

## Course Description Form

**1. Course Name:**

Food factories engineering

**2. Course Code:**

FOFE240

**3. Semester / Year:**

Second semester (spring)/2023-2024

**4. Description Preparation Date:**

1/2/2024

**5. Available Attendance Forms:**

Attendance lesson

**6. Number of Credit Hours (Total) / Number of Units (Total): units**

30 hours/30 units+ 45 hours/

**7. Course administrator's name (mention all, if more than one name):**

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Assistant lecturer Mead waleed saadullah

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**8. Course Objectives****Theoretical:**

- Enabling the student to understand and comprehend what is related to the units to be used to measure the various dimensions within the engineering system of the food factory.
- Enable the student to know the equations needed to be used in mass balancing
- Enabling the student to be familiar with the most important energy budget calculations
- Enable the student with the ability to determine the circumstances of use of some devices.
- The student can judge the efficiency of some devices by performing calculations for that

**practical:**

- Enabling the student to become familiar with measuring devices and their various applications in various food laboratories

**9. Teaching and Learning Strategies**

**Theoretical:**  
Interactive lecture with the use of presentations – dialogue Discussion - brainstorming - assigning tasks and reporting.

**practical:**  
Assigning group work and revealing students' skills - assignment  
Assignments to write a report for each experiment.

## 10. Course Structure

Week	Hours	Required Learning Outcomes	Name of Unit or subject	Learning method	Evaluation method
First	2Theoretical 3Practical	<b>Theoretical:</b> B1: <b>Learn about the most important dimensions and their units of measurement in the international and British systems of units.</b> <b>Practical:</b> B7: Represents the metals and alloy used in the manufacture of food laboratory equipment in the form of a flow chart.	<b>Theoretical:</b> <b>Dimensions and units</b> <b>practical:</b> Metals and alloys used in the manufacture of food processing equipment	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions
Second	2Theoretical 3Practical	<b>Theoretical:</b> C1: Familiar with the equations and laws that must be used to calculate the speed of flow in fluids. <b>practical:</b> C5: <b>Trying measuring devices.</b>	<b>Theoretical:</b> <b>Balance of matter and energy</b> <b>practical:</b> Measuring devices	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions
Third	2Theoretical 3Practical	<b>Theoretical:</b> B2: <b>Explains the conditions of fluid flow.</b> <b>practical:</b> B8: Writes a brief overview of the operation of steam boilers.	<b>Theoretical:</b> Fluid flow  <b>practical:</b> Steam boilers	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions
Fourth	2Theoretical 3Practical	<b>Theoretical:</b> A1: <b>It suggests cases where Bernoulli's equation can be applied very efficiently.</b> <b>practical:</b> A5: Explains the systems used in pumping food fluids.	<b>Theoretical:</b> Fluid flow (matter and energy balance) + Bernoulli's equation  <b>practical:</b> Pump systems	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions
Fifth	2Theoretical	<b>Theoretical:</b>	<b>Theoretical:</b>	<b>Theoretical:</b>	Short exams,

	3Practical	<p><b>C2:</b>  <b>Proficient in the methods to be used to reduce heat loss.</b>  <b>practical:</b>  <b>C6:</b>  <b>Explain the different methods of heat transfer.</b></p>	<p><b>Loss of thermal energy and measurement of pressure generated by fluid flow</b>  <b>practical:</b>  <b>Heat transfer methods</b></p>	<p>Auditory methods  Writing style on the blackboard  Direct dialogue style  <b>practical :</b>  Assigning tasks and reporting</p>	<p>assignments, or discussions</p>
Sixth	2Theoretical 3Practical	<p><b>Theoretical:</b>  <b>C3:</b>  <b>Familiar with the states of thermal energy transfer.</b>  <b>practical:</b>  <b>C7:</b>  <b>Explains how cooling systems work.</b></p>	<p><b>Theoretical:</b>  <b>Thermal energy transfer</b>  <b>practical:</b>  Cooling systems</p>	<p><b>Theoretical:</b>  Auditory methods  Writing style on the blackboard  Direct dialogue style  <b>practical :</b>  Assigning tasks and reporting</p>	<p>Short exams, assignments, or discussions</p>
Seventh	2Theoretical 3Practical	<p><b>Theoretical:</b>  <b>C4:</b>  <b>Explains how to perform heat transfer coefficient calculations.</b>  <b>practical:</b>  <b>C8:</b>  <b>Writes a brief overview of freezing systems.</b></p>	<p><b>Theoretical:</b>  Total thermal energy transfer coefficient in heating and cooling  <b>practical:</b>  <b>Freezing systems</b></p>	<p><b>Theoretical:</b>  Auditory methods  Writing style on the blackboard  Direct dialogue style  <b>practical :</b>  Assigning tasks and reporting</p>	<p>Short exams, assignments, or discussions</p>
eighth	2Theoretical 3Practical	<p><b>Theoretical:</b>  <b>A2:</b>  <b>Determines the heat exchange conditions to be applied.</b>  <b>practical:</b>  <b>A6:</b>  <b>Experiment with how heat exchangers work</b></p>	<p><b>Theoretical:</b>  <b>heat exchangers</b>  <b>practical:</b>  Watch heat exchangers and how to maintain them</p>	<p><b>Theoretical:</b>  Auditory methods  Writing style on the blackboard  Direct dialogue style  <b>practical :</b>  Assigning tasks and reporting</p>	<p>Short exams, assignments, or discussions</p>
Ninth	2Theoretical 3Practical	<p><b>Theoretical:</b>  <b>B3:</b>  <b>Determines the heat exchange conditions to be applied.</b>  <b>practical:</b>  <b>B9:</b>  Experiment with how heat exchangers work</p>	<p><b>Theoretical:</b>  <b>heat exchangers</b>  <b>practical:</b>  Watch heat exchangers and how to maintain them</p>	<p><b>Theoretical:</b>  Auditory methods  Writing style on the blackboard  Direct dialogue style  <b>practical :</b>  Assigning tasks and reporting</p>	<p>Short exams, assignments, or discussions</p>
Tenth	2Theoretical 3Practical	<p><b>Theoretical:</b>  <b>A3:</b>  <b>Explains the concept of thermodynamics when freezing foods.</b>  <b>practical:</b>  <b>A7:</b>  <b>Shows the types of drying devices used.</b></p>	<p><b>Theoretical:</b>  <b>Thermodynamics of food freezing and expected properties of frozen food</b>  <b>practical:</b>  Learn about drying systems</p>	<p><b>Theoretical:</b>  Auditory methods  Writing style on the blackboard  Direct dialogue style  <b>practical :</b>  Assigning tasks and reporting</p>	<p>Short exams, assignments, or discussions</p>
Eleventh	2Theoretical	<p><b>Theoretical:</b></p>	<p><b>Theoretical:</b></p>	<p><b>Theoretical:</b></p>	<p>Short exams,</p>

	3Practical	B4: <b>Determines the necessary standards when steaming food</b>  <b>practical:</b> B10: <b>Explains the types of systems used in food steaming operations.</b>	Food steaming <b>practical:</b> Food fumigation systems	Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	assignments, or discussions
Twelveth	2Theoretical 3Practical	<b>Theoretical:</b> E1: <b>Learn about the calculations food drying methods.</b> <b>practical:</b> E2: It represents the systems used to reduce food sizes in a tabular form.	<b>Theoretical:</b>  Food drying  <b>practical:</b> Size reduction systems for food	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions
Thirteenth	2Theoretical 3Practical	<b>Theoretical:</b> A4: <b>He is familiar with the changes necessary to obtain good nutritional extracts.</b>  <b>practical:</b> A8: Write a brief overview of food separation methods.	<b>Theoretical:</b> Food extraction <b>practical:</b> Food separation systems	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions
Fourteenth	2Theoretical 3Practical	<b>Theoretical:</b> B5: <b>Judges the efficiency of food distillation processes.</b>  <b>Practical:</b> B11: Explain the reasons for using mixing processes in the food laboratory.	<b>Theoretical:</b>  Distillation process for food  <b>Practical:</b> Food mixing systems	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions
Fifteenth	2Theoretical 3Practical	<b>Theoretical:</b> B6: <b>Judges the efficiency of food distillation processes.</b>  <b>Practical:</b> B12: Explain the reasons for using mixing processes in the food laboratory.	<b>Theoretical:</b>  Distillation process for food  <b>Practical:</b> Food mixing systems	<b>Theoretical:</b> Auditory methods Writing style on the blackboard Direct dialogue style <b>practical :</b> Assigning tasks and reporting	Short exams, assignments, or discussions

## 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc . The average is calculated from 25 for theory, as well as for practical, with an average of 15.

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Different lectures

Main references (sources)

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Recommended books and references (scientific journals, reports...)	-----
Electronic References, Websites	-----

Instructor of theoretical part

dr. Oday hasan ali al-jammaas

Instructor of practical part

Mead waleed saadullah

Chairman of scientific committee

Prof. Dr. Moafaq mahmood ahmed

Head of the department of Food science

Prof. Dr. Sumaya khalaf badawi