

Secondary Physics

Syllabus Adjustment for 2021



RETURN TO SCHOOL INFORMATION

Policy for syllabus adjustment in Primary and Secondary Schools in 2021 to take account of Covid school closures in 2020.

Background

1. Learners have missed much of the 2020 school year because of Covid closures. It is therefore necessary to adjust the syllabuses for 2021 to allow learners to 'catch up with' parts of the syllabus they missed, and to move quickly through the 2021 syllabus.
2. For learners moving into Primary 1, they must follow the P1 textbooks which are aligned to the new curriculum. For Learners in P3, P5, P7 and S3, they must begin with textbook Chapter 1 from the previous year. (P2,4,6, and S2.) Further guidance for adjusting the syllabus in P3, P5, P7 and S3 will come to schools in June.
3. Those learners moving into Primary 2, 4 and 6 started the new curriculum and textbooks in 2020. For these learners there will be a syllabus adjustment which will take the form of completing some of the units from the textbook that was appropriate to them in 2020, and some units from the textbook appropriate for 2021. The total number of units to be covered is similar to that expected in a year
- 3a. Learners in P8 will continue with the old syllabus working towards their exams as they missed so much of the new curriculum in P7.

4. The basis for the selection is set out below. It is important for teachers to understand the reasons for the units selected to ensure the correct focus on learning.
5. The Primary 8 Examinations will be based on the old syllabus.
6. The units to be followed by learners entering P2,4,6 and Secondary 2 are set out below for each subject.

Other considerations

7. Missing so much schooling will cause problems in:
 - Social and emotional – there will need to be a period of social and emotional re-adjustment for young people who have spent so long away from school
 - Learning – some young people will inevitably have forgotten some things that they previously knew and will also take a while to re-adjust to learning in a school environment
8. There will therefore need to be a period of re-adjustment on return to school and schools will need to be understanding of learners' needs at this time.

Syllabus adjustment

9. The process of syllabus adjustment means selecting elements from the year that was missed along with elements from the syllabus that should be followed in 2021. The criteria for the selection are based on:
 - Development of key concepts within the subject
 - Development of key subject skills
 - The need for things to be learned in the right order
10. The selection has been made with reference to the Expected Learning Outcomes of the South Sudan Subjects Overviews for the relevant year.
11. The selection also takes account of the requirements for each subject of the South Sudan Examination Specifications and Blueprints. These only apply directly to Primary 8 and Secondary 4, but, of course, have implications for all other years.
12. There are detailed documents for each subject for Primary and Secondary schools. These set out clearly the textbook units, or parts of units, that need to be followed. They also give the reasons for the selections. It will be helpful for teachers to understand these reasons in order to plan learning effectively.

Sharing textbooks

13. This approach means that learners entering P2,4 & 6 and S2 in 2021 will need to use, at the beginning of the year, the textbooks for the previous year. Of course, these same textbooks will also need to be used by learners now entering P1,3,5&7 and S1&3. How can two year-groups use the same books at the same time? The answer is that, because of specialist subject teaching, it is unlikely that two adjacent year-groups will be studying the same subject in the same period – because the same teacher will be teaching both year-groups. If there is a clash, then the school will need to adjust its timetable.
14. It will be necessary for the textbooks to be collected in and transferred from class to class at the end of each period. In the second part of the year, this problem will disappear because learners will be studying from the textbook appropriate to their year group.

More information

More information is available in the County Education Centres, the Ministry of general Education and Instruction and can also be obtained by visiting the website:

[Education and learning materials | CGA Technologies](#)

PRIORITIES FOR SCHOOL REOPENING

Priorities to consider when preparing to reopen schools.

Engage the whole school community, including children and young people, in back-to-school planning and campaigns using a variety of methods including making phone calls, sending messages and by generally speaking to members of the school community. Use appropriate communication formats to reach girls, women and other vulnerable groups who often have less access to information channels.

Clean and disinfect school facilities with emphasis on surfaces that are touched by many people. Engage the whole school community in cleaning and maintenance for school reopening. Ensure that cleaning and disinfection measures are effective and regular.

Take action to ensure all children and young people return to school, prioritizing the most vulnerable. Monitor absences and implement measures to manage or prevent health risks.

Plan to prioritize psychosocial support and socio-emotional learning activities in the reopening period.

Contact all teachers to determine whether they can return to teaching in the school.

Organize meetings with all teachers, school management and other school staff to train on reopening protocols.

EVERY CHILD, EVERY RIGHT



UN Rights of the Child

The Convention applies to every child without discrimination, whatever their ethnicity, gender, religion, language, abilities or any other status, whatever they think or say, whatever their family background (Article 2).

Image: hreusa.org

Priorities for classroom practice when schools reopen.

-  **1-2-3 Establish Routines** – Routines are series of actions that the teacher asks students to follow. These create safe, efficient and productive learning environments.
-  **Set Expectations** – Give clear directions for work and set clear expectations for student behaviour both with regards to how learners treat each other and how they respond to the work they are given.
-  **Reinforce Routines and Expectations**
Consistency is crucial in helping learners to feel safe and in helping them to develop 'healthy habits' for learning and behaviour.
-  **Check for Understanding** – Pause to ask basic questions to see whether learners understand the lesson so far.
-  **Give Feedback** – As soon as you can, explain to the learner what they are doing well and help them to fix mistakes.
-  **Adjust Instruction** – Change your teaching according to how students are performing in the lesson.
-  **Challenge stereotypes and Biases** – Be active in your work against the stereotypes that might exist in your community. Create opportunities for ALL students to learn.
-  **Build Relationships** – Get to know learners better so that understand them as individuals.
-  **Demonstrate and Practice** – Show learners how to perform a new task and then ask learners to practice the same task.
-  **Promote Deeper Thinking** – Ask learners challenging questions that have more than one correct answer. Ask learners to explain their thinking.
-  **Capture Interest** – Use a story, object, fact or question to introduce a lesson and get learners excited about it.

SECONDARY PHYSICS

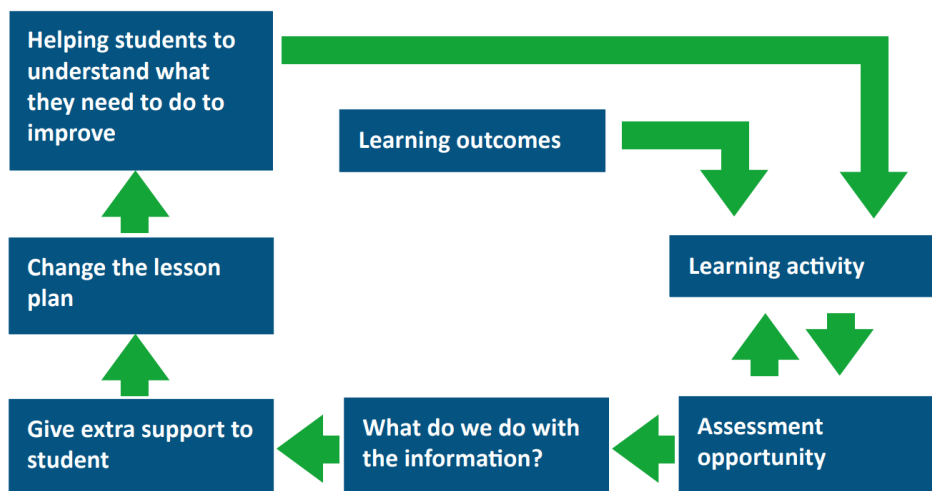
SYLLABUS ADJUSTMENT FOR 2021

The process of syllabus adjustment

Learners have missed much of the 2020 school year because of Covid closures. It is therefore necessary to adjust the syllabus for 2021 to allow learners to 'catch up with' parts of the syllabus they missed and to move quickly through the 2021 syllabus.

The total number of units to be covered is similar to that expected in a year. For learners in S4, they will continue with the old syllabus, upon which the exam will be based because they have covered so little of the new curriculum.

The basis for the selection of units is set out in the following pages. It is important for teachers to understand the reasons for the units selected to ensure the correct focus on learning.



The cycle of formative assessment should help teachers to identify what learners need to do to improve and when it is time to move on to the next unit.

Values and Principles

The adjusted syllabus will continue to promote the Values and Principles as set out in the Curriculum Framework.

In order to build a modern society where young people can prosper and achieve their aspirations, the curriculum needs to be built on a clear set of values that will permeate learning and become embedded in young people's approach to life. Young people need to be clear about their South Sudanese identity. Justice, democracy, tolerance and respect need to be more than words; they need to become an essential part of the

curriculum and young people's lives. Human rights and gender equity must become the norm.

Young people's understanding of, and commitment to, these values is essential to the country's future, and must therefore permeate the curriculum. To achieve this, the curriculum must be based on firm and shared values, and adhere to a set of clear principles.

Values

Education in South Sudan will be based on a shared commitment to:

- Human rights and gender equity
- Respect and integrity
- Peace and tolerance
- Compassion and social justice
- Democracy and national pride

Principles

The South Sudan Curriculum should provide:

- A culture of excellence that supports innovation, creativity, continuous improvement and effectiveness
- An environment of empowerment that promotes independence, individual learning, critical thinking, problem-solving and emotional intelligence
- A context of South Sudanese heritage and culture that builds national pride and identity within an understanding of global citizenship
- A spirit of hope, respect, peace, reconciliation, unity and national pride, democracy and global understanding

The values and principles will guide the construction of the curriculum and also guide the way it is taught. They will underpin and guide the subject syllabuses, and the way schools are run and how teachers are trained.

KEY FEATURES OF SECONDARY PHYSICS SYLLABUSES AND STRUCTURE OF TEXTBOOKS

Key features of Physics syllabus

The South Sudan “Subject Overviews” see physics as “*the study of processes resulting from the effect of energy on matter. These processes relate to mechanics, heat, light, other radiation, sound, electricity, magnetism and atomic structure*”. Within this study of Physics, learners develop:

- An understanding of the **core concepts**
- The ability to carry out the key **processes**
- A recognition of **inter-related concepts** within the subject

The key processes, or scientific skills are:

- Asking questions that can be investigated scientifically, and deciding how to find answers
- Considering what sources of information they will use to answer questions, including first-hand experience and a range of other sources
- Forming hypotheses and thinking about what might happen
- Planning and carrying out investigations, trying out possible approaches and deciding what evidence to collect and what sort of equipment or materials to use
- Making a fair test or comparison by changing one factor and observing or measuring the effect whilst keeping other factors the same
- Making systematic measurements and observations

- Checking measurements and observations by repeating them where appropriate

In selecting from the units, it is therefore important to ensure that the conceptual base of the processes is covered and that sufficient opportunities are provided for learners to develop the necessary skills.

Structure of textbook units

The textbooks follow the structure of the syllabuses with one textbook unit for each syllabus unit. Because the scientific skills are covered in every unit, the selection is made on the basis of the optimal range of knowledge and understanding.

S4 Final Examinations

The specifications for the S4 examination in 2021 are set out below. Although these specifications do not apply directly to years other than S4, they show clearly the direction that development must take in earlier years in order to achieve these expectations.

The table on the opposite page sets out the:

- category of questions that will appear on the examination paper
- the level of performance that is expected
- the elements of the curriculum that this entails

Category	Expectations	Curriculum Element
<p>Core Concepts. Students have developed conceptual understanding within the elements studied and can apply these concepts to understand phenomena and processes in the real world.</p>	<ol style="list-style-type: none"> Demonstrate conceptual understanding Apply the concepts to show understanding of phenomena Apply the concepts to show understanding of processes in the real world 	<ul style="list-style-type: none"> States of matter Forces, work, energy, power Machines and dynamics Behaviour of light at plane and curved surfaces
<p>Practices. Students are able to plan and carry out a scientific investigation, taking account of relevant factors and controlling for necessary variables.</p>	<ol style="list-style-type: none"> Plan and carry out valid scientific investigations Take account of relevant factors Control necessary variables 	<ul style="list-style-type: none"> Particles: radiation, electromagnetic radiation Magnetism Electrostatics, current electricity, electronics Mechanics, motion, laws of linear motion Thermal physics, heat, effect on matter, heat capacity, energy calculations
<p>Inter-related Concepts. Students recognise and understand the connections that are inter-related across the differing areas of disciplinary content and can deploy intellectual tools necessary to detect and handle these connections.</p>	<ol style="list-style-type: none"> Recognise and understand connections between concepts Deploy intellectual tools to detect and handle connections between concepts 	<ul style="list-style-type: none"> Waves: refraction, interaction, interference, diffraction Momentum, circular and harmonic motion Newton's laws of gravitation, orbits of planets and satellites Electric fields, capacitance, magnetic fields, electromagnetic induction Cathode rays, cathode ray tubes Radioactivity, nuclear energy

KEY FEATURES OF SECONDARY PHYSICS SYLLABUSES AND STRUCTURE OF TEXTBOOKS

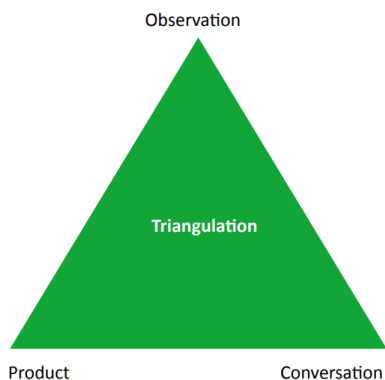
School-based formative assessment

Ongoing classroom-based assessment is even more important in 2021 as we try to ensure that all learning is matched to the needs of learners who are likely to have had a range of experiences whilst schools have been closed. It is important to look for opportunities to find out how well learning is going through the use of the 'triangulation' approach set out in the 'South Sudan Assessment Guidance':

- conversation with learners
- observations of what they do
- analysis of the work that they produce

The expectations for each unit are set out clearly in the syllabuses and Teacher Guides.

Assesment Triangle



Triangulation of assessment opportunities

Sharing Textbooks

It is recognised that if books from an earlier year are being used, then the same books will also be needed by learners in that year. However, it is unlikely that two year-groups will be doing the same subject in the same period, and so it will be possible to share use of the textbooks. This will mean that the teacher will need to collect in the textbooks at the end of a lesson and take them to another class. However, this will only happen at the beginning of the year, because by the end of the year all classes will be on the appropriate book for them.

Units to be covered in S2

The following pages set out the units to be used in S2. In each case, teachers should start with the units from the earlier book.

SECONDARY PHYSICS

SYLLABUS ADJUSTMENT FOR 2021

Secondary 2 Physics

Key Feature of Secondary 1&2

In S1&2, the focus of learning is on understanding a range of key concepts in physics in S1 and on exploring some of these in more depth in S2.

Key Learning Outcomes

By the end of Secondary 2, learners are expected to understand:

- The effects of forces and the concepts of work, energy and the dynamics of objects
- The nature of heat and describe its effects on matter
- The behaviour of light at plane and curved surfaces
- The motion, types and properties of waves
- The theory of magnetism and the properties of magnets

Textbook Units

In the S1 and S2 textbooks, some units have a single topic, and other have more than one. Both books are extremely long and detailed and go way beyond the requirements of the syllabuses, and it would be difficult to get through either textbook in a year when only three lessons are allocated each week for physics. The S1 textbook introduces many important aspects of physics so a selection has been made of sections **within** the units and topics. The S2 selections give time for key topics to be explored in more depth.

The units to be followed are therefore:

Secondary 1 Textbook

Unit 1: Topic 1 - States of Matter

Sections 1.1 to 1.3 and 1.6

Unit 2: Topic 2- Types of forces and their measurement

Sections 2.1 to 2.3

Unit 3: Topic 4 - Effects of temperature change on matter

Sections 4.1 to 4.3

Unit 4: Topic 5 – Reflection of light

Sections 5.1 & 5.2

Unit 5: Topic 7 – Intro to static electricity

Section 7.1

Unit 5: Topic 8 – Intro to current electricity

Section 8.1

Secondary 2 Textbook

Unit 1: Topic 1 – Reflection of light at curved surfaces

Unit 2: Topic 3 – Moments about a force

Unit 3: Topic 5 – Work, energy and power

Unit 5: Topic 7 – Introduction to waves

Unit 6: Topic 9 – Heat transfer

Unit 7: Topic 10 - Magnetism

SECONDARY PHYSICS

SYLLABUS ADJUSTMENT FOR 2021

Secondary 4 Physics

Key Feature of Secondary 3&4

In S3&4, the focus of learning is on an in-depth understanding of some central concepts of physics. It is therefore important to select a number of topics that can be studied in depth that rather than cover all topics at a shallow level. As some S4 units follow on from a unit in S3, it is important that learners receive the necessary grounding. The final examination will be adjusted to take account of the topics selected.

Key Learning Outcomes

By the end of Secondary 2, learners are expected to understand:

- Understand mechanics, motion and laws of linear motion
- Use understanding of waves to explain refraction, wave interaction, interference and diffraction
- Understand Newton's Law of Gravitation, and the orbits of planets and satellites
- Explain electric fields, capacitance, magnetic fields and electromagnetic induction
- Use knowledge of nuclear physics to explain radioactivity and its use in providing nuclear energy

Textbook Units

In the S3 and S4 textbooks, some units have a single topic, and other have more than one. In two instances (S3 Unit 3 and S4 Unit 5) topics have been selected **within** a unit. All other units should be covered in full, apart from S4 Unit 3 where the final sections of the unit should be omitted.

The units to be followed are therefore:

Secondary 1 Textbook

Unit 3: Current Electricity. (Topic 3)

Unit 4: The laws of linear motion

Unit 5: Thermal physics

Secondary 2 Textbook

Unit 2: Newton's Laws of Gravity

Unit 3: Wave refraction, interaction and interference

Sections 4.1 to 4.7

Unit 4: Electrical field and capacitance

Unit 5: Magnetic field and electro-magnetic induction (Topics 6 & 7)

Unit 7: Radioactivity and nuclear energy

Space to write notes

The New National Curriculum for South Sudan

In setting out this curriculum, we set out our ambitions for the nation: for peace and prosperity, for growth and development, for harmony and for justice.

To achieve the ambitions of the nation, we need:

- A vibrant and dynamic curriculum
- A curriculum that will provide challenge to all learners
- A curriculum that can stimulate and inspire
- An inclusive curriculum that provides for all learners
- A curriculum that raises aspirations and broadens horizons.



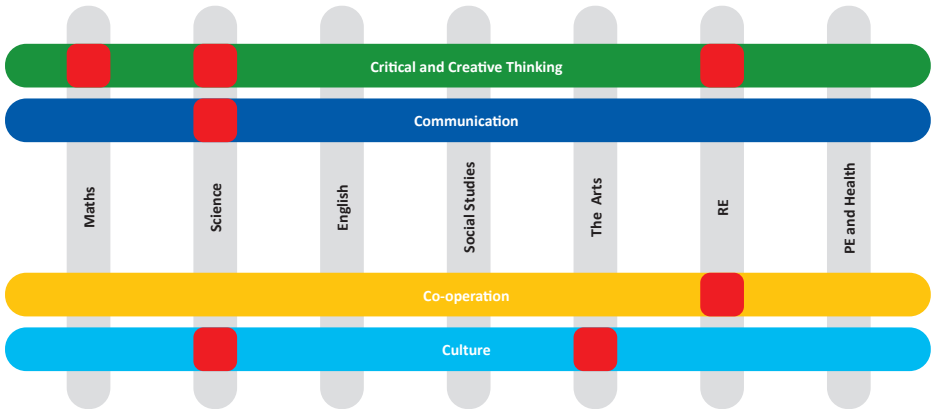
Old Curriculum	New Curriculum
Teacher-Centred	Learner-Centred
Knowledge based	Competency-based
Passive learning	Active learning
Dependent	Independent thought
Learning for exams	Learning for life
Memorization	Understanding
Shallow learning	Deeper learning
'Alien' knowledge	Relevant knowledge

Time allocation for the subjects

The number of periods to be allocated to each subject per week is set out in the tables below. Schools are able to arrange and adapt these periods over the week to fit local circumstances and needs. Periods can be put together into doubles or triples to make longer times for practical activities or longer periods of study where appropriate.

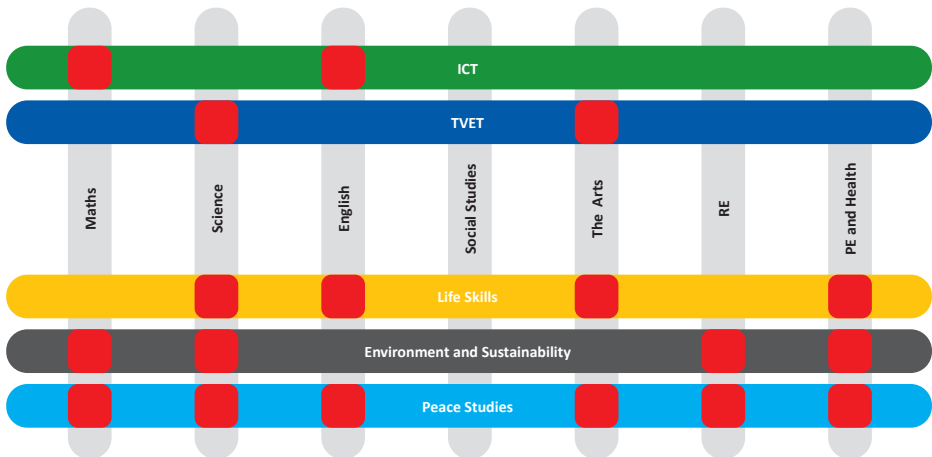
Primary School			
	Number of periods each week		
	P1-3	P4	P5-8
National language	5	5	3
English	7	7	5
Maths	6	6	5
Science	4	5	5
Social Studies	4	5	5
The Arts	3	4	4
RE	3	4	3
PE	3	4	3
Arabic			5
School programmes			2
Total	35	40	40
Time per lesson	35	40	40

Secondary School		
	Number of periods each week	
	S1-2	S3-4
English	5	6
Maths	5	6
Physics	3	
Chemistry	3	
Biology	3	
History	3	
Geography	3	
RE	2	2
Citizenship	2	2
School programmes	3	3
2 x electives (4 lessons each)	8	
3 x electives (7 lessons each)		21
Total	40	40
Time per lesson	45	45



Traditional Subjects are important but young people need to develop a set of competencies that they can apply in all subjects and throughout life. These competencies lie at the heart of every subject and enhance learners' understanding of those subjects. Competencies are needed for young people to continue to learn, to adapt to change and to thrive within the challenges of life in the 21st Century.

Competencies are made up of skills and attitudes in a particular knowledge context.



Cross-cutting Issues and Integrated Subjects. These span the whole curriculum in order for the associated knowledge, understanding, skills and attitudes to be developed in rich and relevant contexts.

South Sudanese culture and heritage

Values and Principles

Human rights, Gender equality, Respect, Tolerance, Compassion, Social justice, democracy and National pride.

Culture of Excellence
Environment of empowerment
Context of South Sudan heritage & culture
Spirit of hope, peace reconciliation

The South Sudan Curriculum

developing:

Good citizens
of South Sudan

Successful life
long learners

Creative and
productive
individuals

Environmentally
responsible
members of society

Critical and
creative thinking

Communication

Co-operation

Culture and
identity

Student Competencies