J.S. University, Shikohabad

Established by UP Govt. Act No. 07 of 2015

Recognized by U.G.C. under section 2 (f) of Act-1956

Value Added Course

(Industrial Waste Treatment & Management)

(VAC-067)

Department of Chemistry

	J.S. University, Shikohabad Department of Chemistry	Value Added Course AY: 2019-2020

Industrial Waste Treatment & Management: VAC-067

Learning Objective:

This Course will provide knowledge of **Industrial Waste Treatment & Management:**

Duration: **30 Hours**

Course Outcomes: -

After completion of the course the student shall be able to:-

CO-1 Utilization of purification methods for waste water remediation.

CO-2 Examine the waste and hazardous waste.

CO-3 Removal of heavy metal and biological pollutant from water body.

CO-4 Knowledge of biotechnological treatment, purification of water and water management.

	J. S. University, Shikohabad Department of Chemistry	Value Added Course AY: 2019-2020

Syllabus Outline: VAC-067

1. Module I **(08 hours)**

Technics and Treatment Process of Waste Water

Industrial Waste Water Treatment Technology, types of treatment physical, chemical and biological. Treatment levels Primary (Sedimentation, Filtration, Grit removal etc), Secondary (Trickling filter, rotary drum reactor, aerobic and anaerobic treatment), Tertiary Treatment (Adsorption, advanced oxidation etc). Strategies for Industrial water recycle and reuse.

2. Module II **(08 hours)**

Solid Waste Management

Types of waste, management of solid waste, treatment and disposal of non-hazardous solid waste (landfills, scrubbing, flue gas cleaning, incineration, heat drying, wet oxidation, biodegradation etc), treatment of hazardous waste, E-waste treatment.

3. Module- III **(07 hours)**

Biosorption of Metals

Introduction, heavy metals, Biosorption by fungi, algae and bacteria, factors affecting biosorption, bioreactors for Biosorption- Packed bed reactor, fluidized bed reactor, rotating disc reactor, sequential reactor.

4. Module-IV **(07 hours)**

Biotechnological Intervention in Environmental Management

Biotechnological application to the management of environment- Composting, Carbon Sequestration, Bioenergy and biofuels, anaerobic digestion for methane production, factors affecting biogas production.

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Books Recommended:

1. Environmental Chemistry by AK Dc
2. Environmental Biotechnology by Indu Shekhar Thakur
3. Bioconversion of waste to industrial products, Editors: A. M. Martin ISBN: 978-1-4613- 7668-2 (Print) 978-1-4615-5821-7

(Name of Faculty)	(Name of Faculty)	(Name of Faculty)
Course Coordinator	Dean Academics	Director/Principle/Dean of Faculty/Department
Dr. Vani Mittal Sharma	Dr. AK Dikshit	Dr. B. P. S Chauhan