Chemistry 4585  
Atomic Force Microscopy  
Spring 2020

Instructor: Dr. Martin R. McPhail  
Office: TLC 2129  
Lab: TLC 2108  
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Office Hours: M//Tu 1:00 pm – 5:00 pm  
F 9:30 am – 11:30 am  
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Course Information  
Class: Chem 4585 (CRN 13493)  
Meeting Times: Thursday 1:00 pm – 4:00 pm  
Room: TLC 2108

Course Description  
This course is designed to introduce students to the operational principles and primary techniques of atomic force microscopy. Specific emphasis is given to AFM’s ability to map morphological, mechanical, chemical, electronic, and magnetic features of modern materials.

Learning Outcomes  
Students completing this course will be able to:

1. Explain the operational principles of key AFM techniques  
2. Prepare and analyze solid materials samples using AFM  
3. Communicate AFM findings effectively in verbal and written formats  
4. Propose, execute, and troubleshoot new AFM experiments

Course Assessment  
Students’ progress towards mastery of the learning outcomes will be tracked and assessed via:

Attendance (20%)  
The content for this course will primarily be delivered through in-class lectures and activities, so you are expected to attend and actively participate. Arriving more than ten minutes late constitutes an absence. You may have at most two unexcused absences. If you have to miss class due to an unexpected medial issue, please contact me as soon as possible.

Homework (40%)  
Homework assignments will allow you to reflect on and apply the information covered over the course of the semester. These may take the form of literature searches, reading assignments, and writing assignments. All writing assignments should follow the formatting guidelines listed below. Homework assignments will be due at the beginning of the next class period. 10% credit is deducted per day late on any assignment.
**Final Project (40%)**
The benefit of understanding the fundamental principles of an instrumental technique is the ability to design and execute novel experiments. This requires you to take into account the strengths and weaknesses of the instrument. To practice this skill, you will propose an original experimental question to address using one of the AFM techniques covered over the course of the semester. You will then plan and execute the experiment using our in-house AFM. You will analyze your data and communicate your findings in a report following ACS guidelines.

The grade for this assignment will be determined from the following breakdown of the component assignments:

- Project choice and literature search (30%)
- Experiment design proposal (30%)
- Final Report (40%)

**Grading Scale**

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 – 100</td>
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<tr>
<td>B</td>
<td>80 – 89</td>
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<td>C</td>
<td>70 – 79</td>
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<tr>
<td>D</td>
<td>60 – 69</td>
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<tr>
<td>F</td>
<td>0 – 59</td>
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**Grade Calculation Formula**

Grade % = [(Attendance) * 0.2] + [(HW) * 0.4] + [(Final Paper) * 0.4]

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**Course Policies and Information**

**Extra-Credit Policy**
No extra credit is accepted for this course.

**Formatting Guidelines**
All written assignments for this course should follow the following formatting guidelines:

- Page size should be 8 ½ x 11”
- 1-inch margins on both top and bottom of the page
- 12-point Times New Roman Font
- Double-spaced
- Indent the first line of every paragraph
- Text alignment should be justified
- Follow ACS guidelines for any cited references

**Student Conduct**
Students are obligated to abide by conduct guidelines as described in the university catalog. Respect and courtesy of all students while in the classroom is required. The following are also mandatory:
1. We will routinely perform activities in a laboratory that presents various chemical hazards. Follow all verbal and written instructions while in the lab to minimize any safety risks. Failure to do so will result in expulsion from the lab.

2. Any disruptive behavior that continues after an initial warning will result in your expulsion from the room. If disruptive behavior persists you will receive a minimum of a one letter-grade deduction from your overall grade as well as possible additional action depending on the severity of the behavior.

Please feel free to contact me with any questions regarding the above. Following “common sense” behavior should prevent any of the above problems. Failure to adhere to conduct guidelines could result in dismissal from class, a deduction from your final course grade, as well as further disciplinary action.

University Policies and Academic Support
Please review the Common Language for all university course syllabi at the address: https://www.westga.edu/administration/vpaa/assets/docs/faculty-resources/common_language_for_course_syllabi_v2.pdf
This document contains important information regarding Academic Support, Online Courses, Honor Code, Email Policy, Credit Hour Policy, and HB 280 (Campus Carry).

Academic Honesty
Any form of academic dishonesty—including but not limited to cheating or plagiarism—will result in a failing grade on the relevant assignment as well as possible additional action. Please be familiar with the definitions of academic dishonesty and plagiarism as laid out in the Student Handbook, which can be found at the link: http://www.westga.edu/handbook/

Disabilities Act / Accessibility for the Course
If you are a student with a disability as defined under the Americans with Disabilities Act and require assistance or support services, please notify me and provide me with a copy of your packet from Student Services. The university will provide you with resources for any audio/visual needs that you may have with the learning management system or course content.

It is critical that you contact UWG Accessibility Services immediately to find out what accommodations are necessary so we can work together to facilitate your success in this class. Please consult the UWG Accessibility Services site http://www.westga.edu/accessibility or call (678) 839-6428 for more details regarding accessibility for this course.

Note on Syllabus Modifications
I reserve the right to modify this syllabus at any time during the course of the term. Students will be notified of all syllabus modifications. In a case where a substantial modification is required, I will reissue a revised syllabus.