OCR
Oxford Cambridge and RSA

Cambridge **TECHNICALS LEVEL 3**

ENGINEERING

Cambridge TECHNICALS

A PROJECT APPROACH TO DELIVERY – TRANSPORT FOR LONDON RAIL CHALLENGE

RESOURCES LINKS

Version 1

TRANSPORT FOR LONDON

ocr.org.uk/engineering

CONTENTS

INTRODUCTION

Resource Links is an e-resource, provided by OCR, for teachers of Cambridge Technicals. It provides descriptions of, and links to, a variety of teaching and learning resources that you may find helpful.

Where appropriate, we have mapped the resources to this OCR unit/learning outcomes (LOs) and provided information about their cost and format.

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

To find out more about this qualification, go to:
http://www.ocr.org.uk/qualifications/vocational-education-and-skills/cambridge-technicals-engineering-level-3-certificate-extended-certificate-foundation-diploma-diploma-05822-05825/

TYPES OF RESOURCE

OCR Produced Resources
These are resources devised and produced directly by the Resources Development Team at OCR.

Publisher Partner Resources
For many subjects OCR works with a publisher partner to ensure that good quality resources such as textbooks are available for first teaching.

Whilst the publisher partner has access to our subject experts and we quality check and endorse these resources they are produced by, and remain the property of, the publisher partner. There is no financial link between OCR and its publisher partners and we do not pay for the development of, or receive any royalties from, these resources.

Endorsed Resources
These resources were produced entirely independently of OCR, but we have quality checked them for their suitability as a resource to support our qualifications.

Other Resources
Unless specifically stated these resources are completely independently produced and are not endorsed by OCR. We have looked at them though, and we think they could be useful in supporting our specifications.

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

Transport for London (TfL) - history

History of Transport for London (TfL).
Supports: Project Approach – Transport for London Rail Challenge
Cost: Free
Format: Web page
https://tfl.gov.uk/corporate/about-tfl/culture-and-heritage/londons-transport-a-history

Wheels and Bogies

Website which identifies and explains railway carriage parts.
Supports: Project Approach – Transport for London Rail Challenge
Cost: Free
Format: Web page
http://www.railway-technical.com/whlbog.shtml

Bogies

Website with links to manufacturer's of railway bogies.
Supports: Project Approach – Transport for London Rail Challenge
Cost: Free
Format: Web page
http://www.railway-technology.com/contractors/bogies/gallery.html

5 inch model railway

Website with 5 inch model railway parts – including rolling stock and bogies.
Supports: Project Approach – Transport for London Rail Challenge
Cost: Free
Format: Web page
http://phoenixlocos.com/products/loco-bogies/

5 inch model railway

Video showing 5 inch model reailway in operation. Note carriages.
Supports: Project Approach – Transport for London Rail Challenge
Cost: Free
Format: YouTube video
http://www.youtube.com/watch?v=3xVDmQnIkwg

Railway carriage design

Commercial website of designers of railway carriages. Includes TfL projects.
Supports: Project Approach – Transport for London Rail Challenge
Cost: Free
Format: Web page
http://www.designtriangle.com/interior-design

Sketching and drawing

Set of downloadable lessons covering simple and advanced sketching and drawing techniques.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.instructables.com/id/Sketching-Drawing-Lessons/?ALLSTEPS

Technical sketching and drawing

Downloadable tutorial covering technical sketching and drawing techniques.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.instructables.com/id/Technical-sketching-and-drawing/?ALLSTEPS

Engineering drawing

Comprehensive tutorial on engineering drawing techniques.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.me.umn.edu/courses/me2011/handouts/drawing/blanco-tutorial.html

Materials selection – engineering design

Materials selection for engineering design PowerPoint presentation.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.materials.ac.uk/resources/FE/materialsselection.ppt

Manufacturing process – selection tool

A selection tool comparing a range of manufacturing processes.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.custompartnet.com/process-selector

Design for Manufacturing and Assembly (DFMA)

A PowerPoint presentation explaining the process of DFMA in design.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://me.gatech.edu/files/capstone/L071ME4182DFA

Train carriage design optimisation

A short article on the importance of ergonomics in train carriage design optimisation.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.ergonomics.org.uk/incorporating-human-factors-into-train-design/

Design optimisation using Excel

Video showing how to solve problems with several variables using the Solver function in Excel.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: YouTube video

http://www.youtube.com/watch?v=BZmSH8Y8_fc

Design for manufacturability and assembly

Set of guidelines on how to design for manufacturability and ease of assembly.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.npd-solutions.com/dfmguidelines.html

Design for sustainability

United Nations website explaining the importance of designing for sustainability. Includes links to many other useful resources.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.unep.org/resourceefficiency/Business/SustainableProducts/DesignforSustainability/tabid/78845/

3D CAD modelling

An interesting article on the advantages and disadvantages of 3D CAD modelling. Also includes free PowerPoint presentation download (subscription required).

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.concurrent-engineering.co.uk/Blog/bid/85534/3D-CAD-modelling-Should-you-switch-for-your-concept-designs

AutoCAD

AutoDesk website which includes free educational CAD software download.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.autodesk.com/education/home

SolidWorks

Free software downloads from SolidWorks.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.solidworks.co.uk/sw/products/free-cad-software-downloads.htm

Solid Edge

Free educational download of Siemens Solid Edge CAD software.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.plm.automation.siemens.com/en_gb/academic/resources/solid-edge/student-download.cfm

Creating assemblies using AutoCAD

Video tutorial on how to create assemblies using AutoCAD. Website includes links to other useful video tutorials.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web pages

http://www.digitaltutors.com/tutorial/2093-Creating-Assembly-Drawings-in-AutoCAD

Creating 2D engineering drawings using CAD

Video tutorial explaining how to create 2D engineering drawings (including bill of materials) using Solid Works.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.solidworks.com/sw/products/3d-cad/2d-drawings.htm

AutoCAD simulation tools

A short video showing AutoCAD simulation tools.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: YouTube video

http://www.youtube.com/watch?v=I7ntLvYFr5g

Solid Works simulation

Feature on the advantages of using CAD simulation in design. Includes short video.

Supports: Project Approach – Transport for London Rail Challenge

Cost: Free

Format: Web page

http://www.cadtek.com/can-business-benefit-solidworks-simulation/

The small print

We'd like to know your view on the resources we produce. By clicking on the 'Like' or 'Dislike' button you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click 'Send'. Thank you.

If you do not currently offer this OCR qualification but would like to do so, please complete the Expression of Interest Form which can be found here: www.ocr.org.uk/expression-of-interest

Looking for a resource?

There is now a quick and easy search tool to help find **free** resources for your qualification:

www.ocr.org.uk/i-want-to/find-resources/

www.ocr.org.uk/engineering

OCR Customer Contact Centre

Vocational qualifications

Telephone 02476 851509
Facsimile 02476 851633
Email vocational.qualifications@ocr.org.uk

OCR is part of Cambridge Assessment, a department of the University of Cambridge. *For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored.*

Cambridge Assessment

LLOYD'S REGISTER · LRQA
ISO 9001
UKAS MANAGEMENT SYSTEMS
001