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Dear Academic Advisors,

I want to update you on the enrollment requirements for CHEM 1035 and some initiatives we have put in place to help students succeed in General Chemistry. We appreciate your efforts in following the requirements as you work on your student schedules for the Fall 2019 semester. There is a great deal of hopefully helpful information here.

1. As was the case last year, we will again require that students must be exempt from MATH 1014 if they are to be batch enrolled in CHEM 1035. This policy is based on published academic research and the chemistry department's own research on the relationship between math skills and general chemistry success. To be enrolled in CHEM 1035, a student must have earned

- a 570 or above on the old math SAT; or
- a 590 or above on the new math SAT; or
- a 25 or above on the math ACT; or
- credit for MATH 1014

Again this year, the Registrar will be applying the same criteria when doing batch enrollment in June. Students who do not meet these requirements are not eligible for CHEM 1035 and will not be added to CHEM 1035 during the batch. If you do find that one of your students without the above requirements has been enrolled in CHEM 1035, you should drop the student from the class.

Please understand and explain to your students that this prerequisite is not meant to be an arbitrary impediment to starting chemistry, but needing MATH 1014 is strongly correlated with poor performance in CHEM 1035. In one cohort we studied, 50% of the roughly 200 students

who were taking Math 1014 and Chem 1035 simultaneously dropped, withdrew, or earned an F in Chem 1035 and another 15% earned a grade of D+, D or D-. Another year, 60% of the 115 CHEM 1035 students with a Math SAT < 570 earned a D or F or withdrew. Last year our DWF rate was substantially lower since students not meeting the minimum math SAT or ACT requirement did not enroll in CHEM 1035. The chemistry department offers CHEM 1035 in the Spring and CHEM 1036 in the Fall (and both courses are offered in the summer), so students who need MATH 1014 and two semesters of chemistry are not strongly impacted. Students needing to start organic chemistry in the Fall of their second year should plan on taking CHEM 1036 in the summer. However, please note that we now teach organic chemistry off-sequence as well (CHEM 2635 in the spring and CHEM 2536 in the fall). We strongly feel that completing MATH 1014 in the Fall semester and taking CHEM 1035 in the Spring semester is preferable to withdrawing from CHEM 1035 in the Fall semester and repeating it in the Spring semester!

The chemistry department will be checking for co-enrollment in MATH 1014 before the semester starts and students in MATH 1014 will be purged from CHEM 1035 rolls. Advisors are asked to work with students to make wise choices. Circumventing these restrictions is strongly discouraged.

2. The chemistry department will offer CHEM 1014, Chemistry Calculations, for students who do not meet the criteria for enrollment in CHEM 1035. CHEM 1014 focuses on skills such as solving word problems, using a calculator, and manipulating algebraic expressions with the end goal of preparing students for success in CHEM 1035 in a subsequent semester. We hope to be able to accommodate all students who wish to take advantage of this course and we encourage you to enroll students who are not eligible for CHEM 1035 in the fall semester.

3. Students meeting the minimum SAT or ACT requirements who enroll in CHEM 1035 but who have a weak background in chemistry and/or math, can also enroll in CHEM 1034, Chemistry Recitations. This 1 credit, pass/fail course is designed to help students succeed in CHEM 1035 by providing hands-on problem solving activities. We have offered recitations as part of CHEM 1035 previously; 83% of students surveyed stated that completing worksheets in recitations helped them learn the material while 86% of students who took CHEM 1035 without and with

recitation stated that recitation improved their performance in the class the second time. Recitation is now a separate course in the fall semester. Students with high Math SAT/ACT scores or a strong background in chemistry (AP course in high school, for example) should not enroll in the CHEM 1034 Recitation course as space is limited and we wish to target students with weak backgrounds who would benefit from the extra help. All students enrolled in CHEM 1034 must also be enrolled in CHEM 1035.

4. Please inform your students who are enrolled in CHEM 1035 that they will be receiving information via e-mail from the Chemistry Department this summer about VTChemPrep; students will take an on-line General Chemistry Assessment Test, the results of which will be used to identify areas of weakness; the software program will then guide the student to problems that will help them fill in any gaps in knowledge of pre-requisite material (algebraic manipulations, measurement, units, and beginning chemistry principles). Students must complete the program with 100% mastery of the topics to earn 3% towards their CHEM 1035 grade. Students are strongly encouraged to start this assessment **several weeks before the semester begins** (the due date will be about 1.5 weeks after the start of the semester). Please encourage your students not to procrastinate in starting and completing this assignment. We have found that the majority of students who did not complete the ChemPrep assignment ultimately earned a D or F or withdrew from CHEM 1035. Students who are struggling and spending 40-60 hours on VTChemPrep are probably not ready to take CHEM 1035 and should consider delaying the class until Spring 2020.

5. We have asked the registrar to create an overflow CRN for students who do not receive a seat in CHEM 1035 during the batch, either due to class conflicts or a lack of seats. Thus advisors will know which students did not receive an actual seat in CHEM 1035 and can work on moving those students into seats as they become available, after the AP drop and throughout the summer.

6. Please note that students whose current majors that do not require General Chemistry for graduation may not enroll in CHEM 1035/1045 at this time. These students can place their names on the wait list found here:

https://virginiatech.qualtrics.com/jfe/form/SV_cOu237elxBopbnL

Due to the increased enrollment this fall, we have increased the capacity in CHEM 1035; we may or may not be able to move students from the wait list into CHEM 1035.

7. Finally, any student who has a strong background in chemistry and a Math SAT of 700 or better should consider taking General Chemistry for Majors, CHEM 1055, instead of CHEM 1035. Let me know if you want a student enrolled in CHEM 1055; the capacity in this class for students in other majors is limited.

Feel free to contact me (pamateis@vt.edu) if you have any questions; we look forward to working with you to increase the success rate of our students.

Sincerely,

Dr. Patricia G. Amateis



Associate Professor of Chemistry
Undergraduate Program Director
Director of General Chemistry