



# TRUYỀN KHỐI

## Mass Transfer



### EXPECTED LEARNING OUTCOMES OF PROGRAMME (PLOs)

#### General knowledge

<b>PLO 1</b>	Apply natural, social, technical and economic knowledge to solve problems in preservation, processing, testing, and research and development of food products.
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#### Professional knowledge

<b>PLO 2</b>	Formulate production procedures based on the analysis of technical factors to ensure and enhance product quality.
<b>PLO 3</b>	Design quality management systems for processing plants to ensure food hygiene and safety.

#### Soft-skills

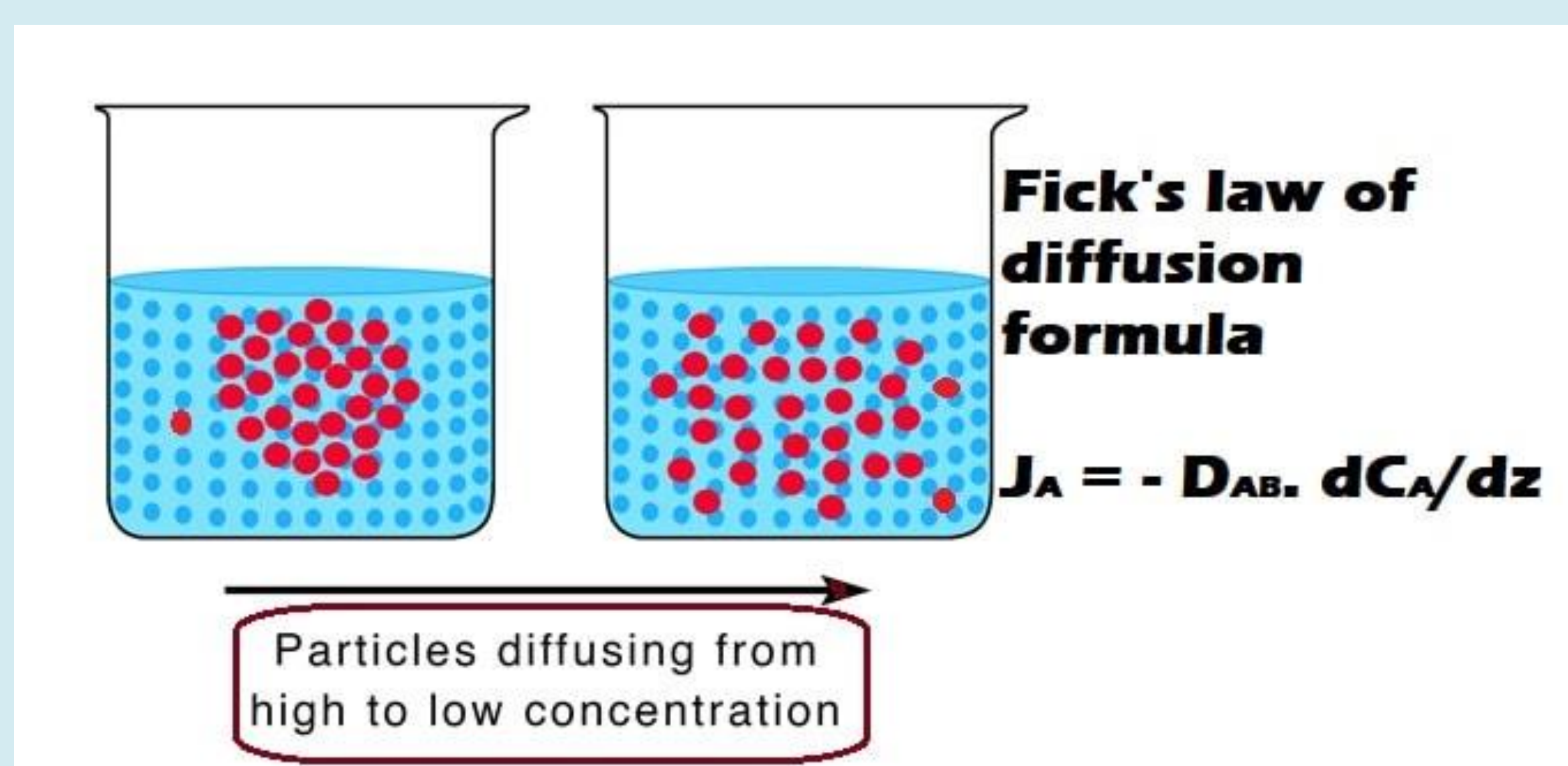
<b>PLO 4</b>	Perform work planning, demonstrate creatively critical thinking, work independently and effectively as a team leader or member.
<b>PLO 5</b>	Demonstrate communication skills and use specialized English in food technology.

#### Professional skills

<b>PLO 6</b>	Operate production equipment in food manufacture factories.
<b>PLO 7</b>	Analyse product quality criteria in food preservation and processing procedures.
<b>PLO 8</b>	Design research to address technological and regulatory problems in the food industry through the evaluation of information, scientific data and information technology applications.

#### Attitude

<b>PLO 9</b>	Work professionally, maintain professional ethics, social responsibility, and demonstrate personal physical development.
<b>PLO 10</b>	Demonstrate the spirit of entrepreneurship and life-long learning.



### LEARNING METHODS AND TASKS OF STUDENTS

- Students read reference materials before coming to class
- The teacher gives presentations using Powerpoint, combined with a video describing the process.
- Students working in groups in class
- Do homework on the E-learning system.
- Practice and report results

### Course description:

- ✓ The module equips knowledge about the process of phase transition, metabolism, and energy exchange occurring in a number of food processing activities such as dehydration, evaporation, concentration, distillation, extraction, absorption, etc.
- ✓ At the same time, it trains students in the skills of collecting experimental data to calculate, design, select equipment, and control the processing process. The subject is a very important technical basis in both chemical engineering and food processing.
- ✓ The module also helps to develop a good attitude and awareness of self-study.

CONTENT	CELOs
Chapter 1. Concept of mass transfer	CELO 1; 2; 4; 8
Chapter 2. Principle of mass transfer	CELO 2; 4; 5; 8
Chapter 3. Distillation	CELO 2; 3; 4; 5; 6; 7; 8
Chapter 4. Drying	CELO 1; 2; 3; 4; 5; 6; 7; 8
Chapter 5: Extraction	CELO 2; 3; 4; 5; 6; 8

EXPECTED LEARNING OUTCOME OF COURSE (CELOs)		PLOs
Knowledge		
<b>CELO 1</b>	Explain the similarities between heat and mass transfer processes and their impact on food processing and storage.	<b>PLO 2</b>
<b>CELO 2</b>	Distinguish the basic mass transfer processes in food: osmotic diffusion, drying, distillation, concentration, ...	<b>PLO 2</b>
<b>CELO 3</b>	Describe the structure and working principle of mass transfer devices.	<b>PLO 1</b>
Professional skills		
<b>CELO 4</b>	Calculate the matter and energy balance for mass transfer.	<b>PLO 4; 5</b>
<b>CELO 5</b>	Collect data from the experimental process, calculate and determine the parameters from the experiment.	<b>PLO 8</b>
<b>CELO 6</b>	Look up calculated data from technical manuals	<b>PLO 4; 5</b>
Attitude		
<b>CELO 7</b>	Follow the rules well during the learning process	<b>PLO 9</b>
<b>CELO 8</b>	Solve problems well during team work.	<b>PLO 10</b>

Course assessment	Methods	Ratio %
On-going assessment	<b>Attitude</b>	10%
	<b>Seminar</b>	20%
	<b>Practice</b>	20%
Final exam	<b>Written exam</b>	50%

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