

# BSC 561B

## Bioremediation

### Courses Syllabus: Summer, 2022

Instructor: Dr. Lin Guo

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Phone: 903-886-5371

**Classroom: blended class**

**Text Book:**

Office location: Science building 234

Office hr: 8:00–5:00 pm M-F

Fax: 903-886-5997

**Time: 7/11/22-8/11/22**

No book is required. The teaching materials or link of resources are provided in D2L.

**Course Description:**

Bioremediation is the applications of living organisms (e.g. plants and microorganisms) to remediate contaminated soils and waters. Microorganisms can degrade toxic compounds to less toxic or non-toxic compounds; plants can uptake or immobilize toxic contaminants to prevent pollutants from entering non-contaminated areas. Further, microorganism and plants may interact with each other to enhance the bioremediation efficiency.

As an introduction course, it includes an overview of the bioremediation process; describe the typical bioremediation strategies for contaminated environment; explore the applications of bioremediation technologies; discuss the factors that influence the bioremediation rates; and introduce success cases in the application of bioremediation technology to contaminated sites

**Instructional Method:**

Lecture, discussion, quizzes and papers; Blended course, part time online part time face to face.

**Learning Objectives:**

Upon completion of this course you should be able to:

1. Understand the nature and importance of bioremediation;
2. Know the influence of site characteristics to bioremediation rates;
3. Have a knowledge of the impacts of contaminant characteristics to bioremediation process;
4. Understand the use of bioremediation in real world applications;

<b>Evaluations:</b>	quizzes	50 points	A $\geq$ 90%
	Term-paper	50 points	B $\geq$ 80%
	Discussions	50 points	C $\geq$ 70%
	Total	150 points	D $\geq$ 60%

**Quizzes:** please complete quizzes after studying the lecture of **some units**.

**Term-paper:** Write a term paper to discuss a case study of bioremediation project; In this paper, you will need to introduce the background of the project, the details of the project (i.e. the strategies of bioremediation), the results of the project, and the suggestions for future; Use 12 pt font, 1.5 line spacing; Number your pages (more than 3 pages); Due on or **before 5 pm on Aug 11;**

**Discussion:** Participate in the online discussions. Post your own thoughts. Post at least one comment to each question posed by the instructor. Read the postings of others and respond (at least two peer review responses are needed). Your level of participation - both quantity and quality - is part of your participation grade. Discussions will open for one week. It will close at midnight of Friday. I encourage you to do it as earlier as possible.

**All the assignments are expected to be submitted on time.**

**Topics:**

- July 11-15: Overview
  - Introduction of bioremediation
  - Process of bioremediation
- July 18-22: Hazardous pollutants
  - Methods of Wastewater treatment
  - Bioremediation of wastewater
- July 25-29: Bioremediation of contaminated soil
  - in situ bioremediation of soil
  - Ex situ bioremediation of soil
- Aug 1-11: Treatment of common contaminants
  - Bioremediation in practice

**University Procedures:****TAMUC Attendance:**

**The teaching/learning materials will be posted in D2L. Students can access to those materials anytime. However, all the assignments are expected to be finished on time.**

**“A&M-Commerce requires the use of face-coverings in all instructional and research classrooms/laboratories. Exceptions may be made by faculty where warranted. Faculty have management over their classrooms. Students not using face-coverings can be required to leave class. Repetitive refusal to comply can be reported to the Office of Students’ Rights and Responsibilities as a violation of the student Code of Conduct. “**

**“Students should not attend class when ill or after exposure to anyone with a communicable illness. Communicate such instances directly with your instructor. Faculty will work to support the student getting access to missed content or completing missed assignments.”**

**Students with Disabilities:**

The Americans with Disabilities Act (ADA) prohibits discrimination against people with disabilities in employment, transportation, public accommodation, communications, and governmental activities.

If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services, Texas A&M University-Commerce

Gee Library- Room 132

Phone (903) 886-5150 or (903) 886-5835 Fax (903) 468-8148 Email: Rebecca.Tuerk@tamuc.edu

Website: Office of Student Disability Resources and Services

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

**Academic Integrity:**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

Graduate Student Academic Dishonesty 13.99.99.R0.10

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

**Nondiscrimination Notice:**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

**Student Conduct:**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.

<http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: Netiquette <http://www.albion.com/netiquette/corerules.html>

**Early Intervention for First Year Students:**

Early intervention for freshmen is designed to communicate the University's interest in their success and a willingness to participate fully to help students accomplish their academic objectives. The university through faculty advisors and mentors will assist students who may be experiencing difficulty to focus on improvement and course completion. This process will allow students to be knowledgeable about their academic progress early in the semester and will provide faculty and staff with useful data for assisting students and enhancing retention. Grade reports will be mailed by the end of the sixth week of the semester.

**Campus carry rules:**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to (<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>) and/or consult your event organizer). Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the

University Police Department at 903-886-5868 or 9-1-1.

### **Technology Requirement**

#### **D2L Access and Log in Information**

This course will be facilitated using D2L, the learning management system used by Texas A&M University-Commerce. To get started with the course, go to myLeo, then select Apps, and then select myleo online (D2L Brightspace).

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

If you are having technical difficulty with any part of D2L Brightspace, please contact Brightspace Technical Support at 1-877-325-7778.

#### **Interaction with Instructor Statement**

If you have questions pertaining to the content of this course, please contact me via email. Generally, emails will be answered within 24 hrs. If I can not answer emails on time, I will let you know in advance.