

# **Integrated Science Syllabus**

## **Grades 5 and 6**

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## Introduction

Integrated science is a subject in which aspects of separate sciences such as biology, chemistry, physics, earth science, and technology are brought together around applied science themes. The integrated science curriculum for grades 5 and 6 is structured by a thematic approach and adopts six themes which are studied at both grades. The six themes are air, water, plants, animals, our body, and earth. The themes are considered at both grades in such a way that they address issues like health, harmful practices, agriculture, environment, population, and technology. The themes are presented in such a way as to provide students with opportunities to learn science by doing and to develop scientific knowledge and skills as well as attitudes and values needed for science and for effective citizenry.

The integrated science syllabuses for grades 5 and 6 are revised based on the new curriculum framework for Ethiopian schools and on the needs assessment conducted prior to the revision work. The syllabuses have also considered international content standards of a similar age and grade level of learners. The specific objectives and contents are derived from the minimum learning competencies designed for the two grade levels. Agriculture, technology and AIDS are integrated in a much broader manner in response to the recommendations of the needs assessment. The needs assessment has indicated areas in the curriculum where contents are too difficult for children and grade levels where contents are overloaded. This syllabus has removed some difficult contents and retained others by simplifying them. The content overload has also been addressed by limiting details of contents and reducing the highly prescriptive methodology. Large content details and highly prescriptive methodology were proved to result in big volumes of textbooks which teachers found difficult to complete in an academic year.

In general, the main changes that are made during the revision of the integrated science curriculum revolved around:

- addressing content overload
- addressing content difficulty
- strengthening relationships with TVET and further learning
- ensuring relevance of contents to the life and need of students
- organizing teaching around learning competencies
- integrating agriculture
- considering international standards
- strengthening horizontal and vertical relationships

- integrating technology
- strengthening active learning

The new curriculum framework for Ethiopian schools has allotted four periods per week for integrated science. Even though the academic calendar is made up of 40 weeks, the syllabus is prepared for 34 weeks (136 periods) creating a wider chance for teachers to use about six extra weeks for tasks of helping students that need further assistance and even for revision and student projects. In addition to getting more relaxed time for activities this also ensures that the curriculum be covered rightly in the academic year. The distribution of periods for each unit and sub-unit of each grade level is indicated in the table at the end of this introduction. It should be noted that periods allocated for the sub-units of each unit, throughout the syllabus, are proposed leaving a room for teachers' freedom of using them flexibly. A teacher who finished the content before the allocated time could freely use the remaining periods for more active learning tasks.

The curriculum frame work has clearly indicted that continuous assessment should be part of the teaching learning process and be done using oral, written and practical work. Therefore, this syllabus expects teachers to conduct continuous assessment throughout each term in the form of classroom exercises (written or oral), tests, homework/ assignments, assessment of practical and field works, reports of project activities and personal inventories. In this syllabus, at the end of each unit, are given assessment descriptions, based on competencies, in order to help teacher focus their continuous assessments around them and make sure whether the ones set as standard competencies are achieved or not. In the assessment, the statement "minimum requirement level" should not be misleading and should be understood as the "standard level" Students working at the standard level are expected to achieve the competencies set for the grade level successfully. Teachers should give special considerations for those who are working above and below the standard levels by encouraging th eons that work above the standard and by giving extra attention for those who work below the standard.

This syllabus is not the only curricular material for integrated science. It is preceded by the flow chart and the minimum learning competencies (MLCs) and is expected to be succeeded by students textbook, students' workbook, teachers guide, and practical activities manual. **The flowchart is**

a document that presents the contents listed in a sequence that gives a guideline on the topics to be taught and arranging them in such a way that they build on each other in a spiral progression. The flow chart begets the MLC. **The MLC** is a document that indicates the minimum that a student must learn in each grade level in terms of content and skills and it builds on the themes or competency areas identified for the subject. The MLC begets the syllabus. **The syllabus** is a document that is preplanned, preordained, pre-sequenced, inventory of specifications that serves as a road map to teachers, students and textbook writers. It is made up of unit outcomes, competencies, contents, and hints for teaching and assessment. The syllabus begets the students' textbook and workbook and to the teachers guide and practical activities manual. **The textbook** is a standard book used in schools for a given subject and grade level and which serves as a primary learning instrument for students. **The workbook** is a booklet used by a student in which answers and workings may be entered besides questions and exercises. The booklet is designed in such a way that it has enough spaces for solving problems or recording activities. **The teacher's guide** is a book for the teacher that consists of written instructions for the teacher giving specific directions for teaching the various parts of a lesson. **The practical activities manual** is a manual for the teacher giving instructions on the 'how to' of conducting experiments and simple activities inside and outside the classroom, preparing equipments and chemicals, arranging and performing field trips and visits, making teaching aids and constructing models.

Finally, it should be underlined that the key players in the proper implementation of the integrated science curriculum are not only students and teachers. Parents, school management, community and government (both central and regional) have important roles. Parents should provide opportunities for their children to practice at home the knowledge and skills they have learnt at school. They should give necessary advice and supervision of their activities. The school management should provide moral and material support for integrated science activities in the school such as plot of land for agricultural activities and establishing linkages between the community, relevant institutions and activities initiated by the

subject such as tree planting. The community should avail community resources for the teaching of integrated science especially when students are required to demonstrate active participation in community undertakings.

This document of grades 5 and 6 integrated science syllabuses was developed by a workshop (January 8- May 8, 2008) held at the premises of the Curriculum Framework Development Department of the MOE and at which 30 teachers from nine regions of the country participated. Following is a list of team of experts and teachers who developed this document:

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**Allotment of Periods  
for Units and Sub-units of Integrated Science  
Grades 5 and 6**

Grade	Unit	Sub-unit	Number of Periods	
			Sub-unit	Total
5	Unit 1: Air	1.1 Air as substance	6	23
		1.2 Properties of air	4	
		1.3 Importance of air	3	
		1.4 The human breathing system	5	
		1.5 The effects of smoking on health	3	
1.6 Harmful traditional practices		2		
Unit 2: Water	2.1 Water in nature 2.2 Water as a compound 2.3 Importance of Water 2.4 Wastage of Water 2.5 Pollution of Water 2.6 Methods of water conservation	2.1 Water in nature	2	20
		2.2 Water as a compound	4	
		2.3 Importance of Water	2	
		2.4 Wastage of Water	3	
		2.5 Pollution of Water	4	
		2.6 Methods of water conservation	5	
Unit 3: Plants	3.1 Importance of plants 3.2 Soils and Plants 3.3 Soil improvement practices 3.4 Our forests: The threats on them and conservation 3.5 Raising vegetable seedlings and crop growing 3.6 Weeds and weed control 3.7 Harmful practices	3.1 Importance of plants	3	30
		3.2 Soils and Plants	5	
		3.3 Soil improvement practices	5	
		3.4 Our forests: The threats on them and conservation	5	
		3.5 Raising vegetable seedlings and crop growing	6	
		3.6 Weeds and weed control	3	
		3.7 Harmful practices	3	
Unit 4: Animals	4.1 Invertebrates and vertebrates 4.2 Insects 4.3 Fishes 4.4 Amphibians 4.5 Reptiles	4.1 Invertebrates and vertebrates	2	25
		4.2 Insects	8	
		4.3 Fishes	7	
		4.4 Amphibians	5	
		4.5 Reptiles	3	
Unit 5: Our body	5.1 Excretion 5.2 Food hygiene 5.3 Food as a source of heat energy 5.4 Food shortage 5.5 Harmful practices 5.6 HIV and AIDS	5.1 Excretion	5	24
		5.2 Food hygiene	4	
		5.3 Food as a source of heat energy	6	
		5.4 Food shortage	2	
		5.5 Harmful practices	3	
		5.6 HIV and AIDS	4	

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Grade	Unit	Sub-unit	Number of Periods	
			Sub-unit	Total
	Unit 6: Earth	6.1 The Earth in the Solar System 6.2 Components of the Solar System 6.3 Motion of the earth 6.4 Artificial satellites	3 5 4 2	14
6	Unit 1: Air	1.1 Air as Mixture 1.2 Air Pollution 1.3 Air Borne Diseases	6 7 6	19
	Unit 2: Water	2.1 Physical properties of water 2.2 Water as a neutral compound 2.3 Clean Water 2.4 Waterborne diseases 2.5 Water and technology	4 7 4 7 9	31
	Unit 3: Plants	3.1 Algae, fungi, mosses and ferns 3.2 Reproduction in plants 3.3 Seed dispersal and germination 3.4 Plants as food for humans 3.5 Raising tree seedlings 3.6 Harvesting and storing crops 3.7 Technology and Agriculture	5 5 5 3 5 5 2	30
	Unit 4: Animals	4.1 Birds 4.2 Mammals 4.3 Wild Life	6 6 5	17
	Unit 5: Our body	5.1 The human eye 5.2 The human nervous system and hormones 5.3 The human reproductive system 5.4 HIV and AIDS	7 7 7 5	26
	Unit 6: Earth	6.1 Structure of the Earth 6.2 Atmosphere and weather 6.3 Earth's Climate	4 5 4	13