

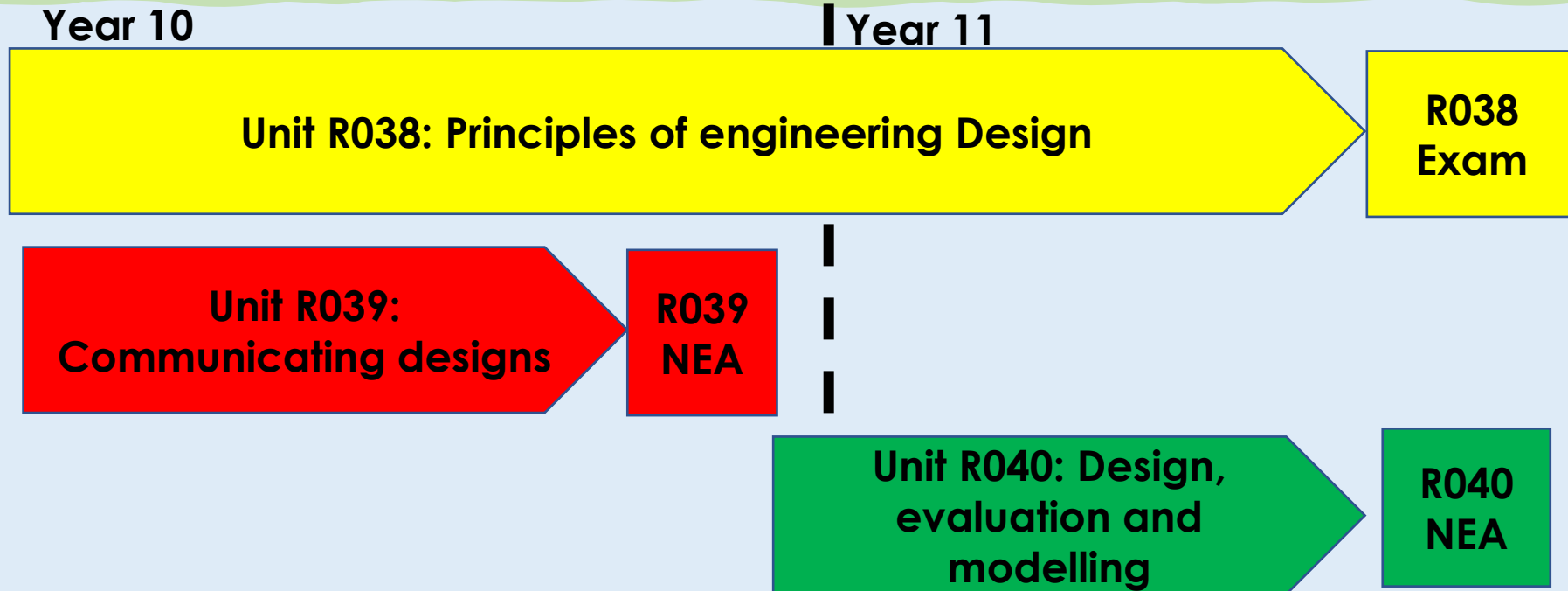
OCR Cambridge National in Engineering Design (Level 1/Level 2)

By studying Design and Technology we allow opportunities to develop skills and knowledge across a wide range of disciplines using traditional, practical and computer aided tools. Design and Technology covers Product Design, Resistant Materials, Electronics, Fashion and Textiles and Engineering, all problem-solving subjects building confidence and resilience in creative skills, testing, failing, improving and creating successful outcomes individually, or as part of a team.

We study engineering to gain a thorough understanding of the fundamental principles and concepts of engineering design. We develop design and practical skills that can be applied in solving real-life problems in creative and innovative ways

The Course Structure and Assessment

The Cambridge Nationals in Engineering design course is divided in to three units. Unit R038; 'Principles in engineering design' gives you a theoretical overview of the whole design and manufacturing process and is assessed by an exam taken at the end of year 11. The remaining two units, R039 and R040, are assessed through non exam assessments (NEA) and give you the chance to apply your theoretical understanding through 'hands on' practical activities. During the R038 you will follow a design brief to fully design and develop your own unique design solution. Unit R040 gives you the chance to investigate real products through physical product analysis and disassembly, alongside making your own virtual and physical prototypes.



Unit R038: Principles of engineering design

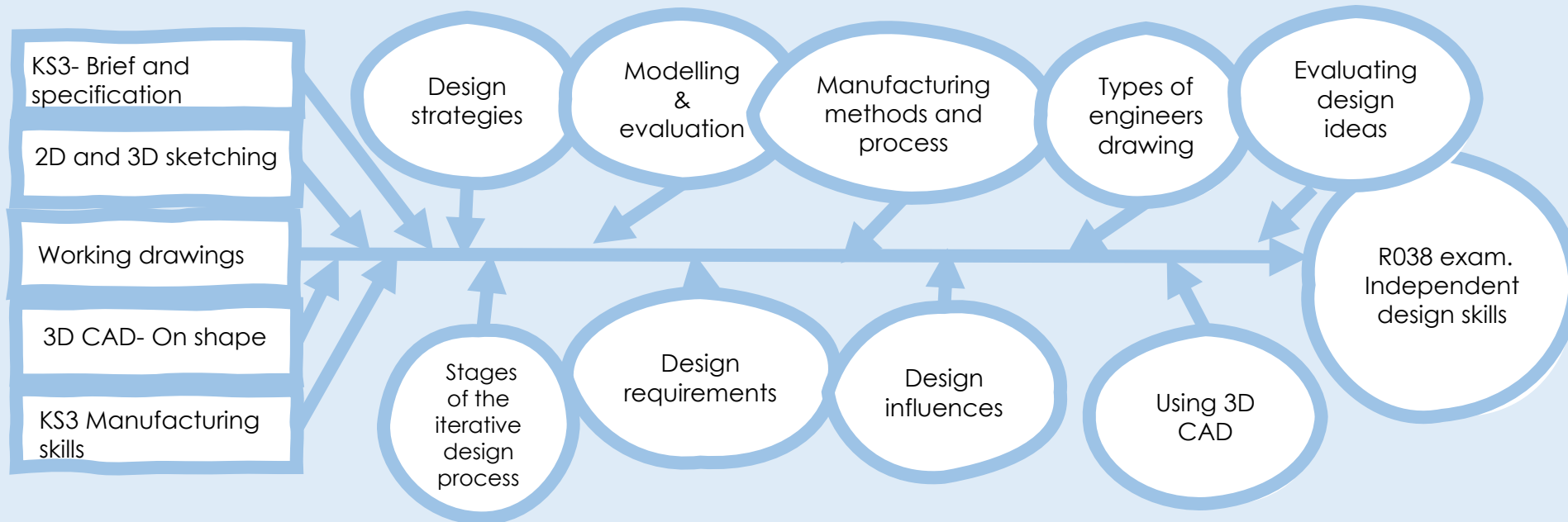
In this unit you will learn about the different design strategies that are used to develop the products we use every day. Specifically, you will learn about the stages of the iterative design process, which is currently the most widely used design strategy.

You will learn about the types of information needed to develop a design brief and specification and about the manufacturing and other considerations that can influence a design.

You will develop knowledge of the types of drawing used in engineering to develop and communicate designs as well as the techniques used to evaluate design ideas.

You will have the opportunity to apply the knowledge and understanding from this unit in the development of your own unique design proposal in Unit R039 and by carrying out product analysis and manufacturing your own product in unit R040

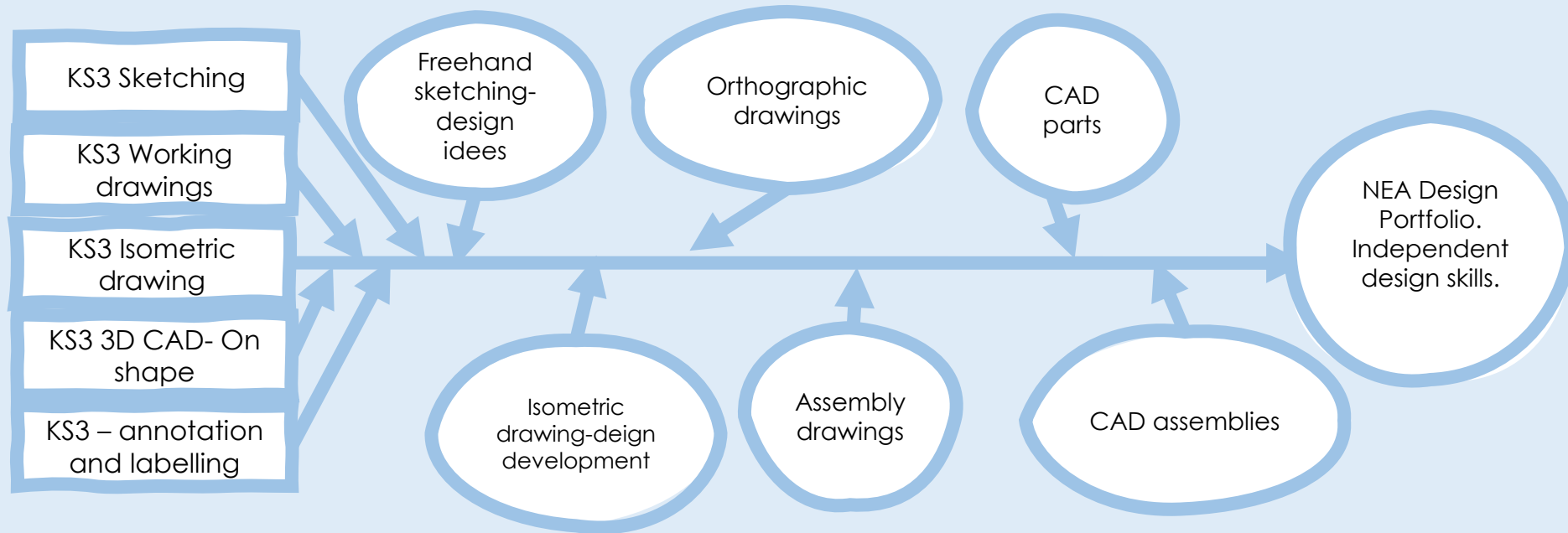
Unit R038 is assessed by an external exam taken at the end of Y11.



Unit R039: Communicating Designs

Unless designers can communicate their ideas to others then it is unlikely their ideas will be fully appreciated or realised. In this unit you will learn & develop skill in sketching to generate and develop your ideas. You will gain industrial skills in producing engineers' drawings using standard conventions and develop your confidence and abilities in computer aided design to produce virtual prototypes & accurate and detailed drawings.

This unit is assessed by a 'none exam assessment (NEA) which is carried out under normal classroom conditions. Here you respond to a design brief and fully develop a design proposal.



Unit R040: Design, evaluation and modelling

Designers need an understanding of how products are manufactured to ensure their products can be produced effectively. In this unit you will analyse and disassemble products to discover how they function and how they were made. You will develop your 3D CAD virtual modelling skills to produce a high-quality model that will simulate your design prototype. You will manufacture and test a working prototype using modelling skills and rapid prototyping processes.

Unit R040 is assessed by a 'none exam assessment (NEA)' carried out in normal classroom conditions.

