## Contents

UNIT	CONTENT		FINAL SECTIONS	
1 The technological process 8	<ol> <li>What's technology?</li> <li>The technology classroom and workshop</li> <li>Stages in the technological process</li> <li>How does technology influence society?</li> <li>Technology and the environment</li> </ol>	10 11 14 18 19	Revision activities  Working with computers Preparing project documents Creating a personal and collaborative ICT environment Emerging technologies and sustainability Bringing new technologies and nature together for more efficient irrigation  Work on your key competences LS Design of a drip irrigation system	20 22 23 24
2 Expressing and communicating ideas 26	<ol> <li>What's technical drawing?</li> <li>Drawing materials</li> <li>Using drawing tools</li> <li>Drawing for projects</li> <li>Rules for drawing: standardisation and annotation</li> <li>The relation between drawing and reality</li> <li>Representing objects</li> </ol>	28 28 30 32 34 36 38	Revision activities  Working with technology Three-sided box for orthographic projection Working with computers Computer-aided design in two dimensions Introduction to 3D: Tinkercad Emerging technologies and sustainability 3D printing: a sustainable alternative  Work on your key competences LS Create it yourself	40 42 44 46 48
3 Materials for technical use 50	<ol> <li>Raw materials, processed materials and finished products</li> <li>Technical material</li> <li>Properties of materials</li> <li>What's Wood?</li> <li>Where does metal come from?</li> <li>What are the most common plastics?</li> <li>Textiles</li> <li>What are ceramic materials?</li> <li>What are stone materials?</li> <li>What tools do we use in the workshop?</li> <li>Joining</li> <li>Industrial processes for manufacturing</li> </ol>	52 53 54 56 58 59 60 61 62 63 66	Revision activities Working with technology How do we use tools? How do we make them? Emerging technologies and sustainability New materials with (almost) magical properties  Work on your key competences	72 74 78
4 Structures 80	metal and plastic objects  1. What's a structure? 2. Forces, loads and effort 3. Types of forces 4. Conditions of structures 5. The evolution of structures in buildings	70 82 83 84 86 88	Building with materials: Wood, metal and plastic Revision activities Technology workshop Typological analysis of structures Functional analysis of structures Working with computers Bridge simulator Working with technology Construction of paper and cardboard structures Emerging technologies and sustainability Innovation in the world of construction	79 94 96 97 98 100
			Work on your key competences LS  Building efficient structures	103

UNIT	CONTENT	FINAL SECTIONS		
5 Electrical circuits 104	1. What's electricity? Electric charge and current 106 2. Electrical circuits, components and symbols 108 3. Electrical quantities 110 4. Ohm's Law. Series and parallel circuits 112 5. he effects of an electric current. Using electricity sensibly 118 6. LEDs and resistors 116	Revision activities  Working with computers Circuit simulators  Working with technology Constructing circuits  Emerging technologies and sustainability Storing electrical energy  Work on your key competences Design and build a solar lamp  125		
6 Programming and computational thinking 126	Programming applications with Scratch     Programming apps for mobile devices     with App Inventor     138	Revision activities  Working with computers 3D computer design 146 Solving problems using flowcharts 147 Artificial intelligence: the smart container 148 Emerging technologies and sustainability Smart machines to improve sustainability  Work on your key competences Don't use the wrong bin! 151		
7 Hardware and software 152	1. What's hardware? 154 2. The parts of a computer 155 3. What's software 165 4. Working with windows 167 5. What's Linux 168 6. Operating systems for smartphones and tablets 169 7. Installing programs 170	Revision activities 176  Emerging technologies and sustainability Recycle your e-waste 178  Work on your key competences LS Computer architecture 179		
8 The Internet and cybersecurity 180	1. What's a communication system? 2. Components of a computer network 3. The Internet 4. Browsing the web 5. Finding information on the Internet 6. Publishing on the Internet 7. The use of images on the Internet 9. Using the Internet safely 194	Computer architecture 179  Revision activities 196  Working with computers Creating a web page or blog in WordPress 198  Emerging technologies and sustainability Good practice in cybersecurity 202  Work on your key competences LS Cybersecurity: a never-ending challenge 203		
PROJECTS		204		
PROJECT I	Let's recycle	206		
PROJECT II	Chess for everyone	208		
PROJECT III	Games for bright sparks	210		
GUIDED PROJECT Design and build a drawbridge				
Language practice activities				