السلاسل التعليمية المعتمدة لمادة العلوم للمدارس الخاصة المطبقة لبرنامج ثنائي اللغة والبرنامج الدولي Cambridge Secondary 1 Checkpoint للصفين (7-8) للعام الدراسي (٢٠١٥/٢٠١٦)

سلطنة عمان
وزارة التربية والتعليم
المديرية العامة للمدارس الخاصة
دائرة برامج ومناهج المدارس الخاصة
قسم برامج المدارس الخاصة

لجنة الإعداد

الإشراف العام

سهام بنت أحمد بن سعيد الريامية/ مديرة دائرة برامج ومناهج المدارس الخاصة

نبيل بن عبد الله بن راشد الخنبشي/ مدير مساعد بدائرة برامج ومناهج المدارس الخاصة

الإشراف الفني

د. سناء بنت سالم بن سلطان السنانية / رئيسة قسم برامج المدارس الخاصة

فريق اعتماد السلاسل

مروة بنت محمد بن زاهر الهنائية / عضو مناهج تعليمية فيزياء
المديرية العامة للمدارس الخاصة

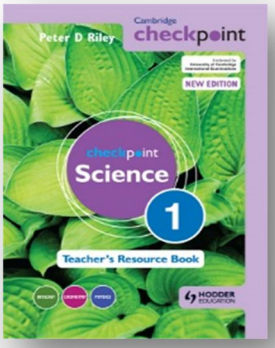
أحمد بن مبارك بن سالم الروتاني / عضو مناهج تعليمية فيزياء
المديرية العامة لتطوير المناهج

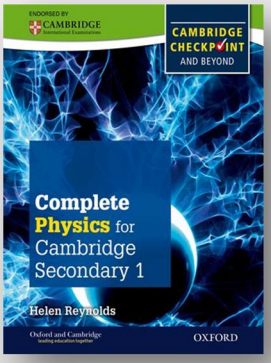
زمزم بنت عبيد بن رمضان الحجرية / عضو مناهج تعليمية كيمياء
المديرية العامة لتطوير المناهج

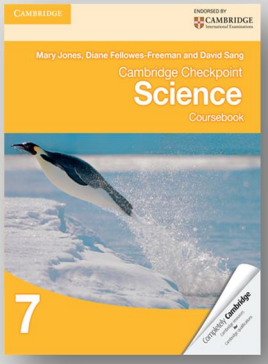
سالم بن خلفان بن سالم الدرعي/ عضو مناهج تعليمية أحياء
المديرية العامة لتطوير المناهج

اعداد النشرة التوجيهية

مروة بنت محمد بن زاهر الهنائية / عضو مناهج تعليمية فيزياء

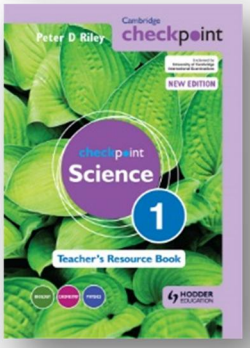






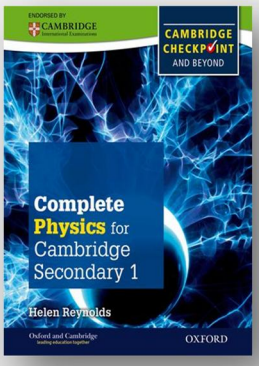
سلطنة عمان
وزارة التربية والتعليم
المديرية العامة للمدارس الخاصة
دائرة برامج ومناهج المدارس الخاصة
قسم برامج المدارس الخاصة

السلاسل التعليمية المعتمدة لمادة العلوم للمدارس الخاصة المطبقة لبرنامج ثنائي اللغة والبرنامج الدولي Cambridge Secondary 1 Checkpoint للصفين (7-8) للعام الدراسي (٢٠١٥/٢٠١٦)



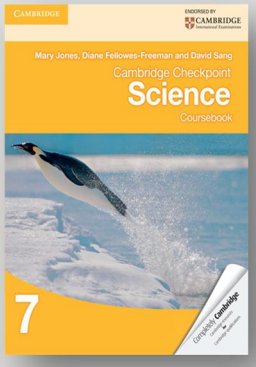
عزيزي / مدير المدرسة
عزيزي/ معلم العلوم

نأمل أن يكون العام القادم ٢٠١٥/٢٠١٦م عاما مليئا بالنجاحات والتطوير الإيجابي بما يحقق أهداف العملية التعليمية التعلمية بالمدارس الخاصة.



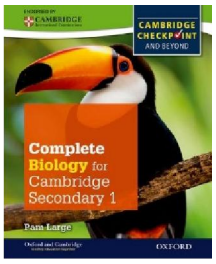
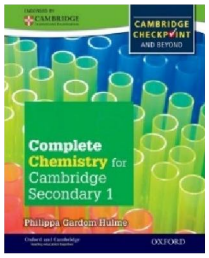
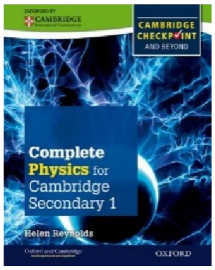
نضع بين أيديكم النشرة التوجيهية الآتية والتي تشتمل على كل مما يأتي:

١- قائمة السلاسل المعتمدة لمادة العلوم والمصادر في برنامج ثنائي اللغة والبرنامج الدولي Cambridge Checkpoint للصفين (٧-٨).
٢- الإطار العام للخطط السنوية لمادة العلوم لبرنامج ثنائي اللغة، للصفين (٧-٨).
٣- توجيهات عامة بشأن منهج مادة العلوم للمدارس الخاصة المطبقة لبرنامج ثنائي اللغة والبرنامج الدولي Cambridge Checkpoint للصفين (٧-٨) في العام الدراسي (٢٠١٥/٢٠١٦).
٤- ملحق قائمة الأهداف التعليمية وأهداف الاستقصاء العلمي لمادة العلوم لبرنامج ثنائي اللغة، للصفين (٧-٨).
٥- ملحق بيانات التواصل مع دور النشر للسلاسل التعليمية المعتمدة.

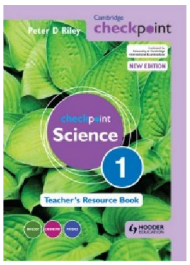
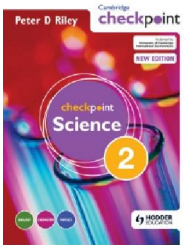
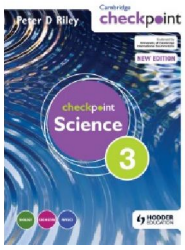


أولا : قائمة السلاسل المعتمدة لبرنامج ثنائى اللغة وبرنامج Cambridge checkpoint لمادة العلوم للصفين (٧ و ٨) :

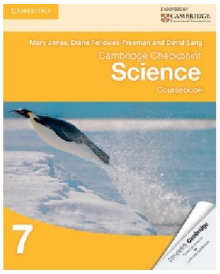
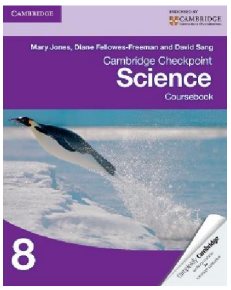
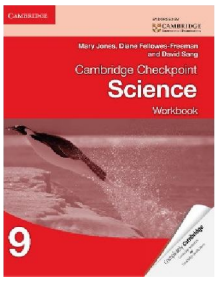
- سلسلة أكسفور (Complete Science for Cambridge Secondary 1)

اسم الكتاب	دار النشر	الطبعة	المكونات	الرقم التسلسلي
Complete Biology for Cambridge Secondary 1 	Oxford university press	First edition 2013	Student book	9708-0-19- 8390213
			work Book	978-0-19-839022-0
			Teacher Pack With (CD)	978-0-19-839023-7
Complete Chemistry for Cambridge Secondary 1 			Student book	978-0-19-839018-3
			work Book	978-0-19-839019-0
			Teacher Pack With (CD)	978-0-19-839020-6
Complete Physics for Cambridge Secondary 1 			Student book	978-0-19-839024-4
			work Book	978-0-19-839025-1
			Teacher Pack With (CD)	978-0-19-839026-8

- سلسلة هودر (Checkpoint Science):

الرقم التسلسلي	المكونات	الطبعة	دار النشر	اسم الكتاب
9781444126037	Student book1	2nd edition 2011	Hodder Education	Checkpoint Science 1 
9781444183467	work Book1			
9781444143805	Teacher Resource1			
9781444143751	Student book2			Checkpoint Science 2 
9781444183481	work Book2			
9781444143812	Teacher Resource2			
9781444143782	Student book3			Checkpoint Science 3 
9781444183504	work Book3			
9781444143829	Teacher Resource3			

- سلسلة كامبردج (Cambridge Checkpoint Science):

اسم الكتاب	دار النشر	الطبعة	المكونات	الرقم التسلسلي
Cambridge Checkpoint science7 	Cambridge University Press	7th edition 2014	Course book7	978-1-107-61333-1
			work Book7	978-1-107-62285-2
			Teacher's Resource7 (CD)	978-1-107-69458-3
Cambridge Checkpoint science 8 		6th edition 2014	Course book 8	978-1-107-65935-3
			work Book8	978-1-107-67961-0
			Teacher's Resource8 (CD)	978-1-107-62505-1
Cambridge Checkpoint science 9 		4th edition 2014	Course book 9	978-1-107-62606-5
			work Book9	978-1-107-69574-0
			Teacher's Resource 9 (CD)	978-1-107-69649-5

ثانيا: الإطار العام للخطط الفصلية لمادة العلوم في برنامج ثنائي اللغة، للصفين (٧-٨)

- **سلسلة أكسفورد (Complete Science for Cambridge Secondary1), Oxford**

Grade 7		
Semester	**Chapters**	**Main Resources**
1st Semester	Unit1: Plants Unit 2: Humans Unit 3: Cells and organisms Unit 4:Living things in the environment Unit5: Variation and classification	**"Complete biology for Cambridge secondary 1"**
	Unit 1: Forces Unit 8: Forces Unit 3: The earth and beyond	**" Complete physics for Cambridge Secondary 1"**
2nd Semester	Unit 2: Energy Unit 10: Energy	
	Unit1: States of matter Unit 2: Material properties Unit 3: Material changes Unit 4: The earth	**" Complete chemistry for Cambridge Secondary 1"**

Grade 8		
Semester	**Chapters**	**Main Resources**
1st Semester	Unit 6: Plants Unit 13: Plants Unit 7: Diet Unit 8: Digestion Unit 9: Circulation Unit 10: Respiration and breathing Unit 11: Reproduction and fetal development Unit 12: Drugs and disease	"Complete biology for Cambridge secondary 1"
	Unit 4: Forces Unit 5: Sound Unit 6: Light	" Complete physics for Cambridge Secondary 1"
2nd Semester	Unit 9: Electricity Unit 7 : Magnetism	
	Unit 6: Material properties Unit 8 : Material properties Unit 7 : Material changes	" Complete chemistry for Cambridge Secondary 1"

(Cambridge checkpoint Science, Hodder) سلسلة هودر

Grade 7		
Semester	**Chapters**	**Main Resources**
1st Semester	Chapter 1: Plants Chapter 2: Major organ system Chapter 3: Cells Chapter 4: Microorganism Chapter 5: Living things in their environment Chapter 6: People and the plant Chapter 7: Classification and variation	" Cambridge Checkpoint Science 1"
	Chapter 13: Measurements Chapter 14: Forces and motion Chapter 17: The earth and beyond	" Cambridge Checkpoint Science 1"
	Chapter 13: Density Chapter 14: Pressure	" Cambridge Checkpoint Science 3"
2nd Semester	Chapter 15: Energy	" Cambridge Checkpoint Science 1"
	Chapter 18: Heat energy transfers	" Cambridge Checkpoint Science 3"
	Chapter 8: The states of matter Chapter 9: Properties of matter and materials Chapter 10: Acids and alkalis Chapter 11: Rocks and soil Chapter 12: Finding the age of the earth	" Cambridge Checkpoint Science 1"

Grade 8		
Semester	**Chapters**	**Main Resources**
1st Semester	Chapter 1: How plants grow	Cambridge Checkpoint Science 2"
	Chapter 1: Photosynthesis Chapter 2: Reproductive in flowering plants	Cambridge Checkpoint Science 3"
	Chapter 2: The healthy diet Chapter 3: Digestion Chapter 4: The circulatory system Chapter 5: The respiration system Chapter 6: Reproduction in humans Chapter 7: Diet, drugs and disease	Cambridge Checkpoint Science 2"
	Chapter 13: Speed Chapter 14: Sound Chapter 15: Light	" Cambridge Checkpoint Science 2"
2nd Semester	Chapter 16: Electrostatics Chapter 17: Electricity	" Cambridge Checkpoint Science 3"
	Chapter 16: Magnetism	Cambridge Checkpoint Science 2"
	Chapter 9: Elements and atoms Chapter 10: Elements, compounds and mixtures Chapter 11: Metals and non- metals Chapter 12: Chemistry in everyday life	" Cambridge Checkpoint Science 2"
	Chapter 7: The structure of atom Chapter 8: The periodic table	" Cambridge Checkpoint Science 3"

- **سلسلة كامبردج (Cambridge Checkpoint Science, Cambridge) : (Cambridge Checkpoint Science, Cambridge)**

Grade 7		
Semester	**Chapters**	**Main Resources**
1st Semester	Unit1: Plants and humans as organisms Unit 2: Cells and organisms Unit 3 :Living things in their environment Unit4: Variation and classification Unit 9: Forces and motion Unit 11: The earth and beyond	" Cambridge Checkpoint Science 7
	Unit 9: Forces in action	" Cambridge Checkpoint Science 9
2nd Semester	Unit 10: Energy	" Cambridge Checkpoint Science 7
	Unit 11: Energy	" Cambridge Checkpoint Science 9
	Unit 5: States of matter Unit 6: Material properties Unit 7: Material changes Unit 8: The earth	" Cambridge Checkpoint Science 7

Grade 8		
Semester	**Chapters**	**Main Recourse**
1st Semester	Unit 1: Plants	" Cambridge Checkpoint Science 8
	Unit 1: Plants	" Cambridge Checkpoint Science 9
	Unit 2: Food and Digestion Unit 3: The Circulatory System Unit 4: Respiration Unit 5: Reproduction and Development	" Cambridge Checkpoint Science 8
	Unit 10: Measuring Motion Unit 11: Sound Unit 12: Light	" Cambridge Checkpoint Science 8
2nd Semester	Unit 10: Electricity	" Cambridge Checkpoint Science 9
	Unit 13 : Magnetism	" Cambridge Checkpoint Science 8
	Unit 7: Elements and Compound Unit 8 : Mixtures Unit 7 : Material Changes	" Cambridge Checkpoint Science 8
	Unit 4: Materials Properties	" Cambridge Checkpoint Science 9

ثالثا : توجيهات بشأن مناهج العلوم للصفين السابع والثامن للمدارس الخاصة المطبقة للبرنامج ثنائي اللغة والبرنامج الدولي (Cambridge Secondary 1) :

المحور	التعليمات
السلاسل المعتمدة	• تلتزم جميع المدارس الخاصة باختيار وتطبيق السلاسل التعليمية المبينة أعلاه للصفين السابع والثامن. • في حال قيام المدرسة بشراء سلاسل تعليمية من القائمة المعتمدة السابقة فيسمح لها بتطبيقها لعام دراسي واحد فقط، على أن تلتزم بالاختيار من القائمة الجديدة في العام الدراسي ٢٠١٦/٢٠١٧م، وعلى أن تتحمل المدرسة مسؤولية تغطية الصور. • بالنسبة للمدارس التي اختارت **سلسلة أكسفورد** فيجب توفير الكتب الثلاثة (الفيزياء والكيمياء والأحياء) كتاب الطالب وكتاب النشاط للطالب على أن يستخدمها الطالب للصفين السابع والثامن وعلى أن يوفر للمعلم كافة مكونات السلسلة. • بالنسبة للمدارس المطبقة **لسلسلة هودر** فإنه يلزم توفير كتاب **(Checkpoint Science 1)** للطالب في الصف السابع وللطالب في الصف الثامن (**Checkpoint Science 2**) وعلى أن يوفر للمعلم كافة مكونات السلسلة. • بالنسبة للمدارس المطبقة **لسلسلة كامبردج** فإنه يلزم توفير كتاب (Cambridge Checkpoint science 7) للطالب في الصف السابع وكتاب (Cambridge Checkpoint science 8) للطالب في الصف الثامن، على أن يوفر للمعلم كافة مكونات السلسلة. • يمكن للمدارس الراغبة بالاطلاع على نسخ من السلاسل التعليمية المعتمدة في القائمة الجديدة زيارة قسم برامج المدارس الخاصة بالمديرية العامة للمدارس الخاصة خلال ساعات العمل الرسمية حتى نهاية يوليو ٢٠١٥. • يمنع نسخ الكتب أو أي مكون من مكونات السلاسل الأساسية بدون تصريح من دار النشر، إذ يعتبر انتهاكاً لحقوق الملكية الفكرية وتعرض المدرسة للمخالفة / الاجراءات القانونية. • ضرورة طلب المدارس لنسخ كافية من السلاسل التعليمية الأساسية لطلابها ومعلميها قبل وقت كاف من بداية العام الدراسي.
الأهداف	• ضرورة التزام المعلمين بتحقيق الأهداف الواردة في النشرة مع التأكيد على ضرورة تحقيق أهداف الاستقصاء العلمي. • ضرورة التزام المعلمين في المدارس المطبقة لبرنامج Cambridge Secondary 1 بتطبيق أهداف البرنامج الدولي في المرحلة (٧-٨).

<table>
<tr><td>المعلمين</td><td>

بالنسبة لسلسلة أكسفورد بإمكان أي معلم علوم تدريس هذه السلاسل دون الحاجة لتقسيمها على ثلاثة معلمين (كيمياء وفيزياء وأحياء).
استخدام طرق تدريس حديثة ومتنوعة مع مراعاة الفروق الفردية للطلاب لتحقيق الأهداف.
استخدام دليل المعلم بفعالية حيث يوضح آلية ادارة الحصة بفعالية ويوفر العديد من الأنشطة الاستقصائية.
تدريب الطلاب على مهارات التفكير العلمي ومهارات القرن ٢١.
اعطاء الطلاب فرصة للقيام بالأنشطة العملية وتدريبهم على مهارات الاستقصاء العلمي.
تدريب الطلاب على أسئلة وأنشطة القدرات العليا والتفكير الناقد والابداعي وقراءة الجداول والرسوم البيانية.

</td></tr>
<tr><td>المختبر</td><td>

يجب تدريب الطلاب على التعامل مع الأدوات والمواد المخبرية.
تدريب الطلاب على اجراءات الأمن والسلامة في المختبر.
يجب اجراء الأنشطة العملية داخل المختبر المدرسي.

</td></tr>
<tr><td>البيانات و التغذية الراجعة</td><td>

أهمية إرسال أية ملاحظات أو أخطاء مطبعية أو مقترحات من قبل المعلمين أو الإدارات حول السلاسل الأساسية المعتمدة حتى يتسنى للمختصين لدينا الإلمام بها، ولعلاج أية إشكاليات تتعلق بهذا الجانب.
أي مدرسة تقوم باختيار سلسلة من السلاسل الأساسية المعتمدة في القائمة الجديدة لأحد البرنامجين، فيرجى منها تعبئة البيانات في الجدول الآتي وإرسالها خلال الفترة من يوليو وحتى نهاية سبتمبر ٢٠١٥م:

<table>
<tr><td>اسم المدرسة – الفرع:</td><td></td></tr>
<tr><td>المحافظة:</td><td></td></tr>
<tr><td>الهاتف:</td><td></td></tr>
<tr><td>البريد الإلكتروني:</td><td></td></tr>
<tr><td>نوع البرنامج (ثنائي/ Check point):</td><td></td></tr>
<tr><td>اسم السلسلة المختارة</td><td></td></tr>
<tr><td>عدد المعلمين المعنيين بتدريس السلسلة</td><td></td></tr>
</table>
❖ للتواصل وإرسال البيانات المطلوبة:
<table>
<tr><th>الاسم</th><th>ا لمسمى الوظيفي</th><th>الايميل</th></tr>
<tr><td>مروة بنت محمد الهنائية</td><td>عضو مناهج فيزياء</td><td>Marwa.a.z@moe.om</td></tr>
</table>
</td></tr>
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رابعا : ملحق قائمة الأهداف التعليمية وأهداف الاستقصاء العلمي لمادة العلوم في البرنامج ثنائي اللغة للصفين ٧ و ٨.

فريق العمل:

Name	Occupation
Marwa Al Hinai	Physics curriculum officer- Ministry of Education
Mr Donald Benjamin	Physics teacher- Al Qurum Privet School
Ms Maryam Ahmed	Biology teacher- Al Qurum Privet School
Ms Shibani Ganguli	Biology teacher- Ahmed bin Majed Privet School
Mr Kenneth Ndaama	Chemistry teacher- Ahmed Bin Majed Privet School
Ms Rubby George	Chemistry teacher- Al Qurum Privet School

- **Scientific Enquiry outcomes:**

Scientific Enquiry (grade 7 & 8)	
Topic	**Learning outcomes**
Question, Ideas and evidence	• Recognize scientific questions. • Understand the importance of questions, evidence and explanations. • Describe how explanations are developed. • Try to answer questions by collecting evidence through observation. • Be able to develop a scientific question that can be investigated. • Explain why some explanations are accepted and others are not • Understand that explanations change as new observations are made. • Understand how scientists worked in the past and how they work now.

Plan investigative work	• Understand that scientists make predictions and check whether their evidence matches these predictions • Understand how to plan an investigation to test an idea in science. • Recognize that there are lots of ways to find out the answers to questions in science. • Make predictions. • Decide what to do to try to answer a science question. • Work out which variables must be changed, controlled, and measured. • Explain what is meant by continuous variables
Obtain and present evidence	• Explore and observe in order to collect evidence and measurements. • Use tools and equipment and technology laboratory in appropriate, safe and accurate manner when implementing the scientific surveys. • Describe how to present results in tables • Describe how to draw line graphs • Record stages in work. • Talk about risks and how to avoid.
Consider evidences and approach	• Make comparisons between his result and other results. • Compare what happened with predictions. • Review and explain what happened. • Model and communicate ideas in order to share, explain and develop.

Grade 7, Biology

Plants and Humans as Organisms	
Topic	**Learning outcomes**
Plant Organs	• Recognize plant parts. • Describe the function of each part of a plant.
Human Organ Systems	• List the names of the human organ systems. • Identifying different organs in our organ systems.
The Human Skeleton	Describe the role of a skeleton in terms of: <u>Support and Protection:</u> • State that a skeleton holds your body together in the right shape. • Identify some delicate organs, their location in the human body and bones that are protect them. <u>Movement:</u> • Define *joint* as two bones meet. • Explain two main kinds of joints and their importance in relation to movement. /explain why joints are needed.
Muscles and Movement	• Explain how the muscle movements control the movements of bones, joints and ligaments. • Describe the different types of muscles • Explain what is meant by voluntary and involuntary muscles and their actions.
Studying the Human Body	• Understand the necessity of studying the human body. • Describe the use of specific equipment and technology to study the human body. • Identify the main parts of a microscope • Find the size of microscopic specimen. (simple calculation)

Cells and Organisms	
Topic	**Learning outcomes**
Characteristics of Living Organisms	• Identify the seven characteristics of living things • Recognize these characteristics in familiar and unfamiliar organisms.
Plant and Animal cells	• Compare plant and animal cells. • Identify different cell organelles and their specific functions.
Specialized Cells	• Identify the different types of specialized cells such as red blood cells, muscle cells, nerve cells, leaf cells, root hair cells, and xylem and phloem cells. • Relate the structure of cells to their functions
Cells, Tissues and Organs	• Define *tissue* as the collection of similar cells that work together. • Describe how different tissues form an *organ.* • Describe how different organs form an *organ system.*
Micro-organism	• Understand the necessity of microorganisms in human welfare. • Describe the harmful and useful microbes and their applications. • Describe the role of microbes in food decay. • Recognize the process of fermentation and its uses. • Understand what is meant by an ‘infectious disease. • Give some examples of diseases caused by micro-organisms. • Suggest how to avoid infections.

Living things in their environment	
Topic	**Learning outcomes**
Habitats and Adaptation	• Define the term habitat and ecosystem. • Explain the term adaptation and survival of the fittest. • Describe the different types of adaptations in plants and animals found in different environments.
Food Chains	• Define the term *food chain*. • Draw and model simple food chains. • Explain how energy is transferred through the various trophic levels of a food chain. • Explain the terms producer, consumer and decomposer, and their role in the ecosystem. • Explain the terms herbivores, carnivores and omnivores with examples.
Pollution	• Describe the human activities that harm the food chain and ecosystem. • Explain the cause and effects of pollution to the environment. • Describe the different types of pollution. • Explain how pollution is depleting the ozone layer.
Variation and classification	
Topic	**Learning outcomes**
Species	• Define term *species* • Describe the binomial system of naming.
Variation	• Define the term *Variation* and how it helps in the formation of new species.

	• Explain variation within the species in terms of development of special features within the species that help an organism to survive. • Describe continuous and discontinuous variation with examples • Describe the term *mutation*. • Identify and analyze the data pertaining to variations within the same species.
Classifying Plants	• State the necessity of classification of the plant kingdom. • Classify plants as spore-bearing and seed-bearing with the characteristics and examples.
Classifying Animals	• State the necessity of classifying animals • Classification of vertebrates and invertebrates with their special features • Describe the rules of classification • Describe the binomial system of nomenclature.

Grade 7, Physics

Forces and motion	
Topic	**Learning outcomes**
Introduction to forces	• Describe different types of forces. • Understand the effects of forces on moving objects • Describe how to measure forces
Balanced force	• Explain the difference between balanced and unbalanced forces • Describe the effect of balanced forces • Describe the effect of unbalanced forces
Friction	• Describe the effect of friction on moving objects • Understand how to reduce friction • Describe how friction can be useful
Gravity	• Explain the link between gravity, mass, and weight • Describe how your weight can be different on different planets
Air resistance	• Explain what affects air resistance • Describe what is meant by terminal velocity
Tension and upthrust	• Describe what happens when you stretch a spring • Explain what is meant by tension • Explain the elastic limit • Explain why things float or sink

Forces in action (some outcomes are from grade 9 textbook)	
Topic	**Learning outcomes**
Pressure	• Explain the difference between weight and pressure. • Calculate the pressure. • Apply ideas of pressure to a range of situations.
Pressure in gases and liquids	• Explain what is meant by liquid pressure. • Describe what determines the pressure in a liquid. • Explain how hydraulic machines work. • Describe some uses of hydraulic machines. • Explain what is meant by gas pressure. • Explain the link between pressure and volume.
Density	• Explain what is meant by density. • Describe how to measure the density of solids, liquids, and gases. • Explain why solids are denser than liquids or gases. • Explain why objects float or sink.

The earth and beyond	
Topic	**Learning outcomes**
The night sky	• Know the types of objects that can be seen in the night sky • Understand how we see different types of objects
Day and night	• Explain why the Sun appears to move across the sky • Explain why we have day and night
Seasons	• Describe the how the height of the Sun in the sky changes over the year • Explain why there are seasons in different parts of the world
Stars	• Explain why the stars appear to move in circles during the night • Describe how the night sky changes over the year
The Solar System	• Describe the planets in our Solar System • Know the order of the planets, and where the asteroid belt is
The Moon	• Describe the phases of the Moon • Explain why we see phases of the Moon and eclipses.

Energy	
Topic	**Learning outcomes**
Introduction to energy	• Describe where we get our energy from. • Know the unit of energy • Understand why the energy in food comes from the Sun. • Describe some methods of generating electricity using the sun's energy.
Energy type	• Name the different types of energy. • Give examples of processes that involve the different types of energy.
Energy transfer	• Understand how energy transfers are shown in diagrams. • Construct energy transfer diagrams.
Conservation of energy	• State the law of conservation of energy. • Explain how the law applies to different situations.
Gravitational potential energy and kinetic energy	• Explain what is meant by gravitational potential energy. • Explain what is meant by kinetic energy. • Describe situations which involve gravitational potential energy and kinetic energy. • Explain how the store of elastic potential energy can change. • Describe situations where the store of elastic potential energy increases or decreases.

Thermal Energy & energy resources (some outcomes are from grade 9 textbook)	
Topic	**Learning outcomes**
Introduction to thermal energy	• Explain the difference between temperature and thermal energy. • Describe what happens to particles in solids, liquids, and gases when you heat them.
Thermal energy transfer	• State the names of some conductors and insulators. • Explain why some materials feel warmer than others. • Describe what happens in convection. • Explain how convection currents are formed. • Recognize some sources of infrared radiation and the similarities between light and infrared. • Describe how infrared is transmitted, absorbed, and reflected. • Explain what is meant by the greenhouse effect.
Energy in the world	• Explain the difference between primary and secondary energy sources. • Describe how the world's energy needs have changed and are likely to change in the future.
Fossil fuels	• Describe how fossil fuels were formed. • Explain how a fossil fuel fired power station works.
Renewable and non- renewables energy resources	• Describe how the energy from the sun can be used. • Explain how energy from the Earth can be used to generate electricity. • Describe how wind, waves, tides, and water behind dams can be used to generate electricity. • Describe the some of the issues in providing energy for the future.

States of Matter	
Topic	**Learning outcomes**
Particle Theory	• State the three states of water: solid (ice), liquid (water) and gas (steam). • Use ideas about particles to explain the behavior of substances in the solid, liquid, and gas states.
Changing of State	• Name the changes of state involvingsolides, liquids and gases. • Observe the changes of water in different states of matter (with reference to boiling point, melting point and freezing point); • Explain changes of state using ideas about particles. • Describe how melting points help identify substances. • State the difference between evaporation and boiling in terms of temperature.

Grade 7, chemistry

Materials properties	
Topic	**Learning outcomes**
Everyday Materials and their Properties	• Describe everyday materials and their physical properties. • Explain what an element is. • Identify metals and non-metals from the periodic table.
Metals and non-metals	• Identify typical metal properties • Link the properties of two metals to their uses. • Identify typical non-metal properties. • Link the properties of non-metals to their uses.

Material Changes	
Topic	**Learning outcomes**
Acids and alkalis	• Give examples of acids and alkalis • Compare the properties of acids and alkalis
The pH scale and indicator	• Explain the use of the pH scale. • Use indicators to distinguish acid and alkaline solutions • Know the pH of acidic, alkaline, and neutral solutions • Use indicators to measure pH. • Understand concentrated and dilute acids /alkali.
Neutralization	• Define neutralization; • State the word equation for neutralization • Give examples of applications of neutralization.
The Earth	
Topic	**Learning outcomes**
The structure of the earth	• Describe a model for the structure of the Earth. • Explain how we know about the Earth's structure.
Rocks	• Observe and classify different types of rocks and soils. • State properties of igneous, sedimentary and metamorphic rock and how each different type of rock is formed. • Relate properties of each type of rock to its formation.
Soil	• Observe and classify different types and soils. • List soil components • Name soil types • Describe soil properties
Fossil	• State what a fossil is • Describe how fossils form • Give examples showing what we can learn from the fossil record. • Describe how scientists have estimated the age of the Earth.

Grade 8, Biology

Plants (some outcomes are from grade 9 textbook)	
Topic	**Learning outcomes**
Photosynthesis	• Describe the importance of plants to life in earth. • Describe the process of photosynthesis with word equation. • Explain the importance of (carbon dioxide, chlorophyll and sun light) for photosynthesis. • Investigate photosynthesis (oxygen bubbles correlated with light). • Explain Biomass and its uses.
Water and Minerals	• Describe how water and minerals are absorbed by roots and transported to leaves. • Explain the importance of water and minerals to plant growth.
Plant reproduction (some outcomes are from grade 9 textbook)	
Topic	**Learning outcomes**
Investigation Flowers	• Identify the parts of a flower. • Describe the function of each part of a flower • Recognize male and female parts of a flower.
Pollination	• Define pollination • Identify different types of pollination • Identify insect and wind pollinated flowers in relation to the types of pollination that undergo. • Explain the importance of pollination in flowering plants
Fertilization	• Define the terms *zygote, gametes* and *fertilization*. • Describe the formation of pollen tube and the process of fertilization
Fruits and seeds	• Describe the process of seed formation and fruit's development. • Explain seed dispersal and its importance in the survival of a species. • Types of fruits: dry and succulent fruits.

Food and Digestion	
Topic	**Learning outcomes**
Nutrient and Balanced Diet	• List the nutrients in food • Explain why each nutrient is needed • Describe what a balanced diet is • Recall some of the main roles of specific vitamins and minerals. • Explain some *deficiency diseases*, such as *scurvy*, *obesity, anemia and rickets* with their causes.
Human Digestive System	• Describe the human digestive system and its major organs that are involved in the digestion of food. • Identify different types of *enzymes* and their role in digestion in the various organs of the alimentary canal. • Explain the process of absorption and assimilation of food in our body.
Teeth	• Identify the different types of teeth. • Describe the structure and function of human teeth • Explain the importance of oral hygiene and preventing tooth and gum decay.

The Circulatory System	
Topic	**Learning outcomes**
Human Circulatory System	• List the components of the circulatory system. • Describe the function of each component. • Describe the structure and function of the heart as a pump organ. • Explain how the blood circulates throughout our body. • Explain the necessity of blood supplying nutrients and oxygen to the body tissues.
Blood	• List the components of blood. • Describe the function of each component. • Describe the function and structure of veins and arteries.

Reproduction and Development	
Topic	**Learning outcomes**
Reproduction	• Describe in brief the human reproductive organs and their functions (for male & female). • Identify female and male gametes • Describe what happens during fertilization.
Fetal development	• Describe fetal development
Growth and development	• Identify the main stages of person's development. • Describe the changes from zygote to adult in terms of growth and development. • Explain how growth involves the cell division and increasing in body size.
Adolescence	• Recognize the changes caused by puberty • Explain why girls have periods
Lifestyle and Health	• Explain how our lifestyle determines our health. • Explain the sedentary lifestyle and health-related problems. • Identify the various lifestyle disorders. • Identify how to create awareness about negative effects of drugs.

Respiration	
Topic	**Learning outcomes**
Human Respiratory System	• Understand the organs and their particular job to form respiratory system. • Explain the structure of lungs. • Explain the difference between breathing and respiration. • Explain the process of respiration (word equation) • Explain aerobic and anaerobic respiration using the word equations. • Investigate the an aerobic respiration of yeast.
Smoking and health	• Describe the effects of smoking • Name some harmful substances in cigarette smoke. • Recognize how to create awareness about negative effects of smoking.
Keeping fit	• Explain the relationship between exercise and fitness in terms of energy for muscles, this include: - Exercise and respiration - Exercise and the action of the heart. • Explain the relationship between diet and fitness, this includes: - Obesity - Blocked tubes - Heart attack and strokes • Investigate pulse rate and heart beat (data analysis).

Grade 8, Physics

Force and motion	
Topic	**Learning outcomes**
Speed	• Calculate the speed . • Explain what is meant by average speed.
Distance time graph	• Describe how a distance–time graph tells a story.
Acceleration and speed – time graph:	• Describe how to calculate acceleration. • Explain what is meant by deceleration. • Explain how speed-time graphs tell a story.

Sound	
Topic	**Learning outcomes**
Properties of sound waves	• Describe how sound waves are produced. • Explain how sound waves travel. • Describe how to measure sound intensity or loudness. • Describe some of the risks of loud sounds and how to reduce the risks. • State the properties of waves. • Explain what affects the loudness of a sound. • Interpret waveforms shown on an oscilloscope. • Describe the link between pitch and frequency. • State the range of hearing in humans. • Describe differences between the range of hearing in humans and in animals. • Explain why musical instruments are distinct.
Speed of Sound	• Make calculations involving the speed of sound.
Detecting sounds	• Describe how the ear detects sound. • Explain how your hearing can be damaged. • Describe how a microphone works.
Echoes	• Describe how echoes are formed. • Explain how echoes can be used.

Light	
Topic	**Learning outcomes**
Light	• Describe what light is. • Explain how shadows form. • Describe how a camera works.
Seeing things	• Describe what happens when light travels from a source. • Explain how we see things.
The speed of light	• Describe how fast light travels. • Explain how astronomers use the speed of light to describe distances.
Reflection	• Describe how an image in a plane mirror is formed. • Describe the differences between you and your image. • Explain why you see your image only in certain situations. • State the law of reflection. • Use the law of reflection. • Describe how to make accurate measurements.
Refraction	• Explain what we see when light is refracted. • Explain why light is refracted. • Use scientific knowledge to explain predictions. • Describe what happens when light goes through a glass block. • Explain total internal reflection.

Dispersion	• Explain how a spectrum of light is produced • Explain why we see rainbows. • Explain what happens when you mix light of different colours together. • Explain how filters work. • Explain why coloured objects look coloured in white light. • Explain why coloured objects look different colours in different colours of light. • Describe how to present conclusions in appropriate ways.

Electricity (some outcomes are from grade 9 textbook)	
Topic	**Learning outcomes**
Electrostatic	• Stat the types of charge. • Explain why things become charged. • Explain the difference between conductors and insulators. • Describe how electrostatics can be dangerous. • Describe how touchscreens and digital cameras work.
Electric circuits	• Describe how to draw components in circuit's diagrams. • Explain how to test whether something conducts electricity. • Describe what is meant by a series circuit. • Describe the differences between series and parallel circuits.
Electric current and voltage	• Describe what an electric current is and how we measure it. • Describe what is meant by voltage.

Magnetism	
Topic	**Learning outcomes**
Properties of magnets	• Describe the properties of magnets. • Know what magnetic materials are. • Know what a magnetic field is. • Explain why compasses point north. • Describe how you can find the shape of a magnetic field around a bar magnet.
Electromagnets	• Describe how to make an electromagnet. • Describe how to change the strength of an electromagnet.
Using of electromagnets	• Describe some uses of electromagnets. • Explain why electromagnets are used instead of permanent magnets.

Grade 8, Chemistry

Elements and compound	
Topic	**Learning outcomes**
Elements	• Explain what is meant by an element. • State the chemical symbols of the first twenty elements of the periodic table • Explain why scientists use chemical symbols for elements.
Compounds	• Differentiate between an atom and a molecule. • Distinguish between element and compound. • Give examples of compounds and state how their properties are different from the properties of their elements.
Naming compound and writing formula	• Name compounds • Write and interpret formulae
Mixtures	• Understand the differences between elements, mixtures, and compounds. • State the properties of mixtures • Discuss how evaporation and distillation separate liquids and solids from solutions. • Describe the physical properties of solutions. • Explain what is meant by a solubility. • Describe how to separate elements from some compounds. • Demonstrate how chromatography separates mixture. • Give examples of uses of chromatography.

Material properties (some outcomes are from grade 9 textbook)	
Topic	**Learning outcomes**
Atomic structure	• Name the three sub-atomic particles, and describe their properties. • Describe the structure of an atom.
The Periodic Table	• Draw the structures of atoms of the first twenty elements • Describe patterns in the structures of these atoms • Recognize Groups and Periods in the periodic table.
Trends in group 1,2 & 7	• Describe trends in periods of the periodic table. • Describe trends in properties of the Group 1 elements. • Describe trends in the properties of the Group 2 elements. • Describe trends in the properties of Group 7 elements

Chemical reactions	
Topic	**Learning outcomes**
Chemical reactions	• Know what chemical reactions are. • Recognize different types of chemical reactions
Writing word equations	• Write word equations to represent chemical reactions
Corrosion reactions	• Explain what corrosion is • Understand the steps to prevent iron corroding.
Energy Changes	• Explain the difference between exothermic and endothermic reactions. • Recognize typical examples of energy changes in reactions as in combustion, respiration,…..

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