

Updated 07/18/2023



WACO, TEXAS

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**COURSE SYLLABUS  
AND  
INSTRUCTOR PLAN**

**Pharmaceutical Mathematics**

**PHRA 1309\_001**

**Alyssa Van Vleet**

**NOTE: This is a 16-week course.**

**NOTE: This is a Face-to-Face course.**

**Course Description:**

Course topics include reading, interpreting and solving calculation problems encountered in the preparation and distribution of drugs. Conversion of measurements within the apothecary and metric systems with emphasis on the metric system of weight and volume. Topics include ratio and proportion, percentage, dilution and concentration, milliequivalents, units, and solving dosage problems.

**Prerequisites and/or Corequisites:**

Must have completed Math 0307 or make a passing score on the TSI assessment  
Semester hours 3 (3 lec)

**Course Notes and Instructor Recommendations:**

This course will be taught in a face-to-face format and is designed to focus on the mathematical side of pharmaceutical dosing. Students are expected to attend lectures, actively participate in class, complete/submit homework by the due date and ask questions when understanding is not achieved.

This course isn't your "ordinary" math class. Throughout this semester, students will learn simple dosage calculations to better prepare for their future in the health care field.

I know math courses can be a scary subject for some, but should you not understand the material we are practicing, it is up to you to let me know so I can help you (it's what I'm here for!)

**Instructor Information:**

Instructor Name: Alyssa Van Vleet

MCC Email: [avanvleet@mclennan.edu](mailto:avanvleet@mclennan.edu)

Office Phone Number: 254-299-8319

Office Location: HP Bldg. Rm. 129

Office/Teacher Conference Hours: Monday/Wednesday: 2:00 PM-4:00 PM.

Tuesday/Thursday: 1:00 PM-3:00 PM

Friday: 8:00 AM-10:00 AM

Other Instruction Information:

**\*\*\*INSTRUCTOR NOTE:\*\*\***

When contacting your professor by email for this course, you must follow these rules:

- Write using formal English only (as if to the president of the company where you work.) This means no slang, or being “lazy” with your wording. You are in college, preparing for your future, please communicate like it!
- Use your MCC student email address.
- I check my email several times a day and try to respond as quickly as possible. However, I still have my own schedule and may not be able to respond instantly.
- I do not respond to emails after 9 PM. If you need to contact me, please do it before then.

**Required Text & Materials:**

Title: Clinical Calculations Made Easy: Solving Problems Using Dimensional Analysis

Author: Gloria P. Craig

Edition: 7<sup>th</sup>

Publisher: Wolters Kluwer

ISBN: 978-1-975103-76-7

**Additional Required Materials:**

You will need to bring a calculator to class everyday. It does not need to be anything “fancy”, a simple calculator will work. I do not allow students to use the calculator on their phone. You must bring a separate one to use.

**MCC Bookstore Website:** <http://www.mclennan.edu/bookstore/>

**Methods of Teaching and Learning:**

- Independent and group work in the classroom
- Homework assignments
- Test/quizzes
- Tutorials videos/media
- Face-to-face class discussions
- Review case studies relating to illnesses, medications and dosage calculations

**Course Objectives and/or Competencies:**

**Chapter 1: Arithmetic Review**

1. Express Arabic numbers as Roman numerals
2. Express Roman numerals as Arabic numbers
3. Identify the numerator and denominator in a fraction
4. Multiply and divide fractions
5. Multiply and divide decimals
6. Convert fractions to decimals

**Chapter 2: Systems of Measurement and common Equivalents**

1. Identify measurements included in the metric, apothecaries, and household systems
2. Calculate intake and output necessary for accurate recording in a medical record
3. Understand abbreviations used in the metric, apothecary, and household systems
4. Differentiate between Fahrenheit and Celsius thermometers used for monitoring temperature
5. Differentiate between standard time and military time necessary for accurate recording in a medical record

**Chapter 3: Solving Problems Using Dimensional Analysis**

1. Define the terms used in dimensional analysis
2. Explain the step-by-step problem solving method of dimensional analysis
3. Solve problems involving common equivalents using dimensional analysis as a problemsolving method

**Chapter 4: One-Factor Medication Problems**

1. Interpret medication orders correctly, based on the seven rights of medication administration
2. Identify components from a drug label that are needed for accurate medication administration and documentation
3. Describe the different routes of medication administration: tablets, capsules, liquids given by medicine cup, or syringe, and parenteral injections using different types of syringes
4. Calculate medication problems accurately from the one-factor-given quality to the one factor wanted quality using the sequential or random method of dimensional analysis

**Chapter 5: Two-Factor Medication Problems**

1. Solve two-factor-given quantity medication problems involving a specific amount of medication ordered based on the weight of the patient
2. Calculate medication problems requiring reconstitution of medications by using information from a Nursing Drug reference, label, or package insert

3. Solve two-factor-given quantity medication problems involving a specific amount of fluid to be delivered over limited time using an intravenous pump delivering milliliters per hour (mL/hr)
4. Solve two-factor-given quantity to two factor wanted quantity medication problems involving problems involving a specific amount of fluid to be delivered over a limited time using different types of intravenous tubing that deliver drops per minute (gtt/min) based on specific drop factor

### **Chapter 6: Three-Factor Medication Problems**

1. Calculates three factor given quantity to one-factor-two-factor- or three factor-wanted quantity medication problems involving a specific amount of medication or intravenous (IV) fluid based weight or the weight of the patient and the time required for safe administration
2. Calculate problems requiring reconstitution or preparation of medications using information from a nursing drug reference, label, or package label

### **Course Attendance/Participation Guidelines:**

If a student is not in attendance in accordance with the policies/guidelines of the class as outlined in the course syllabus as of the course census date, faculty are required to drop students from their class roster prior to certifying the respective class roster. A student's financial aid will be re-evaluated accordingly and the student will only receive funding for those courses attended as of the course census date.

- Attendance will be checked at the start of class. Should you be absent or tardy, I request that you send me an email, letting me know that you will not be present or will be coming in late. Should a student accumulate 3 tardies, it will equal 1 absence.
- Absence from 15 percent of scheduled lecture and/or laboratory meetings (5 days) will be taken as evidence that a student does not intend to complete the course, and the student will be withdrawn from the course with a grade of W. If the student's 15 percent absences are reached after the official drop date, the instructor may assign a W, if the student is passing and requests to be withdrawn. However, if a student who is not passing reaches the 15 percent point after the official drop date, the student will receive an F. Each absence will count toward attendance requirements in each course.
- There are times when an absence is unavoidable (doctor appointments, sick/sick kids, etc.). With that being said, should you be absent, if you present with a doctors excuse for that day, that absence will be excused and will NOT count against your absences for the semester.
- Rescheduling of class days may occur due to unforeseen events, I.E., inclement weather. In this event students will be notified by all means available.

**Course Outline or Schedule:**

Week 1

Syllabus and Chapter 1: Arithmetic Review

Week 2:

Review Chapter 1 and start Chapter 2: Systems of Measurements

Week 3:

Chapter 2 Review

Week 4:

**Exam #1: Chapters 1 & 2**

Week 5:

Chapter 3: Solving Problems Using Dimensional Analysis

Week 6:

Chapter 4: One Factor Medication Problems

Week 7:

Continue review Chapter 4

Week 8:

**Exam #2: Chapters 3 & 4**

Week 9:

Chapter 5: Two-Factor Medication Problems

Week 10:

Chapter 6: Three-Factor Medication Problems

Week 11:

**Exam #3: Chapters 5-6**

Week 12:

Case Studies

Week 13:

Case Studies

Week 14:

**Exam #4: Case Studies**

Week 15:

Review for Final Exam

Week 16:

**Final Exam**

**This schedule is tentative and is subject to change at anytime. Should any necessary changes need to be made, I will notify students ahead of time through email and Brightspace.**

**Course Grading Information:**

It should be noted that enrollment in this course does not guarantee advancement to the next course level. The final responsibility for learning lies with the student. The final class average will be determined by the following guidelines:

<b>Class Participation:</b>	<b>15%</b>
<b>Homework:</b>	<b>20%</b>
<b>Quizzes:</b>	<b>10%</b>
<b>Exams:</b>	<b>25%</b>
<b>Final:</b>	<b>30%</b>

**Class Participation:**

Class participation includes (but not limited to) being actively involved in the lectures, listening attentively, and completing all assigned work. Points will be deducted should you cause distraction, being on your phone, repeatedly showing up late to class, falling asleep, etc.

**Homework:**

Homework is assigned from assignments coming from the textbook and papers I hand out. This means you must have your textbook for every class. All homework will be due on the next class day unless told otherwise.

**Quizzes:**

All missed quizzes will receive a grade zero, if not submitted during class. **\*\*FYI\*\*** Quizzes can be given at random!

**Exams:**

There will be 4 exams and a final at the end of the semester.

**\*\*\*Instructor Note\*\*\***

Cheating or plagiarism will not be tolerated in any form. First offence will result in a grade of zero on the said work/exam. Second offence will result in expulsion from the program.

**Late Work and Make Up Work Policies:**

- All due dates for homework and exams will be clearly communicated.
- Homework can be submitted late with a 10 point deduction. If you miss class you are responsible for making sure your assignment is has been submitted.
- Should you miss a quiz, it **cannot** be made up.
- Makeup on exams will be allowed, but again, it will be your responsibility to contact me to schedule a time as soon as possible. Should you not contact me within a week of missing the exam, the grade for the exam will be a 0. A student may make arrangements to take an exam early if arrangements are made in advance of the absence.

**Student Behavioral Expectations or Conduct Policy:**

Proper student behavior during class is expected at all times. This includes proper respect for your classmates and their opinions, the instructor, dress code, language, attitude, and respect for the field in which you are entering. During class, you are expected to participate in the lecture. Cell phones are to be placed on silent and put away. If you need to answer a call, please excuse yourself into the hall to answer. Sleeping in class will not be tolerated. If you are caught sleeping, points will be deducted from your participation grade. During exams, you are required to remove all watches and place them along with your phone, books, notes, etc. away in your backpack. Consequences for failure to comply with all class rules/guidelines stated in this syllabus as well as other rules stated in the MCC Student Handbook will have the following consequences:

- (1) The student will be asked to comply with the rules (penalties will stand as stated).
- (2) If the student fails to comply, the student will be asked to leave the room for the remainder of the class for that day.
- (3) Subsequent incidents will result in a conference with the program director, the campus disciplinary specialist, and/or the dean of workforce education for further disciplinary actions which could include being dropped from the course. It is the student's responsibility to make up any missed work by the original deadline for the work missed due to a disciplinary action.



**\*\*\*INSTRUCTOR NOTE:\*\*\***

Often, your success in the course can be maintained through discussion with me. Please let me know if you are experiencing difficulties. If you have concerns, tell me immediately. I can only help if I am aware of the situation. Communicate issues as early as possible. There is absolutely nothing I can do to prevent failure if I find out about the issue too late.

I expect every student within this program to behave with the upmost professionalism and respect at all times. You are preparing to enter a field into which both of those qualities are valued. Please do not tarnish your reputation by behaving in such a way that causes others to lose respect for you.

[Click Here for the MCC Attendance/Absences Policy](https://www.mclennan.edu/highlander-guide/policies.html)

(<https://www.mclennan.edu/highlander-guide/policies.html>)

Click on the link above for the college policies on attendance and absences. Your instructor may have additional guidelines specific to this course.

**\*\*\*INSTRUCTOR NOTE:\*\*\***

Please understand that I care for each of my students, especially when it comes to their safety and well-being. If during the course of our discussions an issue arises in which I feel warrants a referral for Title IX or to our success coaches, I will not hesitate to make the referral. I will do my best to notify you in advance of the referral and will stand by your side as part of your circle of care for as long as you and the college will allow. Should these circumstances arise, please understand that the referral is not disciplinary, but rather an opportunity to intervene early and identify all resources that can help you find academic and personal success.

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## **ACADEMIC RESOURCES/POLICIES**

### **Accommodations/ADA Statement:**

Any student who is a qualified individual with a disability may request reasonable accommodations to assist with providing equal access to educational opportunities. Students should contact the Accommodations Coordinator as soon as possible to provide documentation and make necessary arrangements. Once that process is completed, appropriate verification will be provided to the student and instructor. Please note that instructors are not required to provide classroom accommodations to students until appropriate verification has been provided by the Accommodations Coordinator. For additional information, please visit [www.mclennan.edu/disability](http://www.mclennan.edu/disability).

Students with questions or who require assistance with disabilities involving physical, classroom, or testing accommodations should contact:

[disabilities@mclennan.edu](mailto:disabilities@mclennan.edu) 2542998122 Room  
319, Student Services Center

### **Title IX:**

We care about your safety, and value an environment where students and instructors can successfully teach and learn together. If you or someone you know experiences unwelcomed behavior, we are here to help. Individuals who would like to report an incident of sexual misconduct are encouraged to immediately contact the acting Title IX Coordinator at [titleix@mclennan.edu](mailto:titleix@mclennan.edu) or by calling, Dr. Claudette Jackson, (Accommodations/Title IX) at (254) 299-8465. MCC employees are mandatory reporters and must report incidents immediately to the Title IX Coordinator. Individuals may also contact the MCC Police Department at (254) 299-8911 or the MCC Student Counseling Center at (254) 299-8210. The MCC Student Counseling Center is a

confidential resource for students. Any student or employee may report sexual harassment anonymously by visiting <http://www.lighthouse-services.com/mclennan/>. Go to McLennan's Title IX webpage at [www.mclennan.edu/titleix/](http://www.mclennan.edu/titleix/). It contains more information about definitions, reporting, confidentiality, resources, and what to do if you or someone you know is a victim of sexual misconduct, gender-based violence or the crimes of rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, or domestic violence.

### **Student Support/Resources:**

MCC provides a variety of services to support student success in the classroom and in your academic pursuits to include counseling, tutors, technology help desk, advising, financial aid, etc. A listing of these and the many other services available to our students is available at <http://www.mclennan.edu/campus-resource-guide/>

Academic Support and Tutoring is here to help students with all their course-related needs. Specializing in one-on-one tutoring, developing study skills, and effectively writing essays. Academic Support and Tutoring can be found in the Library and main floor of the Learning Commons. This service is available to students in person or through Zoom. You can contact the Academic Support and Tutoring team via Zoom or email ([ast@mclennan.edu](mailto:ast@mclennan.edu)) by going to our website (<https://www.mclennan.edu/academic-support-and-tutoring/>).

College personnel recognize that food, housing, and transportation are essential for student success. If you are having trouble securing these resources or want to explore strategies for balancing life and school, we encourage you to contact either MCC CREW – Campus Resources Education Web by calling (254) 299-8561 or by emailing [crew@mclennan.edu](mailto:crew@mclennan.edu) or a Success Coach by calling (254) 299-8226 or emailing [SuccessCoach@mclennan.edu](mailto:SuccessCoach@mclennan.edu). Both are located in the Completion Center located on the second floor of the Student Services Center (SSC) which is open Monday-Friday from 8 a.m.-5 p.m.

Paulanne's Pantry (MCC's food pantry) provides free food by appointment to students, faculty and staff. To schedule an appointment, go to [https://mclennan.co1.qualtrics.com/jfe/form/SV\\_07byXd7eB8iTqJg](https://mclennan.co1.qualtrics.com/jfe/form/SV_07byXd7eB8iTqJg). Both the Completion Center and Paulanne's Pantry are located on the second floor of the Student Services Center (SSC).

### **MCC Foundation Emergency Grant Fund:**

Unanticipated expenses, such as car repairs, medical bills, housing, or job loss can affect us all. Should an unexpected expense arise, the MCC Foundation has an emergency grant fund that may be able to assist you. Please go to

<https://www.mclennan.edu/foundation/scholarships-and-resources/emergencygrant.html>

to find out more about the emergency grant. The application can be found at

[https://www.mclennan.edu/foundation/docs/Emergency\\_Grant\\_Application.pdf](https://www.mclennan.edu/foundation/docs/Emergency_Grant_Application.pdf).

**MCC Academic Integrity Statement:**

Go to [www.mclennan.edu/academic-integrity](http://www.mclennan.edu/academic-integrity) for information about academic integrity, dishonesty, and cheating. The unauthorized use of artificial intelligence (AI) for classwork can be a violation of the College's General Conduct Policy. Whether AI is authorized in a course and the parameters in which AI can be used in a course will be outlined by each instructor.

**Minimum System Requirements to Utilize MCC's D2L|Brightspace:**

Go to <https://www.mclennan.edu/center-for-teachingandlearning/FacultyandStaffCommons/requirements.html> for information on the minimum system requirements needed to reliably access your courses in MCC's D2L|Brightspace learning management system.

**Minimum Technical Skills:**

Students should have basic computer skills, knowledge of word processing software, and a basic understanding of how to use search engines and common web browsers.

**Backup Plan for Technology:**

In the event MCC's technology systems are down, you will be notified via your MCC student email address. Please note that all assignments and activities will be due on the date specified in the Instructor Plan, unless otherwise noted by the instructor.

**Email Policy:**

McLennan Community College would like to remind you of the policy (<http://www.mclennan.edu/employees/policy-manual/docs/E-XXXI-B.pdf>) regarding college email. All students, faculty, and staff are encouraged to use their McLennan email addresses when conducting college business.

A student's McLennan email address is the preferred email address that college employees should use for official college information or business. Students are

expected to read and, if needed, respond in a timely manner to college emails. For more information about your student email account, go to [www.mclennan.edu/studentemail](http://www.mclennan.edu/studentemail).

**Instructional Uses of Email:**

Faculty members can determine classroom use of email or electronic communications. Faculty should expect and encourage students to check the college email on a regular basis. Faculty should inform students in the course syllabus if another communication method is to be used and of any special or unusual expectations for electronic communications.

If a faculty member prefers not to communicate by email with their students, it should be reflected in the course syllabus and information should be provided for the preferred form of communication.

**Email on Mobile Devices:**

The College recommends that you set up your mobile device to receive McLennan emails. If you need assistance with set-up, you may email [Helpdesk@mclennan.edu](mailto:Helpdesk@mclennan.edu) for help.

You can find help on the McLennan website about connecting your McLennan email account to your mobile device:

- [Email Setup for iPhones and iPads](#)
- [Email Setup for Androids](#)

**Forwarding Emails:**

You may forward emails that come to your McLennan address to alternate email addresses; however, the College will not be held responsible for emails forwarded to an alternate address that may be lost or placed in junk or spam filters.

For more helpful information about technology at MCC, go to [MCC's Tech Support Cheat Sheet](#) or email [helpdesk@mclennan.edu](mailto:helpdesk@mclennan.edu).

**Disclaimer:**

The resources and policies listed above are merely for informational purposes and are subject to change without notice or obligation. The College reserves the right to change policies and other requirements in compliance with State and Federal laws. The provisions of this document do not constitute a contract.