**AQA Psychology A Level - Overview 2022-23**

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| **Year Group** | **Autumn Term** | | **Spring Term** | | **Summer Term** | |
|  | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Year 12**  Engineering is designed to mainly support learners in school colleges who want to learn about engineering from the design and planning perspective. It provides learners with a broad introduction to the engineering sector and the types of career opportunities available.  It is mainly suitable as a foundation for further study. This further study could provide learners with the awareness of the work of different types of job roles in the sector such as design engineers, civil engineers, technicians and mechanical engineers. As a result, they may wish to start an apprenticeship or continue with their studies into higher education in order to pursue those job roles. | Unit 2 (Assignment 1)  **Learning Aim:**  Examine common  engineering processes to  create products or deliver  services safely and  effectively as a team  **Key content areas:**  1 Common engineering  processes  2 Health and safety  requirements  3 Human factors affecting  the performance of  engineering processes  **Assessment:**  A report, prepared as an  individual, detailing  engineering processes and the  impact that human factors can  have on their performance,  using a case study context  based on a given engineered  product. | Unit 2 (Assignment 2)  **Learning Aim:**  Develop two dimensional  (2D) computer-aided  drawings that can be used  in engineering processes  **Key content areas:**  1 Principles of engineering  drawing  2 Two dimensional (2D)  computer-aided drawing  **Assessment:**  Practical activities undertaken  as an individual to produce 2D  CADs. The drawings should  include an orthographic  projection and an electrical  circuit diagram. The evidence  will include the drawings,  observation records/witness  statements and annotated  screenshots. | Unit 2 (Assignment 3)  **Learning Aim:**  Carry out engineering  processes safely to  manufacture a product or to  deliver a service effectively  as a team  **Key content area:**  1 Principles of effective teams  2 Team set-up and organisation  3 Health and safety risk  assessment  4 Preparation activities for  batch manufacture or  batch service delivery  5 Delivery of manufacturing  or service engineering  processes.  **Assessment:**  Complete practical engineering  processes as a leader and a  member of a team. The  evidence will include records of team meetings (minutes),  activity logs, a risk  assessment, set-up planning  notes, quality control  charts/annotated drawings,  modified production plans,  annotated photographs of the  processes and observation  records/witness statements. | Unit 1 (External exam)  **Essential Content:**  Algebraic methods  Trigonometric methods  Static engineering systems  Loaded components  Dynamic engineering systems | Unit 1 (External exam)  **Essential Content:**  Fluid systems  Static current  Direct current circuit theory  Direct current networks  Magnetism  Electromagnetic induction  Single phase alternating current | Unit 3 (External exam)  **Design challenges**  Commercial**-**, regulatory**-** or public policy**-**based trends that challenge current technology  or design, including:  • reduction of energy wasted during design of an engineered product  • reduction of product mass  • increase in component efficiency  • energy recovery features  • reduced product life cycle costs  • integration of different power sources for vehicles  • reduced use of resources in high-value manufacturing  • sustainability issues throughout the product lifecycle (raw materials, manufacture,  packaging and distribution, use and reuse, end of life)  • designing out risk (for individual employees and customers).  **Material properties**  Properties, modes of failure, protection and lubrication of engineering materials and components that impact upon their selection when designing an engineering product, including:  • mechanical properties  • physical properties  • thermal properties  • electrical and magnetic properties |
| **Year 13** | Unit 3 (External exam)  **Mechanical power transmission**  Characteristics of an engineering system that makes use of forces and movement that impacts on mechanical power transmission component selection when designing an engineering product,  including:  • mechanical motion (linear, rotary, reciprocating, oscillating)  • power sources (mechanical, electrical, energy from nature)  • control of power transmission (sensors, actuators, servomotors).  **Manufacturing processes**  Characteristics and effects of manufacturing processes that impact on the selection of engineering  materials and components when designing an engineering product, including:  • processes for metals (additive, moulding, machining, forming, casting, powder metallurgy,  joining, assembly)  • processes for polymers (additive, casting, moulding, extrusion, thermoforming)  • processes for ceramics (additive, casting, forming)  • processes for composites (layup, moulding, automated tow placement)  • effects of processing (recrystallisation, grain structure, alloying elements,  material combinations, process parameters)  • scales of manufacture (one-off, small batch, large batch, mass, continuous). | Unit 3 (External exam)  **Design proposals**  Initial and developed propositions to improve an engineering product, including:  • technical design criteria  • idea generation (context, creativity, range)  • initial design ideas (fitness for purpose, refinements, recognition of constraints)  • developed design idea (aesthetics, ergonomics, sizes, mechanical and electronic principles, material requirements, manufacturing processes, assembly arrangements, cost  estimations, factor of safety, selection procedures for bought out components)  **Communicating designs**  including:  • freehand sketching and diagrams (2D and 3D, illustrations, technical)  • graphical techniques (charts, keys, shading, animation, symbols, conventions)  • documentation (detail and assembly orthographic projections, specifications, parts list,  materials list, production plan, circuit/block diagrams, flowchart, design log).  **Iterative development process**  Using an iterative process to improve an engineering product, including:  • refining a task or process (analysing, adapting, enhancing)  • cyclic process (logical non-linear approach, focus on product design specification/criteria). | Unit 10 (Assignment 1)  **Learning Aim:**  Develop a three dimensional  Compute raided model of an  engineered product that  can be used as part of  other engineering processes.  **Key content area:**  A1 3D parametric  modelling  A2 Develop 3D  components  A3 Develop a 3D model  A4 Output of drawings  from a model  **Assessment:**  A practical drawing activity  to produce a 3D model of a  product and determine the  material properties of  components.  A portfolio of drawings  should include: orthogonal,  3D shaded or solid model,  parts list/bill of material  and a detail view. | Unit 10 (Assignment 2)  **Learning Aim:**  Develop two dimensional  Detailed computer-aided  drawings of an engineered product that can be used as part of other engineering  processes.  **Key content area:**  B1 2D drawing commands  B2 Development of 2D  engineering drawings  B3 Output of 2D drawings  **Assessment:**  A practical drawing activity  to produce 2D drawings for  an assembled product.  A portfolio of drawings  should include: orthogonal,  an assembly drawing, parts  list/bill of material and a  sectional view. | Unit 10 (Assignment 3)  **Learning Aim:**  Develop a three dimensional  Computer aided model for a thin walled product and a  fabricated product that  can be used as part of  other engineering processes.  **Key content area:**  C1 3D modelling  commands  C2 Develop 3D  components  C3 Development of a  3D model  C4 Output of product  drawings  **Assessment:**  A practical drawing activity  to produce a rendered 3D  model of a thin walled and  fabricated product.  A portfolio of drawings  should include: orthogonal,  3D shaded or solid model,  parts list/bill of material,  a detail view, rendered  output and flat patterns. |  |