



**EXPECTED LEARNING OUTCOMES**

Course objectives	COURSE EXPECTED LEARNING OUTCOMES After successfully completing this course, students are able to	Program expected learning outcomes
<b>Knowledge</b>		
CELO1	Assess the quality of fermented products according to the standards of biosafety and environmental protection	ELO3
CELO2	Design production models for products originated from microorganisms	ELO5
<b>Skills</b>		
CELO3	Work in groups to achieve goals when implementing the project	ELO7
CELO4	Utilize information technology and equipment effectively to produce bioproducts	ELO9
CELO5	Perform analytical and culturing procedures proficiently	ELO11
<b>Personal autonomy and responsibility</b>		
CEL06	Comply with safety rules during project implementation	ELO13

**CONTENT**

- ✓ Project 1: Isolation of microorganisms capable of producing amylase enzyme
- ✓ Project 2: Isolation of microorganisms capable of producing cellulose enzyme
- ✓ Project 3: Isolation of bacteria capable of dissolving insoluble phosphorus
- ✓ Project 4: Yogurt fermentation
- ✓ Project 5: Fermenting rice and wine
- ✓ Each topic will be given by the lecturer, or the students can propose a topic (after some discussion with the lecturer).

**TEACHING METHODS**

- ✓ Teaching through project works
- ✓ Lab sessions
- ✓ Groups discussion

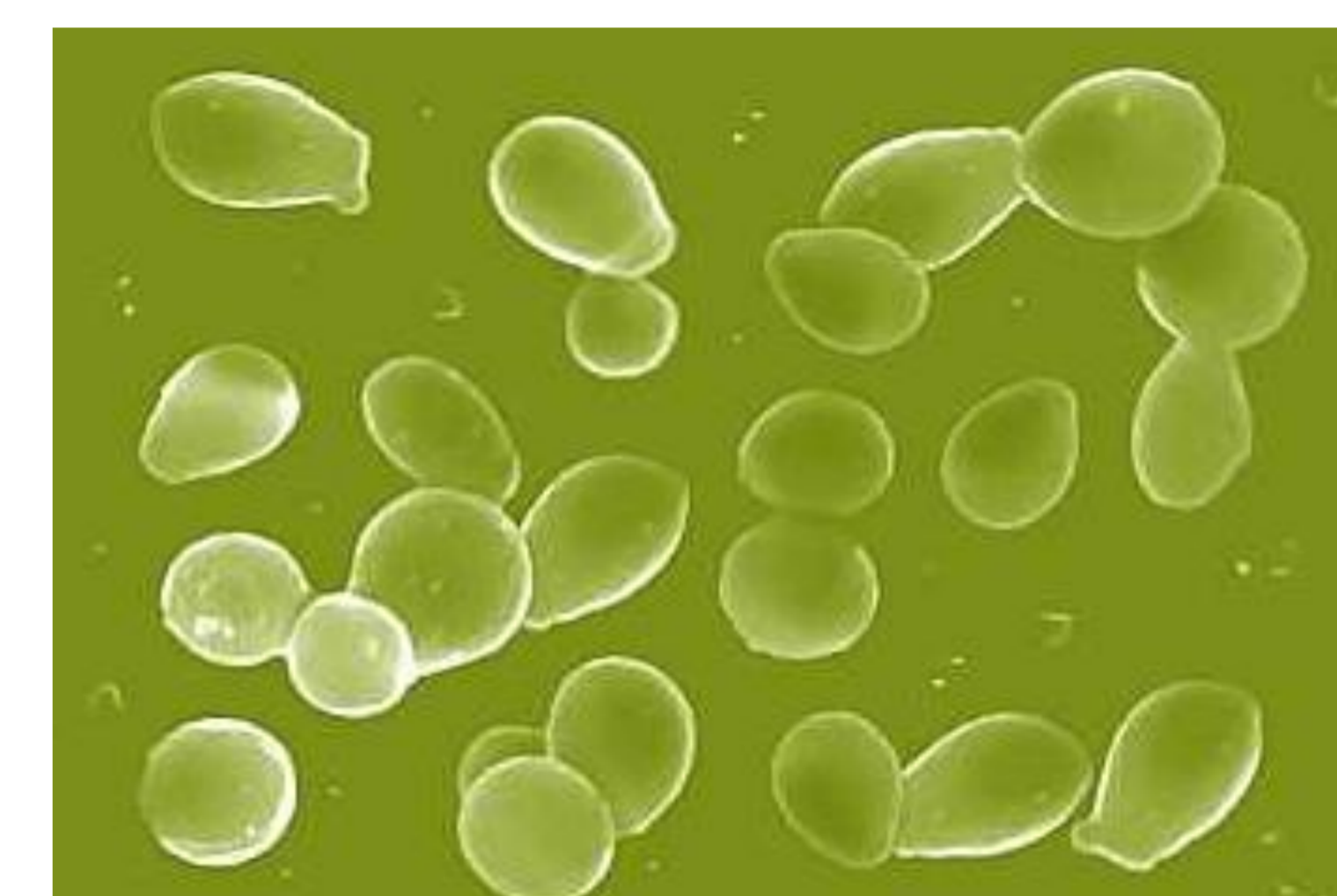
**LEARNING METHODS**

- ✓ Projects are carried out by groups of 4-6 students
- ✓ Planning and implementing
- ✓ Researching references related to projects
- ✓ Discussion and group presentation



**STUDENT TASKS**

- ✓ All students attending this course must perform a specific task in the project.
- ✓ All students attending this course must have good understanding of the knowledge related to the project they are working on; read and carefully study the documents to implement the project.
- ✓ All students participating in this course must complete a project proposal, progress report, group summary report, and present the products made by their team.
- ✓ Presentation and discussion: All students attending this course must contribute to the group presentation; actively ask questions, make comments and evaluations.



**ASSESSMENT METHODS**

- ✓ Grading: 10 marks
- ✓ The average score of the course is score of each rubric multiplying with the corresponding weight of each rubric
- ✓ Proposal assessment and defense - 20%
- ✓ Assessment of project implementation – 30%
- ✓ Final report - 30%.
- ✓ Presentation of project results – 20%

**LECTURES**

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