S2 Subject Choices

Design, Engineering & Technology

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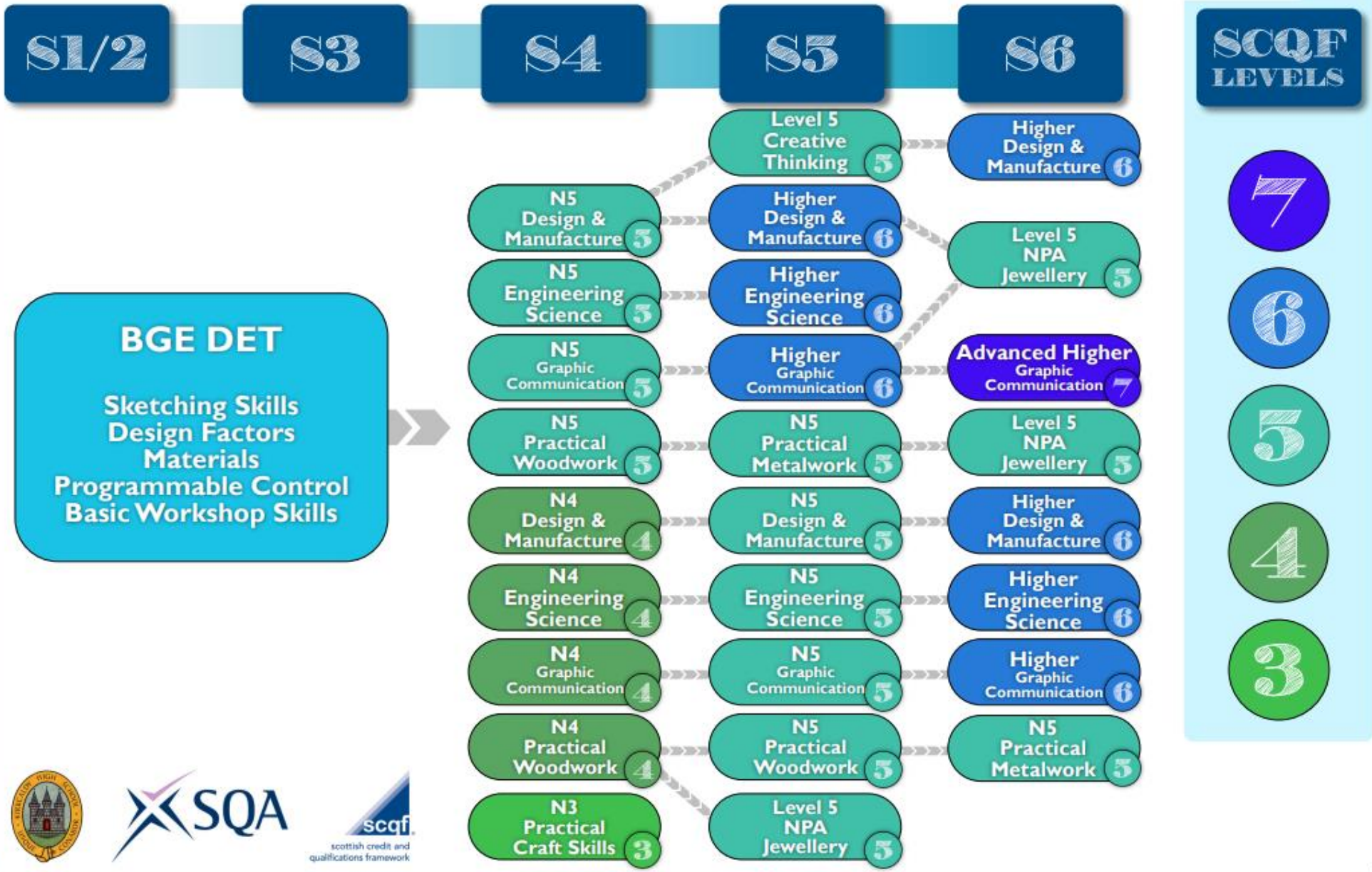


Design & Manufacture Level 4 & Level 5

Entry Requirements - Preferred Skills and Knowledge

To study this subject you should: be interested in creativity, problem solving & practical activities. The course is approximately 75% design based with 25% practical workshop based.

Course Content

Design: Covers the process from brief to design proposal, emphasizing creativity and decision-making in problem-solving.

Manufacture: Focuses on creating prototypes and products, including material properties, manufacturing techniques, and commercial production.

Design & Manufacture Level 4 & Level 5

Course Assessments

Question Paper: 80 marks (1 hour 45 minutes) covering design, workshop-based manufacture, and commercial manufacture.
Assignment – Design: 55 marks, involving developing design proposals based on a brief.
Assignment – Practical: 45 marks, assessing the practical realization of the design, including using tools, assembly, and finishing.

Learning Activities & Homework

Exploratory tasks like analysing design briefs, developing models, and applying graphic techniques. Practical projects to enhance manufacturing and problem-solving skills. Homework may include design iterations, sketching, or researching materials and processes.

Design & Manufacture Level 4 & Level 5

Wider Skills Development

Development of creative and practical problem-solving abilities. Enhanced understanding of societal and environmental impacts of design. Application of numeracy, employability, and thinking skills (e.g., evaluation, analysis, and understanding).

Progression & Career Opportunities

Progression to related qualifications or higher levels of study in design, engineering, or manufacturing. Career pathways in manufacturing industries, design roles, engineering, marketing, and product development.

Engineering Science Level 4 & Level 5

Entry Requirements - Preferred Skills and Knowledge

To study this subject you should: be interested in the key role Engineers play in meeting the needs of society in fields that include: climate, medicine, IT & transport. You should also be studying Mathematics at National 5 level.

Course Content

Engineering Contexts and Challenges: Study of engineered objects, technologies, and their societal, environmental, and economic implications.
Electronics and Control: Concepts and devices in electronic control systems, including analoge, digital, and programmable systems.
Mechanisms and Structures: Understanding of mechanisms, structures, and their application in solving engineering problems.

Engineering Science Level 4 & Level 5

Course Assessments

Question Paper: 110 marks (1 hour 50 minutes), testing knowledge across systems, energy, electronics, mechanisms, and more.
Assignment: 50 marks, requiring analysis, design, construction, testing, and evaluation of engineering solutions.

Learning Activities & Homework

Exploratory tasks like system analysis, energy audits, and simulation of engineering challenges. Hands-on activities include circuit design, flowchart programming, building mechanical systems, and evaluating solutions. Homework may involve researching engineering impacts, creating diagrams, or solving practical engineering problems.

Engineering Science Level 4 & Level 5

Wider Skills Development

Development of problem-solving, analytical, and creative thinking skills. Application of numeracy and ICT skills in engineering contexts. Understanding of teamwork, adaptability, and the societal impacts of engineering.

Progression & Career Opportunities

Progression to higher-level qualifications or further study in engineering, sciences, or related fields. Careers in engineering disciplines such as civil, mechanical, electrical, or emerging fields like renewable energy and technology development.

Graphic Communication Level 4 & Level 5

Entry Requirements - Preferred Skills and Knowledge

To study this subject you should want the opportunity to: develop skills in graphic techniques, including the use of equipment, materials and software. To develop an understanding of the impact of graphic communication technologies on our environment and society.

Course Content

2D Graphic Communication: Development of creativity and skills in initiating, producing, and interpreting 2D graphics, including spatial awareness and graphic conventions.
3D and Pictorial Graphic Communication: Skills in creating and interpreting 3D graphics and pictorial representations, using graphic techniques in various contexts.

Graphic Communication Level 4 & Level 5

Course Assessments

Question Paper: 80 marks (2 hours), covering CAD techniques, graphic conventions, spatial awareness, colour, layout, and presentation.
Assignment: 40 marks, involving tasks in preliminary, production, and promotional graphics that may include creating visual impact and interpreting graphic scenarios.

Learning Activities & Homework

Activities include creating orthographic and pictorial sketches, CAD modeling, rendering techniques, and designing promotional displays. Homework may focus on refining graphic skills, practicing CAD commands, or applying colour theory and layout principles to promotional tasks.

Graphic Communication Level 4 & Level 5

<u>Wider Skills Development</u>

Building numeracy through measurement and dimensioning. Enhancing ICT proficiency with graphic software and CAD tools. Developing problem-solving, analytical, and creative thinking skills in graphic contexts.

<u>Progression & Career Opportunities</u>

Progression to higher-level qualifications in Graphic Communication or related fields such as design, architecture, or engineering. Career opportunities in graphic design, advertising, marketing, CAD drafting, and other creative industries.

Practical Woodworking Level 4 & Level 5

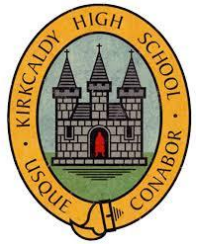
Entry Requirements - Preferred Skills and Knowledge

To study this subject you should have a keen interest in the practical manufacture of high quality products and an interest in workshop based practical manufacturing using wood.

Course Content

Flat-frame Construction: Skills in making woodworking joints and assemblies commonly used in flat-frame joinery.
Carcase Construction: Skills in creating carcase assemblies, using working drawings in both familiar and unfamiliar contexts.
Machining and Finishing: Skills in using power tools and machinery, as well as surface preparation and finishing techniques.

Practical Woodworking Level 4 & Level 5



Course Assessments

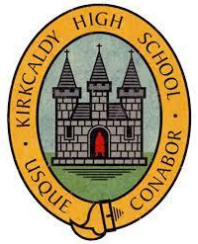
Question Paper: 60 marks (1 hour), assessing knowledge of tools, materials, woodworking techniques, health and safety, and sustainability.

Practical Activity: 70 marks, requiring candidates to manufacture a finished product to a given specification, including maintaining a logbook documenting the process.

Learning Activities & Homework

Practical tasks like constructing woodworking joints, assemblies, and finished products. Activities include interpreting working drawings, safe tool usage, and applying surface finishes. Homework may involve reviewing health and safety practices, practicing marking out, or preparing for assessments

Practical Woodworking Level 4 & Level 5



Wider Skills Development

Numeracy: Measuring, marking out, and calculating dimensions.
Employability and Citizenship: Collaboration, tool-sharing, and teamwork in workshop settings.
Thinking Skills: Applying knowledge to solve problems and creating woodworking products from specifications.

Progression & Career Opportunities

Progression to higher-level qualifications in practical technologies or related areas.Career paths in woodworking, carpentry, joinery, construction, and related industries.