

Introduction

Class objectives

- Understand the background, theories, techniques, and applications of biological approaches for the management of water, soil, and solid waste.
- Obtain in-depth knowledge on the biological approaches applied for wastewater treatment, study current issues of research, and discuss the future direction of research and applications.

Biological Processes in Environmental Eng.

- Office hour: Fri 5:00 – 6:00pm, 35-307
- Email: ychoi81@snu.ac.kr
- Course material/textbook:
 1. Lecture notes
 - Will be uploaded at eTL website by 10AM on class dates
 2. Rittmann & McCarty, Environmental Biotechnology: Principles and Applications

Student presentation & paper discussion

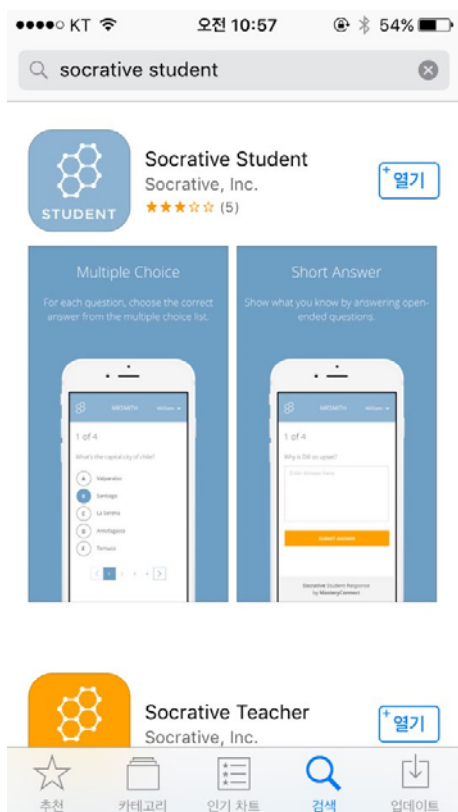
- Only one exam for this class? But...
- One of the student leads the class
- Topic & paper selection & posting
 - Select a topic & a paper (relevant to the class!) and submit a brief presentation plan to me (ychoi81@snu.ac.kr) at least **3 business days prior to the class assigned** (Tue class → Thu; Thu class → Mon)
 - Post the paper link to eTL at least **2 business days prior to the class assigned** (Tue class → Fri; Thu class → Tue)

Student presentation & paper discussion

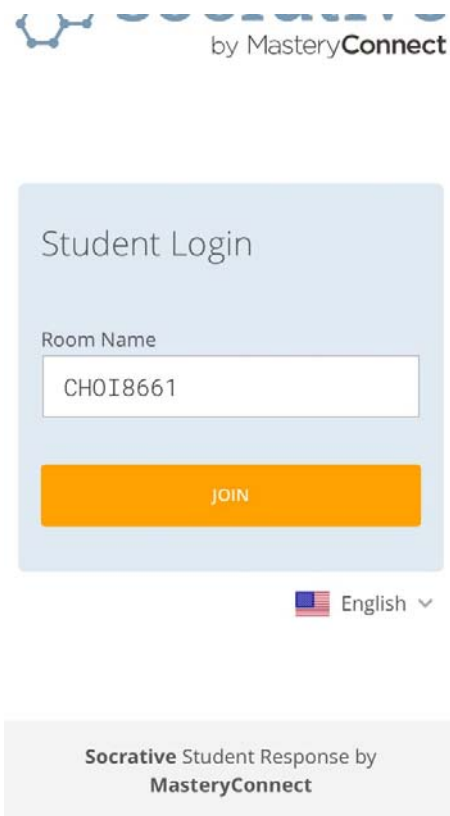
- Contents
 - General background on the selected topic
 - Critical review of the selected paper
 - Provide >3 discussion points to facilitate student discussion
 - Presentation (20 min) + Discussion (30+ min)

Quiz

- Every class – use “Socrative” App



Download & install Socrative Student App



Use “**CHOI8661**” as Room Name to login

Quiz



Enter your name

DONE



Enter your name



1 of 1

What is the exact title of this class?

- A Biological phenomena
- B Biotechnical engineering
- C Environmental engineering seminar
- D Biological processes in environmental engineering



Submit answer

Application of biological processes

- Bioreactors: provide a controlled environment for the growth and maintenance of complex, self-assembled microbial communities that perform ecologically critical functions

Application of biological processes

- Wastewater treatment – secondary treatment



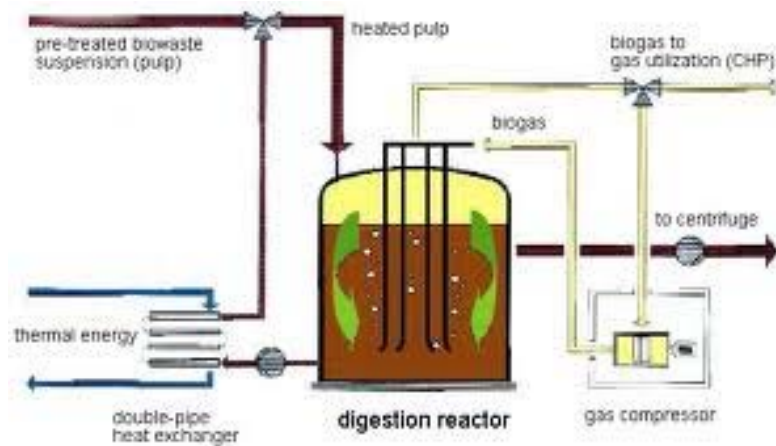
activated sludge



trickling filter

Application of biological processes

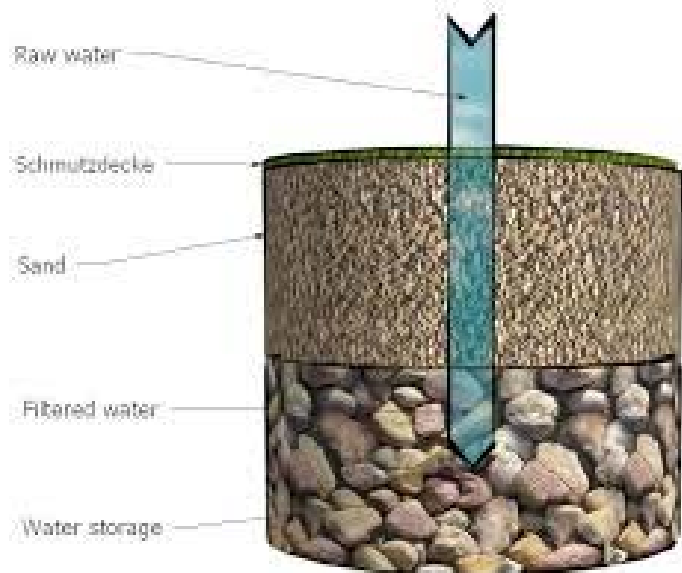
- Wastewater treatment – sludge treatment



anaerobic digestion

Application of biological processes

- Drinking water treatment



slow sand filtration



biological AC treatment



Application of biological processes

- Soil and groundwater treatment

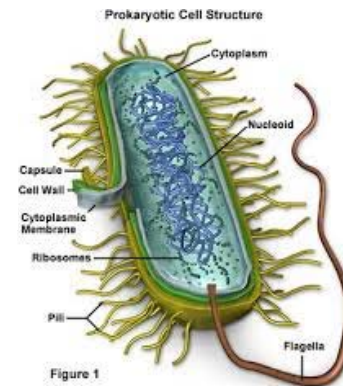
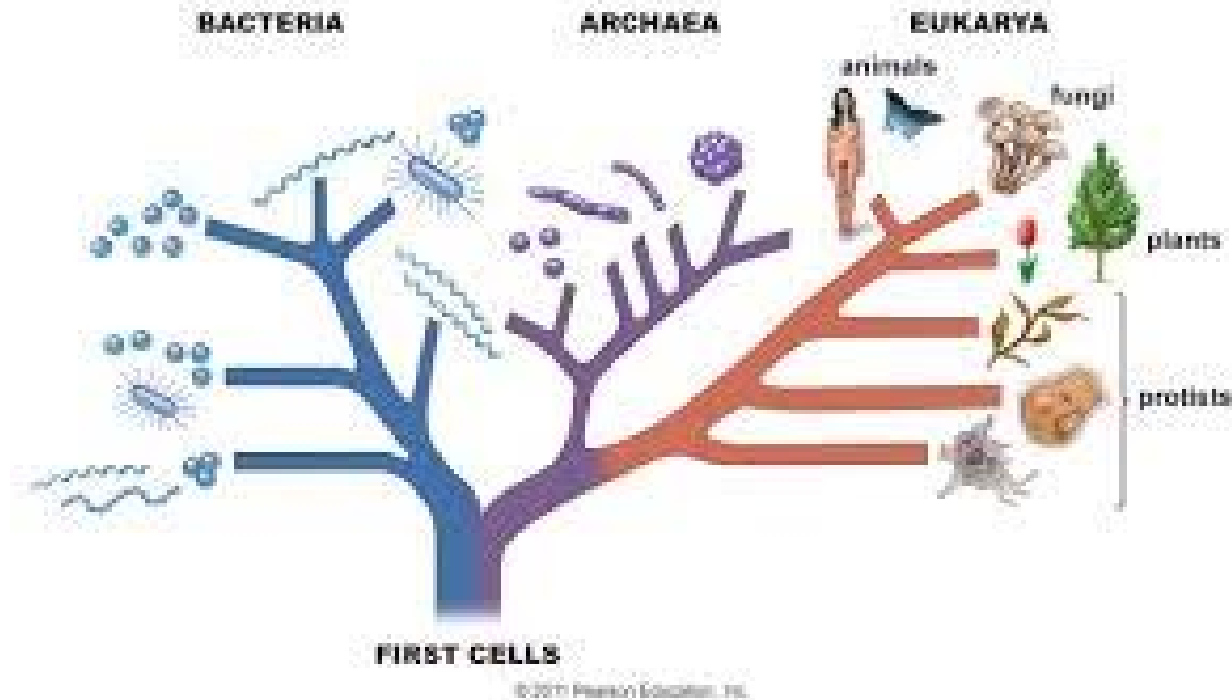


landfarming



biostimulation

The main player



bacteria