



**CENTRAL
FOUNDATION**
BOYS' SCHOOL

**Year 11-12 Bridging Materials
(Vocational)
2020**



BRIDGING MATERIALS

Bridging materials will assist you in making the transition into the sixth form. This is the most substantial academic jump you will take, and the demands are significantly elevated. The resources within the booklet will allow you to explore some of the key topics that you will study over the next two years.

You should research all of the **Key Topics** outlined in your chosen subject and produce summary notes on them over the summer, in preparation for the year ahead. This will help you understand the information and help you make a positive start in September. Teachers will be expecting to see these notes on the first lesson of your sixth form studies.

Wider reading and research are integral to success in KS5. Each subject has a **Recommended Reading & Viewing** list. The more of these texts you read, the broader your understanding of the course will be. At GCSE, you needed to understand the set texts; at vocational level, you need to go beyond the core curriculum. You will have 6-12 periods of independent study built into your timetable. It is important to begin this process over the summer, so it becomes habitual.

Finally, the **Useful Links** section provides you with further resources to supplement your interest and understanding of your subjects.

VOCATIONAL SUBJECTS

<u>BTEC APPLIED SCIENCE</u>	<u>- 1 -</u>
<u>- BIOLOGY -</u>	<u>- 1 -</u>
<u>- CHEMISTRY -</u>	<u>- 2 -</u>
<u>- PHYSICS -</u>	<u>- 3 -</u>
<u>CTEC BUSINESS</u>	<u>- 4 -</u>
<u>CTEC IT & DIGITAL MEDIA</u>	<u>- 6 -</u>

- BIOLOGY -

KEY TOPICS – TERM ONE:

- Understand the structure and function of:
 - The ultrastructure and function of organelles
 - Cell specialisation
 - Epithelial tissue
 - Endothelial tissue
 - Nervous tissue
 - Muscular tissue

RECOMMENDED READING & VIEWING:

- *Very Short Introductions* – Oxford University Press
Series of small books including titles on: molecular biology, the cell, genes, enzymes, marine biology, ecology, forests
- The Amoeba Sisters:
www.youtube.com/user/AmoebaSisters
- Khan Academy:
www.khanacademy.org/science/biology
- Professor Fink:
www.youtube.com/user/professorfink
- S-cool - the revision website:
www.s-cool.co.uk

USEFUL LINKS:

- The full specification studied at CFBS is Edexcel BTEC Level 3 National Extended Diploma in Applied Science:
https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Science/2016/specification-and-sample-assessments/9781446938195_BTECNat_AppSci_ExtDips_Spec.pdf
- Learn how to Harvard Reference – a useful guide with links at the end to additional resources:
www.ocr.org.uk/Images/168840-the-ocr-guide-to-referencing.pdf
- Journal Articles (with some free to read content):
 - The New England Journal of Medicine: www.nejm.org
 - The BMJ (British Medical Journal): www.bmj.com
 - Oxford Academic Journals: <https://academic.oup.com/journals>

- CHEMISTRY -

KEY TOPICS – TERM ONE:

Structure and Bonding in Applications in Science

- Electronic structure of atoms
- Ionic bonding
- Covalent bonding
- Metallic bonding
- Intermolecular forces
- Understand the quantities used in chemical reactions

Production and Uses of Substances in relation to Properties

- Periodic table
- Physical and chemical properties of elements

RECOMMENDED READING & VIEWING:

General Chemistry

- *Reactions: The Private Life of Atoms* – Peter Atkins (2011)
- *What is Chemistry?* – Peter Atkins (2013)
- *The Joy of Chemistry: The Amazing Science of Familiar Things* – Cathy Cobb & Monty L. Fetterolf (2005)

USEFUL LINKS:

- chemrevise - Resources for A-level and GCSE Chemistry:
<https://chemrevise.org>
- A* Chemistry – A Hub of Chemistry Learning:
<http://astarchemistry.com>
- *Chemistry Revision* on Physics & Maths Tutor:
www.physicsandmathstutor.com/chemistry-revision

- PHYSICS -

KEY TOPICS – TERM ONE:

- Understand the features common to all waves
- Graphical representation of wave features
- Understand the difference between the two main types of waves
- Understand concepts applied to diffraction gratings:
 - displacement
 - coherence
 - path difference
 - phase difference
 - superposition
- Industrial application of diffraction gratings
- Use the wave equation: $v = f \lambda$
- Concept of stationary waves resonance and its applications.
- Principles of fibre optics and its applications in medicine to include endoscopes.
- Use of electromagnetic waves in communication

RECOMMENDED READING & VIEWING:

- *Head Start to A-level Physics (CGP A-Level Physics)* – CGP Books (2015)
- *What If?: Serious Scientific Answers to Absurd Hypothetical Questions* – Randall Munroe (2014)
- *A Short History of Nearly Everything* – Bill Bryson (2003)
- *Six Easy Pieces: Essentials of Physics Explained by Its Most Brilliant Teacher* – Richard P. Feynman (1994)
- *A Brief History of Time* – Stephen Hawking (1988)
- *The Universe and Space Stuff* – Playlist by Kurzgesagt – In a Nutshell:
www.youtube.com/playlist?list=PLFs4vir_WsTwEd-nJgVJCZPNL3HALHHpF
www.youtube.com/c/inanutshell
- Smarter Every Day – great content about space exploration and rockets:
www.youtube.com/c/smartereveryday

USEFUL LINKS:

- Isaac Physics – Used extensively during the course to practise problem solving and maths, and is full of resources which would be useful practice:
<https://isaacphysics.org>
- *What If?* on xkcd.com - Free content available on Randall Munroe's blog:
<https://what-if.xkcd.com>

KEY TOPICS – TERM ONE:

- The Business Environment
- Working in Business
- Customers and Communication
- Principles of Project Management

RECOMMENDED READING & VIEWING:**What is business?**

- *Inside the supermarket* – Six-part series following 12 months in the life of Sainsbury's:
www.youtube.com/watch?v=KWeAEqmo-Kc

Watch the documentary and answer the following questions:

- What is the purpose of business? E.g. to provide a range of products? To make profit? To beat their competitors?
- Describe who Sainsbury's main customers are and what they might want from them.
- How do Sainsburys ensure that they meet the needs of their customers?
- Research who Sainsburys main competitors are and how they attempt to differentiate themselves from their competitors.

During your CTEC Business course you will be applying your knowledge of business to a wide range of business sectors such as retail, manufacturing and entertainment.

Using the links below and any other research, explore how these three business in different sectors, have used innovation to fuel their success.



- Describe how each of the businesses uses innovation
- Explain the benefits they have each gained from being innovative
- Describe any situation where innovation has not worked as they each might have hoped
- Sum up by evaluating which of the three companies you think is the most innovative, justifying your choice.

Below are some suggested sources to start you off, but there are many other that you could use to research these companies – just remember to list your sources in your write-up!

- *How Amazon Innovates* – Greg Satell, Inc.com:
www.inc.com/greg-satell/the-secret-behind-amazons-uncanny-ability-to-out-innovate-just-about-every-other-company-on-planet.html
- *innovation, research and development* – Business Case Studies:
<https://businesscasestudies.co.uk/innovation-research-and-development>
- *A lesson in innovation from James Dyson the inventor* – Praseeda Nair, From The Top:
<https://businessadvice.co.uk/from-the-top/a-lesson-in-innovation-from-james-dyson-the-inventor>
- *How Merlin Digital creates personal and seamless guest journeys* – Bea Mitchell, blooloop:
<https://blooloop.com/merlin-digital-guest-journey>

USEFUL LINKS:

- The full specification studied at CFBS is Cambridge TECHNICALS Level 3 in Business:
www.ocr.org.uk/Images/267335-cambridge-technicals-business-summary-brochure.pdf

- Tutor 2 U – All topics covered with tutorials and activities:
www.Tutor2u.net

- Current Business News:
 - BBC: www.bbc.co.uk/news/business
 - The Guardian: www.theguardian.com/uk/business
 - The Independent: www.independent.co.uk/news/business

KEY TOPICS – TERM ONE (subject to change):

Diploma in IT:

- Unit 1 - Fundamentals of IT: Understand Computer Hardware
- Unit 2 - Global Information: Understand where information is held globally and how it is transmitted
- Unit 8 - Project Management: Understand the project life cycle

Extended Certificate in Digital Media:

- Unit 1 - Media Products and Audiences: Understand the ownership models of media institutions
- Unit 3 - Create a Media Product: Be able to create a proposal with sample materials for an original media product to a client brief

RECOMMENDED READING & VIEWING:

- *Cambridge Technicals Level 3 IT* – Sandra Middleton, Victoria Ellis, Graham Manson (2016) [ISBN-10: 1471874915]
- *Cambridge Technicals Level 3 Digital Media* – Victoria Allen, Ian Marshall, Karl Davis, Richard Howe, Kevin Wells (2016) [ISBN-10: 1471874737]
- Films Recommended for Digital Media Units 1 and 2:
 - *The Matrix* (1999)
 - *Black Panther* (2018)
 - *The Dark Knight* (2008)
 - *La La Land* (2016)
 - *Kingsman: The Secret Service* (2014)

USEFUL LINKS:

- Photoshop Tutorials:
www.youtube.com/channel/UC6lrxMZggMaN1u2V9N2-zrQ



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