



T Level Technical Qualification in Science

Occupational specialism assessment (OSA)

Food Sciences

Assignment 2 - Distinction

Guide standard exemplification materials

T Level Technical Qualification in Science Occupational specialism assessment

Guide standard exemplification materials

Food Sciences

Assignment 2

Contents

Introduction	3
Task 1	4
Task 2	7
Task 3	9
Task 4	11
Task 5	13
Task 6	15
Task 7	16
Task 8	17
Task 9	18
Task 10	20
Examiner commentary	22
Overall grade descriptors	23
Document information	25
Change History Record	25

Introduction

The material within this document relates to the Food Science occupational specialism sample assessment. These exemplification materials are designed to give providers and students an indication of what would be expected for the lowest level of attainment required to achieve a pass or distinction grade.

The examiner commentary is provided to detail the judgements examiners will undertake when examining the student work. This is not intended to replace the information within the qualification specification and providers must refer to this for the content.

In Assignment 2, the student must develop and assess their product. This includes food and packaging.

After each live assessment series, authentic student evidence will be published with examiner commentary across the range of achievement.

Task 1

Carry out a health and safety risk assessment of your proposed production processes.

(12 marks)

30 minutes

Student evidence

I carried out the following risk assessment of the development kitchen:

Risk assessment form

Person carrying out risk assessment:	Jane Smith	<table border="1"> <thead> <tr> <th>Those at risk</th> <th>Key</th> </tr> </thead> <tbody> <tr> <td>Own staff</td> <td>OWN</td> </tr> <tr> <td>Venue staff</td> <td>VEN</td> </tr> <tr> <td>Organisers</td> <td>ORG</td> </tr> <tr> <td>Visitors</td> <td>VIS</td> </tr> <tr> <td>Public</td> <td>PUB</td> </tr> <tr> <td>Contractors</td> <td>CON</td> </tr> <tr> <td>All persons onsite</td> <td>AOS</td> </tr> </tbody> </table>	Those at risk	Key	Own staff	OWN	Venue staff	VEN	Organisers	ORG	Visitors	VIS	Public	PUB	Contractors	CON	All persons onsite	AOS
Those at risk	Key																	
Own staff	OWN																	
Venue staff	VEN																	
Organisers	ORG																	
Visitors	VIS																	
Public	PUB																	
Contractors	CON																	
All persons onsite	AOS																	
Person(s) responsible on site:	Lucinda Grey																	
Venue:	Development Kitchen																	
Work activity:	NPD																	
Date of assessment:	29/02/2021																	

Please read the guidelines prior to completing your risk assessment.

Section 1

Hazard	Who might be harmed? (see 'those' at risk, above)	Likelihood	Severity	Total risk level	Control measures (add any other control measures you will use)	Likelihood	Severity	Res. Risk level
Slips, Trips and falls	Own, Con, Org	4	3	12	Clean any spillage up immediately and cordon area until floor is dry. Wear safety shoes to minimise danger of slipping or injuring foot. Keep all walkways clear at all times	2	3	6

Hazard	Who might be harmed? (see 'those' at risk, above)	Likelihood	Severity	Total risk level	Control measures (add any other control measures you will use)	Likelihood	Severity	Res. Risk level
Upper limb injuries	Own	2	2	4	Ensure all portable equipment and tools/utensils are within reaching distance at all times. Move equipment/tools within work area rather than reaching. Ensure work surface is at a comfortable height if not place a stable platform next to work surface.	1	1	1
Burns from oven/hob/pans/oven trays	Own	4	4	16	Ensure overall sleeves completely cover arms, use heatproof glove when removing trays from oven, maintain safe distance from hob. Do not overfill pans on hob and use heatproof glove when removing boiling pans from hob	3	2	6
Cuts, injury from flying debris	Own	4	3	12	Check all equipment, utensil and tools for damage prior to use. If damaged do not use and inform supervisor. Only use equipment you have been trained to use and for its designated purpose. Handle all sharp tools such as knives and skewers responsibly. Always carry or use knives by the handle and do not point them at others	2	2	4

Hazard	Who might be harmed? (see 'those' at risk, above)	Likelihood	Severity	Total risk level	Control measures (add any other control measures you will use)	Likelihood	Severity	Res. Risk level
Food poisoning/anaphylaxis	Own, Pub, Org	4	5	20	Ensure all work surfaces and utensils/tools are clean before use. Carry out swab tests on surface areas to ensure all is clear of microbiological contamination and food debris. If unclear, clean prior to start of production and swab until negative result received	1	1	1
Back injury	Own	3	3	9	Always follow correct manual handling techniques	1	2	4
Electric shock	Own	4	5	20	Ensure all small electrical appliances have been PAT test and are fit for use. Do not use equipment if plug, fittings or cable are loose or any exposed wiring can be seen. For large electrical equipment ensure you know the location of the isolation/lock off switch. Always check equipment prior to use and if any damage has occurred do not use and report to supervisor.	3	3	6

Hazard	Who might be harmed? (see 'those' at risk, above)	Likelihood	Severity	Total risk level	Control measures (add any other control measures you will use)	Likelihood	Severity	Res. Risk level
Chemical burns/inhalation	AOS, Pub	4	4	16	Always ensure chemicals remain in chemical area and are not being used or held in the immediate area when production is running. Only use chemicals as per the manufacturer's instructions and when you have been trained to do so. Always swab area after cleaning to ensure no chemical residue is left on work surface, equipment, tools or utensils	2	3	6

By signing the declaration below, you have agreed that you will put the appropriate control measures in place to ensure that hazards are reduced and that the risks applicable to your stand are controlled.

Signed	Jane Smith 
Print name	Jane Smith
Review date	10 th January 2021

Task 2

Produce kitchen samples of your product for analysis. Samples should be labelled appropriately to enable safe handling, and to be safe for consumption. Records should be kept of:

- equipment used
- changes to recipe and/or process, and reasons for the changes

(14 marks)

2 hours

Student evidence

I collected 2 samples from each batch of the trial runs – 6 samples in total. 3 samples were quartered, placed in sterile bags which were then sealed. Bags were labelled with the name of the product, batch number, and time and date of manufacture and I signed each label. These samples were sent to the lab for testing

The raw materials specification and finished product specification were also made available along with the HACCP flow diagram and the equipment list and what the equipment was used for.

The raw material specification contained the name of the raw ingredient, the name of the supplier, the storage shelf life of each ingredient, the nutritional information of each ingredient, the microbial limits of each ingredient, the labelling and coding (for example use by/best before) of each ingredient, and detailed information on the packaging used included the supplier and the type of packaging, highlighting the fact it was recyclable and the polypropylene window on the cake box met (EC) No 1935/2004 standards with regards to chemical migration. Soy was also listed as an allergen as the recipe included soya milk. The dairy free spread along with the cocoa powder and soya milk were also listed as having a vegan claim.

The finished goods specification was created to show what was acceptable and what was not. Photographic examples showed acceptable/unacceptable with a representation of the whole cupcake and 1 cupcake halved to show the pace of the cherry jam centre. Photographic representation was also provided of the packaging components and how the assembled product should look within the packaging. The number of pieces per pack (4), the visual appearance of the produce, such as 3cm diameter chocolate cupcake with chocolate frosting swirl covering top of sponge base and within boundaries of paper cupcake case and a ½ glacé cherry on top with the cut side face down on the frosting.

A complete equipment list was produced and the main equipment used was as follows:

- sieve – used to sift all dry ingredient to remove lumps and check for foreign body contamination
- hand-held electric mixer to ensure cake batter was smooth and all ingredients were well mixed
- whisk used to cream dairy free spread and sugar for the cake mix and also for all ingredients for the frosting
- the hob was used as the thermal heat process to make the jam
- the thermometer was used to check the boiling temperature of the jam 105°C
- the oven was used as the thermal heat process to make the cakes set at 180°C
- cupcake oven trays were used to ensure the dimensions of the product remain consistent
- cooling racks were used to ensure the product was able to cool sufficiently prior to icing
- scales were used to ensure the correct amounts of ingredients were used and to weigh the finished product to ensure it met the 54g for individual portion size

I tried different approaches to see the impact on the product, I added 1 tablespoon of beetroot juice to the cake mix and an additional 20g of plain flour. This gave the sponge a reddish tinge which aided the physiological properties of product as the redness matches the redness of the cherry jam. However, I decided not to progress with this as the red jam against the brown sponge provided more contrast which was more visually appealing.

I also tried to use a whole fresh cherry as a top rather than the glacé cherry. This again made the cupcake more visually appealing and the product looked more natural which would be likely to appeal to the intended market. However, this would impact on the shelf life of the product which would have been reduced to 2/3 days. As a consequence of this I did not go ahead with this suggestion.

Task 3

Accurately record all of the production data from your process which may include:

- time and temperature data
- ingredient details (for example weights, batch numbers)
- measurements related to product safety characteristics

(9 marks)

15 minutes

(Suggested time for tasks 1, 2 & 3) 2 hours 45 minutes

Student evidence

I identified the following CCPs as part of my process:

Storage chiller temperatures – carried out hourly, temp, time and date recorded on monitoring form by operative and signed. Corrective action identified when temperature is exceeded by moving contents to another chiller and informing supervisor/engineer.

Metal detection checks – carried out hourly, time, date, batch number and ok/reject recorded on monitoring form and signed by operative. Order identified as pack, 1.5 ferrous, pack, 2.0 non-ferrous, pack, 3.5 stainless steel. Corrective action identified if metal piece not rejected. Product placed on hold since last check which passed, supervisor informed and all product rechecked prior to despatch.

The following process checks were also identified:

Goods in – all goods checked against product specification and damage to packaging – reject if does not meet spec of packaging damaged. Supplier, batch number and temperature checked, if applicable, and best before/use by date checked. All information recorded on goods in sheet and signed by intake operative.

Storage – all raw materials stored appropriately and used in FI/FO, earliest date always used first. Ambient ingredients stored in cool dark conditions, stored off floor and away from wall. Sheets signed, batch number, date, time, and amount recorded when placed in storage and removed. Any damaged or out of date stock to be sent to waste. Chilled/frozen ingredients to be stored in chiller/freezer. Chiller temperature always maintained <5°C and freezer at -18°C. Chillers and freezers must never be overfilled. Temperature checks carried out hourly and result recorded and operative to sign sheet. Corrective action in place if temperature exceeds 5°C and freezer exceeds -15°C. Contents to be moved to other chiller/freezer and supervisor informed and engineer called.

Decant and sieving – foreign body contamination and microbial – all dry goods to be decanted into bowls and then sieved. Any dry goods containing stored product insects to be sent straight to waste and supervisor informed. Batch number, ingredient name, time and date recorded along with signature of operative on monitoring sheet.

Prep and mixing – allergen – allergenic products used with the introduction of soya milk. Product to be returned immediately to relevant segregated area after use. Foreign body contamination through poor maintenance of tools and equipment. All equipment to be checked for damage prior to use. Any equipment or tool showing signs of damage not to be used, supervisor informed and damaged tools/equipment removed immediately from production area.

Frosting - allergen product being used in area – return of soya milk to segregated area after use. Foreign body contamination by damaged tools/utensils. All tools/utensils to be checked prior to use and inform supervisor of any damage. Damaged tools/utensils should be removed from the production area. If tools/utensils break during use ingredient should be checked and sent to waste if any contamination found.

Packing – allergen product risk of contamination of work surface and foreign body contamination of product. Boxes should be assembled prior to arrival in packing area and boxes should be checked to ensure they are intact prior to use. Any damaged boxes should be sent to waste.

Samples should not be taken prior to metal detection check.

As an allergen is contained within this product the preparation/mixing, assembly/frosting areas and packing areas must be thoroughly cleaning prior to future use to ensure there is no possibility of future allergen contamination.

Task 4

Carry out a taste panel for your product, using a minimum of 8 participants. Your panel should cover at least 3 sensory characteristics related to the product. Create a questionnaire for them to complete, then evaluate the feedback and produce a report to include recommendations for further development.

(12 marks)

1 hour 30 minutes

Student evidence

I screened the 8 taste panel participants to check that there was no medical, primarily because of the pregnancy or food intolerance, any of which would have prohibited them from participating. I did inform the participants that this was a vegan product and asked if any of them objected to taking part. I explained that there was soya and gluten within the product and checked if any of the participants had any allergies to these ingredients. I then informed participants of the ingredients of the product and asked again if there were any reasons either medical or religious which prohibited them from taking part in the taste panel.

I laid out a place for each participant at intervals around the room I provided the participants with 3 whole cupcakes which were placed on individual white paper plates along with a white plastic knife. I also provided the participants with a copy of the finished product specification and a sample scoring sheet for each sample, a clear glass and water with diluted lime juice to clear the palate between samples. Samples were labelled as A, B and C. A copy of the packaging from each batch was placed in the centre table.

Participants were advised that the taste panel should be carried out in silence to prevent any of them influencing the rest of the group.

I used the following form to ask participants to record their result 1 (red) being unacceptable and should be rejected, 2 (amber) being acceptable quality with some acceptable defects which requires action and 3 (green) which is acceptable.

Taste Panel Record

JS Products Specifications

Chocolate Cherry Cupcake

Unprepared Product Photograph	Prepared Product Photograph
-------------------------------	-----------------------------

Ingredient Listing

Product description from pack

Standard product characteristics

Physical Parameters	
Appearance	
Odour	
Flavour	
Texture	

Sensory Grading

	3	2	1
Physical Parameters			
Appearance			
Odour			
Flavour			
Texture			

I then collated the information and recorded the results on the score collation sheet.

Task 5

Provide details of recipe formulation, including:

- how it contributes to the desired organoleptic properties
- considerations for at least 2 potential ingredient substitutions and alternatives

(9 marks)

15 minutes

Student evidence

I then collated the information and recorded the results on the score collation sheet as shown below:

Score Collation Record Sample A

Numerical Grade

	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8
Physical Parameters								
Appearance								
Odour								
Flavour								
Texture								
Overall score								

RAG Score

3 - Green	
2 - Amber	
1 - Red	

This helped me identify that there was an issue with batch 3 as the cakes were bigger than the 3cm diameter and the cake was drier. Having checked the production records again it appears that there was additional batter placed in the cupcake case and they were placed on a flat tray rather than the cupcake hole trays. They were also cooked for 27 minutes rather than 25. Consequently, I recalled this batch from production and sold the product as seconds

in the staff canteen.

Having found this I made sure that it was clear on the process that the cooking time should not exceed 25 mins.

I was concerned about the use of soya milk. Whilst soya milk is a good alternative for dairy milk it is also an allergen. I would propose using rice milk in future, although it is lower in protein and vitamin B, it tends to be sweeter and higher in calories. Rice milk is also thinner than soya milk so I would suggest adding 30g of flour at a time until the batter achieves the desired consistency. This removes the need for allergen in the product. However, the higher carbohydrate content would mean it would not be suitable for those following a GI diet such as diabetics.

I would also replace the sugar in the cake mix and the jam with xylitol and this would reduce both the sugar and carbohydrate levels in the cake and the reduction in sugar levels would compensate for the higher calorie and carbohydrate count of the rice milk and it would still be suitable for those on a low GI diet but we would need the specific nutritional information to make such a claim.

Neither replacement has an impact in shelf life of the product which could still be safely consumed within 5 days of production.

Task 6

Explain:

- a) the advantages and disadvantages of the specific processes you used in the development of your product
- b) the impact on your product's shelf life, nutritional content and organoleptic properties as a result of the specific processes used

Processes may include:

- energy transfer
- heat processing
- heat removal
- ambient temperature processing technologies

(12 marks)

30 minutes

(Suggested time for tasks 4,5 & 6) 2 hours 15 minutes

Student evidence

On evaluating the existing recipe and process I was able to reach the following conclusions:

The cupcake is a thermally processed product which is high in sugar content and therefore low in A_w . The baking process itself also reduce A_w . This limits the growth of microbiological organisms. However, overbaking even by a few minutes can dry the product out at which point it may retain no value as we would be unable to sell the product to the level of customer complaints it would generate.

Boiling the jam will reduce microbial contamination. Boiling for short periods of time also has little impact on nutrient loss or flavour or colour of the fruit. However, boiling for longer periods of time may also degrade the flavour and change the colour of the fruit. The boiling time may be reduced but it's likely that you would need to add pectin to speed up jellification.

High levels of sugar may also impact on product sales as it's likely not to be a good choice for children or adults who are on low GI/sugar diets. This may be rectified with the use of a sugar substitute. Sugar substitutes such as xylitol may also enhance the flavour of the fruit in the jam thereby removing the need to use pectin as an additive and the boiling process can continue until jellification occurs naturally.

Task 7

Create a mock-up of your product packaging to include all mandatory labelling requirements.

Marks will be awarded on the physical aspects of the packaging, such as materials used, size of packaging, and mandatory labelling. No marks are awarded for the design elements on the packaging, or any non-mandatory labelling.

(8 marks)

1 hour

Student evidence

The brown cardboard cake box, inner flat tray and inner shaped insert is made from 80% recycled material and 20% wood pulp from sustainable forests as is the outer sleeve, which wraps around the middle. The polypropylene window on the cake box meets the standard required within with (EC) No 1935/2004 and there is no chemical migration on to the food from the film. The insert prohibits the movement of the cupcakes within the box during transit and this stops damage to the finished product.



The sleeve is also firmly wrapped around the middle of the box and this negates the need for any further fastening.

The sleeve has been printed with the name and picture of the product in the middle of the sleeve so that it's clearly visible to customers. The folded part of the sleeve down the front face of the box is marked with the vegan symbol shows the storage conditions and best before date along with "this way up" and the folded part of the sleeve down the rear face of the box contains the remaining mandatory labelling requirements including the name of the product, list of ingredients, all allergens listed in bold typeface, QUID, net quantity, name and address of manufacturer, country of origin and nutritional declaration.

Task 8

Complete a sustainability study of the product and prepare a report that includes:

- any potential sustainability issues
- any mitigation strategies that can be used to minimise the environmental impact of the product

(12 marks)

30 minutes

Student evidence

I considered the following points when evaluating the sustainability of the product:

Raw materials – all raw materials have been sourced from local suppliers. This has reduced the environmental impact of transporting raw materials over longer distances as we would need to do so using a national supplier and also providing a big saving on transportation costs. It is also easier for us to build up relationships with businesses closer to site and less time is spent travelling to audits or resolving any complex issues which need to be done face to face. Also buying locally improves the local economy and this helps sustain the local community. This lessens the impact of CO₂ through the reduction in fuel consumption. One consideration to note it may affect availability and lead times of raw materials.

Packaging – our packaging is made from cardboard made from recycled paper and wood pulp from sustainable forests. All of the packaging including the polypropylene window is fully biodegradable. However, the packaging has been sourced from a national supplier which means it travels over 200 miles to get to site. This lessens the environmental impact. Paper also uses 3 times as much energy to process but taking into account the long-term environmental impact of using plastic I feel it is worth it. We will, however, continue to look for a local supplier if we continue to produce this product.

Reuse of waste – waste generated by product which is safe to eat but doesn't meet specification requirements has been sold in the canteen to fellow students and raised additional funds for a college charity. This has enabled our department to donate an additional £30 to a local hospice and this also meant we didn't waste raw materials.

Energy usage – I have implemented a chiller check procedure. Overfilling chillers ultimately leads to a rise in the chiller temperature and the chiller utilises more energy in trying to keep the contents cool. By ensuring chillers don't exceed fill levels we have produced savings by reducing waste we have to discard due to breaching temperature requirements and also reduce energy by maintaining chillers at the optimum temperature for efficient use. I have also looked at the possibility of producing larger batch sizes. Unfortunately, with the current domestic oven there isn't existing capacity and the cost of the purchase of a commercial oven with the additional energy usage does not make this a suitable solution with current product numbers.

Task 9

- a) Select the most appropriate test methods for each stage of the process to:
- ensure compliance with raw material and finished product specifications
 - demonstrate product organoleptic, safety and quality compliance
- b) For each test method selected above, describe the monitoring activities to verify compliance.

(12 marks)

30 minutes

Student evidence

At each stage of the process I have implemented checks to ensure quality standards are consistently maintained. I have also identified 2 critical control points with the chiller temperatures at goods in and the metal detection checks at the last stage in the process to maintain food safety levels. I have also introduced microbial and nutritional testing prior to despatch to ensure the product is safe to eat and provides the nutritional claim as identified on the label.

Intake - goods in check incoming raw materials against material specification for safety (microbial, foreign body, chemical or allergenic contamination) check product number matches raw material specification, supplier details match and product is intact and vehicle as it should be. Temperature monitoring of raw materials and vehicle if applicable.

Storage - all dry raw materials stored off floor, segregation of allergens and items with specific origin or free from claims, segregation of chilled product stored appropriately at required temperatures. Monitoring of chiller temperatures and temperature of chilled materials; humidity levels of dry good checks and first in first out rotation in place for all stock. All raw materials checked against raw material specification on withdrawal from store and batch codes recorded on processing documentation.

Decant and sieving – sifting of dry goods such as flour to ensure no foreign body contamination from items such as stored product insects or packaging - batch number sieve size and any foreign bodies recorded on monitoring record.

Preparation – check of all tools/equipment/utensils are fit for use. No damaged tools/equipment/utensils to be used. Product prepared for heat processing or removal arranged as per pictorial standard and procedure. Allergen product removed from allergen chiller when required and return after use.

Heat processing - check of all tools/equipment/utensils are fit for use. No damaged tools/equipment/utensils to be used. Cooking temperature and time recorded, core temperature baked goods checked with the use of a sterile stainless steel skewer to ensure fully cooked. Jam temperature checked to ensure it meets 105°C. Visual checks carried against pictorial record to ensure match before moving to next stage to check organoleptic properties.

Heat removal - cooling time to <12°C in <1 hour. Cooling method – placed on cooling racks within development area.

Frosting - allergen product being used in area – return of soya milk to segregated area after use. Foreign body contamination by damaged tools/utensils. All tools/utensils to be checked prior to use and inform supervisor of any damage. Damaged tools/utensils should be removed from the production area. If tools/utensils break during use ingredients should be checked and sent to waste if any contamination found

Packaging - visual check against pictorial standard to ensure product placed correctly, labelling of product correct and correct packaging used. Allergen product risk of cross contamination of work surface and foreign body contamination of product. Boxes should be assembled prior to arrival in packing area and boxes should be checked to ensure they are intact prior to use. Any damaged boxes should be sent to waste.

Metal detection – final critical control point to ensure no metal fragments or pieces encased in product prior to despatch.

Final product check - during taste panel checked against final product specification, ingredients checked against traceability record, mass balance check, product organoleptically tested, samples collected as per sampling procedure for nutritional and microbial analysis.

Task 10

Assess the product formulation and processing conditions, identifying what worked well and any areas for improvement

(12 marks)

30 minutes

(Suggested time for tasks 7, 8, 9 & 10) 2 hours 30 minutes

Student evidence

Here is my evaluation as to how I feel what has went well and what could be improved on:

Product formulation – I used various sources both public, industry and business to identify if this product was viable within the marketplace and I was able to provide supporting evidence as to why the product would be marketable.

Idea generation – I really feel I went off at the deep end here I jumped straight in to deciding this was the product I was going to make. I feel this stage would have benefited from much wider research and certainly visiting a range of local supermarkets to see what was on sale may have sent me down a different pathway. I was too blinkered through this stage and that stopped me being truly innovative. For example it was late on in the process before I considered the removal of the allergen from the product and started to look for an alternative.

Feasibility check – I checked in plenty of time to make sure my tutor was aware of what equipment, raw materials and packaging I would need and made sure that I would have sufficient lead time to order the goods. I did think of storage at this point and the fact that I would have allergenic materials within the recipe. I also did have the foresight to discuss this with my tutor. At this stage I should have reflected on how I could negate the need for allergenic materials within the product.

Review of product – I feel this went well and I received good feedback from the customer group. More research though by visiting local retailers may have thrown up a similar product which would have made any comparison much more valid.

Concept approval – during this stage I was able to gain approval from my tutor to go ahead with the product. I was able to fully cost the product and I found that by running trials I was able to generate sufficient cake mix, jam and topping to make an additional 4 cupcakes per batch and this enabled me to meet the cost criteria I had set myself. By carrying out 3 trial runs I was also able to gather pictorial evidence of the good, the bad and the ugly which help in the creation of finish product specification and also I was able to start looking at my process flow diagram. This made me consider the allergen in the product and how I was going to have to go back and forwards to the allergen area during the mixing and frosting process or was it a case of decanting the ingredient and holding it within the development kitchen until it was required.

Trial run – during my first full trial run I worked in a linear fashion from coming in the development kitchen door to going back out again. This meant that there was less risk of cross contamination from other products. Decant the dry goods and sieving them in a separate area also lessened the risk of cross contamination and I decided at this point to leave the soya milk in the chilled allergen area until it was needed rather than having volume which was not required sitting on the work surface. I was also able to create the documentation needed include all monitoring records. Using the Codex CCP decision tree I was also able to identify my CCPs. I was also able to produce procedures for decant and sieving, mixing, cooling and frosting and packing. I was able to take photographs of each stage which also help establish what good looked like. I also took samples which I sent off to the lab in order to check that microbial levels were within acceptable limits and also confirm the nutritional information which I

would need to complete my labelling process in line with the requirements of Food Information for Consumer Regulations 2014 Regulation 1169/200

Review of trial run – this went as expected I was able to provide my tutor with a copy of my process and the recipe, raw materials, WIP procedures, CCPs along with monitoring sheets and I was able to explain how sieving wasn't a CCP due to metal detection check. I should have also sought feedback from the other student who was in the development kitchen at the same as to how we could better work together as we were frequently in each other's way. Perhaps it would have been more helpful to have staggered start times.

Pre-production – at this point the process ran smoothly – my tutor may have picked up on the fact me and the other student had gone in each other's way and both of us stayed to our own allocated areas. Following the full production run I sent samples for microbial and nutritional analysis for final confirmation that all was okay. I also caught up with the artwork department to ensure the sleeves were ready and contained all of the required information. On hindsight I should have done this much earlier as I left it until the end of the week. At that point if any information had been incorrect I wouldn't have had time to get it changed due to their lead time.

Launch – I was finally ready to launch the product during June and advertised throughout the college on the noticeboard and also in the college paper. Again on hindsight this was too late. I didn't start the marketing process until much too late in the day. During June in the college is exam time so not all students are on campus and those that are come for the exam and go again. Thankfully I did make my sales but could have done so much better if I had started planning earlier and rather than stick to the maximum timetable I could have condensed my activities and been ready to launch around 6 weeks earlier when there was increased customers on campus. A good commercial lesson learned.

A big learning point for me was also my recipe choice. It was very late in the day when I started considering the inclusion of allergens in the product. I could also have increased sales if I had removed the soya milk earlier and also substituted the sugar.

Examiner commentary

The student has carried out a thorough risk assessment, identified all hazards in the area and provided solutions to mitigate or eliminate the risk.

The relevant number of samples are collected, labelled and handled properly. All samples are fit for consumption. All changes made are recorded on the relevant documentation. Changes made have contributed to technical development of the product and all equipment used is listed and its purpose identified.

The student has produced comprehensive and logical documented procedures and monitoring records which match the process flow and ensure the food is safe for consumption.

The student carried out a taste panel under controlled conditions with a minimum of 6 participants and correctly collated all data and recorded accurate results. All products were graded and where issues occurred a corrective action was identified to eliminate this happening when producing future batches.

The student has made 2 changes to the product to improve or enhance the organoleptic properties and changed 2 ingredients to enhance flavour, colour or for nutritional reasons. They have provided an evaluation as to why the change was made and the difference to the product as a result.

The student has evaluated the process designed to make the product, evaluated the advantages and disadvantages and can identify at least 2 changes which impact on the organoleptic properties, shelf life or nutritional value in the future.

The student has produced innovative packaging which will help ensure the product is safe to eat for the duration of its shelf life and protect it from damage during transit. All labelling requirements which are essential for food safety such as allergens, cooking/storage instructions/use by dates are clearly labelled and in the appropriate place and the vast majority of labelling requirements are displayed.

The student has considered at least 3 ways to improve or enhance product sustainability whilst reducing costs with no impact on food safety, nutritional value or shelf life of product.

The student has detailed all process steps, at least 1 monitoring check carried out and test methods to verify organoleptic properties, food safety or nutritional value of product.

The student has evaluated each stage of the product formulation and process and has identified at least 2 things which went well and 1 action to which could be taken to improve or enhance the outcome of each stage.

Overall grade descriptors

The performance outcomes form the basis of the overall grading descriptors for pass and distinction grades.

These grading descriptors have been developed to reflect the appropriate level of demand for students of other level 3 qualifications, the threshold competence requirements of the role and have been validated with employers within the sector to describe achievement appropriate to the role.

Occupational Specialism overall grade descriptors

Grade	Demonstration of attainment
Pass	The evidence is logical but displays minimal knowledge in response to the demands of the brief.
	The student makes some use of relevant knowledge and understanding of how it informs practices of the sector and demonstrates a limited understanding of perspectives or approaches associated with food science and food product development processes.
	The student makes adequate use of facts/theories/approaches/concepts/data and attempts to demonstrate breadth and depth of knowledge and understanding.
	The student is able to identify some information from appropriate sources and makes use of appropriate information/appraise relevancy of information and can combine information to make decisions and recommendations.
	The student makes minimal judgements/takes appropriate action/seek clarification with guidance and is able to make limited progress towards solving non-routine problems in real life situations.
	The student attempts to demonstrate skills and knowledge of the relevant concepts and techniques reflected in a food science and/or food product development role and generally applies this across different contexts.
	The student shows adequate understanding of problems that have not been seen before, using limited knowledge to find solutions to problems and make justification for strategies for solving problems, explaining their reasoning.
Distinction	The evidence is precise, logical and provides a detailed and informative response to the demands of the brief.
	The student makes extensive use of relevant knowledge and has extensive understanding of the practices of the sector and demonstrates an understanding of the different perspectives/approaches associated with food science and food development processes.
	The student makes decisive use of facts/theories/approaches/concepts/data, demonstrating extensive breadth and depth of knowledge and understanding and selects highly appropriate skills/techniques/methods.
	The student is able to comprehensively identify information from a range of suitable sources and makes exceptional use of appropriate information/appraises relevancy of information and can combine information to make coherent decisions.
	The student makes well founded judgements/takes appropriate action/seek clarification and guidance and is able to use that to reflect on real life situations in a food science and/or food development role.

	<p>The student demonstrates extensive knowledge of relevant concepts and techniques reflected in a food science and/or food development role and precisely applies this across a variety of contexts and tackles unstructured problems that have not been seen before, using their knowledge to analyse and find suitable solutions to the problems.</p>
--	--

Document information

The T Level Technical Qualification is a qualification approved and managed by the Institute for Apprenticeships and Technical Education.

Copyright in this document belongs to, and is used under licence from, the Institute for Apprenticeships and Technical Education, © 2020-2021.

'T-LEVELS' is a registered trade mark of the Department for Education.

'T Level' is a registered trade mark of the Institute for Apprenticeships and Technical Education.

'Institute for Apprenticeships & Technical Education' and logo are registered trade marks of the Institute for Apprenticeships and Technical Education.

Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Published final version.		June 2021
v1.1	NCFE rebrand		September 2021