

Fall 2019

# EVSC 484-101: Environmental Analysis

Pradyot Patnaik

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## Chemistry: *Fall 2019 Course Syllabus*

**NJIT Academic Integrity Code:** All students should be aware that the Department of Chemistry & Environmental Science (CES) takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

### COURSE INFORMATION

**Course Description:** Environmental Analysis EVSC 484 and 612 courses are designed to acquaint students to identify and quantitatively measure pollutants at trace levels of concentrations in environmental matrices including, waters, soils, sediments and air. These courses include a wide range of topics such as, the errors and statistics in microanalysis, instrumentations used to measure organic and inorganic pollutants, techniques applied for authentic identification of pollutants and their quantifications, and their extractions from sample matrices and purifications. Also, the topics would involve in-depth discussions on the concepts, chemistry and techniques applied in such trace chemical analysis. There will be labs in which students will be exposed to using instrumentations and techniques in such measurements.

**Prerequisites:** Students must have an in-depth understanding of general chemistry.

#### Course-Section and Instructors

Course-Section	Instructor
Environmental Analysis CRN 92799/92801 - EVSC 484/612	Prof. Pradyot Patnaik and Dr. Mustansar Hussain

**Office Hours for All Chemistry & Environmental Science Instructors:** [Fall 2019 Office Hours and Emails](#)

#### Required Textbook:

<b>Title</b>	Environmental Chemical Analysis
<b>Author</b>	Somenath Mitra, Pradyot Patnaik and Barbara B. Keccakus
<b>Edition</b>	2nd Edition, 2018
<b>Publisher</b>	CRC Press
<b>ISBN#</b>	978-0-8493-3838-0 (paperback)

**University-wide Withdrawal Date:** The last day to withdraw with is Monday, November 12, 2019. It will be strictly enforced.

### POLICIES

**All CES students must familiarize themselves with, and adhere to, all official university-wide student policies. CES takes these policies very seriously and enforces them strictly.**

**Grading Policy:** The final grade in this course will be determined as follows:

Exam 1	100 points
Exam 2	100 points
Project Report	50 points
Lab Experiment Reports and Homework Assignments	100 points

Your final letter grade in this course will be based on the following tentative curve:

A	90 % and above	C	50 to 59 %
B+	80 to 89 %	D	40 to 49 %
B	70 to 79 %	F	Below 40 %
C+	60 to 69 %		

**Attendance policy:** Attendance at classes will be recorded and is **mandatory**. Each class is a learning experience that cannot be replicated through simply “getting the notes.”

**Homework Policy:** Homework is an expectation of the course. The home work problems set by the instructor are to be handed in for grading and will be used in the determination of the final letter grade as described above.

**Exams:** There will be two exams. In addition, students will have to write papers on any one of the assigned topics. The lab reports will be due after each lab. The exam periods are tentative and therefore possibly subject to change:

Exam 1	Mid-October, 2019
Exam 2, Submission of papers	December, 2019
Labs, Lab Reports and/or Lab Quiz	November - December, 2019

**Make-up Exam Policy:** There will normally be **NO MAKE-UP EXAMS** during the semester. In the event that a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor’s note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade.

**Cellular Phones:** All cellular phones and other electronic devices must be switched off during all classtimes. Such devices must be stowed in bags during exams or quizzes.

## ADDITIONAL RESOURCES

**Chemistry Tutoring Center:** Located in the Central King Building, Lower Level, Rm. G12. Hours of operation are Monday - Friday 10:00 am -6:00 pm. For further information please click [here](#).

**Accommodation of Disabilities:** Office of Accessibility Resources and Services (*formerly known as Disability Support Services*) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director at the Office of Accessibility Resources and Services at 973-596-417 or via email at [lyles@njit.edu](mailto:lyles@njit.edu). The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Office of Accessibility Resources Services office authorizing your accommodations will be required.

For further information regarding self-identification, the submission of medical documentation and additional support service provided please visit the Accessibility Resources and Services (OARS) website at:

- <http://www5.njit.edu/studentuccess/disability-support-services/>

Important Dates (See: [Fall 2019 Academic Calendar, Registrar](#))

Date	Day	Event
September 3, 2019	T	First Day of Classes
September 13, 2019	F	Last Day to Add/Drop Classes
November 11, 2019	M	Last Day to Withdraw
November 26, 2019	T	Thursday Classes Meet
November 27, 2019	W	Friday Classes Meet
Nov 28-Dec 1, 2019	R-Su	Thanksgiving Break-University Closed
December 12, 2019	R	Last Day of Classes
December 13, 2019	F	Reading Day
December 14-20, 2019	F-R	Final Exam Period

## Course Outline

Lecture	Section	Topic	Assignment
1		Pollutants in the environment, sources, errors in analysis	
2		Wet methods: spectroscopic and titrimetric methods	
3		Gas chromatography: columns, detectors and concepts	
4		Sample extraction technique, removal of interference	Project topics will be assigned
5		Liquid chromatography and ion chromatography	
6		Atomic spectroscopy: flame and furnace atomic absorption	
7		<b>Exam 1</b>	
8		Safety, general laboratory rules, report writing	
9		Lab: sulfate analysis by spectrometry	

10		Lab: pH, conductivity and titration	
11		Lab: chemical oxygen demand	
12		Lab: determination of chromium (III) and chromium (VI)	
13		<b>Exam 2 and Submission of Project Report</b>	
14		Lab: determination of lead by atomic spectroscopy	
15		Lab: volatile organic compounds by GC; check out	
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Department of Chemistry & Environmental Sciences  
Course Syllabus, Fall 2019*

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