

Chemistry Syllabus

Grades 7 and 8

Table of Contents

Introduction	
Grade 7	
General Objectives of Grade 7 Chemistry	
Unit 1: Chemistry and its Importance	
Unit 2: Substance	
Unit 3: The Language of Chemistry	
Unit 4: The Structure of Substances	
Unit 5: Periodic Classification of the Elements	
Grade 8	
General Objectives of Grade 8 Chemistry	
Unit 1: Classification of Compounds.....	
Unit 2: Some Important Metals	
Unit 3: Some Important Nonmetals	
Unit 4: Environmental Chemistry	
Unit 5: Calculations Based on Formulas	

Introduction

The teaching of chemistry must go beyond the factual content of the syllabus. While it is important that a student acquires factual knowledge, there are also other skills beyond recall and understanding. These are application, analysis, synthesis and evaluation. Since chemistry is an experimental science, practical, experimental and investigative skills should also be implemented. In order to deliver these skills, students must be encouraged to take a more active role in their own education, which is a student centered lesson.

The grades 7 and 8 curriculum materials were revised based on the new curriculum frame work of Ethiopian Schools and the findings of needs assessment made in 2007. This revision of the syllabus then took the main comments of the needs assessment and some current economic and social issues of our country into consideration. The major focuses of the curriculum revision include:

- making the content load appropriate to the period allotted;
- making the content difficulties appropriate to the grade level;
- giving more emphasis to active learning approach;
- integrating agriculture and technology;
- reducing unnecessary repetition of contents;
- improving logical order of the content organization;
- organizing contents around competencies for learning and continuous assessment.

This curriculum revision also considered international standards which required assessing curriculum materials of different countries from Africa, Asia, Europe and America. International consultants had also contributed in sharing experience on development of curriculum material starting from the flowchart up to the syllabus.

The courses of both grade 7 and 8 are designed in five units as the previous one. However, as mentioned above there are shifting of units from one grade to the other, merging of topics and introducing new concept to the grades. Some of the examples for these are the introduction of organic chemistry in grade 8 under the unit Classification of Compounds and inclusion of application in agriculture and industry. The rationale behind the introduction of organic chemistry is to make students those quit their

education at grade 8 familiar with hydrocarbons which they encounter in their daily lives and demands forwarded in the needs assessment.

The new curriculum framework of Ethiopian schools allocated two periods a week for grades 7 and 8 chemistry courses. Since there are 40 weeks in the academic calendar; the 70 periods allotted for each of the grade levels are expected to be completed in 35 weeks.

The format of the syllabus is different from the traditionally used format. There are only three columns of competency, content and suggested activities respectively in the syllabus below which comes the assessment row.

In the assessment the minimum learning competencies for students working at the minimum requirement level are listed to evaluate their performances. It also suggests assistance to be made for students working below and above the required levels. Assessment is done through continuous process; however, specific assessment techniques are selected in order to collect information about how well students are achieving the competencies. The assessment techniques used at any particular time depends on what facility with the knowledge, skill, or process the teacher wants the student to demonstrate. The appropriateness of the techniques therefore results on the content, the instructional strategies used, the level of development of the students and what is to be assessed. The environment and culture of the students must also be considered.

Various assessment techniques are listed below. The techniques listed are meant to serve only for reference, since the teacher exercises professional judgment in determining which technique suit the particular purpose of assessment.

Correlating Instruction, Evaluation, and Science Goals

Instructional Strategies	Some Important Active Learning Methods for Science	Some corresponding Assessment Techniques
Direct	<ul style="list-style-type: none"> • Demonstrations 	<ul style="list-style-type: none"> • Group/Individual (Peer/Self): Performance Assessments • Short-Answer Quizzes and Tests
Indirect	<ul style="list-style-type: none"> • Concept Mapping/formation/Attainment • Inquiry • Problem Solving 	<ul style="list-style-type: none"> • Individual/Group: Presentations • Oral Assessments • Performance Assessments • Written Assignments
Experiential	<ul style="list-style-type: none"> • Conducting Experiments • Field Observations and Trips • Model Building • Simulations 	<ul style="list-style-type: none"> • Group/Individual: performance Assessments; Written Assignments; • Peer/Self: Oral Assessments • Technical Skills
Independent Study	<ul style="list-style-type: none"> • Reports • Homework • Research Projects 	<ul style="list-style-type: none"> • Performance Assessments • Portfolios • Presentations • Quizzes • Written Assignments
Interactive	<ul style="list-style-type: none"> • Brainstorming • Co-operative Learning Groups • Discussion • Laboratory Groups 	<ul style="list-style-type: none"> • Group/Peer: Oral Assessments • Written Assignments

To implement the revised curriculum there are a number of curriculum materials prepared besides the syllabus. These materials are: flowchart, minimum learning competencies, student text books, teacher's guide, practical activities manual and student work book.

This syllabus of grade 7 and 8 was revised and reviewed by 14 national and international education experts:

I. International consultant on science education

- Derek McMonagle

II. Curriculum Experts from Ministry of Education

- Alemayehu W/Kirkos
- Nega Gichile
- Tesfaye Jinore

III. Curriculum Expert from Region

- Solomon Asegidew (Addis ababa)

IV. Teachers from the Regions

- Ayenalem Aboye (Dire Dawa)
- Guta Degefa (Addis Ababa)
- Endris Mekonnen (Afar)
- Mekonnen Legesse (Addis ababa)
- Mengesha Tsegaye (Oromia)
- Tesfaye Shimelis (Harar)
- Wasihun Bitew (Somali)
- Zenebe Hailu (SNNPR)

**Allotment of Periods
for Units and Sub-units of Chemistry
Grades 7 and 8**

Grade	Unit	Sub-unit	Number of Periods	
			Sub-unit	Total
7	Unit 1: Chemistry and its importance	1.1 Definition and essence of chemistry	1	4
		1.2 Relationship between chemistry and other natural sciences	1	
		1.3 Role played by chemistry in production and society	1	
		1.4 Some common chemical industries in Ethiopia	1	
	Unit 2: Substance	2.1 Properties of substances	3	21
2.2 Groupings of substances		8		
2.3. Changes around us		4		
2.4. Separation of mixtures and its application		6		
Unit 3: The language of chemistry	3.1. Symbols of elements	2	19	
	3.2. Chemical formulas	8		
	3.3. Qualitative and quantitative significance of symbols and formulas	2		
	3.4. Simple chemical reactions and equations	7		
Unit 4: The structure of substances	4.1. Historical development of the atomic nature of substances	1	15	
	4.2 Atomic theory	2		
	4.3. The structure of the atom	10		
	4.4. Molecules	2		
Unit 5: Periodic classification of elements	5.1 Historical development of periodic classification of elements	1	11	
	5.2. Mendeleev's periodic classification	2		
	5.3. Modern Periodic Table	7		
	5.4. Importance of Modern Periodic Table	1		
8	Unit 1: Classification of compounds	1.1. Introduction	1	17
		1.2. Organic compounds	4	
		1.3. Inorganic compounds	12	

Chemistry syllabus: Grade 7 and 8

Grade	Unit	Sub-unit	Number of Periods	
			Sub-unit	Total
	Unit 2: Some important metals	2.1 General properties of metals	1	12
		2.2 Sodium and potassium	2	
		2.3. Magnesium and calcium	2	
		2.4 Aluminium	1	
		2.5 Iron	1	
		2.6 Copper and silver	1	
		2.7 Gold, platinum and tantalum	2	
		2.8 Alloys	2	
	Unit 3: Some important non-metals	3.1. General properties of non-metals	1	10
		3.2. Carbon	2	
		3.3. Nitrogen	2	
		3.4. Phosphorus	1	
		3.5. Oxygen	1	
		3.6. Sulphur	1	
		3.7 Uses of some common compounds of non-metals	2	
	Unit 4: Environmental chemistry	4.1. Air	5	20
		4.2 Water	6	
		4.3 Soil	6	
		4.4. Fuels	3	
	Unit 5: Calculations based on formulas	5.1 Introduction	1	11
5.2. Atomic mass, molecular mass and formula mass		2		
5.3 The mole concept		3		
5.4 Percentage composition of compounds		2		
5.5 Determination of formulas		3		