MOOR PARK HIGH SCHOOL: CURRICULUM

Key Stage 4 Long Term Planning

Year 10/11 SYLLABUS: NCFE Engineering L1/2

Year 10	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Syllabus	Unit 1 Engineering Disciplines	Unit 2 Applied Science and Mathematics in Engineering	Unit 3 Reading Engineering Drawings	Unit 4 Properties and Characteristics of materials	Unit 5 Engineering tools, equipment and machines	Unit 6 +7 Hand Drawn Engineering Drawings and CAD
Links to prior learning	Research skills and careers	Science- Current/Amps/Mass/ Length/SI Units/use of equations	New skills	New skills	New skills	New skills
Knowledge	1.1.Engineering disciplines through projects and products 1.1.1. Engineering discipline skills 1.2.The health and safety legislation governing engineering 1.2.1. Health and safety legislation	2.1.Application of SI units of measurement 2.1.1. SI units of measurement 2.1.2. Application of base SI units 2.2.Equations used to calculate energy, force, motion, electrical and geometric shapes 2.2.1. Equations for properties 2.2.2. Application of equations	3.1.Reading engineering drawings 3.1.1. Drawing conventions 3.1.2. British Standards (BS)	4.1.Properties and characteristics of materials 4.1.1. Properties 4.1.2. Characteristics 4.1.3. Materials	5.1.Tools, equipment and machines 5.1.1. Marking out 5.1.2. Modification 5.1.3. Joining 5.1.4. Finishing 5.2.Safe and correct use 5.2.1. Control measures	6.1.Hand-drawn engineering drawings 6.1.1. A freehand sketch 6.1.2. A hand-drafted isometric drawing sheet 6.1.3. A hand-drafted orthographic drawing sheet 7.1.CAD engineering drawings 7.1.1. A CAD isometric drawing sheet 7.1.2. A CAD orthographic drawing sheet 7.1.3. The uses of CAD
Skills	Research around engineering sectors. Understanding of types of engineering. Analyze Engineering Assess products. ……	Use of SI units of measurement in engineering products How to derive SI units Using mathematical equations to	Application of British Standard (BS) 8888 for 2D and 3D engineering drawings. Use of line types when constructing engineering drawings	How to choose materials that exhibit properties and characteristics for engineering products and projects.	correct use of common tools, equipment and machines used in the engineering industry for manufacturing, including those used for marking out,	Application of specific drawing conventions and use layouts recognised within the engineering industry, following British Standard (BS) 8888 (education version).

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	Research around engineering organizations. Analyze job roles. Identify engineering sectors attached to a product. Analyse products and components Present data	calculate engineering constraints How equations for properties can be used to evaluate unknown factors			cutting, modifying, joining and finishing	
Assessment	Students will be given an engineering product to investigate the sectors involved in its manufacture and organizations from the sector	*Students will be given a circuit to design and build, taking relevant measurements of current and voltage in SI units*	*Students will create a design adhering to British Standards BS8888*	Students to investigate and identify the proprietary and specialist components used to make the product and then investigate the materials used to make the components.	*Students will be given a task to plan the production of an item, choosing and justifying the use of tools*	*Students will create a design adhering to British Standards BS8888 in order to meet a customer brief*
Homework	Weekly homework	Weekly homework	Weekly homework	Weekly homework	Weekly homework	Weekly homework
Cultural enrichment including Trips, Visits, Experiences, Extra-curricular	**<u>School and University Network</u>** Trip 1- Magnets and Motors Trip 2- Life on Mars					
Literacy	Reading material properties. Identifying the difference between ferrous and non-ferrous metals.	Recording observations and measurements. Using interpretative skills to reason and justify the use of components.	Read and interpret design briefs. Write specifications. Creating designs. Writing presentations. Justify ideas.	Using interpretative skills to reason and justify the use of components. Producing a product design specification	Read and interpret design briefs. Write specifications. Creating designs. Writing presentations. Justify ideas.	Writing a production plan. Describing health and safety. Observing and recording process
Numeracy	Statistics	Using correct units. Strength Stiffness Comparing properties.	Measuring dimensions Planning with measurements.	Using correct units. Strength Stiffness Comparing properties. Calculating strength	Measuring dimensions Planning with measurements. Calculating mass. Counting	Measuring with precision equipment. Recording to correct decimal places. Comparing size

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		Calculating strength Measurements Tolerances Fit Temperature	Using multiple measurements to calculate dimensions and clearances	Measurements Tolerances Fit Temperature	Using multiple measurements to calculate dimensions and clearances	Tolerance Fit. Weighing
CIAG	Scenario – working in a Bicycle repair shop as technician. Materials Engineer. Process Engineer. Mechanical Engineer.	Scenario - working in a Bicycle repair shop. Design Engineer Maintenance Engineer	Scenario- Working as an Aviation Structural Engineer. Mechanical Engineer. Repair Technician. Airframe Fitter	Design engineer Process engineer Quality controller	Design engineer Process engineer Quality controller	Aerospace, Automotive Communications, Electronics Mechanical Environmental Engineering

Key Stage 4 Long Term Planning

Year 11 2020-2021 SYLLABUS:

Curriculum Area:

Year 11	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
Syllabus	Unit 8 Production Planning Techniques Unit 9 Applied processing skills and techniques	Synoptic 2 + Revision	Synoptic 2 + Revision	Synoptic 2 + Revision	Synoptic 2 + Revision
Links to prior learning	Risk assessments-Science Planning-various subjects Control measures-Science	All content covered in Engineering	All content covered in Engineering	All content covered in Engineering	All content covered in Engineering

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Knowledge	8.1.Production planning 8.1.1. Risk assessment 8.1.2. Production plan 9.1.Skills and techniques 9.1.1. Prepare materials 9.1.2. Modify shape and size of materials 9.1.3. Join materials 9.1.4. Finish materials 9.2.Safe and correct use of tools, equipment and machines 9.2.1. Preparation and use of tools, equipment and machines 9.2.2. Control measures	Preparation and Completion of externally set task	Preparation and Completion of externally set task	Preparation and Completion of externally set task	Preparation and Completion of externally set task
Skills	Planning manufacturing tasks safely and on time. Range of processing skills and manufacturing techniques – preparing, modifying, joining and finishing techniques applied to materials for a manufacturing task	Synoptic Assessment draws upon all skills developed during the course			
Assessment	Homework Worksheets Practice Assessments	Homework Worksheets Practice Assessments	Homework Worksheets Practice Assessments	Homework Worksheets Practice Assessments	Homework Worksheets Practice Assessments
Homework	Weekly homework selected from topics.	Weekly homework selected from topics	Weekly homework selected from topics	Weekly homework selected from topics	Weekly homework selected from topics

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Cultural enrichment including Trips, Visits, Experiences, Extra-curricular	**<u>School and University Network</u>** Trip 1-Young Scientist Centre (details to be confirmed) Trip 2-Young Scientist centre	
Literacy	Recording data accurately and precisely. Tabulating Data. Graphs including line of best fit. Observing and noting. Making recommendations.	Synoptic Assessment draws upon Literacy developed during the course to support the Non-Examined Assessment
Numeracy	Dimensions and tolerances to include: linear, radial, surface finish.	Dimensions and tolerances to include linear, radial, surface finish.
CIAG	Mechanical Engineer. Laboratory Technician. Bolt, Screw and Nail technician. Development Engineer	Relevant CIAG links to be developed on release of the Non-Examined Assessment