Unit 10 Industrial practice PLC

Topic Area	**RAG Before Taught**	**RAG After Taught**	**RAG after Assessment**	**RAG after revising**	**RAG after Mocks**
Students should be aware of, and be able to describe, the different scales of production giving example products and specific manufacturing methods. Specific scales of production to include: • one-off, bespoke • batch production • mass/line production • unit production systems (UPS) • quick response manufacturing (QRM) • vertical in-house production.					
Students must develop an awareness of the relationship between material cost, form, and manufacturing processes, and the scale of production. • The development of designs which use materials economically and with regard to their characteristics. • The use of manufacturing processes which increase accuracy and reduce waste. • The savings to be gained when comparing bulk production with one-off production. • The advantages of Just In Time (JIT) manufacture.					
Students should be aware of how computer systems are used to plan and control manufacturing, reduce waste and respond quickly to changes in consumer demand.					
Students should be able to explain specific industrial manufacturing systems and their use in the production of given products. Specific manufacturing systems to include: • modular/cell production • just in time (JIT) • quick response manufacturing (QRM) • flexible manufacturing systems.					
Students should be able to explain the use of computer controlled systems in production, distribution and storage. Students should be able to explain the use of standardised and bought-in components made by specialist manufacturers.					
Students should be aware of, and able to explain, sub-assembly as a separate line of manufacture for certain parts of a product.					
Students should be aware of, and be able to describe, the following: • the advantages and disadvantages of using CAD compared to a manually generated alternative • the use of CAD to develop and present ideas for products, including: • the use of 2D CAD for working drawings • the use of 3D CAD to produce presentation drawings • how CAD is used in industrial applications.					
Students should be aware of, and be able to describe, how CAM is used in the manufacture of products. Specific processes to include: • laser cutting • routing • milling • turning • plotter cutting.					
Students should be aware of, and be able to describe, how virtual modelling/testing is used in industry prior to product production. Specific processes to include: • simulation • computational fluid dynamics (CFD) as used for testing aerodynamics and wind resistance, and flow of liquids within/ around products • finite element analysis (FEA) as used in component stress analysis.					
Students should be aware of, and be able to describe, rapid prototyping processes, including 3D printing. Students should understand, and be able to explain, the benefits to designers and manufacturers.					
Students should be aware of, and able to describe, the use of electronic point of sales (EPOS) for marketing purposes and the collection of market					

research data, including: • the maintenance of stock levels • the capture of customer data, eg contact details.					
Students should be aware of, and able to describe, the role of PCC systems in the planning and control of all aspects of manufacturing, including: • availability of materials • scheduling of machines and people • coordinating suppliers and customers.					