**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 commonengineering processes tocreate products or deliverservices safely andeffectively as a team**Key content areas:**1 Common engineeringprocesses2 Health and safetyrequirements3 Human factors affectingthe performance ofengineering processes**Assessment:**A report, prepared as anindividual, detailingengineering processes and theimpact that human factors canhave on their performance,using a case study contextbased on a given engineeredproduct. | Unit 2 (Assignment 2)**Learning Aim:**Develop two dimensional(2D) computer-aideddrawings that can be usedin engineering processes**Key content areas:**1 Principles of engineeringdrawing2 Two dimensional (2D)computer-aided drawing**Assessment:**Practical activities undertakenas an individual to produce 2DCADs. The drawings shouldinclude an orthographicprojection and an electricalcircuit diagram. The evidencewill include the drawings,observation records/witnessstatements and annotatedscreenshots. | Unit 2 (Assignment 3)**Learning Aim:**Carry out engineeringprocesses safely tomanufacture a product or todeliver a service effectivelyas a team**Key content area:**1 Principles of effective teams2 Team set-up and organisation3 Health and safety riskassessment4 Preparation activities forbatch manufacture orbatch service delivery5 Delivery of manufacturingor service engineeringprocesses.**Assessment:**Complete practical engineeringprocesses as a leader and amember of a team. Theevidence will include records of team meetings (minutes),activity logs, a riskassessment, set-up planningnotes, quality controlcharts/annotated drawings,modified production plans,annotated photographs of theprocesses and observationrecords/witness statements. | Unit 1 (External exam)**Essential Content:**Algebraic methodsTrigonometric methodsStatic engineering systemsLoaded componentsDynamic engineering systems | Unit 1 (External exam)**Essential Content:**Fluid systemsStatic currentDirect current circuit theoryDirect current networksMagnetismElectromagnetic inductionSingle phase alternating current | Unit 3 (External exam)**Design challenges**Commercial**-**, regulatory**-** or public policy**-**based trends that challenge current technologyor 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 engineeringmaterials 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, costestimations, 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 dimensionalCompute raided model of anengineered product thatcan be used as part ofother engineering processes.**Key content area:**A1 3D parametricmodellingA2 Develop 3DcomponentsA3 Develop a 3D modelA4 Output of drawingsfrom a model**Assessment:**A practical drawing activityto produce a 3D model of aproduct and determine thematerial properties ofcomponents.A portfolio of drawingsshould include: orthogonal,3D shaded or solid model,parts list/bill of materialand a detail view. | Unit 10 (Assignment 2)**Learning Aim:**Develop two dimensionalDetailed computer-aideddrawings of an engineered product that can be used as part of other engineeringprocesses.**Key content area:**B1 2D drawing commandsB2 Development of 2Dengineering drawingsB3 Output of 2D drawings**Assessment:**A practical drawing activityto produce 2D drawings foran assembled product.A portfolio of drawingsshould include: orthogonal,an assembly drawing, partslist/bill of material and asectional view. | Unit 10 (Assignment 3)**Learning Aim:**Develop a three dimensionalComputer aided model for a thin walled product and afabricated product thatcan be used as part ofother engineering processes.**Key content area:**C1 3D modellingcommandsC2 Develop 3DcomponentsC3 Development of a3D modelC4 Output of productdrawings**Assessment:**A practical drawing activityto produce a rendered 3Dmodel of a thin walled andfabricated product.A portfolio of drawingsshould include: orthogonal,3D shaded or solid model,parts list/bill of material,a detail view, renderedoutput and flat patterns. |  |