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Design and Technology
AS/A2 Food Technology
Coursework Guide

GCE DESIGN & TECHNOLOGY: FOOD TECHNOLOGY
UNIT 1: PORTFOLIO OF CREATIVE SKILLS

This document has been created to guide Centres through Unit 1: Portfolio of Creative Skills, for the new specification: GCE Design and Technology: Food Technology.

Portfolios may be submitted on A3 or A4 paper.
A theme could be appropriate for combined investigation, design and manufacture tasks or separate tasks.
Good quality photographic evidence is essential.

Product Investigation

Assessment Criteria A: Performance Analysis (6 marks)

Fully justify key technical specification points, that relate to form, function, user requirements, materials and/or components/ ingredient requirements, scale of production and costs.

- Choose a commercial food product. Draw and/or photograph the packaging and product.
- Analysis of a food product and packaging.

Write a technical specification.
Consider the following points:

- Form – why is the product shaped/styled as it is?
- Function- what is the purpose of the product?
- User requirements – who is the target group and what qualities make the product attractive to potential users?
- Performance requirements – what are the technical considerations that must be achieved within the product?
- Materials and components/ingredients requirements – how should materials and components and ingredients perform within the product?
- Scale of production and cost – how does the design allow for scale of production and what are the considerations in determining cost?

Fully justify key technical specification points, that relate to form, function, user requirements, materials and/or components/ ingredient requirements, scale of production and costs.

- The specification points must contain more than a single piece of information, so that each statement is fully justified by giving a reason for the initial point.

Compare and contrast one other existing similar product using the technical specification.

- This could be an exact comparison of the same product:
  e.g. M&S Apple pie and CO OP Apple pie or
- Same product, different processing treatment:
  e.g. Chilled steak and kidney pudding and tinned steak and kidney pudding or
- Same product, different portion size:
  e.g. Own brand family size treacle tart and individual portion treacle tart or
- Same product, different component parts:
  e.g. Strawberry trifle and a mixed fruit trifle or
  Cottage pie and fish pie.

Consider the physical characteristics and components of the food products.

Assessment Criteria B: Materials and /or components/ingredients (9 marks)

Conduct good quality investigation.

- Disassembly
- Product analysis
- Taste tests.

Suggest, with reference to quality and performance, alternative materials/components/ingredients that could have been used.

- Consider how the recipe could be adapted to meet the need of an alternative consumer group.
- Consider from the retailer/manufacturers point of view how the use of the standard components could be used to create different product strata.
- Consideration of packaging for the food product could be discussed.

Evaluate, using advantages and disadvantages, the selection of materials/components/ingredients used.

- Consider organoleptic properties, nutritional characteristics, functionality of ingredients, storage life of ingredients, origin of ingredients, relevance for different consumer groups and cost implications.

Describe the impact on the environment of using materials/components/ingredients identified.

- Consider the choice of ingredients and packaging materials, advantages, disadvantages and their environmental impact.

Assessment Criteria C: Manufacture (9 marks)

Evaluate, using advantages and disadvantages, the selection of the manufacturing processes in the product.

Consider:

- Production and processing of raw materials: preparation processes: cleaning, peeling, sorting, grading, size reduction, mixing, blanching.
- Production processes CAD/CAM/CIM, scale of production.
- Disposal of waste produced during manufacturer and use of the product e.g. packaging.

Suggest one alternative method of production that could have been used in the manufacture of the product.

Consider:

- Preparation processes: cleaning, peeling, sorting, grading, size reduction, mixing, blanching.
- Preservation processes: removal or binding of water, removal of air, addition of chemicals, low and high temperature preservation, addition of salt and sugar.
- CAD/CAM/CIM and scale of production.
- Packaging.
- Storage and distribution systems.

Describe the impact on the environment of using the processes identified in the production of the product.

Consider:

- The sustainability of product.
- Use of eco-friendly preparation, processing and production methods, relevant to the food product.
- Food miles.
- Biodegradability of packaging materials.
- Seasonal ingredients and origin of food.

- Recycle, reuse and reduce packaging commitments from food manufacturers.

Assessment Criteria D: Quality. (6 marks)

Describe a range of quality control checks used during the manufacture of the product and explain how the relevant standards influenced the manufacture of the product.

- Describe when and where quality control checks take place during the manufacture of the product, what the checks consist of and how they form part of a quality assurance scheme.

Describe a quality assurance scheme for the product.

- Identify and describe one of the main standards that must be met during product manufacture and how it influences production of the final product, e.g. HACCP, raw materials, packaging, process control checks, foreign body control, final product checks, calibration, traceability, or m/o sampling.

Product Design

In their product design, students can respond creatively and adventurously to one or more design brief(s)/need(s). Students will demonstrate creativity and flair using their design skills through the production of a range of alternative ideas that explore different approaches to the problem. Students will develop and refine their ideas, with the aid of modeling, into a final workable design proposal that will satisfy the design brief(s)/need(s).

Assessment Criteria: E Design and development (18 marks)

Present alternative ideas that are workable, realistic and detailed and which fully address the design criteria.

- Brainstorm initial ideas.
- Produce a range of good quality designs with annotation related to the design brief and technical specification.
- Practical work based on recipe adaptation/investigation of ingredients or processes. Include photographic evidence.
- Test and evaluate your ideas objectively against the technical specification for example: attribute profiles, nutritional analysis, organoleptic tests, storage tests, experimental work for ingredients/components/processes.
- Provide detail of any tests that you will conduct.

Ideas demonstrate detailed understanding of materials and/ or components/ingredients, processes and techniques.

- Apply knowledge of the working characteristics of materials, components, ingredients and techniques in your product.
- Investigational work based on the working characteristics of ingredients, components and techniques in your product. Include photographic evidence.

Produce a final design proposal that is significantly different and improved compared to any previous alternative design ideas.

- Produce a final design with all the relevant design information. This could include modelling, drawing, CAD, practical work for recipe adaptations and innovations, an explanation about how and why ingredients, techniques and processes were selected and applied to the final design. Include photographic evidence.

The design proposal includes technical details of materials and/or components/ingredients, processes and techniques.

- Quantities of ingredients
- Evaluate processes, methods and techniques used within the final product.
- Size and shape dimensions
- Organoleptic properties
- Nutritional data (if appropriate to the task)
- Methods of preparation, processing, manufacturing, storage.
- Evaluate cooking and storage temperatures for the final product.
- Decoration techniques

Assessment Criteria: F. Communicate (12 marks)

Use a range of communication techniques and media including ICT and CAD, with precision and accuracy to convey enough detailed and comprehensive information to enable third-party manufacture of the final design proposal.

- A range of communication techniques such as sketching, formal drawings, cut and paste, use of CAD, photography, modelling - all where appropriate.
- Information to support third party manufacture, this would include a manufacturing specification, costing, scaling up and a recipe.

Annotation provides explanation and most technical details of materials and/or components/ingredients and processes with justification.

- Technical details with justification.

Product Manufacture

In their product manufacture, students should produce one or more high quality products that meet the requirements of the design brief(s)/need(s). The design brief(s) need(s) should contain requirements against which the final manufactured products can be measured. This will allow them to demonstrate their knowledge and understanding of a range of materials/components/ingredients, techniques and processes by selecting and using those that are appropriate to the requirements of the task. A range can be defined as at least two. The design brief(s)/need(s) should be set by the teacher to ensure a range of materials/components/ingredients, techniques and processes are used.

Manufacture of a food product, that might include two or more of the following components and processes: (please use this list as suggestions, rather than being a definitive list)

- Sauces: thickening and gelatinization: roux, pouring, panada, couli, gravy, custard.
- Topping: gratin, potato, breadcrumbs, dumplings
- Coatings: herbs, egg, batter, bread crumbs.
- Batters: thick and thin consistencies
- Emulsions
- Setting agents, gels(starch, protein, gums, pectin's)
- Pastry: short crust, flaky, choux, filo, puff
- Egg cookery: coagulation, emulsions, aeration.
- Decorative techniques, icing, piping
- Caramelisation and dextrinisation
- Cake methods: all in one, creamed, whisked, rubbed in, melting, rich fruit.
- Biscuit methods: creamed, rubbed in, all in one, melted
- Bread and scone methods: sweet, savory, yeast, sour dough, flat bread, rubbing in methods
- Pasta making and shaping
- Baking: gelatinization, maillard reaction

Assessment Criteria: G. Production plan (6 marks)

Produce a detailed production plan that considers stages of production in the correct sequence, realistic timescales and deadlines for the scale of production.

- Production plan
- Technical specification
- Timescales
- HACCP
- Quality control
- Scaling up information
- Manufacturing information, including equipment, processes and scale of production.
- Photographs to support making and final product.

Assessment Criteria: H. Making (18 marks)

Demonstrate a detailed understanding and justified selection of a range of appropriate materials and/or components/ingredients and processes.

- Consider the choice and function of ingredients, components and processes.
- Photograph of final product and manufacture.
- Evidence is seen through annotation of the photographs presented to show making.

Demonstrate demanding and high quality making skills and techniques.

- List skills and techniques used to create and make final product.

Show accuracy and precision when working with a variety of materials and/or components/ingredients, processes and techniques.

- Include any specific information relevant to accuracy and precision, e. g. cooking and storage time/ temperature, portion size, weight, consistencies and strengths of components.

High-level safety awareness is evident throughout all aspects of manufacture.

- Evidence is seen through annotation of the photographs presented to show making.

Assessment Criteria: I. Testing (6 marks)

Describe and justify a range of tests carried out to check the performance or quality of the product(s).

- Test and evaluate your ideas objectively against the technical specification for example: attribute profiles, nutritional analysis, organoleptic tests, storage tests, experimental work for ingredients/components/processes.
- Provide detail of any tests that you conduct.

Relevant, measurable points of the design brief(s)/need(s) are objectively referenced.
Third-party testing is used.

- Refer back to the technical specification and objectively evaluate your work.
- Evaluate third party testing.