OCR
Oxford Cambridge and RSA

Cambridge **NATIONALS LEVEL 1/2**

ENGINEERING

R101, R102, R103, R105, R106, R108, R109, R112 and R113

Resources Link for Practical Action

March 2021

Practical ACTION

ocr.org.uk/engineering

RESOURCES INDEX

OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

OCR Cambridge Nationals in Principles in Engineering Design Level 1/2

OCR Cambridge Nationals in Principles in Engineering Manufacture Level 1/2

OCR Cambridge Nationals in Principles in Systems and Control Level 1/2

INTRODUCTION

WELCOME

Resources Link is an e-resource, provided by OCR, for teachers of OCR qualifications. Itprovides descriptions of, and links to, a variety of independent teaching and learning resources that you may find helpful.

In Resources Link you will find details of independent resources, many of which are free: where this is the case this has been indicated.

If you know of other resources you would like to see included here, or discover broken links, please let us know. We would also like to hear from you if have any feedback about your use of these, or other, OCR resources. Please contact us at resources.feedback@ocr.org.uk.

We leave it to you, as a professional educator, to decide if any of these resources are right for you and your students, and how best to use them.

LINKS

The Squashed Tomato Challenge

An opportunity for students to do a STEM challenge to increase their understanding of pulleys and levers as used in an aerial ropeway system in Nepal.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R101, LO1 Understand physical properties and mechanical principles

Cost: Free

Format: Website

https://practicalaction.org/schools/?taxCat=stem-challenges

Video - aerial ropeway

Secondary source material: Aerial ropeways in Nepal video.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R101, LO1 Understand physical properties and mechanical principles

Cost: Free

Format: Website

https://practicalaction.org/schools/videos-transport/

Technical Brief - aerial ropeway

Technical brief on aerial ropeway.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R101, LO1 Understand physical properties and mechanical principles

Cost: Free

Format: Website

https://practicalaction.org/schools/technical-briefs-transport/

STEM careers - Making a difference

Links to careers case studies on STEM careers in international development.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R102, LO3 Know about employment in engineering

Cost: Free

Format: Website

https://practicalaction.org/stem-careers/

Six R's (1)

The Six R's PowerPoint and Six R's activity introduces some of the big environmental and social issues to students with an activity to learn about the meaning of the Six R's.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R103, LO1 Know about the sustainability of engineering materials and products

Cost: Free

Format: Webite

https://practicalaction.org/schools/6-rs/

Material information - Belief circles (2)

An activity to highlight the responsibilities of designers and engineers in choosing sustainable materials and products.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R103, LO1 Know about the sustainability of engineering materials and products

Cost: Free

Format: Website

https://practicalaction.org/schools/belief-circles/

Sustainable Design - What's the role of a designer? (1)

A PowerPoint presentation with linked activities for students to consider the responsibilities for designers and engineers.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R103, LO2 Know about sustainable design for engineered products

Cost: Free

Format: Website

http://practicalaction.org/whats-the-role-of-a-designer

Product Lifecycle Analysis - impacts on people and environment (1)

An introductory PowerPoint and activity on Product Lifecycle Analysis – impacts on people and the environment.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R103, LO2 Know about sustainable design for engineered products

Cost: Free

Format: Website

https://practicalaction.org/schools/product-life-cycle-analysis/

Six R's and Sustainability terms

Links to questions that help students to consider the environmental, social and economic impacts of engineered products.

Supports: OCR Cambridge Nationals in Principles in Engineering and Engineering Business Level 1/2

Unit R103, LO3 Understand the impact of global manufacturing

Cost: Free

Format: Website

https://practicalaction.org/schools/6-rs/

Six R's (2)

The Six R's PowerPoint and What's the specification? Activity introduces students to analyse products to work out the specification the designer used.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO2 Understand the requirements of design specifications for the development of a new product

Cost: Free

Format: Website

https://practicalaction.org/schools/6-rs/

Sustainable Starter activities - Let's negotiate

Let's negotiate is an activity to help students develop specification criteria for their products.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO2 Understand the requirements of design specifications for the development of a new product

Cost: Free

Format: Website

https://practicalaction.org/schools/lets-negotiate/

Small Is...Challenge (1)

Learners research products from the past 100 years and design their own sustainable products for the future. A two-metre full colour technology timeline poster of iconic products from the past 100 years is also available.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

http://practicalaction.org/small-is-challenge

Product Lifecycle Analysis - impacts on people and environment (2)

An introductory PowerPoint and activity on Product Lifecycle Analysis – impacts on people and the environment.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

https://practicalaction.org/schools/product-life-cycle-analysis/

Six R's (3)

The Six R's PowerPoint and Six R's activity introduces some of the big environmental and social issues to students with ideas for improving products.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

https://practicalaction.org/schools/6-rs

Small Is...Challenge (2)

The Small Is Challenge PowerPoint introduces the big environmental challenges for designers.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

http://practicalaction.org/small-is-challenge

Sustainable Design - What's the role of a designer? (2)

An introductory PowerPoint and Belief Circle activity on the role of sustainable designers.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

http://practicalaction.org/whats-the-role-of-a-designer

The Six R's and Sustainability terms (2)

Sustainability terms: A set of questions that help students to understand the balance of environmental, social and economic issues involved in product design.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

https://practicalaction.org/schools/6rs

Resisting the rising waters

Flood resistant housing case study.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

https://practicalaction.org/schools/beat-the-flood

Technical briefs - flood-resistant housing

Flood resistant housing technical brief.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R105, LO3 Know about the wider influences on the design of new products

Cost: Free

Format: Website

https://practicalaction.org/schools/beat-the-flood/

Product Lifecycle Analysis - impacts on people and environment (3)

The lifecycle analysis activity with the Six R's definition activity highlight the end of life options for products and define re-use and recycling.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R106, LO1 Know how commercial production methods, quality and legislation impact on the design of products and components

Cost: Free

Format: Website

https://practicalaction.org/schools/product-life-cycle-analysis/

Six R's (4)

The Six R's definition activity together with the lifecycle analysis activities highlight the end of life options for products and define re-use and recycling.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R106, LO1 Know how commercial production methods, quality and legislation impact on the design of products and components

Cost: Free

Format: Website

https://practicalaction.org/schools/6rs

Technical Briefs - recycling plastics

Recycling plastics: A technical brief outlining plastics recycling techniques.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R106, LO1 Know how commercial production methods, quality and legislation impact on the design of products and components

Cost: Free

Format: Website

https://practicalaction.org/schools/plastics-challenge/

Evaluation tools

The evaluation tools linked here Design Abacus, Eco Web and Winners and Losers all offer product evaluation techniques and recoding methods for analysing products with sustainability and other criteria.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R106, LO2 Be able to research existing products

Cost: Free

Format: Website

https://practicalaction.org/schools/evaluation-tools

What we do

For links to more international product case studies.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R106, LO2 Be able to research existing products

Cost: Free

Format: Website

https://practicalaction.org/?sitesearch=any&s=case+studies

Video gallery

For links to video clips on a range of international products.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R106, LO2 Be able to research existing products

Cost: Free

Format: Website

https://practicalaction.org/schools/videos/

STEM challenges and awards

The 'hands-on' STEM challenges offer a range of excellent real-life contexts for developing, modelling and testing prototypes.

Supports: OCR Cambridge Nationals in Engineering Design Level 1/2

Unit R108, LO1 Know how to plan the making of a prototype

Cost: Free

Format: Website

https://practicalaction.org/schools/stem-challenges

Product Lifecycle Analysis - impacts on people and environment (4)

The lifecycle analysis activity with the Six R's definition activity highlighting the opportunities for reducing the impact of the product throughout its life-cycle.

Supports: OCR Cambridge Nationals in Engineering Manufacture Level 1/2

Unit R112, LO4 Know the principles of lean manufacturing

Cost: Free

Format: Website

https://practicalaction.org/schools/product-lifecycle-analysis

Six R's (5)

The six R's definition activity together with the lifecycle analysis activity highlight the opportunities for reducing the impact of the product throughout its lifecycle.

Supports: OCR Cambridge Nationals in Engineering Manufacture Level 1/2

Unit R112, LO4 Know the principles of lean manufacturing

Cost: Free

Format: Website

https://practicalaction.org/schools/6rs

Moja Island

Moja Island enables students to work in small teams to identify the best renewable energy option for an island community.

Supports: OCR Cambridge Nationals in Systems and Control Level 1/2

Unit R113, LO1 Understand basic electronic principles

Cost: Free

Format: Website

https://practicalaction.org/schools/moja-island

Renewable energy images

Photographs of renewable energy options including solar and other sustainable sources.

Supports: OCR Cambridge Nationals in Systems and Control Level 1/2

Unit R113, LO1 Understand basic electronic principles

Cost: Free

Format: Website

https://practicalaction.org/schools/images/

Technical Briefs (3) - energy

Technical briefs on a range of power sources including batteries, solar and wind power.

Supports: OCR Cambridge Nationals in Systems and Control Level 1/2

Unit R113, LO1 Understand basic electronic principles

Cost: Free

Format: Website

http://practicalaction.org/technical-briefs-schools-energy

Need to get in touch?

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Cambridge Assessment