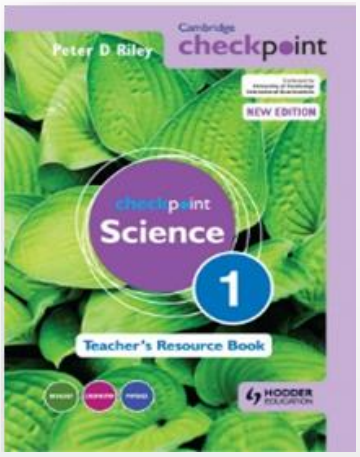
سلطنة عمان

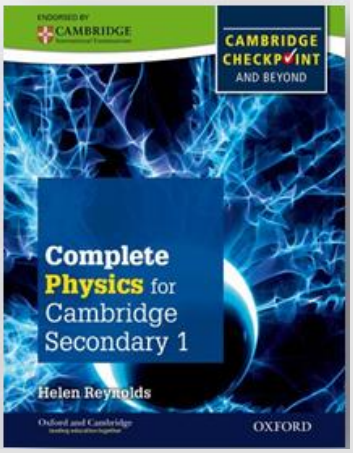
وزارة التربية والتعليم

المديرية العامة للمدارس الخاصة

دائرة برامج ومناهج المدارس الخاصة

قسم برامج المدارس الخاصة





Newsletter

Subject: Science

Educational Programme:

- Bilingual.

- Cambridge Secondary1.

Grades: 7&8

Academic Year:

- 2016/2017

General Supervision

Siham Ahmed Al-Riyamia

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نشرة توجيهية

المادة:العلوم

البرنامج التعليمي:

- الثنائي اللغة.

- كامبردج Secondary 1.

الصفوف: ٧ - ٨

العام الدراسي:

- ٢٠١٦/٢٠١٧

الإشراف العام

سهام بنت أحمد الريامية

مديرة دائرة برامج ومناهج المدارس الخاصة

الإشراف الفني

آمنة بنت علي بن عيسى الفارسية

رئيسة قسم برامج المدارس الخاصة

إعداد النشرة التوجيهية

مروة بنت محمد الهنائية

عضو مناهج تعليمية فيزياء

تم التحديث بواسطة

سعيد بن مرزوق المقبالي

عضو مناهج تعليمية أحياء

سلطنة عمان
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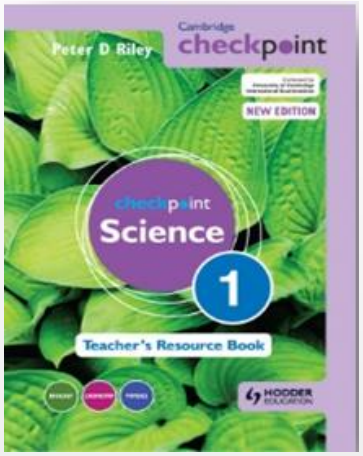
قسم برامج المدارس الخاصة

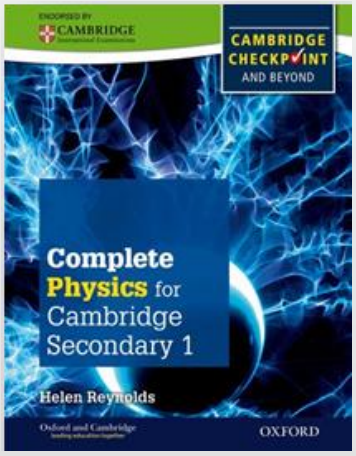
فريق اعتماد السلاسل

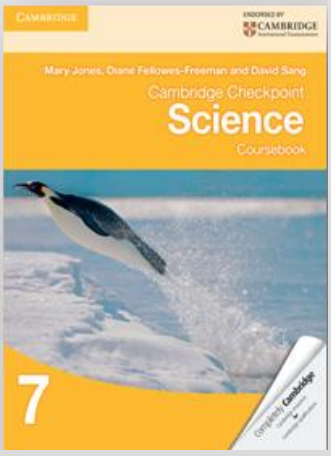
م	الاسم	الوظيفة
١	مروة الهنائية	عضو مناهج تعليمية فيزياء
٢	دونالد بنجامين	معلم فيزياء – مدرسة القرم الخاصة
٣	مريم أحمد	معلمة أحياء – مدرسة القرم الخاصة
٤	شيباني جانجولي	معلمة أحياء – احمد بن ماجد الخاصة
٥	كينيث ندامى	معلم كيمياء –أحمد بن ماجد الخاصة
٦	روبي جورج	معلمة كيمياء – القرم الخاصة

Focus Group

	Name	Occupation
1	Marwa Al Hanai	Physics curriculum officer
2	Donald Binjamin	Science HOD
3	Maryam Ahmed	Biology teacher
4	Shibani Gangoli	Biology teacher
5	Keneth Nadama	Chemistry teacher
6	Rubi George	Chemistry teacher







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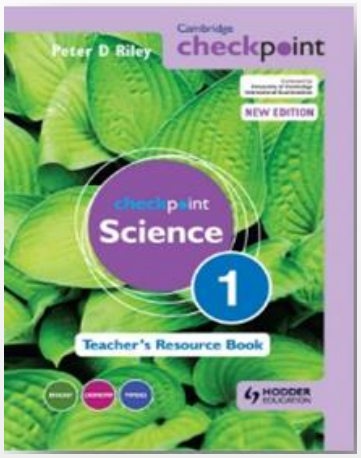
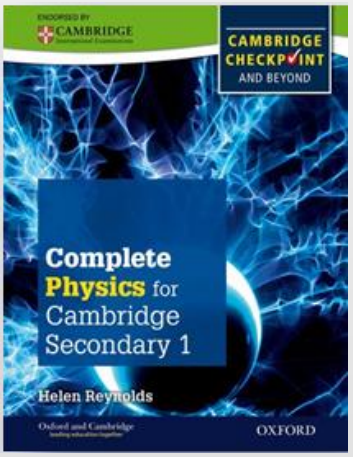
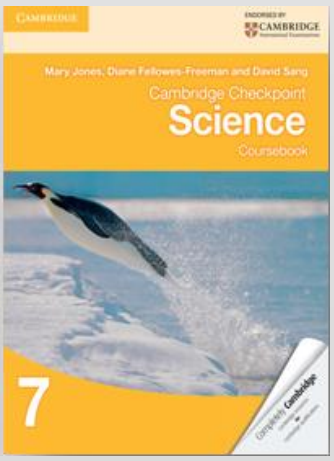






الفهرس

Index

توجيهات عامة

- **اختيار وتوفير السلاسل التعليمية الأساسية:**

١. على المدارس الخاصة أن تلتزم باختيار وتطبيق السلاسل التعليمية المعتمدة من قبل الدائرة في هذه النشرة بحسب البرنامج والمادة المطبق بها .
٢. على المدرسة أن تلتزم بتوفير جميع مكونات السلسلة المختارة لكل طالب يدرس المادة .
٣. على المدرسة أن تلتزم بتوفير نسخة واحدة على الأقل من جميع مكونات السلسلة المختارة لكل معلم .
٤. يمنع تدريس مواد الفيزياء والكيمياء والاحياء كمواد منفصلة في الصفوف ٧ و ٨ ، وفي حال قيام المدرسة بتدريس هذه المواد تعتبر مخالفة للانظمة.
٥. عند اختيار المدرسة الخاصة لسلسلة أساسية معينة للتطبيق، على المدرسة أن تلتزم بطلب توفير نسخ كافية من السلاسل التعليمية الأساسية لطلابها ومعلميها قبل وقت كاف من بداية العام الدراسي .
٦. على المدرسة أن تلتزم بتوفير نسخ أصلية من السلاسل التعليمية التي تم اختيارها للتطبيق، وذلك عن طريق طلبها من دار النشر المعنية بإنتاج السلسلة أو من أي موزع معتمد من قبل دار النشر .
٧. جميع ما ورد في جميع السلاسل والكتب المذكورة يخضع لحقوق النشر والتوزيع، وعليه يمنع طلب أي نسخ للسلاسل التعليمية من أي موزعين غير معتمدين لدار النشر، ويمنع منعا باتا نسخ الكتب أو أي مكون من مكونات السلاسل الأساسية بدون تصريح من دار النشر، إذ يعتبر انتهاكا لحقوق الملكية الفكرية وتعرض المدرسة للمخالفة/ الاجراءات القانونية .
٨. يمكن للمدارس الراغبة في الاطلاع على نسخ من السلاسل التعليمية المعتمدة في القائمة المحدثة للعام الدراسي ٢٠١٦/٢٠١٧م واختيار ما يناسبها من تلك السلاسل التعليمية زيارة قسم برامج المدارس الخاصة، بدائرة برامج ومناهج المدارس الخاصة، بالمديرية العامة للمدارس الخاصة بديوان عام وزارة التربية والتعليم خلال ساعات العمل الرسمية .

- **الأهداف والمخرجات:**

١. ضرورة التزام المعلمين في المدارس المطبقة للبرنامج ثنائي اللغة بتحقيق الأهداف الواردة في الخطة الدراسية الجديدة لمواد العلوم المرفقة في بند "خطة العمل السنوية للبرنامج ثنائي اللغة" (انظر الفهرس) .
٢. ضرورة التزام المعلمين في المدارس المطبقة للبرامج الدولية بتطبيق الخطة الدراسية للبرنامج الدولي .

- **المصادر المساعدة للمعلم:**

١. المصادر المساعدة للمعلم ويعنى بها: السلاسل التعليمية والمصادر التي تدعم المعلم، وهي حق لكل معلم، تكمن أهميتها في توفير أنشطة إضافية وأسئلة متنوعة، وأفكار تدريسية بديلة يمكن الاستعانة بها لتحقيق أهداف السلسلة الأساسية، وتعتبر مصدر مهم لإعداد أوراق العمل الإضافية للطلاب، ومختلف أنواع الاختبارات، وغيرها من أوجه الاستفادة، مع الحرص على عدم نسخ محتوياتها إن لم تكن من المصادر المصممة للنسخ بدون الحصول على إذن رسمي من دار النشر المعنية بالسلسلة.

٢. أن يتم توفير نسخة من بعض المصادر المعتمدة حسب ما ورد في الجداول السابقة في مركز مصادر التعلم (LRC)، حتى يتسنى للطلاب الاستفادة منها والرجوع إليها عند الحاجة.

٣. يحق للمعلم اقتراح أو استخدام أي مصادر اثرائية أخرى تخدم المنهج مع التأكيد على أن يتم استخدامها من قبل المعلم فقط وأن لا يتم استخدامها من قبل الطلاب إلا بعد اعتمادها من المختصين بالدائرة. **كما يجب الالتزام بالمعايير التالية عند اختيارها:**

- أن تضيف المادة أو النشاط جوانب جديدة متعمقة للمنهج الدراسي لم يتم توفيرها بالكتب الاثرائية المعتمدة.
- أن تكون المصادر الاثرائية المختارة من طبعة ٢٠١٢ فما فوق.
- أن لا تدعو المادة أو النشاط إلى العنف أو الاضطهاد أو التفرقة على أساس الجنس أو اللون أو الدين.
- أن لا يتناول العلاقات الغريزية (الحميمية) بين الرجل والمرأة بأي شكل من الأشكال.
- أن يتناسب المحتوى ومستوى النشاط مع المرحلة العمرية للطالب.
- أن لا يتطرق مراحل تطور الإنسان بحيث يرجع أصل الإنسان إلى قرد (نظرية داروين).
- أن لا يتم التطرق للمسكرات (الخمور والمخدرات) بكافة أنواعها إلا بالسياق الذي يوضح حرمتها وخطورتها وأضرارها.
- أن لا يتم التعرض إلى الأنشطة التي تعترف باسرائيل كدولة معتمدة في خريطة العالم.

- **الوسائل التعليمية:**

١. يجب على المدرسة توفير اتصال انترنت في المدرسة (ويحبذ أن يتم توفيره أيضا في الغرف الصفية).

هـ. التدريب:

١. ضرورة حضور المعلمين المعنيين بالمرحلة التعليمية المطبقة فيها السلسلة التعليمية في حالة وصول أي تعميم أو رسالة بشأن إقامة أي فعالية مرتبطة بالتدريب في مجال تطبيق السلاسل التعليمية لجميع مواد العلوم.

- **قاعدة البيانات والتغذية الراجعة:**

١. يأمل المختصون في قسم برامج المدارس الخاصة أن تقوم المدارس الخاصة بإرسال أية ملاحظات أو أخطاء مطبعية أو مقترحات من قبل المعلمين أو الإدارات حول السلاسل التعليمية الأساسية المعتمدة حتى يتسنى لأعضاء المناهج بالقسم المذكور الإلمام بها، وعلاج أية إشكاليات تتعلق بهذا الجانب.

٢. أي مدرسة تقوم باختيار سلسلة من السلاسل الأساسية المعتمدة في القائمة المحدثة مما سبق، فيرجى منها تعبئة الجدول الآتي وإرساله خلال الفترة من يوليو وحتى نهاية سبتمبر ٢٠١٦م:

اسم المدرسة – الفرع:		هذه البيانات ضرورية للتواصل بشأن البرامج التدريبية للمعلمين وقاعدة البيانات في القسم.
المحافظة:		
الهاتف:		
البريد الإلكتروني:		
البرنامج التعليمي:		
اسم السلسلة المختارة:		
المادة:		
عدد المعلمين المعنيين بتدريس		
عدد الطلاب المختارين للمادة:		

لإرسال البيانات المطلوبة أعلاه و للتواصل بشأن المادة:

الفاضل / سعيد بن مرزوق المقبالي

البريد الإلكتروني / abomalaks@moe.om

General Guidelines

- **Selecting and Providing Basic Educational Series:**
    1. Private schools must select and apply the approved series in this newsletter according to the implemented programs in schools.
    2. Teachers are welcome to visit the Department of Private Schools' Programs and Curricula at the Directorate General of Private Schools in Ministry of Education to check series and books before making orders.
    3. Schools should provide all of the series components according to the numbers of students (one copy must be provided to each student) and teachers based on details provided in the lists.
    4. Teaching physics, chemistry and biology as separate subjects is prohibited.
    5. Schools must provide original copies of the selected series by ordering them from the publishing house or from their authorized distributors in Oman or outside Oman. All schools should respect the intellectual property and the copyrights of all publishers and publications. Photocopying series and placing orders from unauthorized distributors are not allowed. These actions are considered illegal, and may violate International Series copyright laws and will lead to filing court cases against schools.

- **Objectives and Outcomes:**
    1. Teachers must stick to the learning outcomes of the bilingual program syllabus attached at "The yearly Scheme of Work for Bilingual Program" (see the index). .
    2. Teachers must stick to the learning outcomes of the international program syllabus that are provided by the concerned institutes.

- **Teacher's Supportive Resources:**
  1. "Teachers' Supplementary Resources" are extra materials that can assist teaching and learning process. Schools should provide them for their teachers to offer students extra-curricular activities, various questions and new teaching ideas. These resources can help the teachers in implementing the main series, preparing worksheets and writing exams papers (with the consideration of copyright issues).
  2. A copy of some of the Supplementary Resources mentioned should (see tables) be provided for students use at the Learning Resource Center (LRC).
  3. Teachers can use chosen Supplementary Resources not mentioned in the list of this newsletter (not to be used by students unless they are approved by the Ministry Specialists), and if chosen Supplementary Resources including texts and activities:
     - More useful to enrich the learning process than the approved materials in above lists.
     - Publishing year 2012 and beyond.
     - Does not refer to violence, persecution or discrimination on the basis of race, color or religion.
     - Does not deal with the instinctive relations (intimacy) between men and women in any way.
     - Must suit the age and thinking level of students.
     - Does not mention **Darwinian Evolution Theory**.

- **Teaching aids:**
  1. Internet connection must be provided for teachers at school (and it will be better if provided in classrooms).

- **Training:**
  1. Schools are must encourage teachers to attend training courses and workshops if they received invitations from the Ministry or from the publishing house regarding the selected series.

- **Database an feedback:**
  1. Specialists in the department encourage schools to send their feedback regarding the approved series, whether print errors or suggestions from teachers as well as administrator. Such processes make it easy for the department to handle any problem in this regard.
  2. Any school purchasing a series from the new approved list should fill out the form:

Name of school - Branch:	
Governorate:	
Telephone:	
Email:	
Program's category (Bilingual/Cambridge Primary):	
Name of the selected series:	
Subject:	
Number of the teachers who teach the series:	
Total number pupils choosing the subject :	

This form contains the necessary data for the department in order to be able to contact schools regarding teacher's training programs and forming a database in the Department. For communication and sending of required data:

Curriculum officer:

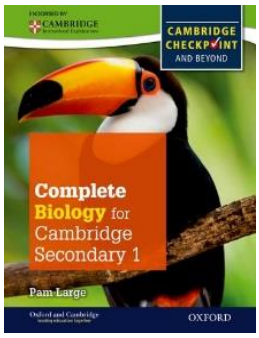
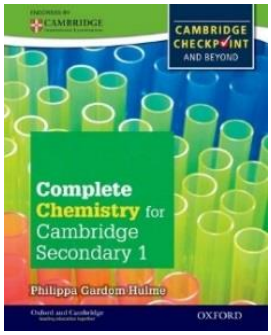
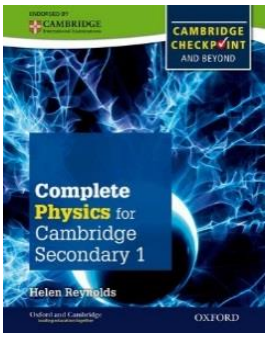
Said Al Maqbali E-mail: **abomalaks@moe.om**

The List of Approved Science Series and Supplementary Resources for Bilingual & Cambridge Secondary 1 Programs

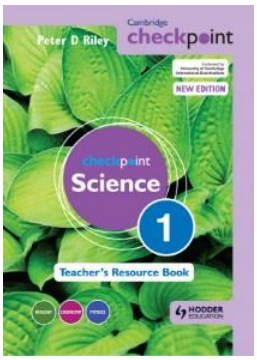
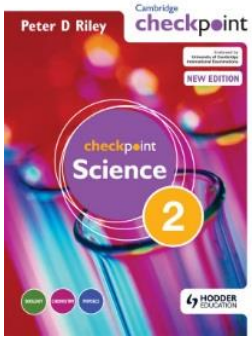
s	Name of series	Publisher	Components
1	Complete Biology for Cambridge Secondary 1	Oxford University Press	Student book
			Work Book
			Teacher Pack With (CD)
2	Checkpoint Science 2nd edition	Hodder Education	Student book
			Work Book
			Teacher Resource
3	Cambridge Checkpoint science	Cambridge University Press	Course book
			Work Book
			Teacher's Resource (CD)

Component's Titles of Science Series with (ISBNs)

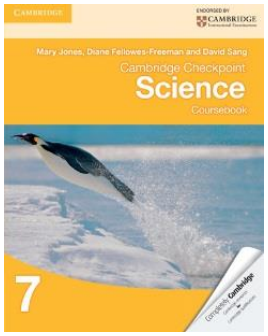
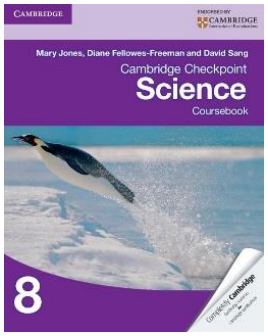
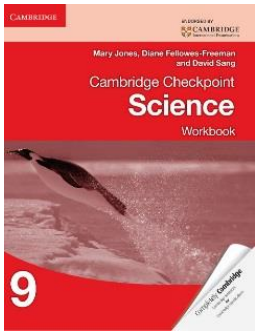
1. Oxford Series (Complete Science for Cambridge Secondary 1)

Name of Series	Components	(ISBN)
Complete Biology for Cambridge Secondary 1 1st edition 	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 1st edition 	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 1st edition 	Student book	978-0-19-839024-4
	Work Book	978-0-19-839025-1
	Teacher Pack With (CD)	978-0-19-839026-8

2. Hodder Education Series (Checkpoint Science):

Name of Series	Components	(ISBN)
Checkpoint Science 1 2nd edition 	Student book 1	9781444126037
	Work Book 1	9781444183467
	Teacher Resource 1	9781444143805
Checkpoint Science 2 2nd edition 	Student book 2	9781444143751
	Work Book 2	9781444183481
	Teacher Resource 2	9781444143812
Checkpoint Science 3 2nd edition 	Student book 3	9781444143782
	Work Book 3	9781444183504
	Teacher Resource 3	9781444143829

3. Cambridge University Press Series(Cambridge Checkpoint Science):

Name of Series	Components	(ISBN)
Cambridge Checkpoint science7 7th edition 	Course book 7	978-1-107-61333-1
	Work Book 7	978-1-107-62285-2
	Teacher's Resource 7 (CD)	978-1-107-69458-3
Cambridge Checkpoint science 8 6th edition 	Course book 8	978-1-107-65935-3
	Work Book 8	978-1-107-67961-0
	Teacher's Resource 8 (CD)	978-1-107-62505-1
Cambridge Checkpoint science 9 4th edition 	Course Book 9	978-1-107-62606-5
	Work Book 9	978-1-107-69574-0
	Teacher's Resource 9 (CD)	978-1-107-69649-5

The Science Yearly Scheme of Work of Bilingual Program (7-8)

Oxford series (Complete Science for Cambridge secondary1)

Grade 7		
Semester	**Chapters**	**Main Resource**
1st Semester	Unit 1: 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	
	Unit 1: 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 Resource**
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"

- **Hodder Series (Cambridge Checkpoint Science):**

Grade 7		
Semester	**Chapters**	**Main Resource**
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 Resource**
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"

- **Cambridge Series (Cambridge Checkpoint Science):**

Grade 7		
Semester	**Chapters**	**Main Resource**
1st Semester	Unit 1: 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 Resource**
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

Guidelines on Science Curriculum for grades 7 & 8 in Bilingual and Secondary 1 Programs

Aspect	Instructions
Series Selection and Providing	• All private schools must select and apply the aforesaid series. • If the private school already bought from the previous (old) list, the books can be used for the academic year 2015-2016 only. Also, this school must take responsibility for covering images. **As for Oxford series called "Complete Science for Cambridge Secondary 1":** • Schools which choose Oxford series should provide students with three students' books accompanied with their work books "Complete Physics, Complete Biology and Complete Chemistry" and students will use these books for grades 7 & 8. • Any science teacher can teach this series with no need to assign teaching to subject streams' teachers (physics, biology and chemistry teachers). **As for Hodder series called "Checkpoint Science":** • School which choose Hodder series should provide students in grade 7 the book (Checkpoint1) both student book & work book, and students in grade 8 the book (check point 2) both student book and work book. • The the teachers should have all components of series for grades 7, 8 & 9. **As for Cambridge Series "Checkpoint Science":** • The school which chooses Cambridge series should provide the students in grade 7 the book (Check point 7) both course book and work book, and students in grade 8 the book (check point 8) both course book and work book. • The teachers should have all components of the series for grades 7, 8 & 9.

General Science Framework for Grades 7 & 8 in Bilingual Program

- **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: Support and Protection. • 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 Up thrust	• 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.

- **Grade 7 Chemistry:**

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 involving solids, 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.

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.

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 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 colors together. • Explain how filters work. • Explain why colored objects look colored in white light. • Explain why colored objects look different colors in different colors 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 Compounds	
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 organic 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 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, …..