ARDUINO EDUCATION

CTC GO! MOTIONS

CURRICULUM GRID

Key stage	UK Curriculum Key stages 3-4 ■ = Covered	Lessons				Projects	
		Making things move	Circular to linear movement	Continuous rotation	Gears and pulleys	4 Guided projects	Self-guided projects
Computing							
3	Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.	■	■	■	■	■	■
3	Understand how instructions are stored and executed within a computer system.	■	■	■	■	■	■
3	Learn to analyse problems in computational terms.	■	■	■	■	■	■
3	Understand several key algorithms that reflect computational thinking.		■	■	■	■	■
3	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.	■	■	■	■	■	■
3	Use logical reasoning to compare the utility of alternative algorithms for the same problem.		■	■	■	■	■
3	Understand simple Boolean logic and some of its uses in circuits and programming.			■	■	■	■
3	Design and develop modular programs that use procedures or functions.						■
3	Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.						■
3	Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.						■
4	Develop their capability, creativity and knowledge in computer science, digital media and information technology.	■	■	■	■	■	■
4	Develop and apply their analytic, problem-solving, design, and computational thinking skills.	■	■	■	■	■	■
Design and Technology							
3	Understand how more advanced mechanical systems used in their products enable changes in movement and force.	■	■	■	■	■	■
3	Understand how more advanced electrical and electronic systems can be powered and used in their products.	■	■	■	■	■	■
3	Apply computing and use electronics to embed intelligence in products that respond to inputs, and control outputs, using programmable components.	■	■	■	■	■	■
3	Analyse the work of past and present professionals and others to develop and broaden their understanding.		■		■		
3	Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists.		■		■		■
3	Identify and solve own design problems and understand how to reformulate problems given to them.						■
3	Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools.					■	■
3	Test, evaluate and refine their ideas and products against a specification, taking into account the views of the intended users and other interested groups.						■
3	Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture.						■

For more info visit: arduino.cc/edu

Objective Number	**21st Century Skills** ■ = Covered	Lessons				Projects	
		Making things move	**Circular to linear movement**	**Continuous rotation**	**Gears and pulleys**	**4 Guided projects**	**Self-guided projects**
Life & Career Skills							
1	Collaborate and cooperate effectively with teams.	■	■	■	■	■	■
2	Leverage strengths of others to accomplish a common goal.	■	■	■	■	■	■
3	Be accountable for results.	■	■	■	■	■	■
4	Adapt to varied roles, job responsibilities, schedules, and contexts	■	■	■	■	■	■
5	Incorporate feedback effectively.					■	■
6	Manage time and projects effectively.					■	■
7	Utilize time and manage workload efficiently.					■	■
8	Monitor, define, prioritize, and complete tasks without direct oversight.					■	■
9	Prioritize, plan, and manage work to achieve the intended result.						■
10	Reflect critically on past experiences in order to inform future progress.					■	■
11	Respond open-mindedly to different ideas and values.					■	■
12	Set and meet goals, even in the face of obstacles and competing pressures.						■
13	Work positively and ethically.					■	■
Learning & Innovation Skills							
1	Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur.	■	■	■	■	■	■
2	Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.	■	■	■	■	■	■
3	Assume shared responsibility for collaborative work, and value the individual contributions made by each team member.	■	■	■	■	■	■
4	Develop, implement, and communicate new ideas to others effectively.	■	■	■	■	■	■
5	Demonstrate imagination and curiosity.	■	■	■	■	■	■
6	Use a wide range of idea creation techniques (such as brainstorming).						■
7	Elaborate, refine, analyze, and evaluate ideas in order to improve and maximize creative efforts.						■
8	Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work.	■	■	■	■	■	■
9	Demonstrate originality and inventiveness in work and understand the real world limits to adapting new ideas.						■
10	Solve different kinds of non-familiar problems in both conventional and innovative ways.						■
Information, Media & Technology Skills							
1	Access information efficiently (time) and effectively (sources).	■	■	■	■	■	■
2	Use information accurately and creatively for the issue or problem at hand.						■
3	Use technology as a tool to research, organize, evaluate, and communicate information.						■