1. 50% of the total score for the course of the various activities carried out by the student during his study of the course.
2. 50% of the total scores for the course of the discussion session.



The following grading system is applied:

Grades	Symbols	No. of points	Degree
Excellent	A	4	90% — 100%
	A-	3.7	85% — <90%
Very Good	B+	3.3	80% — <85%
	B	3	75% — <80%
Good	B-	2.7	70% — <75%
	C+	2.3	65% — <70%
Pass	C	2	60% — <65%
Fail	F	0	<60%
Absent	F-	0	—

10- Teaching and learning strategies used in the program:

- a. Direct teaching strategy.
- b. Cooperative learning strategy.
- c. Brainstorming strategy.
- d. Problem-solving strategy.
- e. Effective discussion strategy.
- f. Independent Study strategy.
- g. E-learning strategy.

11- Methods of program evaluation: (Appendix 6)

Samples	Tool	Evaluators
1- Senior Students	Questionnaire	100%
2- Alumni	Questionnaire	100%
3- External Evaluators	Reports	

The responsible person for the program: Prof. Dr. Alaa S. Amin

Date:



Benha University
Faculty of Science
Department of Chemistry



Chemistry and Radiochemistry B.Sc. Program Specification



Chemistry and Radiochemistry B.Sc. Program Specification

A. Basic Information

Program Title:	Chemistry and Radiochemistry B.Sc. Program
Program Type:	Single (undergraduate)
Department:	Chemistry Department
Coordinator:	Dr. Mostafa Y. Nassar

Assistant Co-ordinators: **Prof. Wagdy El-Dougdog**
Dr. Ayman A Ali
Dr. Hany I. Mohamed

The most recent date of the program specification approval: 9/12/2015 (Faculty council; meeting number, 390)

B. Professional Information

1. Program Aims

The Radiochemistry program is an academic program produced by **Chemistry Department**. It aims at introducing knowledge, experience and practices in chemistry and radiochemistry to the students. The following are the aimed graduate attributes:

- Recognizing wide knowledge related to different branches of chemistry and radiochemistry.
- Having the required background and experience of working with relevant and advanced laboratory techniques.
- Acquiring the required knowledge and experience of working with radioisotopes and nuclear safety.
- Designing experimental work and advanced laboratory techniques and risks that might face in his practical work.
- Gaining the required background of nuclear waste and applications of nuclear chemistry in industry.
- Developing the skills and attitude necessary for independent learning and participate effectively in research activities or different areas of work especially in radiochemistry.
- Participating effectively in quality control processes.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

On successful completion of the program, the graduate will be able to:

- Define different chemical concepts of inorganic chemistry.
- State different chemical concepts of analytical chemistry.
- Express different chemical concepts of organic chemistry.
- Identify some fundamentals of physical chemistry.
- Name organic and inorganic compounds.



- a.6 Identify chemical formulae of inorganic and organic compounds and units of some parameters.
- a.7 Recognize characteristics of different states of the matter and elements including trends within the periodic table and the related theories.
- a.8 Recognise theories, facts, concepts, fundamentals, techniques related to physical, inorganic, and organic chemistry.
- a.9 Characterize structure of different chemical compounds using different spectroscopic and analytical techniques.
- a.10 State the principles of thermodynamics and quantum mechanics including their applications in chemistry.
- a.11 Describe the main synthetic pathways and the relation between the properties of individual atoms and molecules.
- a.12 Mention the current issues of chemical research and technological development.
- a.13 Recognize different nuclear reactions and different nuclear safety issues.
- a.14 Investigate nuclear fuels, technology of radiations, and environmental radiations.

b. Intellectual Skills

By the end of the chemistry program, the graduate will be able to:

- b.1 Differentiate between the different states of the matter, elements and compounds based on the recognition and quantification of the properties.
- b.2 Categorise nuclear reactions and nuclear fuels types.
- b.3 Assess risks that might be faced during working with radioactive materials
- b.4 Analyse collected chemical and radiochemical data using some data processing skills.
- b.5 Point out different concepts in different branches of chemistry.
- b.6 Describe the efficiency of chemical systems by applying mathematical relationships.
- b.7 Analyze chemical data to identify the compositions and chemical structures of inorganic and organic compounds.
- b.8 Propose mechanisms for different chemical and nuclear reactions.

c. Professional and Practical Skills

By the end of the chemistry program, the graduate will be able to:

- c.1 Perform standard laboratory procedures in analytical, physical, organic and inorganic chemistry.
- c.2 Apply the chromatographic methods to separate different radioisotopes.
- c.3 Assess risk in laboratory work taking into consideration the specific hazards associated with the use of chemical materials as well as the safe and proper operation of the laboratory techniques.
- c.4 Use different radiometers to detect different radioisotopes.
- c.5 Report observations and measurements of different chemical properties.
- c.6 Examine the physical and chemical properties of compounds.



d. General Skills

The graduates of the Chemistry program should be able to:

- d.1 Use computers and internet for communication, data handling and word processing.
- d.2 Collaborate effectively with teamwork members to maintain independent and critical thinking, effective time-management and positive communication and cooperation with other members of the teamwork.
- d.3 Solve problems on scientific basis.
- d.4 Effectively manage tasks, time, and resources.
- d.5 Search for information and engage in life-long self-learning discipline.
- d.6 Help raising public awareness of the benefits of conserving intellectual property rights and scientific patents on the individuals and communities.
- d.7 Assess the industrial safety.

3- Academic standards of the program

.1 The program outcomes are derived from our Academic Reference Standards (ARS) for Single programs in Science Faculties (Radiochemistry).

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4.1 The program outcomes are derived from our Academic Reference Standards (ARS) for single programs in Science Faculties (Radiochemistry).

5- Curriculum structure and contents of program

a-Program duration:

The period of study to obtain a B.Sc. degree is 4 academic years. The academic year is divided into two semesters. Each semester extends to 17 weeks. A summer semester extended for 8 weeks is a subject for approval by the faculty council.

b- Program structure:

No. of hours/No of units	Lectures	Practical	Total
	110	30	140

Program	Credit hours
Compulsory	125
Optional	9
Elective	6
Total	140

Program	Credit hours	Percentage
Basic sciences	32	22.86%
Humanities (including language)	5	3.57 %
Specialized courses	98	70%
Computer and IT	5	3.57%
Total	140	100 %



- Field training: 6 weeks

c- Program Courses:

- Symbols in the list and their meanings

Connotation	Symbol
University requirement	Ur
Faculty requirement	Fr
Botany	B
Chemistry	Ch
Entomology	E
Geology	G
Mathematics	M
Mathematical Statistics	MS
Physics	Ph
Zoology	Z

A. First level:

1. The student studies (8 credit hours) in first level from the following table (University requirement courses):

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	total
015 Ur	English (1)	-	2	-	2
030 Ur	Computer Science (1)	-	2	2	3
040 Ur	Computer Science (2)	030 Ur	1	2	2
050 Ur	Human Rights	-	1	-	1

2. The student studies (18 credit hours) in first level from the following table (Faculty requirement courses):

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	total
100 M	General Mathematics (1)	—	2	2/-	3
105M	General Mathematics (2)	100 M	2	2/-	3
100 Ph	General Physics (1)	—	2	- / -	2
105 Ph	General Physics (2)	100 Ph	2	- / -	2
180 Ph	Practical Physics (1)	—	-	-/3	1
181 Ph	Practical Physics (2)	180 Ph	-	-/3	1
100 Ch	General Chemistry (1)	—	2	- / -	2
105 Ch	General Chemistry (2)	100 Ch	2	- / -	2
181 Ch	Practical Chemistry (2)	—	-	-/3	1
180 Ch	Practical Chemistry (1)	181 Ch	-	-/3	1



3. The student studies (6 credit hours including two hours from general culture courses) in first level from the following table:

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	total
183 Ch	Applied inorganic chemistry (1)	-	-	2/-	1
183 Ph	Applied physics (1)	-	-	2/-	1
185 Ch	Applied organic chemistry (2)	-	-	2/-	1
185 Ph	Applied physics (2)	-	-	2/-	1
11 Fr	Business Administration	-	2	-	2
12 Fr	History of Science	-	2	-	2
13 Fr	Healthy Nutrition	-	2	-	2
15 Fr	Scientific Thinking	-	2	-	2
17 Fr	Principles of labor law	-	1	-	1
19 Fr	Selected topics from the history	-	1	-	1

B. Second level:

The student studies the following credit hours in second level from the following table:

Code No.	Course Title		Pre. Req.	Hours		
				Lect.	Exer. / Prac.	total
First semester						
217 Ch	Aliphatic organic chemistry		105 Ch	2	-/3	3
219 Ch	Petroleum and petroleum additive chemistry		105 Ch	2	-/-	2
231Ch	Chemical Thermodynamics		100 Ch, 105Ch	2	-/-	2
240Ch	Water treatment chemistry		100 Ch	2	-/2	3
241M	Statistical and computer science		100 M	2	-/-	2
270 Ph	Physical optics		105 Ph	1	-/3	2
291 B	General Microbiology	Choose only one course	-	2	-/3	3
323Ph	Biophysics		105 Ph	2	-/3	3
No. of Hours						17
Second semester						
216Ch	Aromatic organic chemistry		105 Ch	2	-/2	3
222Ch	Inorganic Chemistry		100 Ch, 105Ch	2	1/-	2
242Ch	Analytical Chemistry		100Ch, 105 Ch	2	-/3	3
214 M	Differential equations		105 M	2	-/-	2
215 Ph	Modern physics		105 Ph	2	-/3	3
235 G	Crystal and mineralogy		-	2	-/2	3
215Ch	Environmental green organic	Choose only one course	105 Ch	2	-/-	2
336Ch	Chemistry of catalysis tech-		100 Ch, 105	2	-/-	2
No. of Hours						18



C. Third level:

The student studies the following credit hours in third level from the following table:

Code No.	Course Title	Pre. Req.	Hours			
			Lect.	Exer. / Prac.	total	
First semester						
313 Ch	Pesticides and poisons chemistry	-	2	-/-	2	
315Ch	Polymer chemistry	216 Ch, 217Ch	2	-/2	3	
317 Ch	Organic chemistry spectroscopy	217 Ch	2	-/3	3	
323 Ch	Transition elements & Coordination Chemistry	100 Ch	2	-/-	2	
351Ch	Radiometric measurements	100 Ch, 105Ch	2	-/2	3	
353Ch	Nuclear reactions	100 Ch, 105Ch	2	-/-	2	
355Ch	Nuclear analysis methods	-	2	-/-	2	
423Ch	Solid state chemistry	Choose only one course	-	2	-/-	2
434Ch	Separation chemistry		100 Ch, 105Ch	2	1/-	2
No. of Hours					19	
Second semester						
310Ch	Organic reaction mechanism (2)	105Ch	2	1/-	2	
316 Ch	Natural product & carbohydrates chemistry	105 Ch	2	-/3	3	
318 Ch	Pharmaceutical chemistry	105 Ch	2	-/-	2	
335 Ch	Chemistry thermodynamics of solutions	100 Ch, 105Ch	2	-/3	3	
352Ch	Radioactive decay theory	100 Ch, 105Ch	2	-/-	2	
354Ch	Radiation protection	100 Ch, 105Ch	2	-/2	3	
344Ch	Radiation Physics	Choose only one course	-	3	-/-	3
350Ch	Principles of solid physics		-	2	-/3	3
No. of Hours					18	

D. Fourth level:

The student studies the following credit hours in fourth level from the following table:

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	total
First semester					
441 Ch	Instrumental analysis chemistry (1)	242 Ch	3	-/3	4
447Ch	Ore preparation chemistry	240 Ch	2	-/-	2
451 Ch	Radioactive waste treatment	352 Ch	2	-/-	2
453 Ch	Radiation chemistry technology	354 Ch	2	-/-	2
455 Ch	Nuclear reactor chemistry	354 Ch	2	-/-	2
457 Ch	Radiochemistry and earth science	352 Ch	1	-/-	1



459 Ch	High mass element chemistry		351 Ch	1	-/-	1
461 Ch	Radiation and industrial applications		353 Ch	2	-/-	2
430Ch	Metallurgy chemistry	Choose only one course	100 Ch, 105Ch	2	1/-	2
439 Ch	Quantum chemistry and statistical dynamic		100 Ch, 105Ch	2	1/-	2
No. of Hours						18
Second semester						
400 Ch	Research and Essay		-	2	-/-	2
410 Ch	Textile and dyes chemistry		-	2	-/2	3
452 Ch	Radioisotope production chemistry		353 Ch	2	-/-	2
454 Ch	Nuclear fuel chemistry		355 Ch	2	-/-	2
456 Ch	Higher energy particles		355 Ch	2	-/-	2
458 Ch	Chromatography and isotopes separation		100 Ch, 105Ch	2	-/-	2
460 Ch	Radiation and environmental chemistry		352 Ch	2	-/-	2
414 Ch	Industrial detergents chemistry	Choose only one course	105Ch	2	-/2	3
416 Ch	Paints technology chemistry		105 Ch	2	-/3	3
No. of Hours						18

6- Contents of the Courses

See course specification forms (Appendix 4)

7- Program admission requirements:

- Faculty of Benha Science accepts students who have a high school (the scientific branches) or equivalent according to the admission requirements specified by the Supreme Council of Universities.
- Faculty of Benha Science accepts transfer students from other science faculties; if the number of credit hours that were studied not more than 50% of the total number of credit hours necessary for his graduation. The student is exempt from the courses studied by successfully whatever their level.

8- Regulations for progression and program completion:

According to the bylaw of the faculty of Benha Science, the regulations for progression and program completion are:

▪ Joining the Program:

1. Vice Dean for Education and Student Affairs supervises on the implementation of the registration rules and procedures and prepare menus for each of the study groups, schedule, distribute students gentlemen academic advisers, processing cards courses for students which is about cards individual for each course as well as cards total for each student, that academic record data in accredited private records, and the completion of enrollment of students in the first week of the start of the semester.



2. Students may register early, after announcing the results of the spring.
3. Take into account when you log decision student success in Prerequisite if any.
4. A student who was not able to register for compelling reasons approved by the
5. Student Affairs Committee and approved by the College Board to register record late in the additional period for registration (the second week).
6. Student selects one branch to research and essay from two specialized branches.

▪ **Study load:**

Students are allowed to register in at least 14 credit hours and no more than 19 credit hours per semester. With the exception of the following cases:

1. A student can superior (who has a cumulative average of 3 or more) that adds to it two hours, certified in one semester and a maximum of 8 credit hours throughout the study period in decisions, additional optional requirements, specialization departments, college different, that is added appreciation where to CGPA It is not permitted to be an elective requirement for another decision.
2. The College Board may increase the maximum for the academic workload in the last semester of the student up to a maximum of four credit hours to complete graduation requirements.
3. Not allows the student who has a cumulative rate (1) to register in more than 12 credit hours in a semester.

▪ **Additions, deletions, withdraw and modify the path:**

1. Any student after the approval of the academic advisor to add or delete scheduled or two until the end of the second week only study and without prejudice to the burden stipulated.
2. Student may withdraw from the study any decision until the end of the seventh week of the start of registration for the semester with the approval of the academic advisor. The record of this decision in the student's academic record estimate "withdrawn" on the condition that the student does not have absenteeism overruns before the withdrawal. And cases before the forced withdrawal over this period the Commission Education and Student Affairs for consideration and approval of the Faculty Council on the withdrawal shall be without prejudice boarding school student.
3. A student may alter the course of the specialization subject to the completion of the requirements of specialization desirable and not counting credit hours, which the student obtained by not located in the area of the requirements of the new specialization and after the approval of the academic advisor and the Committee on Education and Student Affairs and the College Board on this amendment.

▪ **Stop registration or drop out**

1. Stop registration: the student can apply to stop his registration for one semester and a maximum of four separate classes are connected and for compelling reasons approved by the College Board.
2. Dropout: the student can re-record if he dropouts for maximum two semesters and for compelling reasons approved by the College Board.

▪ **Attendance:**

1. The instructor shall register the presence of students at the start of each lecture theory or process in a practical period Prepared for by the Student Affairs and delivers this record at the end of the semester to manage the affairs of Students.



2. When the student exceeds the absence of 10% of the scheduled hour's instructor shall notify the Department of Affairs Students to guide the first warning to the student.
3. When the student exceeds the proportion of the absence of 20% of the scheduled hour's instructor shall notify the Department Student Affairs to direct second and final warning to the student.
4. If increased absenteeism 25% of the total scheduled hours and the absence of a student without an acceptable excuse Student Affairs Committee and approved by the College Board, student records estimate" deprived" decision and intervention because of failure to calculate the cumulative average of the student.
5. If increased absenteeism was 25% and the absence of the student excuse acceptable to the Commission, Education and Student Affairs and approved by the College Board, student records withdraw from the course.
6. In the case of a request student, Add a new decision attendance is calculated from the date of registration.

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

Rating: The exam is evaluated each courses at 100 degrees and distributed degrees scheduled as the follows:

9.1- courses which did not include the part "practical":

Method of Assessment	Marks	learning outcomes assessed	Weighting
Mid term exam & Semester work	10	Knowledge and understanding (a1-a10); intellectual (b1-b5); professional and general skills (c5, d1-d7)	10%
Final Oral Exam	10	Knowledge and understanding (a1-a11); intellectual skills (b1-b10)	10 %
Final Term Examination	80	Knowledge and understanding (a1-a16); intellectual skills (b1-b10).	80%

9.2-courses practical separate

Method of Assessment	Marks	learning outcomes assessed	Weighting
Mid term exam & Semester work	20	Knowledge and understanding (a1-a5); intellectual (b1-b4); professional and practical (c5, d1-d3); and general (d3) skills.	20%
Final Oral Exam	20	Knowledge and understanding (a1-a11); intellectual skills (b1-b10)	20 %
Final practical Examination	60	Intellectual (b6,b7); professional (c1-c7) and practical; and general skills(d3).	60%

9.3 Courses, which include part "practical":



Part	marks	Method of Assessment	Marks	learning outcomes assessed	Weighting
Practical part	40	Mid term exam & Semester work for practical part	8	Knowledge and understanding (a1-a5); intellectual (b1-b4); professional and practical (c5, d1-d3); and general (d3) skills.	8 %
		Final Oral Exam for practical part	8	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	8 %
		Final practical Examination	24	Intellectual (b6,b7); professional and practical (c1-c5); and general skills(d3).	24 %
Theoretical part	60	Mid term exam & Semester work for theoretical part	6	Knowledge and understanding (a1-a7); intellectual (b1-b5); professional and general skills (c5, d1-d6)	6 %
		Final Oral Exam for theoretical part	6	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	6 %
		Final Term Examination	48	Knowledge and understanding (a1-a14); intellectual skills (b1-b7).	48 %
	100		100%		100

60% of the total score lecture semester work for final oral exam.

9.4 Course search and essay

1. 50% of the total score for the course of the various activities carried out by the student during his study of the course.
2. 50% of the total scores for the course of the discussion session.

The following grading system is applied:

Grades	Symbols	No. of points	Degree
Excellent	A	4	90% — 100%
	A-	3.7	85% — <90%
Very Good	B+	3.3	80% — <85%
	B	3	75% — <80%
Good	B-	2.7	70% — <75%
	C+	2.3	65% — <70%
Pass	C	2	60% — <65%
Fail	F	0	<60%
Absent	F-	0	—



10- Teaching and learning strategies used in the program:

- a. Direct teaching strategy.
- b. Cooperative learning strategy.
- c. Brainstorming strategy.
- d. Problem-solving strategy.
- e. Effective discussion strategy.
- f. Independent Study strategy.
- g. E-learning strategy.

11- Methods of program evaluation: (Appendix 6)

Samples	Tool	Evaluators
1- Senior Students	Questionnaire	100%
2- Alumni	Questionnaire	100%
3- External Evaluators	Reports	

The responsible person for the program: Prof. Dr. Alaa S. Amin

Date:



Benha University
Faculty of Science
Department of Chemistry



Special Chemistry B.Sc. Program Specification



Special Chemistry B.Sc. Program Specification

A. Basic Information

Program Title: Chemistry B.Sc. Program
Program Type: Single (undergraduate)
Department: Chemistry Department
Coordinator: Dr. Mostafa Y. Nassar

Assistant Co-ordinators: Prof. Wagdy El-Dougdog
Dr. Ayman A Ali
Dr. Hany I. Mohamed

The most recent date of the program specification approval: 9/12/2015 (Faculty council; meeting number, 390)

B. Professional Information

1. Program Aims

The overall aims of the program are to provide the graduate with the following:

- Wide knowledge related to different branches of chemistry and environmental chemistry.
- The required background and experience of working with relevant and advanced laboratory techniques.
- Ability to design the experimental work and advanced laboratory techniques and risks that might be faced in the practical work.
- The required skills and attitude for independent learning and participating effectively in research activities or different areas of work.
- Basics of effective quality control processes.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

On successful completion of the program, the graduate will be able to:

- Define different chemical concepts of inorganic chemistry.
- State different chemical concepts of analytical chemistry.
- Express different chemical concepts of organic chemistry.
- Identify some fundamentals of physical chemistry.
- Name organic and inorganic compounds.
- List chemical formulae of inorganic and organic compounds and units of some parameters.
- Recognize characteristics of different states of the matter and elements including trends within the periodic table and the related theories.
- Describe theories, facts, concepts, fundamentals, techniques related to physical, inorganic, and organic chemistry.
- Characterize structure and morphology of different chemical compounds using different spectroscopic and analytical techniques.
- Outline major types of chemical reactions, their characteristics and mechanisms as



well as their kinetics including catalysis.

- a.11 State the principles of thermodynamics and quantum mechanics including their applications in chemistry.
- a.12 Define constitution and properties of different chemical compounds.
- a.13 Describe the main synthetic pathways and the relation between the properties of individual atoms and molecules.
- a.14 Select the current issues of chemical research and technological development.

b. Intellectual Skills

By the end of the program, the graduate will be able to:

- b.1 Compare between the different states of the matter, elements and compounds based on the recognition and quantification of the properties.
- b.2 Solve chemical problems using computational soft wares.
- b.3 Interpret collected chemical data using some data processing skills.
- b.4 Organize the different concepts in different branches of chemistry.
- b.5 Report the efficiency of chemical systems by applying mathematical relationships.
- b.6 Hypothesize chemical data to identify the compositions and chemical structures of inorganic and organic compounds.
- b.7 Construct mechanisms for different chemical processes.

c. Professional and Practical Skills

By the end of the program, the graduate will be able to:

- c.1 Prepare standard laboratory procedures in analytical, physical, organic and inorganic chemistry.
- c.2 Assess risk in laboratory work taking into consideration the specific hazards associated with the use of chemical materials as well as the safe and proper operation of the laboratory techniques.
- c.3 Collect observations and measurements of different chemical properties.
- c.4 Examine the physical and chemical properties of compounds.
- c.5 Analyze the chemical investigation using the computational packages.

d. General Skills

By the end of the program, the graduate will be able to:

- d.1 Use computers and internet for communication, data handling and word processing.
- d.2 Collaborate effectively with teamwork members to maintain independent and critical thinking, effective time-management and positive communication and cooperation with other members of the teamwork.
- d.3 Solve problems on scientific basis.
- d.4 Effectively manage tasks, time, and resources.
- d.5 Search for information and engage in life-long self-learning discipline.
- d.6 Help raising public awareness of the benefits of conserving intellectual property rights and scientific patents on the individuals and communities.



3- Academic standards of the program

The program outcomes are derived from the Egyptian National Academic Reference Standards (NARS) for Single programs in Science Faculties (Chemistry), Aug. 2009.

4- Reference indices (Benchmarks): Not utilized

5- Curriculum structure and contents of program

a-Program duration:

The period of study to obtain a B.Sc. degree is four academic years. The academic year is divided into two semesters. Each semester extends to 17 weeks. A summer semester extended for 8 weeks is a subject for approval by the faculty council.

b- Program structure:

No. of hours/No of units	Lectures	Practical	Total
	107	33	140

Program	Credit hours
Compulsory	123
Optional	12
Elective	5
Total	140

Program	Credit hours	Percentage
Basic sciences	32	22.86%
Humanities (including language)	5	3.57 %
Specialized courses	98	70%
Computer and IT	5	3.57%
Total	140	100 %

- Field training: 6 weeks

c- Program Courses:

- Symbols in the list and their meanings

Connotation	Symbol
University requirement	Ur
Faculty requirement	Fr
Botany	B
Chemistry	Ch
Entomology	E
Geology	G
Mathematics	M
Mathematical Statistics	MS
Physics	Ph
Zoology	Z



A. First level:

1. The student studies (8 credit hours) in first level from the following table (University requirement courses):

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	Total
015 Ur	English (1)	-	2	-	2
030 Ur	Computer Science (1)	-	2	2	3
040 Ur	Computer Science (2)	030 Ur	1	2	2
050 Ur	Human Rights	-	1	-	1

2. The student studies (18 credit hours) in first level from the following table (Faculty requirement courses):

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	Total
100 M	General Mathematics (1)	—	2	2/-	3
105 M	General Mathematics (2)	100 M	2	2/-	3
100 Ph	General Physics (1)	—	2	-/-	2
105 Ph	General Physics (2)	100 Ph	2	-/-	2
180 Ph	Practical Physics (1)	—	-	-/3	1
181 Ph	Practical Physics (2)	180 Ph	-	-/3	1
100 Ch	General Chemistry (1)	—	2	-/-	2
105 Ch	General Chemistry (2)	100 Ch	2	-/-	2
181 Ch	Practical Chemistry (2)	—	-	-/3	1
180 Ch	Practical Chemistry (1)	181 Ch	-	-/3	1

3. The student studies (6 credit hours including two hours from general culture courses) in first level from the following table:

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	Total
183 Ch	Applied inorganic chemistry (1)	-	-	2/-	1
183 Ph	Applied physics (1)	-	-	2/-	1
185 Ch	Applied organic chemistry (2)	-	-	2/-	1
185 Ph	Applied physics (2)	-	-	2/-	1
11 Fr	Business Administration	—	2	-	
12 Fr	History of Science	—	2	-	2
13 Fr	Healthy Nutrition	—	2	-	2
15 Fr	Scientific Thinking	—	2	-	2
17 Fr	Principles of labor law	—	1	-	1
19 Fr	Selected topics from the history of modern Egypt	—	1	-	1



B. Second level:

The student studies the following credit hours in second level from the following table:

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	Total
First semester					
211 Ch	Aliphatic organic chemistry (1)	105 Ch	2	-/3	3
213 Ch	Aliphatic organic chemistry (2)	105 Ch	2	1/-	2
219 Ch	Petroleum and petroleum additive chemistry	105 Ch	2	-/-	2
231 Ch	Chemical Thermodynamics	100 Ch, 105Ch	2	-/-	2
240 Ch	Water treatment chemistry	100 Ch	2	-/2	3
241 M	Statistical and computer science	100 M	2	-/-	2
270 Ph	Physical optics	105 Ph	1	-/3	2
291 B	General Microbiology	Choose only one course	-----	-/3	3
323 Ph	Biophysics		105 Ph	2	-/3
No. of Hours					19
Second semester					
210Ch	Small scale industrial chemistry	105 Ch	2	-/2	3
212Ch	Aromatic organic chemistry (1)	105 Ch	2	1/-	2
214Ch	Aromatic organic chemistry (2)	105 Ch	2	1/-	2
222Ch	Inorganic Chemistry	100Ch, 105Ch	2	1/-	2
234Ch	Electrochemistry	100Ch, 105Ch	2	1/-	2
242Ch	Analytical Chemistry	100Ch, 105Ch	2	-/3	3
214 M	Differential equations	105 M	2	-/-	2
215Ch	Environmental green organic chemistry	Choose only one course	105 Ch	-/-	2
336Ch	Chemistry of catalysis technology		100Ch, 105Ch	2	-/-
No. of Hours					18

C. Third level:

The student studies the following credit hours in third level from the following table:

Code No.	Course Title	Pre. Req.	Hours		
			Lect.	Exer. / Prac.	Total
First semester					
311Ch	Organic reaction mechanism (1)	100 Ch, 105Ch	3	-/3	4
313 Ch	Pesticides and toxins chemistry	-	2	-/-	2
320 Ch	Inorganic chemistry and its applications	222 Ch	2	-/2	3
323 Ch	Transition elements & Coordination Chemistry	100 Ch	2	-/-	2
330 Ch	Irreversible electrochemistry	231 Ch	2	-/-	2



331 Ch	Kinetics and photochemistry		231 Ch	2	-/3	3
321 Ch	Chemistry of Forgery and Counterfeiting	Choose only one course	222 Ch	2	-/3	3
337 Ch	Applied electrochemistry (1)		100Ch, 105Ch	2	-/3	3
No. of Hours						19
Second semester						
312 Ch	Organic chemistry spectroscopy (1)		105 Ch	2	-/-	2
314 Ch	Organic chemistry spectroscopy (2)		214 Ch	2	-/1	2
316 Ch	Natural product & carbohydrates chemistry		105 Ch	2	-/3	3
338 Ch	Surface chemistry, catalysis, colloids, and solid state		100Ch, 105Ch	2	-/-	2
342 Ch	Analytical chemistry (2)		242Ch	2	-/3	3
215 Ph	Modern physics		105 Ph	2	-/3	3
318 Ch	Pharmaceutical chemistry	Choose only one course	105 Ch	2	-/-	2
350 Ch	Nuclear and radiochemistry		100 Ch	2	-/-	2
No. of Hours						17

D.Fourth level:

The student studies the following credit hours in fourth level from the following table:

Code No.	Course Title	Pre. Req.	Hours			
			Lect.	Exer. / Prac.	total	
First semester						
411 Ch	Petroleum chemistry & Polymers	-	2	-/3	3	
439 Ch	Quantum chemistry and statistical dynamic	100Ch, 105Ch	2	1/-	2	
441 Ch	Instrumental analysis chemistry (1)	242 Ch	3	-/3	4	
319 Z	Molecular microbiology and cell	-	2	-/2	3	
235 G	Crystal and mineralogy	-	2	-/2	3	
413 Ch	Petroleum additives	Choose only one course	-	2	-/-	2
415 Ch	Stereo- and photo-organic chemistry		211Ch	2	-/-	2
No. of Hours						17
Second semester						
400 Ch	Research and Essay	-	2	-/-	2	
410 Ch	Textile and dyes chemistry	-	2	-/2	3	
412 Ch	Heterocyclic organic chemistry	105 Ch	2	-/3	3	
422 Ch	Advanced inorganic chemistry and chemical applications of group theory	-	2	-/-	2	
432 Ch	Material science chemistry	100Ch, 105Ch	2	-/2	3	
440 Ch	Advanced analytical chemistry	240 Ch	2	-/-	2	
414 Ch	Industrial detergents chem-	Choose only	105 Ch	2	-/3	3



	istry	one course				
416 Ch	Paints technology chemistry		105 Ch	2	-/3	3
No. of Hours						18

6- Contents of the Courses

See course specification forms (Appendix 4)

7- Program admission requirements:

- Faculty of Benha Science accepts students who have a high school (the scientific branches) or equivalent according to the admission requirements specified by the Supreme Council of Universities.
- Faculty of Benha Science accepts transfer students from other science faculties; provided that the number of credit hours that were studied not more than 50% of the total number of credit hours necessary for his graduation. The student is exempt from the courses studied by successfully whatever their level.

8- Regulations for progression and program completion:

According to the bylaw of the faculty of Benha Science, the regulations for progression and program completion are:

▪ Joining the Program:

1. Vice Dean for Education and Student Affairs supervises on the implementation of the registration rules and procedures and prepare menus for each of the study groups, schedule, distribute students gentlemen academic advisers, processing cards courses for students which is about cards individual for each course as well as cards total for each student, that academic record data in accredited private records, and the completion of enrollment of students in the first week of the start of the semester.
2. Students may register early, after announcing the results of the spring.
3. Take into account when you log decision student success in Prerequisite if any.
4. A student who was not able to register for compelling reasons approved by the
5. Student Affairs Committee and approved by the College Board to register record late in the additional period for registration (the second week).
6. Student selects one branch to research and essay from two specialized branches.

▪ Study load:

Students are allowed to register in at least 14 credit hours and no more than 19 credit hours per semester. With the exception of the following cases:

1. A student can superior (who has a cumulative average of 3 or more) that adds to its two hours, certified in one semester and a maximum of 8 credit hours throughout the study period in decisions, additional optional requirements, specialization departments, college different, that is added appreciation where to CGPA It is not permitted to be an elective requirement for another decision.
2. The College Board may increase the maximum for the academic workload in the last semester of the student up to a maximum of four credit hours to complete graduation requirements.
3. Not allows the student who has a cumulative rate (1) to register in more than 12 credit hours in a semester.



▪ **Additions, deletions, withdraw and modify the path:**

1. Any student after the approval of the academic advisor to add or delete scheduled or two until the end of the second week only study and without prejudice to the burden stipulated.
2. Student may withdraw from the study any decision until the end of the seventh week of the start of registration for the semester with the approval of the academic advisor. The record of this decision in the student's academic record estimate "withdrawn" on the condition that the student does not have absenteeism overruns before the withdrawal. In addition, cases before the forced withdrawal over this period the Commission Education and Student Affairs for consideration and approval of the Faculty Council on the withdrawal shall be without prejudice boarding school student.
3. A student may alter the course of the specialization subject to the completion of the requirements of specialization desirable and not counting credit hours, which the student obtained by not located in the area of the requirements of the new specialization and after the approval of the academic advisor and the Committee on Education and Student Affairs and the College Board on this amendment.

▪ **Stop registration or drop out**

1. Stop registration: the student can apply to stop his registration for one semester and a maximum of four separate classes are connected and for compelling reasons approved by the College Board.
2. Dropout: the student can re-record if he dropouts for maximum two semesters and for compelling reasons approved by the College Board.

▪ **Attendance:**

1. The instructor shall register the presence of students at the start of each lecture theory or process in a practical period Prepared for by the Student Affairs and delivers this record at the end of the semester to manage the affairs of Students.
 2. When the student exceeds the absence of 10% of the scheduled hour's instructor shall notify the Department of Affairs Students to guide the first warning to the student.
 3. When the student exceeds the proportion of the absence of 20% of the scheduled hour's instructor shall notify the Department Student Affairs to direct second and final warning to the student.
 4. If increased absenteeism 25% of the total scheduled hours and the absence of a student without an acceptable excuse Student Affairs Committee and approved by the College Board, student records estimate" deprived" decision and intervention as a result of failure to calculate the cumulative average of the student.
 5. If increased absenteeism was 25% and the absence of the student excuse acceptable to the Commission, Education and Student Affairs and approved by the College Board, student records withdraw from the course.
 6. In the case of a request student, Add a new decision attendance is calculated from the date of registration.

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

Rating: The exam is evaluated each courses at 100 degrees and distributed degrees scheduled as the follows:



9.1- Courses, which did not include the part "practical":

Method of Assessment	Marks	learning outcomes assessed	Weighting
Midterm exam & Semester work	10	Knowledge and understanding (a1-a7); intellectual (b1-b5); professional and general skills (c5, d1-d4)	10%
Final Oral Exam	10	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	10 %
Final Term Examination	80	Knowledge and understanding (a1-a14); intellectual skills (b1-b7).	80%
	100		100 %

9.2-Courses practical separate

Method of Assessment	Marks	learning outcomes assessed	Weighting
Midterm exam & Semester work	20	Knowledge and understanding (a1-a5); intellectual (b1-b4); professional and practical (c5, d1-d3); and general (d3) skills.	20%
Final Oral Exam	20	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	20 %
Final practical Examination	60	Intellectual (b6,b7); professional (c1-c5) and practical; and general skills(d3).	60%
Total	100		%100

9.3 Courses, which include part "practical":

Part	Marks	Method of Assessment	Learning outcomes assessed	Weighting	
Practical part	40	8	Midterm exam & Semester work for practical part	Knowledge and understanding (a1-a5); intellectual (b1-b4); professional and practical (c5, d1-d3); and general (d3) skills.	8 %
		8	Final Oral Exam for practical part	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	8 %
		24	Final practical Examination	Intellectual (b6,b7); professional and practical (c1-c5); and general skills(d3).	24 %
Theoretical part	60	6	Midterm exam & Semester work for theoretical part	Knowledge and understanding (a1-a7); intellectual (b1-b5); professional and general skills (c5, d1-d6)	6 %
		6	Final Oral Exam for theoretical part	Knowledge and understanding (a1-a11); intellectual skills (b1-b6)	6 %
		48	Final Term Examination	Knowledge and understanding (a1-a14); intellectual skills (b1-b7).	48 %
	100			100	

60% of the total score lecture semester work for final oral exam.



9.4 Course search and essay

1. 50% of the total score for the course of the various activities carried out by the student during his study of the course.
2. 50% of the total scores for the course of the discussion session.

The following grading system is applied:

Grades	Symbols	No. of points	Degree
Excellent	A	4	90% — 100%
	A-	3.7	85% — <90%
Very Good	B+	3.3	80% — <85%
	B	3	75% — <80%
Good	B-	2.7	70% — <75%
	C+	2.3	65% — <70%
Pass	C	2	60% — <65%
Fail	F	0	<60%
Absent	F-	0	—

10- Teaching and learning strategies used in the program:

- a. Direct teaching strategy.
- b. Cooperative learning strategy.
- c. Brainstorming strategy.
- d. Problem-solving strategy.
- e. Effective discussion strategy.
- f. Independent Study strategy.
- g. E-learning strategy.

11- Methods of program evaluation: (Appendix 6)

Samples	Tool	Evaluators
1- Senior Students	Questionnaire	100%
2- Alumni	Questionnaire	100%
3- External Evaluators	Reports	

The responsible person for the program: Prof. Dr. Alaa S. Amin

Date: