ME 823 - SECONDARY AND TERTIARY EFFLUENT TREATMENT PROCESSES

UNIT I: Suspended Growth Biological Treatment Processes

Activated Sludge Process - Wastewater Characterization - Processes for BOD removal and Nitrification - Denitrification Processes - Processes for Biological Phosphorous removal - Selection and Design of Physical Facilities for Activated-Sludge Processes

UNIT II: Attached growth and Combined Biological Treatment Processes

Trickling Filters - Rotating Biological Contactors - Combined Aerobic Treatment Processes Activated Sludge Fixed Film Packing - Submerged Attached Growth Processes - Attached Growth Denitrification Processes

UNIT III: Advanced Wastewater Treatment Processes

Depth Filtration; Selection and Design Considerations - Surface Filtration - Membrane Filtration Processes - Adsorption - Gas Stripping - Ion Exchange - Advanced Oxidation Processes - Distillation

UNIT IV: Disinfection Processes

Regulatory Requirements for Wastewater Disinfection - Disinfection Theory - Disinfection With Chlorine - Disinfection With Chlorine Dioxide – Dechlorination - Design of Chlorination and Dechlorination Facilities - Disinfection With Ozone - Ultraviolet(UV) Radiation Disinfection

UNIT V: Issues Related to Treatment- Plant Performance

Treatment Process Reliability and Selection of Design Values - Odor Management - Upgrading Wastewater Treatment Plant Performance - Important Design Considerations

References:

1. Metcalf & Eddy Inc: Reviewed by George Tchbanoglouf: "Wastewater Engineering" 4th Edition, McGraw-Hills publication;
2. Mackenzie L Davis, "Water and Wastewater Engineering", McGraw-Hill publication , 2010
3. Cheremisinoff & Nicholas.P : "Handbook of Water and Wastewater Treatment Technologies" Elsevier