

**King Abdulaziz University**  
**Faculty of Science**

**BSc Chemistry Major Program      2009**

**Note:** upon admission to King Abdulaziz University from high school, students must complete the one-year “Preparatory Year program” before registering in a degree program. The Foundation program consists of a full year of courses in English, pre-university mathematics, and communications-computer applications.

Following completion of the Preparatory Year, each degree program includes a set of compulsive and elective “Core Courses” (55 Credit Hours for the BSc Chemistry Major) and required and elective courses in the Major and Minor, for a total of 128 credits over four years.

**Plan of Studies in Chemistry**

In order to qualify for a BSc. Degree, the student must successfully complete a total of 128 credit hours with a minimum GPA of 2.0. Credit hours are distributed as follows:

<b>Requirements</b>	<b>Credit hours</b>	<b>Remarks</b>
University requirements	26	As shown in the University requirements
Preparatory Year for Natural Science Students requirements	17	As shown in Preparatory Year for Natural Science Students requirements
Faculty requirements	6	As shown in the college requirements
Career skills and training requirements	73	55 department core courses
		14 department elective courses
		3 Mathematics department core courses
Free requirements	6	Out of specialization
<b>Total</b>	<b>128</b>	

### 1: University Requirements (Core Courses)

Course No.	Course Title	Credit hours	Pre-request
ELC 101	English Lang. (1)	3	-
COMM101	Communication skills	3	-
ELC 102	English Lang. (2)	3	ELC 101
CPIT 100	Computer	3	-
ISLS 101	Islamic Studies 1	2	-
Arab 101	Arabic Lang.1	3	-
ISLS 201	Islamic Studies 2	2	ISLS 101
ARAB 201	Writing	3	ARAB 101
ISLS 301	Islamic Studies 3	2	ISLS 201
ISLS 401	Ethics	2	ISLS 301

### 2: Preparatory Year for Natural Science Students requirements

Course No.	Course Title	Credit hours	Pre-request
MATH 110	Math	3	-
PHYS 101	General Physics	4	-
STAT 110	General statistics	3	-
CHEM 101	General Chemistry (I)	4	-
BIO 101	General Biology	4	-

### 3: Faculty Requirements (Core Courses)

Course No.	Course Title	Credit hours	Pre-request
MATH 202	Diff. & Integ. 2	4	MATH 110
CHEM 200	Lab safety	1	-
PHYS 281	Physics Lab I	1	PHYS 110
CHEM 390	Summer Training	2	Dept. approval

#### 4: Departmental requirements:

The student must study 72 credit hours from Chemistry and Mathematics departments which include:

##### (A) Departmental Core Courses (55 credit hours):

Course No.	Course Title	No. of Units			Pre-requisites
		Th.	Pr.	Credit	
Chem 202	General Chemistry (II)	3	3	4	Chem 201
Chem 211	Volumetric & Gravimetric Analysis	3	3	4	Chem 202
Chem 221	Inorganic Chemistry (I)	3	-	3	Chem 202
Chem 231	Principles of Organic Chemistry (I)	3	3	4	Chem 201
Chem 232	Principles of Organic Chemistry (II)	3	3	4	Chem 231
Chem 241	Chemical Thermodynamics	3	-	3	Chem 202, Math 202
Chem 242	Quantum Chemistry and Statistical Thermodynamics	3	-	3	Chem 241
Chem 312	Instrumental Methods of Analysis	2	3	3	Chem 211
Chem 313	Methods of Chromatographic Separations	2	3	3	Chem 211
Chem 322	Inorganic Chemistry (II)	3	-	3	Chem 221
Chem 323	Inorganic Laboratory	-	9	3	Chem 322
Chem 333	Spectroscopy of Organic Compounds	2	3	3	Chem 232
Chem 334	Physical Organic Chemistry	2	-	2	Chem 232
Chem 343	Experimental Physical Chemistry	-	6	2	Chem 241
Chem 344	Chemical Kinetics	3	-	3	Chem 241
Chem 345	Solid State and Surface Chemistry	2	-	2	Chem 241
Chem 360	Organo-Biochemistry	3	-	3	
Chem 491	Research Project	-	9	3	Chem 312,323,334,343

**(B) Departmental Elective Courses (14 credit hours):**

Course No.	Course Title	No. of Units			Pre-requisites
		Th.	Pr.	Credit	
Chem 414	Electrical Analytical Methods	2	-	2	Chem 312
Chem 415	Analysis of the Industrial Products	2	-	2	Chem 312, 313
Chem 416	Applications of Mass Spectroscopy in Analytical Chemistry	2	-	2	Chem 312, 313
Chem 417	Special Topics in Analytical Chem.	2	-	2	Chem 312
Chem 424	Group Theory and its Application in Chem.	2	-	2	Chem 322
Chem 425	Oregano-Metallic Chemistry	2	-	2	Chem 322
Chem 426	Bioinorganic Chemistry	2	-	2	Chem 322
Chem 427	Environmental inorganic Chem.	2	-	2	Chem 322
Chem 428	Special Topics in Inorganic Chem.	2	-	2	Chem 322
Chem 435	Heterocyclic Chemistry	2	-	2	Chem 334
Chem 436	Applied Organic Chemistry	1	3	2	Chem 334
Chem 437	Chemistry of Natural Products	1	3	2	Chem 435
Chem 438	Chemistry of Industrial Polymers	2	-	2	Chem 334
Chem 439	Special topics in Organic Chem.	2	-	2	Chem 334
Chem 441	Chemistry of Polymers	2	-	2	Chem 344, 231
Chem 442	Fundamentals of Molecular Spectroscopy	2	-	2	Chem 242
Chem 443	Nuclear and Radio Chemistry	2	-	2	Chem 241
Chem 444	Photo Chemistry	2	-	2	Chem 344
Chem 445	Catalysis	2	-	2	Chem 345
Chem 446	Electrochemistry	2	-	2	Chem 344

**(C) Training Course (Chem. 390) (2 credit hours):**

The student should spend 6 weeks at least, during the summer time, in one of industrial sectors under the department supervision. It is one of the Faculty requirements as follows:

Course No.	Course Name	Credit hours
Chem. 390	Training Course (1)	2

# Chemistry Department Plan

## 1<sup>st</sup> Level (13 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
MATH 110	Math	3	-
PHYS 101	General Physics	4	-
ELC 101	English Lang. (1)	3	-
CPIT 100	Computer	3	-
<b>Σ credit hours</b>		<b>13</b>	

## 2<sup>nd</sup> Level (17 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
STAT 110	General statistics	3	-
CHEM 101	General Chemistry (I)	4	-
ELC 102	English Lang. (2)	3	ELC 101
COMM101	Communication skills	3	-
BIO 101	General Biology	4	-
<b>Σ credit hours</b>		<b>17</b>	

## 3<sup>rd</sup> Level (16 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
Math 202	Diff. & Integ.2	4	Math 110
CHEM 231	Principles of Organic Chem. I	4	CHEM 101
Arab 101	Arabic Lang.1	3	-
CHEM 281	Chem Lab (I)	1	CHEM 110
CHEM 200	Lab Safety	1	-
<b>Σ credit hours</b>		<b>16</b>	

## 4<sup>th</sup> Level (17 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
CHEM 241	Chemical Thermodynamics	3	CHEM202, Math 202
ISLS 101	Islamic Studies 1	2	-
CHEM 211	Volumetric & gravimetric analysis	4	CHEM 202
PHYS 281	Phys Lab (I)	1	PHYS 101
Math 204	Differential Eqn.	3	Math 202
CHEM 232	Principles of Organic Chem. II	4	CHEM 231
<b>Σ credit hours</b>		<b>17</b>	

## 5<sup>th</sup> Level (17 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
ISLS 201	Islamic Studies 2	2	ISLS 101
CHEM 221	Inorganic Chem. 1	3	CHEM 202
ARAB 201	Writing	3	ARAB 101
CHEM 242	Quantum Chem. & St. Thermo.	3	CHEM 241
CHEM 312	Instrumental Analysis	3	CHEM 211
CHEM 333	Organic Spectroscopy	3	CHEM 232
-	-	-	-
<b>Σ credit hours</b>		<b>17</b>	

## 6<sup>th</sup> Level (17 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
ISLS 301	Islamic Studies 3	2	ISLS 201
CHEM 322	Inorganic Chem. 2	3	CHEM211
CHEM 334	Phys. Org. Chem.	2	CHEM333
CHEM 313	Chromatographic Separations	3	CHEM 211
CHEM 343	Experimental Phys. Chemistry	2	CHEM 241
CHEM +++	Elective Chem.	2	-
xxxx	Free Course	3	-
<b>Σ credit hours</b>		<b>17</b>	

Course No.	Course Title	Credit hours	Pre-request
Chem. 390	Training course	2	Dept. approval

## 7<sup>th</sup> Level (17 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
CHEM 323	Exp. Inorganic Chem.	3	CHEM 322
ISLS 401	Ethics	2	ISLS 301
CHEM 491	Research Project	3	CHEM312, 323,334,343
CHEM 344	Chemical Kinetics	3	CHEM241
CHEM 345	Solid State & Surface	2	Chem.241
CHEM +++	Elective Chem	2	-
<b>Σ credit hours</b>		<b>15</b>	

## 8<sup>th</sup> Level (16 Credit hours)

Course No.	Course Title	Credit hours	Pre-request
CHEM 360	Organo-Biochemistry	3	CHEM 334
CHEM +++	Elective Chem	2	-
CHEM +++	Elective Chem	2	-
CHEM +++	Elective Chem	2	-
CHEM +++	Elective Chem	2	-
CHEM +++	Elective Chem	2	-
CHEM +++	Free Subject	3	
<b>Σ credit hours</b>		<b>16</b>	