



## Using the BSKC to build curriculum projects

The following show how the BSKC curriculum projects can be used to link with the national curriculum and core examinations.

Subject	Attainment Target	BSKC area of study	Content	
Science	AT2 Organisms, their behaviour and the environment	Reaction times	Measuring reaction times  Factors affecting reaction times	
		Metals and Composites	Properties of metals vs. needs of the kart chassis  Plastics and their properties vs. the needs of the kart	
	AT3 Materials, properties and the Earth	Fuels	Fossil Fuel production	
		AT4 Energy, Forces and Space	Forces and Motion	How can I go faster?  How can I stop quicker?  What makes the kart go/ stop?
			Speed, Velocity and Acceleration	Measurement and calculation  Using kart data to find outcomes
			Equations of Motion	
			Structures and strength	Shapes and relative strength
		Friction	Useful and non-useful friction  Grip and braking  Increasing grip	
		Levers and moments	Pedals, steering wheels as control systems/ levers	
		Hydraulics	Braking Systems – Hydraulics in action	
Gears	Drive train ratios – using gears to maximise speed			
Technology	Design Technology	Form and Function	Producing a Chassis design brief and specification	



		<p>Materials and their properties</p> <p>Manufacturing methods</p> <p>Control Systems</p> <p>Bearings and movement</p> <p>Machining methods</p> <p>Control systems</p> <p>Motors and gears</p> <p>Hydraulics</p> <p>Adjustment and improvement</p>	<p>Design solutions – the kart chassis</p> <p>Metals, Plastics and Composites</p> <p>Joining metal to metal, bolts, rivets</p> <p>Bending and shaping</p> <p>Levers and their effect in control mechanisms – pedals, wheels, pulleys, drive systems</p> <p>Steering control and kart design</p> <p>Reducing friction, rolling vs. rubbing</p> <p>Lathes and Milling machines – accurate machining of parts</p> <p>Cable/ Electronics</p> <p>Types of engine, Drive systems</p> <p>Hydraulic systems</p> <p>Braking control</p> <p>Adjustments and outcomes</p> <p>Setting the machine for optimum performance</p>
Mathematics	<p>AT1 Mathematical Processes and Applications</p> <p>AT4 Handling Data</p>	<p>Average, mean and median</p> <p>Statistical analysis</p> <p>Number and pattern</p>	<p>Measuring and calculations from lap times</p> <p>Changes over time and effect of changes/ adjustments</p> <p>Analysis of different drivers/ teams</p> <p>Using raw data to search for patterns</p> <p>Percentage changes needed to beat the opposition</p>



## Key Stage 4

A selection of core examination and qualification programmes of study matches to project study linked to kart manufacture and competition in the BSKC:

<b>BSKC Project</b>	<b>Exam Board</b>	<b>Syllabus</b>	<b>Content match</b>
Kart design, manufacture, build and development	Cambridge	Design Technology IGCSE	Design (Requirement, specification, ideas, implementation, realisation, aesthetics)  Graphics (formal and orthographic)  Resistant Materials (All)  Systems and Control (Mechanisms)  Project
	EdExcel	Engineering Diploma	Principal Learning:  Applications of Computer Aided designing;  Selection and application of engineering materials;  Principles and application of engineering science;  Extended project
	AQA	Engineering GCSE	Designing, communicating and manufacturing  Materials, technologies and design considerations
	OCR	Resistant Materials GCSE	Making quality products
	WJEC	Resistant Materials GCSE	Designing, planning and communicating ideas  ICT, CAD and CAM



	EdExcel	Control Systems GCSE  BTec First	Commercial manufacturing processes  Introduction to designing and making
Maximising Friction - Braking and grip	OCR	Engineering GCSE	Engineering processes: Automotive: Wheels
Minimising Friction – Axles, bearings and running gear	OCR	Engineering GCSE	Engineering processes: Automotive: Wheels
Competing in BSKC - Analysing Motion	EdExcel	Science GCSE (2006)  Science GCSE (2011)	Unit P2 As fast as you can  Unit P2 – draft specification
Competing in BSKC - Speeding up and slowing down	EdExcel	Science GCSE (2006)  Science GCSE (2011)	Unit P2 As fast as you can  Unit P2 – draft specification
Circuit Data - Lap Analysis and evaluation	OCR	Mathematics A GCSE	Unit FA13 – Data Handling