



Subject	Microbiology
Paper No. and Title	DSE – 1 – B: Paper MIC - XIII: Microbial Genetics Genetic engineering
Module (Flipped classroom) Title	<ul style="list-style-type: none">• Introduction to Tools and Techniques of Genetic engineering• Applications of Genetic engineering
Module Tag	DAYA_MIC_XIII_III_M1

BY

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Module No. 1

- **Title – Module No.1, Genetic engineering (Introduction to Tools and Techniques of Genetic engineering and Applications of Genetic engineering)**

Prerequisites – Students have understood and gained the basic Molecular Biology information and they have referred the various reference books on Molecular biology and genetics.

Objectives of the Module

Sub Unit 1 -

	Content	Objectives (Learner should be able to)	Cognitive Level
1.1	Introduction to Genetic engineering (Definition and Concept)	Define Genetic Engineering	Remembering
		Memorise the definition of Genetic Engineering	Remembering
		Explain the concept of Genetic Engineering	Understanding
		Describe the various contents of genetic engineering	Understanding
		Write the possible novel methods of genetic engineering	Applying
		Develop the desired techniques in genetic engineering	Creating
1.2	Introduction to various tools and techniques of genetic engineering	Recall the all tools and techniques of genetic engineering	Remembering
		Describe the functions of all tools and techniques of genetic engineering	Understanding
		Illustrate the specific role of Specific tool and technique of genetic engineering	Applying

		Examine the effect of specific tool on preparation of recombinant DNA Molecule	Analyzing
		Design a particular technique to isolate rDNA from host cell	Creating

Sub Unit 2 -

	Content	Objectives (Learner should be able to)	Cognitive Level
2.1	Applications of Genetic engineering (Concept)	List the all applications of genetic engineering	Remembering
		Recall the all applications of genetic engineering	Remembering
		Explain the all application of genetic engineering in detail	Understanding
		Illustrate the various applications of genetic engineering	Analyzing
		Write the novel application of genetic engineering	Creating
2.2	Applications of Genetic engineering in Medical, Agricultural and Industrial field	Recall the specific application of genetic engineering in medical, agricultural and industrial field.	Remembering
		Describe the applications of genetic engineering in medical, agricultural and industrial field	Understanding
		Illustrate the specific role of genetic engineering in medical, agricultural and industrial field	Applying
		Write the major application of genetic engineering in medical, agricultural and industrial field	Understanding
		Evaluate possible characters of rDNA molecule to apply various field	Analyzing
		Design a novel application of genetic engineering in medical field to treat the disease	Creating

Detailed Plan of Out-of -class and In-class activities

Week 1

Sub Unit 1 - Introduction to Genetic engineering (definition and Concept) and Introduction to various tools and techniques of genetic engineering.

Objectives –

- To know the definition of genetic engineering
- To know the concept of genetic engineering
- To know the various contents of genetic engineering
- To know the possible methods or techniques of genetic engineering
- To develop the novel or desired technique in genetic engineering

Resources Needed –

Title and Nature of Resources –

Syllabus of B.Sc.III Microbiology

Link-

<https://classroom.google.com/c/NDE0OTA4MDExNjRa/m/MzM4ODE0NTcxNjcx/details>

Material OER/URL/Instructor-made/Copy written/Text Book etc.

1) Reference Books

<https://classroom.google.com/c/NDE0OTA4MDExNjRa/m/MzM5NDIxMTY4NDM3/details>

2) PPT – <https://www.slideshare.net/kamblesai2611/genetic-engineering-87581053>

3) Reference made -

Video – <https://youtu.be/3IsQ92KiBwM>,

<https://youtu.be/nfC689EIUVk>

Units	Out-of –class activity Details of Activity	In-class activity Details of Activity	Assessment
1.1	<p>Students should read out the topic from the given reference books or posted resources</p> <p>Students should watch the posted videos</p>	<p>Discussion on the topic</p> <p>Check the level of understanding through Question – answer session</p>	Question – answer session
1.2	<p>Students should read out the topic from the given reference books or posted resources</p> <p>Students should refer the video’s from</p>	<p>Discussion on the topic</p> <p>Check the level of understanding through Question – answer session</p>	<p>Question to write in detail</p> <p>https://classroom.google.com/c/ND E0OTA4MDExNj Ra/sa/MzM5MTA 1NDg1Nzcx/details</p>

Detailed Plan of Out-of -class and In-class activities

Week 2

Sub Unit 2 - Applications of Genetic engineering (Concept) and Applications of Genetic engineering in Medical, Agricultural and Industrial field

Objectives –

- To know the List the all applications of genetic engineering
- To understand the actual role of genetic engineering in various field
- To know the specific role of genetic engineering in Medical, Agricultural and Industrial field
- To develop the logic of genetic engineering on novel application in medical field.

Resources Needed –

Title and Nature of Resources –

Syllabus of B.Sc. III Microbiology

Link-

<https://classroom.google.com/c/NDE0OTA4MDExNjRa/m/MzM4ODE0NTcxNjcx/details>

Material OER/URL/Instructor-made/Copy writed/Text Book etc.

1) Reference Book: -

<https://classroom.google.com/c/NDE0OTA4MDExNjRa/m/MzM5NDIxMTY4NDg2/details>

2) PPT: -

<https://classroom.google.com/c/NDE0OTA4MDExNjRa/m/MzM5NDIzMDU1NTIy/details>

3) Reference made -

Video – <https://youtu.be/4fBQ2umTaMA>,

https://youtu.be/Yh9w_fyvpUk

Units	Out-of –class activity Details of Activity	In-class activity Details of Activity	Assessment
2.1	<p>Students should read out the topic from the given reference books or posted resources</p> <p>Students should watch the posted videos</p>	<p>Discussion on the topic</p> <p>Check the level of understanding through Question – answer session</p>	Question – answer session
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