Engineering Assessment Criteria

7	8	9	Designing	Manufacturing	Technical Knowledge & Careers	Analysis and evaluation
		M+	A1- Students work with independence in order to develop a range (3+) of **innovative designs**, utilising **both** manual and CAD methods. Designs **fully meet** the expectations of the **client brief** and the **design specification.** A2- Design annotations demonstrate a **clear understanding** of **material requirements** and **justified,** specific **tooling** requirements to produce the desired outcome in either **batch or mass production.**	B1- Students work **independently** and **accurately** in the manufacture of a given product, **justifying** the use of **PPE and health and safety procedures** to minimise risk. B2- Students clearly show the ability to follow and **review a detailed manufacturing plan** in order to complete a **high quality product** to a given **timeline**. B3- Students use a **wide range of processes,** including that of CAD/CAM, effectively resulting in a final prototype(s) that **fully responds to stakeholder requirements.** B4- Final prototypes are of **high quality**, demonstrating **accuracy** and **meeting quality control measures**.	C1- Students can **justify** the relevance of **engineering in modern society**, making clear and correct references to engineered products, **engineering sectors** and existing/ potential job roles. C2- Students are able to **accurately** use **scientific formulas** in order to **justify** decisions on the selection of appropriate materials and components to meet the **performance requirements** of a design. C3- Students can justify the **scales of production f**or a given product**, clearly explaining the benefits and limitations of each scale**. C4- Students demonstrate a **clear understanding** of **mechanical, material properties** when **justifying** material selection decisions and a choice of manufacturing method.	D1- Students can **analyse products** and **situations effectively** in order to **inform design decisions** that **objectively meet the needs of the user.** D2- Students use information gathered from a **design brief , product analysis** and **independent** research in order to inform **meaningful criteria** within a **detailed product specification.** Thorough **technical information is produced**, using digital applications where appropriate which is easy for a third party to understand. D3- Students can provide a **detailed product evaluation** against a **detailed design specification**, utilising design specification criteria to **measure success** and make **multiple, justified, modifications** based on **detailed peer/ self** product evaluation.
		M	A1- Students work with independence in order to develop a **range (3+) of different designs**, utilising both manual and CAD methods. Designs **meet the expectations** of the **client brief** and **specification.** A2- Design annotations **demonstrate** a **clear understanding** of **material**	B1- Students work **independently** and **accurately** in the manufacture of a given product, **demonstrating** the use of **PPE and health and safety procedures** to minimise risk. B2- Students clearly show the ability to **follow a detailed manufacturing**	C1- Students can **justify** the relevance of **engineering in modern society**, making clear and correct reference to **engineered products**, **engineering sectors** and existing/ potential **job roles** C2- Students are **able to use scientific formulas** in order to **justify**	D1- Students can **analyse products effectively** in order to inform design decisions that **objectively** meet the **needs of the user.** D2- Students use information gathered from a **design brief , product analysis** and **independent** research in order to inform

			requirements and justified **tooling** requirements that could be used to produce the desired outcome.	**plan** in order to complete a **high quality product** to a given **timeline.** B3- Students use a **wide range of processes**, including that of CAD/CAM, effectively, resulting in a final prototype(s) that **respond to stakeholder requirements**. B4- Final prototypes are of **high quality,** demonstrating **accuracy** and meeting **most quality control measures.**	decisions on the selection of appropriate materials and components to meet the **performance requirements** of a design. C3- Students can justify the **scales of production f**or a given product**, clearly outlining the benefits and limitations of each scale.** C4- Students demonstrate a **clear understanding of mechanical, material properties** when **justifying** material selection decisions.	**meaningful criteria** within a **detailed product specification.** D3- Students can provide a **detailed** product **evaluation** against a **clear design specification**, utilising design specification criteria to **measure success of the product** and make **multiple modifications** to the design based on detailed **peer and self product evaluation**.
	M	**S**	A1- Students develop **a range (3+) of designs** that demonstrate the use of **2D and 3D sketching** methods in order to convey design features. Designs **meet** the expectations of the **client brief** and **specification**. A2- Design annotations demonstrate understanding of **potential material requirements** and **some** suggestions for how the product may be **manufactured**.	B1- Students work **mostly with independence** and **some accuracy** in the manufacture of a given product. B2-Students show the ability to **follow a basic manufacturing plan** in order to complete a product to a given timeline. B3- Students use **a range of processes,** including that of CAD/CAM, resulting in final prototype(s) that **respond to stakeholder requirements.** B4- Final prototypes are of **good quality**, demonstrating **some accuracy** and meeting **some quality control measures**.	C1- Students are aware of engineering in modern society, some engineering sectors and an existing/ potential job role. C2- Students can accurately use a range of calculations in order to inform the selection of appropriate materials/ components to meet the needs of a design's constraints. C3- Students can differentiate between the **different scales of production** and can **suggest the benefits and limitations of each scale**. C4- Students have a **clear understanding** of **some, relevant, material properties** when selecting materials for a design.	D1- Students **can use effective analytical methods** in order to **explore a design problem**. D2- Students use information gathered from a **design brief , product analysis** and **independent** research in order to inform **meaningful criteria** within a **product specification.** D3- Students can provide a product **evaluation against a design specification**, utilising design specification criteria to **measure success** and make a **limited suggestion for how the product could be improved in the future**

Engineering Assessment Criteria

M	**S**	**D**	A1- Students develop **a range (3+) of designs** that demonstrate the use of **a 3D sketching method** in order to convey design features. Designs **meet some** of the expectations of the **client brief** and **specification**. A2- Design annotations demonstrate an **understanding** of potential **material requirements, dimensioning**, and **some** suggestions for how the product may be **manufactured.**	B1- Students **can use basic hand, cutting and shaping techniques with some accuracy** to manipulate the material being used. They are **aware of the benefits of CAD/CAM**, and how this can be used in modern manufacturing. B2- They understand the benefit of conducting simple **quality control testing** in order to ensure that products meet a high level of quality. B3- Students can undertake s**imple verbal risk assessments** of practical tasks in order to **work safely** and minimise risk. B4- Final prototype(s) demonstrate **some accuracy** and meet **some** quality control measures, **reflecting some stakeholder requirements**.	C1- Students are **aware** of an e**ngineering sector** and an existing/ potential **job role**. C2- Students can **accurately use basic calculations** in the selection of appropriate materials/ components to meet the needs of a design's constraints. C3- Students are **aware of** the **different scales of production** and can **suggest a benefit and a limitation of each scale**. C4- Students understand **some** mechanical, **material properties** and can **refer** to these when selecting materials for a given purpose.	D1- Students **can use analytical methods** in order to **explore a design problem** and gather **relevant information**. D2- Students use information gathered from a **design brief , product analysis and independent research** in order to inform **some relevant criteria** within a **product specification.** D3- Students can provide a product **evaluation against a design specification**, utilising design specification criteria to **measure success** and make a **limited** suggestion for how the **product could be improved in the future.**
S	**D**		A1- Students develop **more than one design** that convey **some** useful **design features**. Designs meet some areas of the **client brief** and **specification.** A2-Design annotations provide **some suggestions** for a **potential material** for construction as well as **dimensioning** information.	B1- Students **can use some basic hand, cutting and shaping techniques with some accuracy** to manipulate the material being used. B2- Students understand **how to conduct simple quality control testing** in order to ensure that products meet a secure level of quality. B3- Students can **identify risks** within practical tasks in order to work safely. B4- Final prototype(s) demonstrate **limited accuracy** and meet **some** quality control measures, **reflecting some stakeholder requirements**.	C1- Students are **aware** of an **existing job** role within the engineering/ design industry. C2- Students can **use basic calculation** in the selection of **appropriate materials** to meet the needs of design constraints. C3- Students are **aware** of **material properties** and can **refer** to these when selecting materials for a given purpose.	D1- Students **can use analytical methods** in order to **explore a design problem**. D2- Students can use information **gathered from a design brief , product analysis and research** in order to **inform criteria** within a **product specification.** D3- Students can provide a **limited product evaluation** against a **design specification,** utilising design specification criteria to **measure success.**

D			A1- Students develop a design that conveys **some useful design features**. Designs meet **some** areas of the **client brief**. A2- Design annotations **provide some** suggestions for a **potential material** for construction.	B1- Students **can use some basic hand, cutting and shaping techniques in order** to manipulate the material being used. B2- Students can use a **simple quality control test** in order to ensure that products meet a specification requirement. B3- Students can **identify risks** within practical tasks in order to work safely. B4- Final prototype(s) demonstrate **limited accuracy**, reflecting **some stakeholder requirements**.	C1- Students are **aware of an existing job** role within the engineering/ design industry. C2- Students are **aware of how basic calculations are used** in the selection of appropriate quantities of materials to meet the needs of design constraints. C3- Students are a**ware of material properties** when selecting materials for a given purpose.	D1- Students can use **limited analytical methods** in order to explore a design problem. D2- Students can use information **gathered from a design brief and product analysis** in order to inform **basic criteria** within a **product specification.** D2- Students can provide a **limited product evaluation** against **some criteria** outlined in a design specification.