



CONFECTIONARY PROCESSING

Level-II

Based on *May 2019*, Version 2 Occupational standards

Module Title: - Operating a Panning Process

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LG #70

LO #1- Prepare the panning equipment and process for operation

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Confirming and make available service and materials
- Starting and operating the panning process
- Selecting and preparing the centers and coating
- Identifying and confirming cleaning and maintenance
- Prepare the panning process.
- Checking and adjusting equipment performance
- carrying out the Pre-start checks

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Confirm and make available service and materials
- Start and operate the panning process
- Select and prepare the centers and coating
- Identify and confirm cleaning and maintenance
- Prepare the panning process.
- Check and adjust equipment performance
- carry out the Pre-start checks

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the "LAP test"



Information Sheet 1- Confirming and make available materials and service

1.1. Confirming and make available materials

As raw materials becoming more expensive special attention should be paid to engumming and stabilization of the centers in order to decrease rework and prolong shelf life. Since, panning is a time-consuming and labor-intensive process, the scope for improvement could be for processes that are automated and for production to be rationalized further.

Dark chocolate almonds are known and loved by many, and almonds are about the closest thing we have to a “perfect” center for panning. They are usually the first item made in a new panning operation, followed quickly by milk chocolate-coated raisins. Although smaller in sales volume, more complex gourmet-panned items are a great way to create differentiation in your product line.

Gourmet-panned centers can include such items as dried fruits, espresso beans, fondant, fragile nuts, and seeds. It may also include adding spices or flavors.

Consider these...

- Cinnamon- , cardamom- and malt-spiced white chocolate almonds
- Honey milk chocolate-coated sunflower seeds
- Cinnamon-dusted cranberries
- Dried ginger and pineapple coated in wasabi-infused dark chocolate
- Maple syrup walnuts coated in milk chocolate and dusted with cocoa and nutmeg
- Mayan cayenne dark chocolate almonds
- Habanero kettle corn nuggets
- Paprika-roasted cashews coated in dark chocolate and rolled in lime-salt seasoning
- Indian five-spice milk chocolate pecans

- Tiramisu-coated espresso beans
- Blood orange-coated apricots



Fig. 1 raw ingredients

- **Pan-Coated Sugar Products**

Ingredients for an optimal pan-coating result, stable and long-lasting glaze and effect-coatings for hard or soft-coated products



Fig. 2 Pan-Coated Sugar Products

- **Glazing Agents for Pan-Coated Chocolate Products**

Quick Shine, Quick Sol, Quick Gloss plus Water-based glazing and sealing agent's with optimum film-building properties for panned goods on chocolate and compound basis
 They generate an intensive brilliance with a long lasting gloss on the dragees surface.

Technical Function

Releasing agents for product moulds, conveyor belts and equipment surfaces.



Fig.3 Glazing Agents

- **Spice-Coated Nuts and Snacks**

Natural adhesive for spice-coated nuts and other snacks items



Fig. 4 Spice-Coated Nuts and Snacks

- **Glazing Agent for Sugar-Coated Dragees**

Quick Glanz

A range of glazing and sealing agents comp of various natural waxes and oils for soft a hard sugar-coated products

Quick Glanz creates a brilliant and glossy surface with in short application time.



Fig. 5 Sugar-Coated Dragees

- **Souring Agent for Gums and Jellies**

Quick Acid

Coated acid for surface application on gum jellies. Creates a stable, intense sour taste



Fig 6. Souring Agent for Gums and Jellies

In respect to rationalization and automation, in-stead of conventional coating pans, belt coaters can be used for polishing. Mainly for reasons of hygiene, copper vessels can be replaced by belt coaters. There should be development of polishing agents that allow direct polishing in the belt coater. However, the polishing agent must achieve the gloss by less friction and pressure in the shortest period.



The gloss on chocolate panned goods should be made resistant and long lasting by means of a sealing agent. Panning on nearly every center type and combined with chocolate panning allows clueless combinations of flavour and texturing.

Current scenario such as functional food, value-addition of the product by vitamins, fiber or light snacks can be combined with one another and create an exciting subject which may have a stake in the future.

The chocolate panning process creates the mouth-watering flavor and texture consumers crave. Our artisanal panning methods go beyond the chocolate most think of and include unique coatings such as nut butters, yogurt, caramel and more. With multiple inclusions and a wide range of coverings, the options for panned candies reach into the dozens.

Panning requires experience with chocolate as well as creating the layers of the candy. We specialize in chocolate panning and have developed a highly efficient technique that adds increased value to the snacks and sweets your consumers

Chocolate panning is a process that uses rotating drums to cover inclusions with a fat-based coating, which does not limit the options to chocolate. Coverings can include everything from dark chocolate to yogurt and nut butters.

1.2. The equipment requires for chocolate panning

Panning process is the controlled build-up of a center through application of successive layers either of solid or liquid coating material in a revolving pan, with or without the use of warm or cool air to dry or set the coating

Panning requires a large, rotating drum that resembles a chocolate pan mixer. This device is the heart of the panning process. The environmental conditions and the speed of the drum are factors in the finished product.

The speed at which the drum spins plays a part in the finished product. If the drum moves too quickly, the candies inside could sustain too much damage from hitting against each other. Products such as those with hard shells can sustain faster panning speeds than chocolates or confections with soft inclusions.

These conditions allow the chocolate or other coatings to cool and harden appropriately to the inclusions. Low humidity keeps excessive moisture from binding to the product, affecting the finished appearance of the chocolate.



Fig.7 spray coating pan

<http://youtube.com/watch?v=vzV-6cVm4sU>

❖ What Can You Pan

Just about any roundish food can get engrossed in chocolate through panning. Candy makers call these foods at the center of the confection inclusions. Round, evenly sized foods are best suited for chocolate panning processes, but even irregular nuts like cashews can work with the right skill applied.

Common inclusions are:

- Nuts
- Dried fruits
- Candies

- Plant Based Protein center
- Legumes



Fig. 8 chocolate panning

Types of chocolate panning dictate how the coating feeds into the pan and over the inclusions. The method used will depend on the existing equipment and the type of inclusions covered.

Ladling: Ladling coating over the turning inclusions creates a layer that needs a cool air treatment to set it before adding more coating. This traditional method requires a skilled hand at applying the coating material.



Fig.9 Ladle

Drip feeding: Drip feeding sends a stream of coating onto the turning centers, which constantly move until they reach the desired thickness for their coating. A single cool air treatment at the end sets the coating.



Fig 10 Drip feed coating

Spraying: During spraying, the coating and cool air both spray onto the turning pan contents at the same time. This method best coats irregular pieces with a thin covering of chocolate.

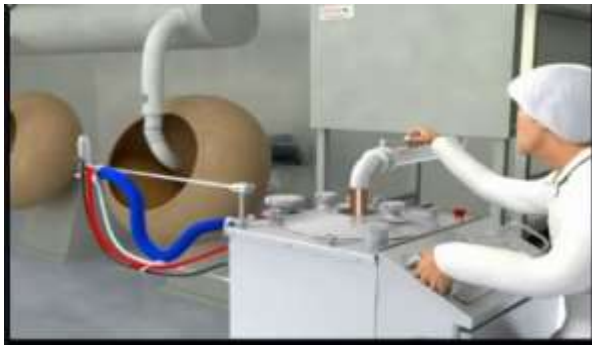


Fig. 11 Spraying

After panning, the chocolates go to the polishing and glazing steps of the process. Polishing creates a smooth surface that evenly reflects light to appear more appealing. The polish and glaze also help to seal the confection from moisture and harden the exterior, helping it to last longer. Finishing options determine the appearance of the candy when complete.

- **Artisanal Panning**

The art of Artisanal Chocolate Panning involves the creation of a layer of chocolate, surrounding the center, then dusting or polishing to a high gloss. Our chocolate and nut butter artisanal panning processes turn the food inside a steel barrel. As the barrel

turns, we add the coating to the inclusions. Once evenly coated, we finish the candies with a confectioner's glaze, which creates shine and gloss.



<https://youtu.be/VCbwe0G9O-w>

Fig. 12 Artisanal Panning

1.3. Make available service

During making available service of the work, you have focus on this Check points:

- The water is fully filled, and in a good circulation condition.
- The motor is rotating in correct direction.
- The oil of the gear box is filled to the marked line.
- The tank of enrobe is filled water, and over-flow port is forbidden block.
- The compressor is in good condition and fills enough refrigerant.
- All the safety device is fixed
- Check electrical power



Self-check 1	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best answer (4 point)

1. Which ingredients you use for chocolate panning?
 A. nut seeds B. cinnamon C. Mayan cayenne D. all

2. Which one of the following is not panning equipment?
 a. Chocolate pan b. vacuum cooker c. coating pan d. all of the above

Test II: say “True” or “False” for the following questions (4 point)

1. Ladling is traditional method of panning.
2. Panning requires a large, rotating drum that resembles a chocolate pan mixer
3. Panning requires experience with chocolate as well as creating the layers of the candy.

Answer Sheet

Score = _____ Rating: _____
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You can ask you teacher for the copy of the correct answers.

Note: Satisfactory rating - ≥10points

Unsatisfactory - below 10 points

Name: _____

Date: _____



Information Sheet 2-	Starting and operating the panning process
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2.1 Starting and operating the panning process

Confectionery means the food items rich in sugar and often referred to as a confection. Panning is an art of framing layers on candy-based centers in a very controlled way.

Panning process is the controlled build-up of a center through application of successive layers either of solid or liquid coating material in a revolving pan, with or without the use of warm or cool air to dry or set the coating

Panning process consists of the following three steps:

1. Pre-treatment of the centre
2. Chocolate/compound panning
3. Polishing and sealing

2.2 Sugar panning

Sugar panning is a process of building up a layer by layer coating of sugar on centers. The coating may be hard or soft, depending on the thickness, sugar composition and method of manufacture and the resultant sweets are called dragees

Sugar caramelizing video <https://youtu.be/vzV-6cVm4sU>

2.3 Hard panning

- In hard panning, the centres are tumbled in the pan and a sugar syrup is applied
- Both together, the rotation of the pan and the tumbling of the centres results into spreading of the syrup over the surface of the centres into a thin layer
- The evaporation of water in the sugar syrup causes crystallization of sugar
- Increasing the temperature reduces the rate of crystallization



- The layers applied are only 10-14 µm thick, and as they are so thin, contours of the product occurs

2.4. Soft panning

Soft panning syrup is not intended to crystallize. The syrup used can either be an all glucose syrup or a 50:50 mixture of sucrose and glucose syrup. The centers are wetted with the syrup just sufficiently to coat them. Then caster or milled sugar is added which dissolves in the water of the syrup rather than evaporating the water as in hard panning.

Any excess of sugar convert the syrup from non-crystallizing syrup to a crystallizing one. Then the centers are removed from the pan and placed on trays for drying purpose. Soft panning is a cold process and it does not use drying air.

Dust extraction is needed for health and safety reasons. Soft panning puts on thicker layers. A product that has been soft panned can be finished by dusting with milled sugar followed by a number of hard panned coats. Typical examples of soft panned products are jelly beans and dolly mixture components.

Soft panning applies a thick, soft layer to centers such as moulded jelly beans or chews. Hence, soft panning is a cold process, it uses non-crystallizing syrup rather than using the crystallized sugar coating which require heat to dry it out. It is also a first process and thick coating can be built up in a very short time. Comparison of the features of hard and soft panning is given in Table 1.



Table 1 Comparison Hard, soft and sugar panning

Parameters	Hard panning	Soft panning	Sugar panning
Coating chemistry	Pure sucrose	Sucrose and glucose syrup	Caramel syrup
Panning conditions	Heat and ventilation	Cold	Heat
Coating build up	Slow	Quick	slow
Coating thickness	Thin	Thick	Thin
Pan size	Large	Small	Small
Crystallization caused by	Evaporation	Adding milled sugar	Adding milled sugar
Typical products	Sugared almonds, mint imperials, nonpareils, sugar-coated chocolate beans	Jelly beans, dolly mixture compounds	sugar-coated

2.4. Chocolate panned caramel

Caramel is a pale to dark-brown color confectionery product made by heating any variety of sugars. It is used as a flavoring agent in puddings and desserts, as a filler in bonbons and as a topping for ice cream, custards and caramel corn.

The initial bed temperature of the caramel centers should be 10°C because the spherical caramel centers deforms rapidly at temperatures above 15°C therefore. The application of uniform spray of small droplets of chocolate (40°C) is done for minimizing mixing and redistribution of the chocolate prior to solidification of that chocolate on the surface of the pieces.



For the chocolate panned caramel production chocolate coating of 45% (percentage of total finished piece weight) is required equating to a 1.43 mm thick uniform chocolate coating. Total amount of chocolate require is 73.5 kg [73.5 kg chocolate/ (73.5 kg chocolate+90 kg centers) = 45% chocolate]. The flow diagram for the manufacture of chocolate panned caramel is shown in figure 3.

Panning is a process that uses rotating drums to cover inclusions with a fat-based coating, which does not limit the options to chocolate. Coverings can include everything from dark chocolate to yogurt and nut butters.

This industrial process requires larger scale equipment than most home confectioners can purchase. The limited availability of the material means most consumers will only have access to panned confectioneries through commercial producers, though they may still demand customized products and a range of options they could only get with homemade candies.

https://youtu.be/_7zf_PwsZy4



Self-check 2	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best answer (4 pts. each questions)

1. Soft panning applies a _____, _____to centers such as moulded jelly beans or chews.
 - a. Thick
 - b. soft layer
 - c. Slow
 - d. a and b
 - e. none
2. _____ is a process of building up a layer by layer coating of sugar on centers.
 - A. Hard panning
 - B. Soft panning
 - C. sugar panning
 - D. chocolate panning

Test II: Say “True” or “False” for the following questions (4 pts. each questions)

1. Confectionery means the food items rich in sugar and often referred to as a confection
2. Panning is an art of framing layers on candy-based centers in a very controlled way.
3. Soft panning is a cold process and it does not use drying air.

Answer Sheet

Score = _____
Rating: _____

You can ask you teacher for the copy of the correct answers.

Note: Satisfactory rating - ≥10 points

Unsatisfactory - below 10 points

Name: _____

Date: _____



Information Sheet- 3	Selecting and preparing the centers and coating
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3.1. Selecting and preparing the centers

The centres have to be coated with a concentrated sugar syrup for hard panning

- Some centres, such as nonpareils, quickly take the sugar syrup coating, while others such as nuts or chewing gum have a hydrophobic surface, need some pre-treatment
- The syrup is dosed in it is called ‘wetting’ and ‘engrossing’ when the coating is built up
- Hard panned confections have a hard crystalline coating

The company offers multiple center options for your chocolate panned candies. When roasting nuts, we separate peanuts and tree nuts to eliminate cross-contamination and maintain food safety protocol.

Centers we can cover with our chocolate panning process include the following:

- Roasted nuts
- Plant Protein centers
- Raisins
- Pretzel balls
- Dried fruits
- Peanut brittle pieces
- And more – talk to us about custom options you have in mind!



Fig 1 filling centers

3.1.1. Coating Preparation

A wide variety of coatings can be used in a chocolate panning operation but each has their own special requirements. Milk and dark chocolate usually are used at temperatures of 100 to 110 F. while compound and special coatings at 110 to 115 F. The coating should be melted and held at the desired controlled the chocolate is used for panning.

A flavor and texture difference is observed between panned and enrobed chocolate products. The lower the chocolate temperature, the faster the centers will build up in the pans but may be uneven and non-uniform from piece to piece. Additional time is required to smooth the surface for polishing and glazing.

Higher temperature chocolate will spread more evenly but requires additional time to set. The blending of milk and dark chocolate can easily be done in a chocolate panning operation to give the desired flavor and color variation. If you want to coat things in chocolate there are a few different methods, you can hand dip enrobe or pan products, If you choose panning you will need some need some specialized equipment;



The Corporation is one of the leading chocolate panning companies in plant. You can successfully coat many different types of centers including roasted nuts, dusted almonds, raisins, pretzel balls, dried fruits, peanut brittle pieces and more.

The capabilities extend well beyond milk, dark and white chocolate. You can also pan products using additional coatings such as:

White yogurt: White yogurt offers a slightly different flavor compared to mild white chocolate.

Fudge: Rich and dense, fudge coatings remain a favorite in the industry.

Caramel: For a change from traditional chocolate, caramel enhances inclusions while contributing its own buttery rich flavor.

Peanut butter: Peanut butter adds protein to candy, giving them a healthier profile and nutty flavor.

Nut butters: Almond, cashew and sunflower butters give you peanut-free alternatives for protein-packed coatings.

In addition to the above surfaces, we have the equipment and technology for adding protein coatings during the panning process. These compound coatings have protein added to boost the nutritional value of the product.

Processing these different coatings requires slight changes to the panning technique, but changes to the inclusions don't significantly alter the method used. Our processes also include multiple finish options, allowing optimal customization. Below, see some of the inclusions and finishing options we have.



Fig. 1 Chocolate coating machine



Self-check 3	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Say “True” or “False” for the following questions (3 pts. each questions)

1. The blending of milk and dark chocolate can easily be done in a chocolate
2. Panning operation to give the desired flavor and color variation.
3. The coating should be melted and held at the desired controlled the chocolate is used for panning
4. Milk and dark chocolate usually are used at temperatures of 100 to 110 F

Test II Short Answer Questions (3 pts. each questions)

1. What types of additional ingredients you use for coating?
2. For centers of chocolate panning process
3. Explain coating and centering process.

Answer Sheet

Score = _____ Rating: _____

You can ask you teacher for the copy of the correct answers.

Note: Satisfactory rating ≥ 10 points

Unsatisfactory - below 10 & 11 points

Name: _____

Date: _____



Information Sheet- 4	Identifying and confirming cleaning and maintenance
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4.1. Identifying and confirming the cleaning

Effective cleaning management systems need suitable cleaning methods, schedules, equipment, trained cleaners and reliable communication and consultation.

4.1.1. Assess the risk

While good cleaning reduces contamination, bad cleaning increases contamination. Check your workplace for any of the signs that indicate a poor cleaning system:

- floors are not fully dry and can be accessed
- spills and contaminants are left unattended
- a build-up of cleaning product residues (reduces slip resistance)
- cleaning equipment and cords left across walkways
- cleaning is ad hoc, unplanned and reactive
- poor, inappropriate or dirty cleaning equipment used
- Incorrect cleaning products and procedures.

4.1.2. Decide on control measures

There are a range of strategies that have been proven to control the risk of slips, trips and falls, while also leaving floors and other surfaces clean and free from contaminants. The best cleaning requires a combination of important elements, as listed below.

4.1.3. Cleaning methods:

- leave a clean and dry surface, free from moisture or dry waste – e.g. 'clean-to-dry'
- do not leave a build-up of cleaning products
- maintain the slip resistant properties of the floor/surface (if non-slip flooring)



- are based on advice from the flooring supplier
- Are tailored to the specific flooring and contaminants – i.e. type and concentration of chemicals etc. For example, the time detergent is on the floor has been shown to have a significant effect on cleanliness. It is also noted that flooring that is slip resistant can be cleaned to be as hygienic as other flooring.

4.1.4. Cleaning schedules:

- are systematic and well planned
- have routine daily cleaning conducted during quiet/slow periods
- include periodic deep/comprehensive cleaning
- provide a rapid/urgent response to spills
- include indoor and outdoor areas
- include customer/visitor areas
- Accommodate for periods of bad weather.

4.1.5. Cleaning equipment/products:

- suited to the task, environment and the users
- Don't spread the problem (e.g. paper-towel instead of wet mop for small spill, or 'spill-kit' materials for oil leaks, spill stations where resources are kept etc.)
- Includes barriers and signs to keep people off any wet areas if 'clean-to-dry' is not possible.

4.1.6. Personnel responsible for cleaning:

- cleaners are trained, equipped and supervised to do routine cleaning
- all workers assist in spot cleaning/spills management
- supervisors are trained and able to oversee work practices
- Workplace visitors and others encouraged to report hazards where appropriate.



Details regarding the correct cleaning system may be provided in a Safe Work Method Statement or other procedural guidance.

4.1.7. Cleaning methods to consider

The cleaning method you use will depend on a number of factors. This is best decided in consultation with the flooring and cleaning equipment suppliers based on the workplace's requirements. A combination of methods may be used across the workplace. The following table is from a review of cleaning options for health settings, and may be relevant to other similar settings.

During confirming the cleaning:

- ✓ Workshop should be kept neat and tidy.
- ✓ Work areas and equipment are to be thoroughly cleaned.
- ✓ Ensure that gangways, access routes and exit ways to fire exits are kept clear.
- ✓ Keep access to fire and emergency equipment clear at all times. Fire doors must never be locked or be difficult to open.
- ✓ Keep gangways and exit ways clear of rubbish; do not use them as storage area even on a temporary basis.
- ✓ Avoid tripping hazards such as boxes, trolley handles, trucks and materials

4.2. Maintenance

The machine basically has no wearing parts and will remain in good working conditions so long as the user operates it correctly and performs careful daily maintenance.

Maintenance procedures that should be considered when preparing the planned maintenance program include:

- Carrying out repairs needed when plant or equipment breaks down;
- Predicting, from a history of breakdowns, the life expectancy of parts, bearings, etc., the tasks to be carried out and the frequency to be established;



- Checking the condition throughout the plant of equipment, its running hours, readings of different responses (e.g. vibration, temperatures, current, etc.);
- Monitoring the operating cycle and, where appropriate, seasonal shutdowns of plant, equipment (e.g. production process, 24-hour duty, etc.).



Self-check 3	Written test
---------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers

Test –I match column “A” with column “B”. (3pts.)

- | A | B |
|--------------------------------|--|
| ___ 1. Daily cleaning | a. integrating analysis, measurement and periodic |
| ___ 2. Daily maintenance | b. often check the insulating layer of the chocolate mass tank |
| ___ 3. Confirming the cleaning | c. kept neat and tidy. |
| ___ 4. Weekly cleaning | d. at least once daily |

Test II: Short Answer Questions (3pts.)

1. What is the meaning of Cleaning?
2. List all basic types of maintenance.
3. List all daily maintenances.

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating ≥ 10 pts.

Unsatisfactory - below 10 & 11 pts.

Name: _____

Date: _____



Information Sheet- 5: Preparing the panning process to meet safety and production Requirements

5.1. Preparing the panning process to meet safety

5.1.1. The Process Of Chocolate Panning

Panning is an art of framing layers on candy-based centers in a very controlled way. A well-developed and precisely executed chocolate panning technique can provide one of the fastest, most efficient ways to give a chocolate coating to a product. The art of chocolate panning involves the creation of a layer of chocolate surrounding the center, then dusted or polished to a high gloss.

5.1.2. The steps in the chocolate panning process

The basics of chocolate panning include three steps, each of which contribute to how the coating adheres to the inclusions and gets finished. While simple, panning is an art that requires expertise to perfect.

- **Engrossing:** Engrossing describes the process of coating the prepared inclusions with chocolate or another coating.
- **Polishing:** After engrossing, most confections have a dull appearance that needs polishing for a more attractive appearance. This step and glazing are parts of the finishing process.
- **Glazing:** Glazing often consists of different layers, such as a sugar syrup coating followed by shellac covering.



There a specific process for different types of chocolate

Spray and hand panning offer a pair of methods for coating candies. These two techniques use either tempered or un tempered chocolate, depending on the method.

An automated third method of drip-feeding bridges the gap between ladling and spray panning by depositing a small trickle of coating in the pan, using more coating than spraying and less than ladling. This method works best for large-scale operations that require the coated candies only to have cold air applied to set.

Tempered chocolate dries quickly without streaks or other surface imperfections. Untemper chocolate requires less preparation time but can work well under temperature-controlled situations.

Spray panning works best with un tempered chocolate whereas hand panning uses tempered chocolate best. The sizes of inclusions also determine whether spraying or ladling the coating works better. For smaller pieces, spraying does not overwhelm the inclusions with chocolate, leading to clumping.

Temperature and humidity make another significant difference in the chocolate panning processes among white, dark and milk coatings. White chocolate generally needs lower temperatures and humidity for success, whereas milk and dark chocolates are more forgiving.

The finishing methods, though, are the processes that set apart panned chocolates. Finishing determines whether the final products look more like dusted truffles or have a shiny, hard coating.

For sake of example, let's use hazelnuts; however you could use most any nut, or even freeze-dried fruits like bananas, raspberries or blueberries.



Caramelize your hazelnuts (most people use sugar, we prefer to use honey - both work well). Spread them on a non-stick surface and allow them to cool, and then proceed to separate them.

- Place them in your panning machine.
- Begin rotating your confectionery drum.
- Add a coating of crystallized chocolate (let's say 100-150 g per addition of chocolate for 500 g of product (in this case hazelnuts).
- Apply cold air to help the product set quickly, or simply wait (some machines come with a built-in fan, or you can use a pressurized can of cold air).
- Once the product begins to set, you may add another layer of chocolate; most often you do not wait until it is fully set and hard.
- At these times, you may also add other products, such as feuilletine, to introduce another texture.
- Once you reach a thickness that you prefer - in this case, the total amount of chocolate you use to coat your product depends on two things: a. the shape of your product; the object of the panning process is to make a round product, so if you start with something such as an almond, which is flatter and has more surface area, rather than a hazelnut, the amount of chocolate you need to add will be much greater, and b. the desired thickness that you prefer in your confection. So you see there is really no standard recipe, as it depends on a number of factors.

An example of a lacquer recipe is: 170 g water, 85 g gum Arabic powder, 250 g 70 proof liquor - Heat the water and dissolve the gum Arabic. Combine in a mixer while gradually adding the liquor. Now to proceed with glossing your product weigh out 1% of your nuts in glossing solution.



- With your machine running and your product inside, use a heat gun to very slightly warm the outside of your coated product just enough to make it soft but not melt. At this point, add your 1% of glossing solution all at once.
- Allow your glossing solution to dry. This may take up to 30 minutes, but at this point the nuts should be starting to shine.
- Weigh out 0.5% of lacquer solution in relation to the amount of product you are coating. Once the glossing solution is dry, you may add the lacquer solution. Allow to dry again.
- Remove the products from the machine, and allow them to dry; alternatively, dry them with a fan.
- You may need to repeat the process an additional time in order to achieve the desired level of shine.
- That is the basic, and by basic I mean fairly complex and intricate, process. It represents only a small portion of what you may do with panning products, and as always with chocolate, your imagination is the only limit.

A basic quantity recipe you may start with could be:

- 400 g hazelnuts
- 135 g sugar + 45 g water (to caramelize the nuts)
- 1000 g crystallized chocolate
- 100 g cocoa powder
- One final note on the panning process: some people prefer to use non-crystallized chocolate (and may advise you to do so), at a temperature of about 40C (104F), however we do not. We have found better results with a crystallized product than not, but you may certainly experiment yourself.



Self-check 5	Written test
---------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: say “True” or “False”(3pts.)

1. Panning is an art of framing layers on candy-based centers in a very controlled way.
2. Temperature and humidity make another significant difference in the chocolate panning processes among white, dark and milk coatings.

Test II: match column “A” with column “B”(3pts.)

- | | |
|----------------|---------------------------|
| A | B |
| 1. Engrossing: | a. the process of coating |
| 2. Polishing: | b. a dull appearance |
| 3. Glazing: | c. different layers |

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating ≥5 pts.

Unsatisfactory - below 5 pts.

Name: _____

Date: _____



Information Sheet- 6 Checking and adjusting equipment performance

6.1. Check and adjust equipment performance Condition

Poor operational practice is also one of the main causes of problems on treatment plants. It is imperative that operators understand why they are performing certain tasks and what the consequences are if the tasks are not carried out as prescribed. It is the responsibility of a treatment plant manager to ensure appropriate training of the operating staff

Lack of maintenance is the most common reason for plant failure. Mechanical equipment requires regular attention to ensure problem-free operation. Maintenance schedules must be strictly carried out. Good housekeeping and keeping equipment, buildings and civil structures clean and tidy go a long way to minimize operational problems. Work area, materials, and equipment are routinely monitored to ensure compliance with purification requirements.

Check to ensure accuracy and dependable operation of the proposed equipment and methods prior to the start of dough operations and after making any changes in the location or arrangement of the coating equipment. Plant calibration is the responsibility of the Producer.

Check the general layout of the plant before the equipment is erected to ensure efficient operation and adequate space for stockpiling and handling materials in compliance with specification requirements. Whenever possible, avoid the arrangement and erection of batching plants in congested locations which are not conducive to proper handling of materials. Small stockpiles result in segregation and non-uniformity of materials and very poor control of the concrete. Once panning machine equipment is erected in such a location, it is difficult to improve conditions.



6.2. The Purpose of Performance Monitoring

There is the classic story of the condition monitoring technician who completed a vibration survey on a pump after it was reported as running erratically. He reported that the pump had the lowest vibration levels ever measured and it was therefore in perfect condition.

Applications for Machinery Performance Monitoring Machines and Systems for which Performance Monitoring surveys may be required on a routine basis include the following items:

- **Pumps** – due to impeller wear, seal ring wear (re-cycling) or blockage.
- **Fan Systems** – due to filter blockage, blade fouling or re-cycling.
- **Boilers** – due to loss of thermal efficiency for many different reasons.
- **Heat Exchangers** – due to fouling or blockage.
- **Steam Turbines** – due to blade fouling and numerous other reasons.
- **Air Compressors** – due to wear, filter blockage, valve leakage (reciprocating), etc.
- **Diesel or Gas Engines** – due to loss of compression (rings or valve leakage) etc.
- **Electrostatic or bag dust filters** – due to fouling, shorting or leakage.

The current state-of-health of process plant is important information related to current information, diagnosis and prognosis of various defects, and predicted useful life in the optimization of safety, quality and high production rates.

There are the obvious functions of monitoring and controlling the process for reasons of safety and product specification. Additionally, there is invaluable information to be gained from the process parameters that can give an understanding of the current health of the asset.



Self-Check -6	Written Test
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Name: _____ ID.NO. _____ Date: _____

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Test I: Choose the Best Answer (3pts.)

1. The wider view of Condition Management must take into account _____?
 - A. the performance of the machine
 - B. the system of which it is a part
 - C. And report on excursions away from previously defined acceptable tolerances
 - D. All

2. One great benefit of performance monitoring electric motors is _____?
 - A. to identify the frequency
 - B. And number of times that they are overloaded
 - C. A and B are Answers
 - D. none

3. Most machine and process characteristics which affect
 - A. availability
 - B. capacity
 - C. quality
 - D. All

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating ≥ 4 points

Unsatisfactory - below 4 & 5 points

Name: _____

Date: _____



Information Sheet- 7 Carrying out the Pre-start checks

7.1. Carrying out pre-start checks

Pre-start check is important for the workers safety. It involves a daily check of the chocolate panning/coating machines health. Any panning/coating machines or production machine that needs repairs, maintenance or is observed to be unsafe to operate has to be taken out until such repair or maintenance has been done. Check to ensure there is a fire extinguisher, First aid kit, and any tools or supplies that you will need to perform your task. If using a cell phone, make sure to keep it on your person. Don't leave it in the tractor.

- ❖ The purpose of a pre-start check is to make sure that no hazards exist before you start your production for the day. Find out what you should be checking as part of these checks.

As a responsible operator, running a pre-start check on your plant or machinery before you start the day is the best way to ensure the job gets done safely and without delay.

Undertaking a pre-start check on your machine before you start a day’s work happens in three stages.

Steps 1 - Visual inspections of important features prior to starting the machine

Step 2 - Visual & function tests while the machine is turned on but stationary

Step 3 - Testing the machine’s functions during a short drive

Prestart checks must be made to ensure equipment is not damaged on startup and also to prevent possible injury to personnel during start up, the operational status of safety systems must be checked. Check that equipment is plugged in correctly



A pre-start inspection involves a routine examination of a piece of equipment by its operator that is standardized via a checklist. Whether it be a light vehicle, heavy vehicle, mobile plant or tools, pre-start inspections are an important task with financial, and more importantly, safety implications.

In many industries involving the use of potentially dangerous equipment, it is standard procedure to conduct pre-start inspections. Pre-start inspection can potentially be the difference between life and death.

1.2. Pre-start Benefits

The main goal of regular pre-start inspections is to protect people. Industrial equipment such as various tools, mobile plant, light vehicles and heavy vehicles have the potential to cause serious injury and death if they aren't maintained properly, so regular pre-start inspections form the foundation of their maintenance program and workplace safety. Often it is the small, unseen items that go unnoticed, but by implementing a thorough pre-start checklist all of these aspects can be inspected.

Pre-start inspections for industrial equipment is extremely important, they form the basis of equipment maintenance programs and also an organization or site's safety program.



Self-Check – 7	Written test
-----------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Test I: Choose the Best Answer (4pts.)

1. A pre-start inspection involves?
- A. routine examination
 - B. After the work done check the equipment's.
 - C. prevent possible injury
 - D. All are Answers
 - E. Except "B"

Test- II Say "True" or "False" for the following questions (3pts.)

- 1. Pre-start inspections are not important for industrial equipment.
- 2. The main goal of regular pre-start inspections is to protect people.

Answer Sheet

Score = _____

Rating: _____

Note: Satisfactory rating \geq 5 points Unsatisfactory - below 5points

You can ask you teacher for the copy of the correct answers.

Name: _____

Date: _____



Operation Sheet- 1	Formulation of making normal syrup
---------------------------	---

Procedures:

- Steps 1 Boil sugar (30% w/w)
- Steps 2 add water (15% w/w)
- Steps 3 mix it with corn syrup (55% w/w)
- Steps 4 make normal syrup

Operation Sheet- 2	Caramelizing in panning machine
---------------------------	--

Procedures:

- Steps 1 connect the gas bottle to the panning machine
- Steps 2 turn on the heat
- Steps 3 follow the instruction of your recipes
- Steps 4 Put water and sugar in the bowl
- Steps 5 let water and sugar boil, wait until the middle is boiling
- Steps 6 turn the heating to low
- Steps 7 add the nuts
- Steps 8 switch on the engine
- Steps 9 let it turn until the sugar crystallize
- Note:** the nuts may not stick on the wall
- Steps 10 switch on the heating and start caramelizing
- Steps 11 when the kettle gives too much smoke turn to low
- Steps 12 keep continuing until the nuts are caramelizing to your preference
- Steps 13 switch off the heating
- Steps 14 switch on the blower to cool the nuts and to keep them separate
- Steps 15 remove the nuts by turning the bowl with the handle



Operation Sheet- 3	Chocolate panning
---------------------------	--------------------------

Procedures:

- Steps 1 start with raw product
- Steps 2 load in to selmi comfit
- Steps 3 add chocolate using the selmi sprayer
- Steps 4 adjust the sprayer to coat evenly
- Steps 5 remove the coated product
- Steps 6 let product sit for 24hrs
- Steps 7 put product back in to comfit
- Steps 8 use hot air to polish for approx. 45mins.
- Steps 9 continuously check softness and temperature
- Steps 10 prepare shellac and color
- Steps 11 once product is plastic like switch to cold air
- Steps 12 add shellac and prepare for packaging

Operation Sheet- 4	Chocolate coating
---------------------------	--------------------------

.Procedures:

- Steps 1 put the product that you want to coat in to kettle
- Steps 2 switch on the machine by pressing the green button then switch the blower
- Steps 3 add tempered chocolate little on the coated product in to the kettle
- Steps 4 once product is dry put the next layer
- Steps 5 repeat this till your reach the level of thickness you want
- Steps 6 the speed of turning depends on the product
- Steps 7 remove the product out of the kettle
- Steps 8 clean the kettle before polishing
- Steps 9 polish with shellac or Arabic gum
- Steps 10 for different products you can also use cocoa powder
- Steps 11 but no blower you use powder



LAP TEST	Performance Test
-----------------	-------------------------

Name..... ID.....

Date.....

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **1:30mins**. The project is expected from each student to do it.

Task-1 normal syrup

Task-2 Caramelizing in panning machine

Task-3 chocolate panning

Task 4 chocolate coating



LG #71	LO #2- Operate and Monitor the panning process
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Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Starting and operating the panning process
- Monitoring the operation of equipment and processes to identify variations
- Identifying, maintaining and reporting the Variation of equipment operation
- Conducting the work in accordance with legislative requirement.
- Maintaining workplace records to workplace information
- Monitoring the process to confirm the specifications
- Identifying, rectifying and/or reporting the out-of-specification production/processing outcomes
- Maintaining the work area according to housekeeping standards.
- Conducting the work in accordance with guidelines

This guide will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, **you will be able to:**

- Start and operate the panning process
- Monitor the operation of equipment and processes to identify variations
- Identify, maintain and report the Variation of equipment operation
- Conduct the work in accordance with legislative requirement.
- Maintain workplace records to workplace information
- Monitor the process to confirm the specifications
- Identify, rectify and/or report the out-of-specification production/processing outcomes
- Maintain the work area according to housekeeping standards.
- Conduct the work in accordance with guidelines

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test



Information Sheet 1- Starting and operating the panning process

2.1. Starting and operating the panning process

Panning is a process that uses rotating drums to cover inclusions with a fat-based coating, which does not limit the options to chocolate. Coverings can include everything from dark chocolate to yogurt and nut butters.

This industrial process requires larger scale equipment than most home confectioners can purchase. The limited availability of the material means most consumers will only have access to panned confectioneries through commercial producers, though they may still demand customized products and a range of options they could only get with homemade candies.

Chocolate panned products can cater to even the pickiest of consumers thanks to the use of coatings and inclusions that include gourmet, classic and healthier varieties.

2.1.1. Basic Technical Process of panning:

For this example, let's use roasted cocoa nibs from Soa tome; place them in your panning machine.

- start rotating the drum on the slowest speed possible
- Add a coating of chocolate 100-150 g of chocolate for 500 g of Centers.
- Blow some cold air to help the product set more quickly, (I use a Dyson fan) or you could just wait.
- Put your hand in the drum to move the beans around making sure they are not sticking together or to the drum.
- Once the chocolate starts to set, you can add another layer of chocolate; don't leave it until its fully set and hard.
- At this stage you could introduce another texture by adding things like sea salt or feuilletine.



Keep adding chocolate layers until you reach the thickness that you want, the total amount of chocolate you use to coat your product depends on two things:

- a. **The shape of our finished product;** the point of the panning process is to make a round product, so if you start with something like an almond, which is flatter and has more surface area, rather than a hazelnut, the amount of chocolate you need to add will be much greater,
- b. **The thickness that you prefer:** there is really no standard recipe; it's totally up to you.

Now we are ready to finish our product. If we want dusted a truffle look: once we our desired thickness, add one final coat of chocolate to the nibs. Then turn off the fan and add some unsweetened cocoa powder, allow the nibs to complete a few more revolutions in the drum and then stop the machine. If you leave the machine continue too long after adding the cocoa powder, your beans will look dull. cocoa powder just one example; but if we were coating with white chocolate, we could add a white finish with icing sugar, or orange mango powder, etc. I use red hibiscus, raspberry, blueberry and beetroot powder for different finishes.

Panning is a process that uses rotating drums to cover inclusions with a fat-based coating, which does not limit the options to chocolate. Coverings can include everything from dark chocolate to yogurt and nut butters.

This industrial process requires larger scale equipment than most home confectioners can purchase. The limited availability of the material means most consumers will only have access to panned confectioneries through commercial producers, though they may still demand customized products and a range of options they could only get with homemade candies.



Self-check 1	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short Answer (5pts.)

1. Write at list five a basic technical process of roasting cocoa nibs from soa tome

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

2. To keep the thickness chocolate layers

- a. _____
- b. _____

3. How to you process panning?

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating \geq 7 points

Unsatisfactory - below 7 and 8 points

Name: _____

Date: _____



Information Sheet- 2	Monitoring the equipment to identify the variation in operating conditions
-----------------------------	---

2.1. Monitoring equipment

Workers have to monitor the equipment's operation correctly and report tools/equipment malfunctions or problems according to procedures to his immediate supervisors.

A finished product may exhibit several quality characteristics.

Quality control (QC) techniques apply by inspecting and measuring the product quality characteristics using inspection equipment and some procedures. By comparing to the standard, the product can be identified whether conforms to requirements or fails, consider as accepted or rejected as well.

The speed should be sufficient to provide good figure eight motion to the centers but not excessive to cause breakage of the centers or coating. This type of system is easy to set up but the air supply system and room environment is critical. A pan turning to slow will result in the product sliding down the inside of the pan resulting in poor distribution of the coating.

A pan turning to fast will carry the product to the top of pan before falling down onto the remaining product causing breakage and peeling of the coating. The pan should be turning at speed that will lift the centers to approximately the ten o'clock position before tumbling down over the remaining centers.

Inspection provides useful information about the current demonstrated product quality. Then, any managerial decision made based on this information, which is concentrate more on the effort of product and process improvement program. Many procedures,



especially for acceptance inspection, has been developed to conduct the inspection which technically effective and/or economically efficient.

2.2. Recognizing deviations of variables

Deviations of Variables to be monitored include:

- Equipment performance (e.g. speed, output, variations)
- equipment component performance
- sequences and timing of operation
- materials changes (desired and not desired)

Deviations May include but not limited to:

- ✓ equipment production outputs
- ✓ equipment operating conditions
- ✓ Operating parameters like temperatures and pressures. so all these expected deviations has to be recognized monitored and reported.



Self-Check – 5	Written test
-----------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: choose the best Answer (3pts.)

1. Important information about existing equipment appliances, including
 - a. Their functional status
 - b. Age and location
 - c. Net storage capacity.
 - d. All

2. Variables to be monitored include:
 - a. Equipment performance (e.g. speed, output, variations)
 - b. equipment component performance
 - c. sequences and timing of operation
 - d. All

Test II: Give short Answer (3pts.)

1. What is the advantage of equipment monitoring?

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating – 4 points

Unsatisfactory - below 4 and 5 points

Name: _____

Date: _____



Information Sheet- 3	Identifying, maintaining and reporting the Variation of equipment operation
-----------------------------	--

3.1. Identifying, maintaining and reporting the Variation of equipment operation

Workers have to monitor the equipment's operation correctly and report tools/equipment malfunctions or problems according to procedures to his immediate supervisors.

- A finished product may exhibit several quality characteristics.
- Quality control (QC) techniques apply by inspecting and measuring the product quality characteristics using inspection equipment and some procedures.
- By comparing to the standard, the product can be identified whether conforms to requirements or fails, consider as accepted or rejected as well.

Lack of maintenance: is the most common reason for plant failure

Mechanical equipment requires regular attention to ensure problem-free operation. Maintenance schedules must be strictly carried out and conduct routine maintenance.

The main problem areas are related to.

- ❖ poor design,
- ❖ Variations in raw flour quality,.
- ❖ lack of maintenance,
- ❖ inadequately trained operators,
- ❖ inadequate process monitoring,
- ❖ poor record-keeping and poor management

Preventative maintenance and operating procedures that is necessary to ensure satisfactory operation.



Self-Check – 3	Written test
-----------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Say “True” or “False” for the following questions (3pts.)

1. Lack of maintenance is the most common reason for plant failure

Test II: Choose the best answer (3pts.)

1. Which of the following is category of Maintenance activities?
 - a. Preventive
 - b. Adjusting
 - c. monitoring
 - d. All

2. _____ is the most common reason for plant failure
 - a. Lack of maintenance
 - b. Preventive maintenance
 - c. Corrective maintenance
 - d. Inspection maintenance

Test III: Give short answer (3pts.)

1. How we report for the variation of equipment?

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

Note: Satisfactory rating – 6 points Unsatisfactory - below 6points



Information Sheet- 4	Conducting the work in accordance with legislative requirement
-----------------------------	---

4.1. Conducting the work in accordance with legislative requirements

Workplace health and safety (WH&S) legislation requires workplaces to be, as far as is reasonably practicable, physically and mentally safe and healthy for all employees. This means steps must be taken to ensure that the working environment does not harm mental health or worsen an existing condition.

In order for legislation to be complied with, employees need to understand the legislation, regulations and codes which are relevant to their jobs. If they do not understand it they cannot comply with and this might result in fines, litigation and investigation of the company.

A Food Safety Plan should include some basic activities which address hazard control more broadly. Basic activities include: cleaning and sanitation , personal hygiene practices, pest control, waste disposal, staff training and handling of customer complaint., Responsibilities to everyone, Prevention contaminations, cross contamination

Food safety refers to a scientific discipline handling, preparing, and storing food in ways to best reduce the risk of individuals becomes sick from food borne illness.

4.1.1. Basic Requirements of a Food Safety

A Food Safety Plan should include some basic activities which address hazard control more broadly. Basic activities include: cleaning and sanitation , personal hygiene practices, pest control, waste disposal, staff training and handling of customer complaint., Responsibilities to everyone, Prevention contaminations, cross contamination

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4.1.2. Prevention contamination, cross contamination

Activities to protect the food supply from microbial, chemical, allergenic and physical hazards that may occur during all stages of food production and handling. Number of methods of prevention can be used that can totally prevent, delay, or otherwise reduce food spoilage.

4.1.2.1. Responsibilities to everyone

There are many things to know to keep food safe. The responsibility for safe food belongs to everyone in your food premises, from the owner to the chef to the server to the dishwasher. Every person in your premises has a job to do, and part of that job is keeping your customers and the food you prepare or serve to them safe.

As a food handler, it's your responsibility to know what the regulations and standards are and to follow them. You have a responsibility to provide safe food. Food sanitation rests directly upon the state of personal hygiene and habits of the personnel working in the domestic house. Education of food handlers in matters of personal hygiene, food handling, utensil and dish washing is the best means of promoting food hygiene.



Table 1 Terms and their Definition

Term	Definition
Cross contamination	The passing of microorganisms from contaminated food or surfaces to other foods or surfaces
Food	Food is any substance consumed to provide nutritional support for the body's
Basic principles of food safety	Four basic food safety principles work together to reduce the risk of food borne illnesses—Clean, Separate, Cook, and Chill
Food poisoning	Illness occurring when a person ingests contaminated foods or beverages
Hazard identification	Recognizing the risk of an item or situation that may lead to a potential accident or harm to a person
Hazards	An item, condition, event or situation that could lead to a potential accident or harm
Prevention	Preservatives can expand the shelf life of food and can lengthen the time long enough for it to be harvested, processed, sold, and kept in the consumer's home for a reasonable length of time.
Manual handling	Using human force to move or support a load (including moving, lifting, putting down, pushing pulling, or carrying)
Personal hygiene	Factors that maintain positive, clean personal care and health of a person
Pest control	Actions designed to control and eradicate pests and vermin from workplaces



Self-Check 4	Written Test
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Name: _____ Date: _____

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Test –I Give short answer (2 point)

1. What is responsibilities to everyone keep food safe (2 pts.)

.....

2. What is waste disposal? (2 pts.)

.....

3. How Customer Complaint Record (2 pts.)

.....

4. What is a personal hygiene practice? (2pts)

.....

5. What is cleaning (2pts)

.....

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Note: Satisfactory rating ≥5 points

Unsatisfactory - below 5 points

You can ask you teacher for the copy of the correct answers.



Information Sheet- 5 Maintaining workplace records to workplace information

5.1. Maintaining Workplace records

Workplace records are an important part of any work environment and should be accurately, reliable, easy to follow, consistent as the basis used and be very simply.maintained within the required timeframes.

Records must be kept to allow proper equipment management and control. Performance records are required for trouble shooting, to identify changes in operating conditions, to identify reasons for process failure or dough quality reduction, for process optimization, to record changes in influent quality and process conditions, etc.

All Records should be:

- legible and clear;
- Dated;
- readily identifiable and retrievable;
- carry authorization status;
- retained for a designated period;
- Protected from damage and deterioration while storage.
- All calculations should be duly recorded

5.1.3. Types of workplace records

There are different types of records according to workplace guidelines and requirements. Those are which listed below:

A. Staff records

- These are records relating to any and all aspects of staffing the premises. May be divided into overall records and individual staff records. Overall records are those records kept that relate to staff as a whole



- ❖ Overall records
 - Staffing rosters
 - Training details by operational area
 - Annual leave planning chart
 - Salary and overtime payments
 - Injury records.
- ❖ Individual staff records
 - Leave records
 - Record of uniform orders
 - Training schedule
 - Direct salary deduction details
 - Injury claims.

5.1.3.1.Types of records

Staff may be given required to complete records such as:

- Time sheets
- Requisitions
- Internal transfers
- Requests for maintenance
- Daily takings sheets.

5.1.3.2. The importance of records

- For continuous monitoring of quality system
- For specimen tracking throughout process
- To identify failures in equipment
- To revisit information; reference
- For use as a management tool



Self-Check 5	Written Test
---------------------	--------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test - I: Say “True” or “False” for the following questions (3pts)

1. Workplace records are an important part of any work environment (3point)
2. There are not different types of records according to workplace guidelines and requirements. (3points)

Test II: Choose the best answer

1. Why are records essential? (3points)
 - A. For continuous monitoring of quality system
 - B. To identify failures in equipment
 - C. To revisits information; reference
 - D. All
2. The importance of records (3points)
 - A. For continuous monitoring of quality system
 - B. For specimen tracking throughout process
 - C. To identify failures in equipment
 - D. All

Test III: Short answer

1. Write five Types of records (4points)
-

You can ask you teacher for the copy of the correct answers

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating ≥ 8 points

Unsatisfactory - below 8 points

Name: _____

Date: _____



Information Sheet- 6	Monitoring the process to confirm the specifications
-----------------------------	---

6.1. Monitoring the process to confirm the specifications

These conditions allow the chocolate or other coatings to cool and harden appropriately to the inclusions. Low humidity keeps excessive moisture from binding to the product, affecting the finished appearance of the chocolate.

Thus in the context of food protection, quality assurance consists of establishing the following procedures:

- obtain from the providers a certificate of quality¹ for any micronutrient mixes used;
- request, receive and store in a systematic, programmed and timely manner the ingredients and supplies for the preparation of a pre-coating
- produce the pre-coating according to a schedule that is adjusted to the rate of food manufacturing and fortification;
- control the adequate performance of the pre-coating equipment;
- appropriately label and deliver the pre-coating jacket;

Chocolate panned products can cater to even the pickiest of consumers thanks to the use of coatings and inclusions that include gourmet, classic and healthier varieties.

For chocolate panning, the ideal ambient temperature for the process ranges from 55 to 65 degrees Fahrenheit, though many facilities use slightly higher room temperatures for operator comfort.

When coating with milk or dark chocolate, humidity levels should stay between 50 and 55 percent. White chocolate requires drier conditions with humidity ranging from 35 to 45 percent.



Regulatory monitoring comprises three parts – internal monitoring, external monitoring and commercial monitoring:

- Internal monitoring refers to the quality control and quality assurance (QC/QA) practices conducted by producers, importers and packers.
- External monitoring refers to the inspection and auditing activities carried out at production centers (factories and packers) and importation custom sites. Governmental authorities are responsible for external monitoring, which is implemented as a mechanism to assure compliance with standards and regulations.
- Commercial monitoring is similar to external monitoring in that it is generally the responsibility of the government and its purpose is to verify that the fortified prod



Self-check 6	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Test I: Short Answer Questions (3pts.)

1. Write all regulatory monitoring
 - a. _____
 - b. _____
 - c. _____
2. When coating with milk or dark chocolate, humidity levels should stay between _____ and _____ percent.
3. Who is responsible to monitor and care environment of workplace?

You can ask you teacher for the copy of the correct answers

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating ≥ 4.5 points

Unsatisfactory - below 5 points

Name: _____

Date: _____



Information Sheet- 7 Identifying, rectifying and/or reporting the out-of-Specification production/processing outcomes

The term OOS (out of specification), is defined as those results of in process or finished product testing, which falling out of specified limits, that are mentioned in compendia, food industries. The frequent occurrence of OOS results indicates that the manufacturing and analytical procedures not in control.

The consequences of OOS may result in market complaints, and rejection of commercial batches, which is an inventory loss for any food industry. So, the OOS result occurrences have to be investigated and addressed. This article describes a typical procedure that can be adopted to handle OOS results. These conditions allow the chocolate or other coatings to cool and harden appropriately to the inclusions. Low humidity keeps excessive moisture from binding to the product, affecting the finished appearance of the chocolate.

One of the reasons chocolatiers don't hand pan anymore is because larger companies have made it so cheap to buy chocolate covered peanuts and raisins (using cheap compound), small confectionery shops would need to charge higher prices just to make a profit.

But if you use top quality centers and fine chocolate and follow advice of experts it can be a lot of fun.

“Investigations of Out of Specification (OOS)/Out of Trend (OOT)/Atypical results have to be done in cases of:

- Batch release testing and testing of starting materials



- In-Process Control testing: if data is used for batch calculations/decisions and if in a dossier and on Certificates of Analysis.
- Stability studies on marketed batches of finished products and or active pharmaceutical ingredients, on-going / follow up stability (no stress tests)
- Previous released batch used as reference sample in an OOS investigation showing OOS or suspect results.

Phase Laboratory analysis Investigations– This phase of investigation are for obvious error such as calculation or power outage, testing errors such as spillages or incorrect setting of equipment parameters. It is expected that these issues are trended even if a laboratory investigation Laboratory batch (Ib) or II was not raised.

- Phase Ib Investigations– is an initial investigation conducted by the analyst and supervisor using the laboratory investigation checklist covering the pertinent areas for investigation. The checklist documented in the guidance details checks such as:
 - “Correct test methodology followed e.g. Version number.
 - Correct sample(s) taken/tested (check labels was it taken from correct place).
 - Sample integrity maintained, correct container and chain of custody (was there an unusual event or problem).”

Hypothesis testing may include further testing regarding sample, filtration, sonication /extraction and potential equipment failures etc. Multiple hypotheses can be explored during the investigation. This initial hypothesis testing can include the original working stock solutions but should not include another preparation from the original sample.

A test can be invalidated if a clear root cause has been determined such as

- Technician Error
- Sample/Standard Prep.
- Analytical method
- Equipment Failure
- Deviation from Procedure



Self-check 7	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Test I: choose best Answer (3pts.)

1. A test can be invalidated if a clear root cause has:
 - a. Technician Error
 - b. Sample/Standard Prep.
 - c. Analytical method
 - d. Equipment Failure
 - e. All
2. What is the abbreviation of "OOS"?
 - a. Out of standard
 - b. Ordering the standard
 - c. Operation of standard
 - d. All of the above

You can ask you teacher for the copy of the correct answers

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating ≥ 3 points

Unsatisfactory - below 3 points

Name: _____

Date: _____



Information Sheet- 8	Maintaining the work area according to housekeeping standards
-----------------------------	--

8.1. Maintaining the work area according to housekeeping standards

Good housekeeping practices help ensure neat, organized, and safe workspaces, which can reduce stress and improve morale. An increase in productivity and lower operating costs may also result when workers spend less time tracking down a needed tool or other item. Reducing workplace injuries will also help lower cost

Good housekeeping is not just about cleanliness; it lays the basic foundation for accident and fire prevention. It requires attention to details, such as the layout of the worksite or facility, identification and marking of physical hazards, ensuring the adequate number of storage facilities, and routine maintenance.

Here are some of the many benefits that can be gained when implementing good workplace housekeeping:

a. Improve Worker Safety

- Fewer trip and slip incidents where walkways and working surfaces are free of clutter and spills.
- Decreased fire hazards as a result of the reduction or elimination of waste, dust, debris, and other flammable materials.
- Reduced number of workers being struck by objects through organized and careful storage of materials, tools, and equipment.
- Fewer worker injuries as a result of defective or malfunctioning parts through timely maintenance of machinery, equipment, or systems.

b. Improve Worker Health



- Reduced worker exposure to hazardous substances, such as dust and vapor buildup, by following a regular cleaning schedule.
- Improved working conditions and worker health through regular servicing, cleaning, and supplying sanitation facilities

c. Increase Worker Productivity/Reduced Costs

- Safe work environments lead to healthier workers, higher worker morale, and increased productivity.
- Workplace cleanup and maintenance, including worker training, will ensure better control over tools and materials as well as the inventory of supplies.

Among benefits to be derived good housekeeping in panning are:

- Increased efficiency.
- The reduction of accident hazards.
- The reduction of fire hazards.
- Improved morale.
- Compliance with the law.
- Creating a favorable impression to people outside the Company.

Workshop should be kept neat and tidy. Good housekeeping can significantly reduce the risk of an accident and injury, failure to maintain a clean and tidy Workshop can result in accident and injury. Work areas and equipment are to be thoroughly cleaned after use.



Self-check 8	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Test I: choose best Answer (4points)

1. What is the of benefits good housekeeping?
 - A. Increased efficiency.
 - B. The reduction of accident hazards.
 - C. The reduction of fire hazards.
 - D. All of the above
2. Good housekeeping involves the maintenance of:
 - A. good lighting
 - B. heating and power supply lines,
 - C. tools and machinery
 - D. All of the above

Test II fill in the blank space (4points)

1. Workshop should be kept _____ and _____
2. . Good housekeeping can significantly reduce _____

Answer Sheet

Score = _____
Rating: _____

Note: Satisfactory rating ≥8 points

Unsatisfactory - below 8 points

Name: _____

Date: _____



Information Sheet- 9	Conducting the work in accordance with guidelines
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9.1. Conducting the work in accordance with guidelines

Every workplace has a set of rules. Some are organized enough to have them written out in an employee handbook. Others are more casual. Whether you're at the job of your dreams or at a temporary stop on your career path, it's important to make a good impression. There are some basic guidelines on workplace etiquette you can follow so you know how to conduct yourself in the workplace.

When the requirements of the standards' met, employees understand the role their work

- plays, in maintaining quality output
- Motivated work force supports management in detecting, solving, correcting and preventing problems in the production area.
- Identification of the required resource
- Doing any work related with modern dairy production system we have to allocate the necessary resources which, proper and suitable to undertake the general work activities.

To manage these issues, your disciplinary process might cover two areas: employee performance and general workplace conduct. Conduct issues might include lateness, refusal to cooperate, misuse of IT or bullying. It might even include violent behavior and other crimes

Since a little conflict is inevitable, how you manage employee conduct can have the biggest impact on your organization. So it's essential you create an environment that encourages good performance while dealing with grievance and misconduct effectively.



9.2. Promoting good employee conduct

If you're to expect good conduct from them, employees need to clearly understand those expectations. The answer is often a code of conduct, which will spell out:

- Standards of performance and workplace conduct, promoting a culture of respect and good performance.
- Grievance and disciplinary procedures, which provide clear structures for dealing with problems.

Standardized procedures make sure everyone is treated fairly and equally in similar circumstances.

9.3. Reducing the need for tribunals

Another goal for your code of conduct might be to resolve issues quickly and in-house, thereby reducing the need for a costly tribunal process.

Effective procedures comply with the Acas Code of Practice and the law. In the event an issue does go to tribunal, the procedure you've followed can demonstrate you've acted lawfully.

9.4. Managing discipline and grievances

Disciplinary and grievance issues happen in every workplace. It's common to face problems such as: Differences in personality and work styles: they're the most common contributors to workplace conflict.

Lack of respect between employees: it's the most common discipline-related behavior in UK workplaces. Bullying, refusal to co-operate and shouting are also widely reported.



Falls in motivation and commitment: workplace conflict commonly causes these damaging results.

9.5. Disciplinary procedures

To manage these issues, your disciplinary process might cover two areas: employee performance and general workplace conduct.. Conduct issues might include lateness, refusal to cooperate, misuse of IT or bullying. It might even include violent behavior and other crimes.

Your misconduct disciplinary procedure should usually include:

- Clear communication.
- A full, fair investigation into the facts, to decide if further action is needed.
- Detailed record-keeping. Should the issue go to tribunal, you'll need to demonstrate that you followed a fair and lawful procedure.
- Disciplinary interviews. Staff conducting interviews should be fully trained



Self-Check 9	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Test –I choose the best answer (2 point)

1. _____ is the interpreting of schedules and plans, as well as a clear understanding of procedures to be undertaken and to meet in working place.

A. Develop Health and Safety Program	C. Written Health and Safety Policy
B Clarification of work requirement	D. Written Safety Rules

2. When the requirements of the standards' met?
 - A. plays, in maintaining quality output
 - B. Motivated work force supports management in detecting, solving, correcting and preventing problems in the production area.
 - C. Identification of the required resource
 - D. All

Part II Fill the black space (4 point)

1. Write the purpose of documenting work place Injury emergency occurred (3%)

_____ , _____
 _____ , _____

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Note: Satisfactory rating ≥ 5points

Unsatisfactory - below 5 point



LG #71	LO #3- Shutdown the panning process
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Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying the appropriate shutdown procedure
- shutting down the process according to workplace procedures
- Identifying and reporting maintenance requirements

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify the appropriate shutdown procedure
- shut down the process according to workplace procedures
- Identify and report maintenance requirements
-

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”



Information Sheet 1-	Identifying the appropriate shutdown procedure
-----------------------------	---

1.1. Identifying the appropriate shutdown procedure

Shut down/isolation means and includes isolation of mechanical, electrical drives, pipework (pressure) rotating equipment etc. utilizing electrical lock-off isolators, mechanical and power driven valves etc. in accordance with standard operating instructions.

Pull plug or throw switch to off position before cleaning or adjusting any machine. Keep fingers, hands, spoons, etc., away from moving parts. Wait until machine stops before moving food.

❖ Relevant regulations:

- Under taking Shut-down sequence safely and to standard operating procedures.
- Depressurizing the machine/equipment to standard operating procedures.
- verify Safe shut-down of machine/equipment of panning
- Install safety/security lock-off devices and signage to standard operating procedures.
- Do not start a mixer until the bowl in place securely fastening and the attachments
- When using a mixer, turn off motor before you scrape down the sides of the bowl.
- Machine/equipment is clean and safe state
- When working with tools at height makes sure they cannot fall
- switch off when disconnected from their power do not leave power tools
- Ensure that cables, power lines, pipes and hoses
- Check insulation, switches and fuse boxes for possible hazards. Ensure warning signs are clear and easily seen.
- Ensure that correct type of firefighting equipment
- Remove empty cartons, wrappings and other flammable waste as soon as possible



- Never use any machine you have not been train to use.
- Check all switches to see that they are off before plugging into the outlet.
- First pull the plug.
- Turn the gauge to zero in order to cover the edge of the blade
- Clean the blade from the center out.
- Clean the inside edge of the blade with a stick that has a cloth
- Never start a machine until you are sure all parts are in their proper places. If it is a machine that operates with gears, check the gear position.
- You must be aware of the lock-out procedures that are to be follow before repairing or cleaning any machine. Lock-out procedures must be clearly posted by management near each machine.
- Many industries have emergency shutdown systems or “panic buttons.” These are installed so that only one switch has to be thrown to kill the power to a large amount of equipment. These systems are to be used when a person is being electrocuted or is caught in a piece of machinery. Under these circumstances, you do not have time to hunt for and throw the correct switch. Fast action is necessary. Hit the panic button.
- When you enter an industry for the first time, locate and learn how to use the emergency shutdown.



Self-check 1	Written test
---------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best answer (4 point)

1. Relevant regulations for shut down dough mixing equipment
 - A. Shut-down sequence is undertaken safely and to standard operating procedures.
 - B. Machine/equipment is to standard operating procedures.
 - C. Safe shut-down of machine/equipment is verified.
 - D. Safety/security lock-off devices and signage are installed to standard operating procedures.
 - E. All

Test II: say “True” or “False” for the following question.(4pts.)

1. Before shutdown remove empty cartons, wrappings and other flammable waste as soon as possible.

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Note: Satisfactory rating ≥4 points Unsatisfactory - below -4 points



Information Sheet 2-	Shutting down the process according to workplace procedures
-----------------------------	--

2.1 Shutting down process:

An occasion when a large piece of equipment stops operating, usually for a temporary period or the act of closing a factory or business or stopping a machine.

Reading, interpreting and following information on written job instructions, specifications and other applicable reference documents

- checking and clarifying task-related information
- Entering information onto preforms and standard workplace forms.
- Shutting down machine/equipment.
- Purging/de-energizing equipment.
- Installing safety/security lock-off devices and signage

2.1.1 Shut down Coating pan Procedure

1. Stop the machine
2. Empty the machine
3. Empty the jacket water
4. Cut off the power supply
5. Clean the machine



Self-check 2	Written test
---------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best answer (5 point)

1. Shutting down procedures
 - A. checking and clarifying task-related information
 - B. Entering information onto preforms and standard workplace forms.
 - C. Shutting down machine/equipment.
 - D. Purging/de-energizing equipment
 - E. All

2. When you shut down the machine?
 - A. After you finished the task
 - B. When same problems has happened
 - C. During the during cleaning a machine
 - D. All

Test II: Give short answer (5 point)

1. Write the shutting of machine procedures
2. What you do before you shut down?

Score = _____
Rating: _____

Answer Sheet

Name: _____ Date: _____

Note: Satisfactory rating ≥10 points Unsatisfactory - below -10 points



Information Sheet- 3	Identifying and reporting maintenance requirements
-----------------------------	---

3.1. Identifying and reporting maintenance requirements

Maintenance is the upkeep of equipment and machinery in proper working condition at all times. Maintenance plan in dough product processing includes:

- maintenance activities and schedules
- maintenance costs and budget details
- Staff resource and supply requirements
- staff roles and responsibilities
- contingency plan for staff and supply problems
- reporting requirements
- hazard and risk control measures
- OHS procedures, personal protective clothing and equipment requirements
- environmental impact control measures

Enterprise requirements include:

- Standard Operating Procedures (SOP),
- Industry standards and production schedules,
- Material Safety Data Sheets (MSDS)
- Legislative and licensing requirements
- Work notes, product labels and manufacturers specifications,
- Operator's manuals, enterprise policies and procedures (including waste disposal, recycling and re-use guideline, and OHS procedures

❖ Reporting for maintenance

Report to your immediate supervisor any tool or piece of equipment that is broken or does not function properly or unsafe equipment to a responsible individual to prevent serious injury



Self-check 3	Written test
---------------------	---------------------

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test -1 Choose the best answer (6 point)

E. What is the primary purpose of a preventive maintenance program?

- a. Increase the use of backup equipment
- b. Correct equipment breakdowns
- c. Eliminate inventory of spare parts
- d. All

F. What are enterprises requirements?

- a. Work notes
- b. product labels and manufacturers specifications
- c. policies and procedures
- d. all
- e. none of the above

Test –II Give short answer for the following questions

1. For whom you report if there is machine or equipment broken?(3point)
2. Why you report? (3point)

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Note: Satisfactory rating – ≥5 points

Unsatisfactory - below -5 points



Operation Sheet-1	Shut down coating pan
-------------------	-----------------------

Procedures:

- Steps** 1. Stop the machine
- Steps** 2. Empty the machine
- Steps** 3. Empty the jacket water
- Steps** 4. Cut off the power supply
- Steps** 5. Clean the machine



LAP TEST	Performance Test
-----------------	-------------------------

Name..... ID.....

Date.....

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **10mins**. The project is expected from each student to do it.

Task-1 Shut down coating pan



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The trainers who developed the Teaching, Training Learning Materials

No	Name	Qualification	Educational background	Region	E-mail
1	Teshale Besufikad	B	Food science and post-Harvest Technology	Hawasa	teshu44@gmail.com
2	Memiru Michael	B	Food Process Engineering	A.A	Lijelshaday@gmail.com
3	Zerfu Negash	B	Hotel mgmt.	Oromia	nzerfu@gmail.com
4	Meseret Niguse	B	Hotel & Tourism mgt	Oromia	mimimesi@gmail.com
5	Cheru petros	B	Food technology and process engineering	SNNPR	Chupeter143@gmail.com
6	Zelalem Taye	A	Leader ship management	Amhara	tayezelalem22@gmail.com