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VEER NARMAD SOUTH GUJARAT UNIVERSITY

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વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી

યુનિવર્સિટી કેમ્પસ, ઉદ્ધના-મગદલા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.

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-: પરિપત્ર :-

યુનિવર્સિટી સંલગ્ન વિજ્ઞાન વિદ્યાશાખા હેઠળની તમામ કોલેજોનાં આચાર્યશ્રીઓને જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૨૫-૨૬ થી NEP-2020 અંતર્ગત પ્રથમ વર્ષ બાદ Exit થનાર વિદ્યાર્થીઓને સર્ટિફિકેટ એનાયત કરવા સંદર્ભે ૪ ક્રેડિટના Vocational Exit Course અને દ્વિતીય વર્ષ બાદ Exit થનાર વિદ્યાર્થીઓને ડિપ્લોમા એનાયત કરવા સંદર્ભે ૪ ક્રેડિટના Vocational Exit Course સંદર્ભે માઈક્રોબાયોલોજી વિષયની અભ્યાસ સમિતિની તા.૨૬/૦૪/૨૦૨૫ ની સભાના ઠરાવ ક્રમાંક:૦૨ થી કરેલ ભલામણ સ્વીકારી વિજ્ઞાન વિદ્યાશાખાની તા.૩૦/૦૪/૨૦૨૫ની સભાનાં ઠરાવ ક્રમાંક:૩૯ થી કરેલ ભલામણસ્વીકારી એકેડેમિક કાઉન્સિલની તા.૦૫/૦૫/૨૦૨૫ ની સભાનાં ઠરાવ ક્રમાંક: ૧૦૩ થી મંજૂર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

બિડાણ: ઉપર મુજબ

ક્રમાંક:ઓથો./પરિપત્ર/સિલેબસ/૧૨૧૮૨/૨૦૨૫
તા.૨૬-૦૫-૨૦૨૫

Wifer
કુલસચિવ

પ્રતિ,

- ૧) યુનિવર્સિટી સંલગ્ન વિજ્ઞાન વિદ્યાશાખા હેઠળની તમામ કોલેજોનાં આચાર્યશ્રીઓ.
.....આપશ્રીની કોલેજના સંબંધિત શિક્ષકોને જાણ કરી અમલ કરવા સારું.
- ૨) ડીનશ્રી, વિજ્ઞાન વિદ્યાશાખા.
- ૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.
.....તરફ જાણ તેમજ અમલ સારું.



Veer Narmad South Gujarat University

Surat

Vocational Course for Certificate

After completion of First Year B. Sc

Basics of Wastewater Treatment (04 Credits)

As per NEP 2020

(Effective from June 2025)

B. Sc. (Microbiology)

Vocational Course (MB-VOC-101)

Course Code	Course Title	Course Credit	Teaching Schedule Hrs./ week	External Marks	Internal Marks	Total Marks	Duration of external exams
MB-VOC-101	Basics of Wastewater Treatment	03	03	38	37	75	1.30 hrs.
MB-VOCP-101	Practicals	01	02	13	12	25	3.00 hrs.

MB-VOC-101

Course code	MB-VOC-101
Course title	Basics of Wastewater Treatment
Course type	Vocational course
Course credits	03 Theory + 01 Practical

COURSE CONTENT:

- This course introduces students to the fundamentals of wastewater treatment and management. It covers the characteristics of wastewater along with key treatment processes such as primary, secondary, and tertiary treatment.
- Students will learn about the functioning of wastewater treatment plants (WWTPs) and gain hands-on experience in analysing basic physical and chemical properties of wastewater.

COURSE OUTCOME: CO1

- Students will be able to understand the sources, types, and fundamental properties of wastewater, and understand the need for wastewater treatment.

COURSE OUTCOME: CO2

- Students will be able to understand the working primary, secondary, and tertiary treatment processes in a wastewater treatment plant.

COURSE OUTCOME: CO3

- Students will be able to understand basic physical and chemical analyses of wastewater (pH, Alkalinity, TSS, TDS).

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						

Basics of Wastewater Treatment Process

UNIT 1	Introduction to waste water management
1.1	Water pollution and waste water
1.2	Characteristic of waste water
1.3	Classification of waste water treatment method
1.4	Microbial characteristic of waste water

UNIT 2	Treatment processes in waste water treatment plant
2.1	Waste water treatment and disposal
2.2	Primary treatment
2.3	Secondary treatment
2.4	Tertiary treatment
UNIT 3	Basic Physico-Chemical Analysis of Wastewater
3.1	Sampling and analytical procedure
3.2	Physical properties: Sources of physical properties
3.3	Solids
	3.3.1 Total suspended solids
	3.3.2 Total dissolve solids
3.4	Inorganic nonmetallic constituent : Sources of Inorganic constituent
	3.4.1 pH- Acidity
	3.4.2 Alkanity

PRACTICALS
MBP-VOC-101

1. Determination of pH of water sample.
2. Estimation of Total Suspended Solids (TSS) water sample.
3. Estimation of Total Dissolved Solids (TDS) water sample.
4. Determination of Alkalinity in water Sample.
5. Field Visit to Industrial or Sewage Effluent Treatment Plant.

Recommended Learning Resources:

1. Metcalf & Eddy, Inc. (2014). Wastewater Engineering: Treatment and Resource Recovery (5th ed.). McGraw-Hill Education.
2. Pelczar, M.J., Chan, E.C.S., & Krieg, N.R. (2001). Microbiology, McGraw-Hill Education.
3. Willey, J.M., Sherwood, L.M., & Woolverton, C.J. (2017). Prescott's Microbiology (10th ed.). McGraw-Hill Education.
- 4 Central Pollution Control Board (CPCB). (2007). Manual on Water and Wastewater Analysis. Ministry of Environment, Forest and Climate Change, Government of India, New Delhi.



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Surat

Vocational Course for Diploma Degree
After completion Second Year B. Sc
Basics of Wastewater Treatment (04 Credits)
As per NEP 2020
(Effective from June 2025)

B. Sc. (Microbiology)

Vocational Course (MB-VOC-201)

Course Code	Course Title	Course Credit	Teaching Schedule Hrs./ week	External Marks	Internal Marks	Total Marks	Duration of external exams
MB-VOC-201	Probiotic drinks at home	02	02	25	25	50	1.00 hrs.
MB-VOCP-201	Practicals	02	04	25	25	50	6.00 hrs.

MB-VOC-201

Probiotic Drinks at Home

COURSE CODE	MB-VOC-201
COURSE TITLE	PROBIOTIC DRINKS AT HOME
COURSE TYPE	Vocational course
COURSE CREDITS	02 Theory + 02 Practical

COURSE CONTENT:

- This course introduces students about the probiotic drinks having ancient roots but are considered relatively newcomer to the healthy drink menu. It covers information regarding health benefits as well as targeting as an energy source and body detoxification.
- They provide an amazing source of energy, can aid in detoxification and boost overall health. It highlights the preparation of probiotic rich drinks by mixing some water, sugar and fresh ginger. Likewise many such recipes at home can be created and even converted to a small scale business too.

COURSE OUTCOME: CO1

- To understand importance of probiotics in our daily life to improve gut health.
- To learn basics of probiotic fermentation at home.

COURSE OUTCOME: CO2

- To learn making of some basic home recipes of fermented probiotics.

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						

UNIT 1	GAINING GOOD HEALTH WITH PROBIOTICS
1.1	Probiotics and prebiotics
1.2	Gut health: Digestion, Immunity, Emotional well being
1.3	Methods of fermentation
1.4	Basics of fermentation
1.5	Healthy fermentation
1.6	The fermentation kitchen

UNIT 2	FERMENTED PROBIOTIC RECIPES
2.1	Introduction to fermentation using a culture
2.2	Fermentation guidelines, to check readiness for bottling and troubleshooting for making of: Water Kefir and coconut water kefir,
2.3	Milk kefir, Kombucha, Jun
2.4	Introduction to wild fermentation
	Fermentation guidelines, to check readiness for bottling and troubleshooting in making of: Beet kvaas, Pineapple tepache, Ginger bug, Honey mead

PRACTICALS MB-VOCP-201

1. Preparation of basic water kefir.
2. Preparation of basic milk kefir.
3. Preparation of basic kombucha.
4. Preparation of basic Jun.
5. Preparation of basic beet kvaas.
6. Preparation of basic pineapple tepache.
7. Preparation of basic ginger bug.
8. Preparation of basic honey mead.

COURSE OUTCOME:

- Students shall gain a comprehensive understanding of importance of probiotics in gut health and the principles of probiotic fermentation.
- Students shall develop proficiency in the making of some fermented probiotics.

REFERENCES:

- Evans F., (2018). Fermented probiotic drinks at home, The experiment, LLC publisher.
- Tamang, J. P. & Kailasapathy, K., (2010). Fermented foods and beverages of the world. CRC Press.
- Puniya, A. K. (2015). Fermented milk and dairy products. CRC Press.
- Cruz, A. G. da, Silva, M. C., Pimentel, T. C., Esmerino, E. A., & Verruck, S. (2023). Probiotic foods and beverages: Technologies and protocols. Springer. <https://doi.org/10.1007/978-1-0716-3187-4>.