

Department	Design and Technology
Year	13
Qualification	L3 Engineering Unit 16

<h2>BCHS Curriculum Map 2016-2017</h2>
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Term	Autumn 1									
	Topic									
	Assignment 1									
	Assessment		Assess against criteria P1.		Assess against criteria P2.		Assess against criteria P3.			

Autumn	Week	2.11.15	9.11.15	16.11.15	23.11.15	30.11.15	7.12.15	14.12.15
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2	Commencing							
	Topic Assignment 1 and Assignment 2	Explain the reasons for carrying out modelling of a component and simulation before actually cutting out metal.	Using a case study, investigate and discuss criteria that a low technology company would use to assess the viability of introducing CAM simultaneous engineering systems.	Describe the criteria used to assess the viability of introducing CAM simultaneous engineering systems into a business.	Investigate costing factors when moving from low technology to high technology manufacturing, including, machine removal, purchase cost, installation, training, systems and maintenance.	Explain the cost benefits of moving from low technology manual manufacturing to high technology automated manufacturing.	Investigate the use of robots in industry, typical applications, their versatility and limitations.	Describe the applications, advantages and limitations of industrial robots.
	Assessment	Assess against criteria P4.		Assess against criteria M1.		Assess against criteria M2.		Assess against criteria P5.

Spring 1	Week Commencing	4.1.16	11.1.16	18.1.16	25.1.16	1.2.16	8.2.16
	Topic	Using a case study compare flexible manufacturing systems against traditional methods.	Explain why a flexible manufacturing system will produce productivity gains for a business deploying a range of processing machines , loading and unloading systems and coordinated work schedules.	Explore the use and preparation of robots to move parts between workstations.	Explain the use and preparation of robots to move parts between workstations in a flexible machining system.	Identify a current low technology manufacturing system, and start to assess the viability of introducing CAM simultaneous engineering systems into a business.	Analyse a current low-technology manual manufacturing system for suitability to move to a CAM environment.
	Assessment		Assess against criteria P6.		Assess against criteria M3.		Assess against criteria D1.

Spring 2	Week Commencing	22.2.16	29.2.16	7.3.16	14.3.16	21.3.16
	Topic Assignment 3	Using and existing CAM program, identify key G and M codes.	Design a small component that can be manufactured using CAM.	Using the correct codes write a CNC program to manufacture your component.	Prove your CNC program by running it on a CNC simulator.	Correct any errors with your program and continue to correct, test and develop your program until it is fully operational.
	Assessment		Assess viability of component for CAM production.			Interim assessment against criteria P7 .

Summer 1	Week Commencing	11.4.16	18.4.16	25.4.16	2.5.16	9.5.16	16.5.16	23.5.16
	Topic	Transfer CNC program to CNC machine and quality check to ensure no data lost or corrupted.	Complete a dry run of CNC program to ensure correct tool changes, and tools will not crash into workpiece or vice.	Run CNC program to manufacture component from billet aluminium.	Collate all evidence for running CNC program.	Investigations into ceramic materials and applications within engineering.	Investigations into properties of polymers and applications within engineering.	Practice exam questions based on prior learning.
	Assessment		Interim assessment against criteria P7.		Assess against criteria P7.			Assessment against Exam mark scheme.

Summer 2	Week Commencing	6.6.16	13.6.16	20.6.16	27.6.16	4.7.16	11.7.16	18.7.16
	Topic	Investigations into Microcontrollers and industrial control systems within engineering.	Investigations into Pneumatic, hydraulic and mechanical components within engineering.	Practice exam questions based on prior learning.	Develop design ideas using CAD, and understand the advantages over traditional methods.	Understand the impact of the engineering industry on the environment.	Practice exam questions based on prior learning.	Review knowledge and understanding of exam content.
	Assessment			Assessment against Exam mark scheme.			Assessment against Exam mark scheme.	Assess own levels in exam to exam question success and set targets / revision plan.

