

**University of Maryland Baltimore County**  
**Department of Civil and Environmental Engineering**

**Physicochemical Processes (3 credit hours)**

**Course Overview:** In this course the physicochemical processes that control the fate of contaminants in engineered and natural systems will be discussed. Physicochemical phenomenon will first be introduced from a phenomenal standpoint then their application in engineered and natural systems discussed. The student at the end of the course will be able to understand the basic physicochemical/ phenomena that control the fate of pollutants in the environment.

**Prerequisites:** CHEM 101, CHEM 102, MATH 225

**Lecture Day/Time/Room:** TBA

**Instructor:** Brian E. Reed

**Office:** 278 TRC Building

**Phone:** 410 455 8649, email: reedb@umbc.edu

**Office Hours:** TBA

**Required Text:**

*Wastewater Engineering: treatment, Disposal, Reuse.* Metcalf and Eddy, 3d Edition, McGraw Hill, 1991.

**Supplemental Texts:**

*Water Quality and Treatment*, AWWA, 4<sup>th</sup> Edition, McGraw Hill, 1990

*Unit Operations and Processes in Environmental Engineering*, Reynolds and Richard, 2<sup>nd</sup>

**Reference Texts:**

Supplemental readings (library): journal articles, handouts, etc.

**Grading Policy:**

Exams: 75% (3 at 25 %)

Homework and Journal Reviews : 25%

**COURSE OUTLINE**

<b>Week No.</b>	<b>Topic</b>
1-3	Water and Wastewater Quality, Reactions, Reaction Kinetics, Reactor Analysis
4-5	Coagulation-Flocculation
6-7	Gravity Separation
7-8	Filtration
9-10	Adsorption
11	Ion Exchange
12-13	Gas Transfer
14-15	Disinfection
16	Membranes