Chemistry 150
The Chemistry of Emotion & Behavior
Fall 2022

General Information

Course Time and Location: Prerequisites: none

8:00 – 9:20 a.m., TR, Class location: ISC 248

Instructor: Randolph Coleman
Office: ISC room 1289. Please use email to contact me.
E-mail address: racole@wm.edu (include Chem 150 in subject line)
(You are *strongly encouraged* to contact me by email whenever you have a question about the course.)

Please let me know if you have documented disabilities that might affect your performance in this class.

Course Description

This course will explore recent advances in the chemistry, neuroanatomy, and physiology of the brain in an attempt to better understand the biochemical basis for emotion, behavior and personality. We will also develop an understanding of both normal and abnormal brain function related to emotional responses to external stimuli and will explore the role of drugs on mood and behavior. This course satisfies the freshman writing requirement.

Writing Requirement

This class will satisfy the College writing proficiency requirement for students receiving a grade of C- or better. There will be frequent opportunities to write; there will also be frequent opportunities to receive feedback on one's writing, both from other students and from the instructor.

Texts & Other Readings

The books required for the course are:
The Secret World of the Brain by Catherine Loveday
The Distracted Mind by Adam Gazzaley & Larry Rosen
Mapping the Mind (revised and updated) by Rita Carter
Emotional Intelligence (10th anniversary ed.) by Daniel Goleman
Writing in the Biological Sciences (grammar and style handbook) by Angelika Hofmann

At various times there may be short reading assignments from *Scientific American*, *Science, Discovery Magazine*, and other publications; these will be posted on Blackboard.

Course Objectives

*Provide a foundation for more thoughtful understanding of popular science literature.
*Provide you with a foundation of college level writing skills for your success in future courses (and career).
*Provide an opportunity to fulfill the lower-division writing proficiency requirement (grade of C- or better).
*Provide an opportunity to fulfill the Coll 150 requirement (passing grade required).
*Develop your oral communication skills for your success in future courses (and career).
*Develop critical thinking skills necessary to become more responsible for your own learning.

Student Course Responsibilities & Course Policies:

Time commitment: Excelling in college level course work typically requires on average three to four hours per credit per week. Since this is a four credit course, in addition to the time we meet as class each week, you should expect to spend nine to twelve hours on average reading, writing or otherwise preparing for this class on a weekly basis.

Attendance: A good class discussion depends on the participation of all students; therefore your presence in our class meetings is essential. Two unexcused absences (or four late arrivals) will lower your **final** grade by one-third letter grade (eg. A- to B+). Excused absences include those arranged with me beforehand and those accompanied by appropriate written documentation (such as a note from the health center, Dean of Students, or athletic coach). You should have completed all assigned reading before class and bring relevant texts to class meetings. If you are not feeling well, do NOT come to class! Just email me and I will excuse you.

Classroom Behavior: Please remain civil during discussions to promote the open exchange of ideas and foster a culture of open dialogue. Please bear in mind that all students are entitled to their own opinion. You are expected to listen attentively to each person speaking. Please refrain from eating during class.

Breaking News: New information relevant to this seminar appears every day. Relatively reliable sources for this information include:

- National newspapers (e.g. *The New York Times*, *The Washington Post, USA Today, Christian Science Monitor*)
- National news magazines (e.g. *Time*, *Newsweek, U.S. News and World Report*)
- Scientific news magazines(e.g. *Science News*, *Scientific American, Discovery*)
- Digital web sites like *Science Daily* and others mentioned in the Swem Workshop.

The first five to ten minutes of each class session will be spent discussing news items *relevant to the class*. Contributions of breaking news items will be used as a partial basis for the class contribution grade. Two students will be the assigned "News Anchors" at each class meeting. These students will provide an overview of the two most significant/interesting class-related news stories since our last class meeting and coordinate news discussion.

Preparation for class discussions: Unlike most chemistry classes, this will be a seminar class based on informal discussion of the reading assignments. For this reason, it is essential that students come to class ***prepared to discuss the reading.*** Students will be expected to have prepared a document of *discussion points* (NOT questions for the instructor) to be used during class. These discussion point documents are collected at the end of class and are used as a partial basis for the class participation grade.

Journal Club: Each student will be responsible for presenting an overview of an instructor-approved research article to the rest of the class in a scientific journal club format.

> The presenting student will have the responsibility for giving a general overview of the significance of the article; for discussing background material and answering questions; and for directing class discussion of the article. Preparation for this talk will include at least one practice talk to be given beforehand to one or a small group of classmates. Presentations will be expected to take approximately fifteen-to-twenty minutes; focus and clarity will be rewarded. Articles will be chosen by the student ***with approval of the instructor.***
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> All other students must read the article in advance and write a short summary of the article's take-home message; the summaries will count towards the class participation grade. Audience members should be prepared to ask questions at the end of the presentation. *These questions will count toward the class participation grade*.

Writing Assignments: Courses used to satisfy the Lower Division Writing Requirement are required to assign a **minimum of 25 pages** of writing. Instructors are expected to formally evaluate at least 50% of the submitted writing and provide opportunities for students to revise some papers based on instructor feedback. To meet these requirements, writing assignments will be distributed as follows:
Informal writing assignments: These assignments are one paragraph to one page in length. They include written class participation assignments such as the one paragraph overviews of journal club articles and peer feedback of the major paper. They will be graded for content and style on a high pass/pass/low pass/fail basis, with these grades factoring into the class participation grade.
One introductory personal paper of **not more** than two pages in length to serve as an introduction of your personal, informal, writing style, composition, grammar, spelling, etc. to the instructor. Details for this assignment will be given on the first day of class, and will be due in one week.
One introductory science paper of **not more** than two pages in length to serve as an introduction of your science writing style to the instructor. Details for this assignment will be given two weeks before the due date.
One formal short paper (four - five pages in length) should be a compact and focused discussion of a specific topic. The introduction and conclusion should be kept relatively short in this assignment. Assignment details will be distributed at least two weeks in advance of due date. This paper will receive a letter grade and may be rewritten as described under grading policies.
Term paper: Students will choose a topic relevant to the class, research it, and write an eight-to-ten page term paper in review article format. Topics must be approved in advance by the instructor. A schedule for term paper research and development is given below. Suggestions to guide your choice of a term paper topic can be found at the end of this syllabus.

Peer feedback: (a) Each student must have one other student read and comment upon a draft of their term paper; each student must read and provide one page (250 words) of comments for one other student's term paper draft in return. Feedback should take the form of a letter to the author addressing the *content* of the

paper. Your comments may argue with the writer, add to what she or he is saying, point out weaknesses in the argument, etc. Written copies of the feedback will count towards the class contribution grade. Additional comments of an editorial nature (need transition, spell check, sentence fragment, etc.) should be noted on the manuscript. (b) Each student must give a practice talk before giving their journal club presentation. The audience should include at least one classmate. Audience members must provide substantive written comments on the talk to the presenter. Presenters should turn in these written comments at the conclusion of their journal club talk. Each student must be an audience member for at least one practice talk.

Manuscript Preparation: All papers should be written individually, computer-generated (including rough drafts), double-spaced, with left justified one-inch margins (**NOTE**: The default in Microsoft Word is 1.25" unless you change it!) and using 12-point font. Follow guidelines in Hofmann (top, page 53) for formatting of APA citations. Citations should be provided as a bibliography on the last page of your document. This list should be sorted by first author. Direct quotes from sources should not be used. Extensive paraphrasing of sources and failure to cite sources are unacceptable and possible causes for Honor Council deliberation of plagiarism. Papers which do not fulfill the stated requirements of the assignment will not receive a grade higher than a C. Papers should always be submitted with the **pages numbered**. Proofread carefully before submitting your work! Place your name, the date, and the title of the paper at the top of the first page.

Manuscript/Assignment Submission Procedures:

- The two introductory papers, short paper, and the term paper should be submitted to me as **hardcopy printouts**. A PDF or Word version of the short paper and term paper will also be uploaded to Bb.
- The Journal Club Summaries, Readings/Discussion Points, and Peer Feedback of term papers should be submitted to me as computer-generated **hardcopy printouts** formatted as outlined above.

Librarian-Student Conferences: Students are strongly encouraged to meet with Ms. Camille Andrews, science librarian, individually **before Fall break** to discuss term paper research.

Grading Policies

Grading: Your grade will be calculated as follows:

- One formal eight-to-ten page term paper and associated assignments: 35%
  Thursday, October 20: Last day to submit ideas for the paper
  Thursday, November 17: One paragraph abstract, outline & preliminary bibliography (at least 5 sources)
  Thursday, December 1: Polished draft to be given to peer reviewer.
  Tuesday, December 13: Final version of term paper due at 4:00 pm and uploaded to Bb by 11:59 pm.
- One formal four to five-page writing assignment (Due Thursday, November 3): 20%
- Journal club presentation: 20%
- Class contributions: 15%
- Introductory personal two-page paper: 5% (Due Thursday, September 15)
- Introductory science two-page paper: 5% (Due Tuesday, October 4)

Deadlines: Assignments must be turned in on time. The following policies apply:

1) Daily lists of discussion points/questions and journal club article summaries must be turned in at the end of class. Late assignments will receive no credit.

2) All other assignments are due as hardcopy on the designated day by 4:00 pm. These assignments are subject to the following rule: for every day they are late, they will be worth 25% less. Thus, a short paper worth 100 points will only be worth 75 points if it is turned in a day late; 50 points if it is two days late; and so on. Note that weekend days and non-class days do count. This policy will only be waived in extreme circumstances.

3) Students will have one week from the distribution of graded written work to resubmit for re-evaluation. Students may schedule a conference with me before revising any assignment. Up to one letter grade improvement may be earned by *substantial improvement* of the paper (e.g. review of a revised C+ paper may result in no change in grade or an improved grade of B-, B or B+). The term paper will be treated as an exam and there will not be an opportunity for a rewrite of the term paper after submission.

Class Climate, Culture and the Honor System

This course is a Coll 150 class, designed to give students a chance to explore an academic area of interest through intensive reading, writing, and discussion. Accordingly, most class periods will be filled by discussion of the assigned reading, with frequent opportunities to write. In order for discussions to be productive, all

students need to feel comfortable participating. We will create and maintain an atmosphere of mutual respect in which everyone's ideas can be heard.

Scientists always seek feedback from their colleagues when preparing papers and oral presentations. I encourage students to collaborate in this way as well: thus, peer feedback will be required for all major course assignments.

I require that students work *independently* when:

*Doing short, informal writing assignments, including discussion points
*Writing the early drafts of the term paper
*Preparing the outline and transparencies for the journal club presentation

Students *must seek the feedback of other students* when:

*Revising and editing the rough drafts of the term paper
*Giving the practice talk for the journal club presentation

Note that feedback includes comments and critiques; it does NOT include doing the work for someone else. You will be asked to describe feedback given to you by other students when you turn in your work; they will receive credit for their work, which will count as a part of their class participation grade.

Because the College of William and Mary has an honor system, I feel comfortable encouraging collaboration between students under the rules described above. Please see me if you have any questions about how the Honor System applies to your responsibilities in this course.

Campus Resources for Improving Writing and Oral Communication

I strongly encourage you to use these resources. Even bench scientists need to be able to write and to speak in public. Practice over time with good feedback is the best way to develop these skills.

A. The Writing Resources Center:
Located on the main floor of Swem Library, the Writing Resources Center serves students, faculty, and staff. Writing consultants (students trained by the Writing Resources Center staff) will give individual assistance with writing assignments at any stage of the writing process. Expect to work: they will not do the writing for you, but they can give you feedback that will improve your writing skills and result in a better final product. Online consultations are free, but must be scheduled in advance.

B. Oral Communication Studios:
The Oral Communications Studios, located with Writing Resources , are staffed by oral communications consultants (students trained by the staff of the Oral Communications Studio) who can critique and advise students (as well as faculty and staff) who are preparing oral presentations. Covid-19 may have changed consultation opportunities. Inquire at Writing Resources.

Course Calendar (tentative)

DATE	READINGS & ASSIGNMENTS
Sep 1	Course introduction – survey and review of handouts, policies, etc.
Sep 6	Loveday Intro – 3; Coleman presentation, "Neurotransmission"
Sep 8	**Swem Library Workshop** (Meet Camille Andrews, Science Librarian, at the main entrance at 8:00 am)
Sep 13	Loveday 4-6; Coleman presentation, "Learning & Memory"
Sep 15	Loveday 7-9; Bb reading, "Mirror Neurons" and "Mirror Neurons and Autism"; **Introductory personal paper due today**
Sep 20	Loveday 10-12; Bb reading, "The Limbic System (both articles)"
Sep 22	Loveday 13-15; Coleman presentation and discussion of science writing
Sep 27	Gazzaley 1-2; Journal Club #1
Sep 29	Gazzaley 3-4; Journal Club #2
Oct 4	Gazzaley 5; Journal Club #3; **Introductory science paper due to**day
Oct 6	Gazzaley 6-7; Journal Club #4;
Oct 11	Gazzaley 8-9; Journal Club #5

Fall Break

Oct 18	Gazzaley 10; Journal Club #6
Oct 20	Gazzaley 11; **Last day to submit term paper ideas**; Journal Club #7

Oct 25 Carter 1-2; Journal Club #8
Oct 27 Carter 3-4; Journal Club #9
Nov 1 Carter 5-6; Journal Club #10;
Nov 3 Carter 7-8; **Short paper due today;** Short paper hardcopy due by 4:30 pm. (ISC1039) and uploaded to Bb by 11:59 pm; Journal Club #11
Nov 8 NO CLASS (Election Day)
Nov 10 Goleman 1-2; Journal Club #12 & 13
Nov 15 Goleman 3-5; Journal Club #14 & 15
Nov 17 Goleman 6-8; **Outline, Abstract, & preliminary bibliography (at least 5 sources) of term paper;** Journal Club #16
Nov 22 VIRTUAL CLASS; Topic TBA

Thanksgiving Break

Nov 29 Goleman 9-11; Journal Club #17 & 18
Dec 1 Goleman 12-14; **Polished draft of term paper due today;** Journal Club #19
Dec 6 Goleman 15-16; Journal Club #20
Dec 8 Reflections on the Course; **Peer feedback of term paper due.**

Exam period begins.

Dec 13 Final version of term paper due at 4:00 p.m. (hard copy) in the main chemistry office (ISC 1039), and uploaded to Bb by 11:59 pm same day.
***Turn in peer-reviewed hard-copy and peer-reviewed editorial comments at the same time and place.

Caveat:
The above schedule and procedures in this course are subject to change in writing in the event of extenuating circumstances or breaking news.

Choosing a Term Paper Topic

Choosing an appropriate term paper topic takes time. Plan to:

1) Spend time brainstorming; use news sources, your discussion points, and your textbooks to come up with a short list of topics that interest you. A Google search (go to <www.google.com>) can help you find a wide selection of information sources, some of which will be reliable: use the results with care!

2) Discuss possible topics with the instructor, either by e-mail, during an appointment, or before/after class.

3) Do preliminary literature searches using the databases available through the Swem Workshop to see if the topics you have found can be covered effectively in a ten-page term paper.

Schedule an online consultation with a science librarian in Swem, if you need help finding information on your topic. Visit *libraries.wm.edu/appointments* to schedule an appointment.

A good term paper topic will have the following characteristics:

1) The topic should be current: Be sure that most of your references for this paper were published in the last five years; papers from 2017 – 2022 should ***dominate*** your reference list for maximum credit!

2) The topic should be focused: be sure that you can discuss details rather than generalizations

3) The topic should be understandable. Be sure that the references you find when you do your initial search for key sources are reasonably easy for you to understand. If all of your references appear to require an intimate knowledge of biochemistry and you are planning to be an English major, it may be sensible to choose a less scientifically demanding topic.

4) The topic should be interesting to you. By the end of the semester, you will have spent a great deal of time with your topic. If it started out seeming boring but appropriate, you will hate it by the time the paper is finished...