



**Florida Gateway College  
Water Resources Department  
EVS 1026C Chemistry and Biology of Natural  
Waters**

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**COURSE NUMBER/NAME:** EVS 1026C- 011 Chemistry and Biology of Natural Waters

**DATE:** Fall 2020

**INSTRUCTOR:** Janet Bargar, M.S.  
Department of Water Resources  
Building 30 Room 007E  
Phone: (386) 754-4484  
Email: [janet.bargar@fgc.edu](mailto:janet.bargar@fgc.edu)

**OFFICE HOURS AND CALL HOURS:** Campus: Monday - Thursday (11:20am-12:20pm)  
Virtual: Monday – Thursday (8:15am-9am)  
Appointment

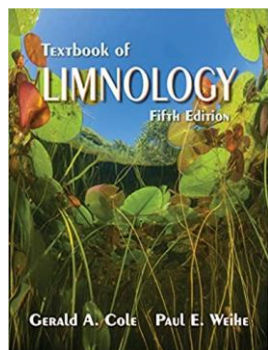
**DELIVERY METHOD:** On-line via the Canvas Learning Platform

**LEARNING ACTIVITIES:** Weekly discussions, lab assignments, lab final, midterm exam, and final exam.

**COURSE DESCRIPTION:**

This course introduces the biological and chemical processes present in water and wastewater treatment systems. It emphasizes the unit operations and analysis of water and wastewater treatment processes. Attention is placed on the assessment of natural waters with regard to raw water quality and the impact of wastewater effluent.

**REQUIRED READINGS/TEXTBOOKS:**



*Textbook of Limnology, 5<sup>th</sup> edition*  
Gerald A. Cole and Paul E. Weihe  
Hardcover ISBN: 978-1478623076

**CONTENT AND SCOPE:**

1. Scientific Method
2. Chemistry & Biology: the basics, inorganic and organic molecules as related to biological organisms
3. The Cell: structure, function, and differences of cell structure in organisms
4. Metabolism: basic concepts, cellular respiration, and photosynthesis

5. Biology of wastewater treatment and aquatic environments
6. The chemistry of water treatment and aquatic environments

### **COURSE OBJECTIVES (Learning Outcomes):**

#### 1. Critical Thinking:

- Student will demonstrate the ability to question and evaluate information (data, ideas or concepts) for accuracy, objectivity and quality.
- Student will demonstrate the ability to analyze information (data, idea or concepts) in context to draw appropriate and well supported conclusions.
- Student will demonstrate the ability to synthesize ideas from a variety of sources producing an original product.

#### 2. Scientific Reasoning:

- Student will demonstrate an understanding of fundamental scientific principles and their application to scientific research and to society.
- Student will demonstrate the ability to utilize and apply technological data to understand natural phenomena.
- Student will demonstrate the ability to apply these steps of the scientific method to solve problems by:
  - Observation of natural phenomena
  - Interpretation of the natural phenomena through formulation of a hypothesis, which is a tentative explanation of the observed phenomena
  - Acquisition of scientific data through experiment or continued observation
  - Formulation of a conclusion to explain the results obtained and be able to modify that conclusion when new data is collected
  - Student will demonstrate the ability to integrate ideas and concepts from different disciplines.
- Demonstrate the ability to identify and evaluate scientific information based on methodology and models to evaluate information on biological phenomena
- Demonstrate and apply the scientific method to identify an issue for experimentation/ research and be able to evaluate, draw inferences, and recognize limitations of models to develop ideas for an original product
- Demonstrate an understanding of proper lab techniques including the proper use of equipment and materials to facilitate an understanding of principles in biology
- Analyze the data by applying scientific quantitative methods to biological phenomena
- Interpret, draw conclusion and recognize limitations from scientific models such as formulas, graphs, tables, and schematics
- Demonstrate and apply knowledge of the major concepts in Biology and Chemistry and integrate the information into a structured understanding and awareness of biological processes and the effect on society.

### **Upon successful completion of this course, the student should be able to:**

1. Describe the nature of environmental systems
2. Explain and apply the fundamentals of environmental chemistry
3. Describe the molecular building blocks of organisms
4. Differentiate among the types of energy and recite the basics of energy flow
5. Distinguish photosynthesis from respiration and summarize their importance to living things
6. Define ecosystem and evaluate how living and non-living entities interact in ecosystem level ecology
7. Outline the fundamentals of ecology
8. Compare and contrast how carbon, phosphorus, nitrogen and water cycle through environment
9. Describe microorganismal metabolic diversity, habitat variety, symbiosis
10. Outline soil microbiology and biogeochemical cycles such as carbon cycle, nitrogen cycle, sulfur cycle, phosphorus cycle

11. Explain the degradation of synthetic chemicals in soil and water
12. Describe the processes involved in aquatic microbiology and sewage treatment including biofilms, aquatic microorganisms, the role of microorganisms in water quality
13. Describe the chemistry of water treatment
14. Describe the biology of wastewater treatment
15. Explain ecosystem structure and dynamics including ecosystem alteration from upset chemical cycling and nutrient effects on freshwater and marine ecosystems

**GRADING SCALE & EVALUATION:**

Letter Grade	A	B+	B	C+	C	D+	D
Percentage Points	90-100	85-89	80-84	75-79	70-74	65-69	60-64

**Module 1 (5%):** Introductory materials.

**Weekly Discussions (25%):** Questions will be posted related to the chapters.

**Labs (20%):** Lowest grade dropped.

**Lab Final Exam (10%):** As scheduled. There is no makeup.

**Midterm Exam (15%):** As scheduled. There are no makeups.

**Course Final Exam (25%):** As scheduled. There is no makeup.

If there is a problem with the course, please discuss it with me. If you require accommodations for a disability, please see me as soon as possible.

**COURSE POLICIES**

**Class Structure and Deadlines:**

This is an online course using Canvas as the learning platform. The course is conducted in 15 one-week modules. Each module begins Monday at midnight and ends Sunday at 11:59 pm. Make sure to be an active participant in the course at least four days during the week. The deadlines for assignments are as follows:

- Discussion Initial Post – No later than Wednesday by 11:59 pm for full credit. The topic and description will be posted by Monday at 8:00am EST. You can also refer to your syllabus for information on the specific week.
- Discussion Response Posts – All responses to be concluded by Sunday at 11:59 pm for full credit. Remember, you must be an active participant in the discussion forum at least four days from Monday through Sunday to get full credit!
- Assignments – Submitted no later than Sunday by 11:59 pm.
- Quizzes and Exams – Completed no later than Sunday by 11:59 pm. Students will not have the opportunity to make up quizzes and exams.

All course requirements must be completed by the final Sunday of the course unless otherwise indicated and approved by the instructor.

## **Attendance/Participation Policy**

Online attendance is required. It is mandatory to visit the online classroom to participate in discussions, submit assignments, take quizzes, and check for announcements. The discussion forum is equal to "attending class." You are expected to log in and participate in discussions as well as participate in any assigned group work. If you are not able to participate during a given week due to personal or professional circumstances, arrangements must be made with the Instructor prior to the absence or as immediately as possible when the absence occurs.

If you do not log in and/or are not active in the online classroom (e.g., discussion forum posting(s), assignments, quizzes, etc.) in the first week of class, you will be considered dropped unless prior arrangements are made with the Instructor.

## **Academic Misconduct**

No student shall receive or give assistance not authorized by the instructor in the preparation of any essay, laboratory assignment, examination, or other assignment included in an academic course. No student shall take or attempt to take, steal, or otherwise procure in an unauthorized manner any material pertaining to a class, including but not limited to tests, examinations, laboratory equipment and roll books.

No student shall sell, give, lend, or otherwise furnish to any person material, which can be shown to contain the questions or answers to any examinations given at the College without authorization from the instructor.

You are to behave honorably. Remember that you will only get out of any course what you are willing to put into it. It is permissible for you to assist classmates in general discussions of computing techniques. General advice and interaction are encouraged. However, each person should develop his or her own projects, assignments, and tasks. Students should make themselves aware of the student code of conduct found in the Student Handbook (Links to an external site.). All FGC students are held to a high standard of Ethics and require a clear understanding of such policies.

The consequences of academic misconduct are the following:

- First instance- warning and 50% reduction of the grade for that assignment.
- Second instance- zero on the assignment
- Third instance- behavior reported to the Director of Student Life for student discipline.

## **Late Work**

Assignments are expected to be completed by the due date. Assignments submitted 4 days after the due date will not be accepted. Assignments submitted after the due date will receive a 10% grade deduction per day (24-hour period). In other words, assignments which would have been rated A will be graded as B, or instead of 100%, the grade will be 90%. This policy does not apply to discussion forum postings and replies due to late penalties stated in the grading rubric.

Since life situations come up, you have 2 penalty-free late days to use how you want. For instance, you may use both days for one assignment or one for each of two assignments. These days will be applied to the first late assignment unless you contact the instructor ahead of time that you want to reserve them for later.

Contact the instructor in advance if you are going to be late or miss an assignment. Timely communication is an e-learning best practice. Prior email notice to the instructor in sufficient time to allow for discussing an alternative schedule is required.

The instructor will review late requests and circumstances on a case-by-case basis and make decisions accordingly. If an emergency arises that prevents you from completing your work on time, email the instructor as soon as possible so that arrangements can be made for you to keep up in the class. The late policy may be waived at the instructor's discretion in case of an emergency. Emergencies are defined as anything that is serious and unexpected. Emergencies cannot be written on the calendar in advance. Examples of emergencies are heart attacks, car accidents, a serious health crisis of the student or in the student's immediate family. Examples of non-emergencies are family weddings, vacations, conferences or any other event, which can be planned around. Documentation may be requested.

If a late submission is requested in advance of the due date and the instructor grants an extension, no points will be deducted from the assignment grade.

While technology is great, it also can cause problems when a computer crashes, the Wi-Fi is down, or Canvas is down. It is your responsibility to ensure the assignment submits to the appropriate area in the classroom in Canvas. If technology issues arise, contact me with the following information:

- Name of the assignment.
- Details of the issue.
- A screenshot showing the issue; must include date and time on the device.

Based on the information, the instructor will use their discretion to wave the late penalty. If the required information is not provided, the late policy will be enforced.

### **Plagiarism**

Plagiarism is the unauthorized use of the words or ideas of another, and the representation of them as one's own. Themes, essays, term papers, tests, and other similar requirements must be the work of the student submitting them. When direct quotations are used, they must be indicated and when the ideas of another are incorporated in the paper, they must be appropriately acknowledged. Plagiarism may result in reduced grade, failure of assignment, failure for course, or other actions by the college. Students caught plagiarizing will be given a warning and documentation will be placed on file. Any subsequent misrepresentations of work will result in removal from the program.

If plagiarism is found in any discussion posting or assignment, the following will be instituted:

- First instance- warning and 50% reduction of the grade for that assignment. The student will be required to complete a preventing plagiarism tutorial.
- Second instance- zero on the assignment.
- Third instance- behavior reported to the Director of Student Life for student discipline.

### **EXTRA CREDIT**

There will not be extra credit in this class. You should spend time working on the material assigned and reading your text. If you are not making the grade you'd like to make in the course, please talk to me so I can offer some strategies to help you succeed at learning the material. Do not ask me for extra credit.

## **NOTE**

I hope you enjoy this course as much as I enjoy teaching it. If you are having any problems, questions, or just want to talk, I encourage you to contact me in person, on the phone, or via e-mail. I WANT TO TALK TO YOU!!!! Don't let small problems during the semester grow to a crisis at the end. It's always easier to fix anticipated difficulties than to untangle a mess.

## **EMAIL AND LEARNING PLATFORM ACCOUNTS:**

Student e-mail accounts are created once you are admitted to the college. To set up your email account:

- Go to: [Florida Gateway College website](#) → Students → Student Resources → Student Email Instructions

Check your college email frequently. Your professors, as well as other areas of the College will contact you during the term. This is the official means of communication from the college.

This course will be conducted on-line via the [Canvas Learning Platform](#) in addition to the Pearson Learning Platform. If the above link for Canvas does not work, you can login to Canvas if you visit the college's homepage and click on the MyCourses link. Your Username is your College @wolves email and the Password is your MyFGC pin. Pearson login instructions are found within our Canvas course.

## **FLORIDA GATEWAY COLLEGE INFORMATION**

### **The Student Success Center (SSC)**

The Student Success Center is located in Building 059. SSC offers a variety of resources for students and faculty. The Success Center has over 60 computers with internet and limited free printing for students (50 pages per day, campus-wide). Copies of reference books, textbooks, access to course specific software, and access to tutors for all levels of math and writing are available in the Success Center. Students may submit academic papers to be reviewed by an in-house tutor by emailing to [college.success@fgc.edu](mailto:college.success@fgc.edu). Tutoring for other subjects such as Chemistry, Accounting, Anatomy and Physiology, Physics, Spanish, and Public Speaking is available. Please stop by Building 059 for the current tutor schedule. The center also provides space for students to study in subject specific Learning Groups, which provide opportunities for students to work with a Tutor on particular competencies and to focus on strengthening their foundational skills. SSC offers a PERT preparation Boot Camp for students to strengthen their skills with a personalized study plan. If you have any questions please call (386)754-4479 or 754-4382, or email [robert.dawsonjr@fgc.edu](mailto:robert.dawsonjr@fgc.edu).

SSC also provides 24 hour online tutor services through Tutor.com. This service is accessed directly through students' Canvas courses. Online tutoring is limited to five hours per student per semester. If additional online tutoring time is needed, you must contact Robert Dawson in the Student Success Center by email: [robert.dawsonjr@fgc.edu](mailto:robert.dawsonjr@fgc.edu). Extensions will be granted on a case-by-case review of online tutoring sessions.

The TRiO program is also housed in the Student Success Center offering coaching to enhance, navigate, and simplify the college experience. Qualified students may participate in workshops, travel, individualized tutoring sessions and other educational experiences.

The SSC is open during the following hours:

- Monday – Thursday 8 am to 6 pm (All year)
- Friday 9 am to 4:30 pm (Fall/Spring)
- Saturday 10 am to 2 pm (Fall/Spring)

If you have any questions, you may contact the center by phone at (386)754-4437, 754-4305, or 754-4307, or by email at [robert.dawsonjr@fgc.edu](mailto:robert.dawsonjr@fgc.edu)

### **GradesFirst**

The Student Success Center, located in Bldg. 59, offers early alert to the entire campus through GradesFirst/EAB. Twice during the semester we provide instructors with the opportunity to ALERT students of their course progress. This is done through the FGC Wolves email account. Students may receive an email stating their success may be at risk in a specific course. If you receive this email, DO NOT PANIC. Please contact your instructor directly, your Academic Advisor, and the Student Success Center. Your instructor's information is provided in the email.

Please do not allow yourself to struggle. We are here to help you achieve success. The mission of the Student Success Center is to help encourage and promote your educational journey here at FGC and beyond.

### **Resource Information**

If you think you might benefit from the guidance of a professional counselor for any school, work, or life issue, take advantage of the **free, confidential resources of BayCare Behavioral Health**. If you would like to speak to a Counselor over the phone, please call **(800) 878-5470**. It is a safe and secure way to get short-term counseling (up to 3 sessions) on issues including: managing stress/ school, work or life issues/ relationship issues/ family concerns/ anxiety, depression/ grief, trauma, loss/ self-esteem/ substance abuse. **Counseling sessions are completely confidential**. If you are in the need of additional resources please contact the Director of Student Life, Building 7.

### **Academic Appeal; Grievances; General Complaint**

If a student wishes to file an academic appeal, grievance, or general complaint, please visit the college's website ([www.fgc.edu](http://www.fgc.edu)) for more information. Under Student Resources and Student Complaints/Appeals, information regarding policy, procedure, and forms related to these topics is provided.

### **College Course Withdrawal and Drop Process**

Students who register for classes are responsible for all fees associated with those classes. Students who decide not to attend or wish to withdraw from a class are responsible for dropping or withdrawing from class by the appropriate published date (see [Academic Calendar](#)). Students, who have not been identified by their instructor as never attending, will not be automatically dropped or withdrawn. Any student not dropped or withdrawn by the published dates will remain officially registered, liable for all fees, and assigned an earned grade at the end of the semester.

A course may be dropped only during the published add/drop period. The student may drop the course online through MyFGC or by submitting a form through the office of Enrollment Services. Dual Enrollment students should follow the established dual enrollment drop process.

To withdraw from a course, the student must complete the following before the published withdrawal deadline:

1. Complete the Withdrawal form and submit it to your instructor. The instructor should sign the form and fill in the last date of attendance.
2. The student must then meet with an academic advisor, who will sign the form. (Advising Services, Building 014).
3. Submit the form to the Director of Financial Aid or one of the Director's designees for signature.
4. Take the signed Withdrawal form to the Office of Enrollment Services for processing before the deadline for withdrawal.

A student will be permitted a maximum of two (2) withdrawals per course. Upon the third attempt, the student will not be permitted to withdraw and will receive a grade for the course. Students, who take courses off campus or have extenuating circumstances that prevent submission of Withdrawal form in person, must:

1. Obtain the instructor's authorization and last date of attendance via email
2. Email the advisor a statement requesting a withdrawal from the course and include the instructor's email with the last date of attendance.
3. The advisor will complete a withdrawal form, attach the emails from the student and instructor in lieu of signatures and forward the form to Financial Aid.
4. A Financial Aid representative will complete and sign the form and forward the form to Enrollment Services to be processed.

It is the student's responsibility to ensure that the required documents are submitted to the advisor in sufficient time to be completed by all offices and processed by Enrollment Services prior to the designated withdrawal deadline and to understand all financial and academic implications of the withdrawal. Absence from class or merely notifying the professor does not constitute withdrawal. A student who stops attending class without withdrawing will receive a grade from his/her instructor.

### **Academic Honesty**

Cheating, plagiarism, bribery, misrepresentation, and fabrication are not permitted and will be dealt with severely. Students should make themselves aware of the student code of conduct found in the Student Handbook.

### **Equity and Diversity**

Florida Gateway College does not discriminate in education or employment related decisions on the basis of race, color, ethnicity, national origin, gender, religion, disability, age, marital status, genetic information, sexual orientation, pregnancy, or any other legally protected status in accordance with the law. The equity officer is Sharon Best, Executive Director of Human Resources, Building 001, Room 116, 149 SE College Place, Lake City, FL 32025, and may be reached at [sharon.best@fgc.edu](mailto:sharon.best@fgc.edu) or (386) 754-4313.



## **Disability Statement**

The Office of Accessibility Services (OAS) is a resource for both students with disabilities as well as faculty. Students with disabilities in need of academic accommodations must first be registered with the Accessibility Services Office to verify the disability, establish eligibility, and determine reasonable academic accommodations.

After registering with the OAS, students must request their academic accommodation letters be sent each semester to their instructors. Upon receipt of the letter, the instructor will be available during office hours or via email to discuss the accommodations a student will need during the course.

Students with disabilities who are not registered with the OAS or faculty who may have questions or concerns regarding an accommodation, please contact the office at the following:

In person: Building 14, Room 102  
Phone: (386) 754-4393  
Email: [Accessibility.Services@fgc.edu](mailto:Accessibility.Services@fgc.edu)

## **FERPA Statement**

The Family Educational Rights and Privacy Act (FERPA) provides certain privacy rights to students related to educational records. This information can be found in the College Catalog, at the Office of Enrollment Services in Building 015 or on the College Web site.

## **SACSCOC Statement**

Florida Gateway College is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award the baccalaureate and associate degrees. Contact the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, or call 404-679-4500 for questions about the accreditation of Florida Gateway College.

## **Honorlock Statement**

The college has partnered with Honorlock, an online testing proctoring service. If off-campus remote proctoring is required during any course, Honorlock will be the online proctoring service that allows you to take your exam. You **DO NOT** need to create an account, download software or schedule an appointment in advance. Honorlock is available 24/7 and all that is needed is a computer, a working webcam, and a stable Internet connection.

To get started, you will need to download the Honorlock Chrome Extension using Google Chrome. You can download the extension at [www.honorlock.com/extension/install](http://www.honorlock.com/extension/install). When you are ready to test, log into the LMS, go to your course, and click on your exam. Clicking **Launch Proctoring** will begin the Honorlock authentication process, where you will take a picture of yourself, show your ID, and complete a scan of your room. Honorlock will be recording your exam session by webcam as well as recording your screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device.

Honorlock support is available 24/7/365. If you encounter any issues, you may contact Honorlock by live chat, phone (**844-243-2500**), and/or email ([support@honorlock.com](mailto:support@honorlock.com)).

If you encounter a Canvas issue, please contact Canvas via the Canvas Help menu.

### **COVID-19 Preventative Statement**

The Three W's- For Everyone on Campus

Wash your hands

Watch your distance

Wear your mask

Masks must be worn in classrooms, in hallways and public spaces of the college. As you enter most of the busiest buildings on campus there will be student greeters that will have hand sanitizer for everyone entering the building. Student greeters will also be reminding everyone of the campus requirements of wearing masks, and also about hygiene and wellness. All frequently used buildings will have one entry point.

If you have had close contact (less than 6 feet apart for 15 minutes or more) with someone who has COVID-19, please report this to your instructor or Ms. Rebecca Golden 386-754-4271 **before** attending an on-campus class. As always, follow CDC guidelines recommended [here](#).

**COURSE SCHEDULE:**

<b>MODULE</b>	<b>DATES</b>	<b>TOPIC(S)</b>	<b>COURSEWORK AND ASSIGNMENT(S)</b>
1	August 17-23	Introductions Library Skills Plagiarism	Introduction Library Skills Assessment Plagiarism Assignment Module 3 Lab Syllabus Quiz
2	August 17-23	Introduction Water Properties	Discussion Postings Lab
3	August 24-30	Survey of Limnological Biodiversity The Limnetic Communities	Discussion Postings Lab
4	August 31- September 6	Ecosystems, Energy, and Production	Discussion Postings Lab
5	September 7-13	Shapes and Sizes of Lakes	Discussion Postings Lab
6	September 14-20	Wetlands	Discussion Postings Lab
7	September 21-27	Streams: The Lotic Ecosystem	Discussion Postings Lab
8	September 28-October 4	Review Chapters 1-8	Midterm Exam
9	October 7-11	Light and the Aquatic Ecosystem	Discussion Postings Lab
10	October 12-18	Density, Layering, and Lake Mixing	Discussion Postings Lab
11	October 19-25	Oxygen and Other Dissolved Gases	Discussion Postings Lab
12	October 26-November 1	Carbon Dioxide, Alkalinity, and pH	Discussion Postings Lab

13	November 2-8	The Major Ions in Inland Waters	Discussion Postings Lab
14	November 9-15	Redox, Metals, Nutrients, and Organic Substances	Discussion Postings Lab
15	November 18-24	Review Chapters 1-4, 6-10, 12-15	Final Exam