



Principles in Manufacturing Mathematics
BMM 140 - 3 Credits

Day(s): Mondays

Time(s):

Classroom Number:

Instructor: Al Pucino
Email address:

Office Hours: **Phone number:**

Prerequisite/Co-requisites: Foundation MAT 095

Course Description

This course begins with a review of basic operations of numbers, fractions and decimals. It then covers the practical mathematics that every machinist is expected to use in the shop in the creation of machined parts and maintenance of tools and fixtures. This includes common fraction to decimal and vice-versa conversions, inch to metric and vice-versa conversions, calculating part and feature dimensions and locations, calculating speeds and feeds, calculating tap drill sizes with formulas and charts, converting surface feet per minute to RPM's, calculating tapers for machine set-up, plane geometry calculations, sine bar set-up, measurements of right triangles, angular and simple indexing calculations. (F, Sp, Su)

Required Text

Smith, Robert D., Peterson, John C., Mathematics for Machine Technology. (7th Ed). Delmar Cengage, Clifton Park, NY. ISBN 978-1-133-28145-0

Recommended Text:

Course Learning Goals:

1. Calculate the conversion between common fractions and decimals
2. Calculate powers and roots of numbers
3. Explain and calculate ratios, proportions and percentage
4. Specify and convert units of measure
5. Determine tolerances, clearances and interferences
6. Operate measurement devices
7. Employ the fundamentals of algebra
8. Apply formulas to cutting speeds and revolutions
9. Apply the fundamentals of plane geometry
10. Calculate geometric figures areas and volumes
11. Apply the principles of trigonometry

Learning Objectives	Learning Outcomes	Assessment Methods
To demonstrate an	At the end of this course, students will be able to:	As measured by:

understanding of:		
Mathematical conversions	Calculate the conversion between common fractions and decimals	Homework/quiz assignment , mid-term, final
Power & Roots	Calculate powers and roots of numbers.	Homework/quiz assignment , mid-term, final
Number ratios, proportions and percentages	Explain and calculate ratios, proportions and percentages.	Homework/quiz assignment , mid-term, final
Unit conversions	Specify and convert units of measure	Homework/quiz assignment , mid-term, final
Solution of Equations	Determine the solutions of equations	Homework/quiz assignment , mid-term, final
Measurement Devices	Operate measurement devices	Homework/quiz assignment , mid-term, final
Algebraic equations	Employ the fundamentals of algebra	Homework/quiz assignment , mid-term, final
Use of mathematics in machining	Apply formulas to cutting speeds and revolutions	Homework/quiz assignment , mid-term, final
Plane Geometry	Apply the fundamentals of plane geometry	Homework/quiz assignment , mid-term, final
Areas	Calculate geometric figures areas	Homework/quiz assignment , mid-term, final
Trigonometry	Apply the principles of trigonometry	Homework/quiz assignment , mid-term, final
Cartesian Coordinates	Apply Cartesian Coordinates	Homework/quiz assignment , mid-term, final

Professor's General Expectations

- Routinely check your **Goodwin e-mail account** and the Announcements area on Blackboard for important messages and for communications with classmates.
- Post Discussion Board messages as required by specific course assignments.
- Complete and submit all assignments on time.
- Attend and participate fully in on-campus meetings.
- Abide by the College's Academic Integrity Policy.

Course Logistics

The course is segmented into fifteen (15) sections over a 15 week period **or** eight sections (s, then set aside **approximately 9-12 hours** a week for work on this course. That figure allows generous time for

readings, written work, projects, on-line discussions and on-campus activities. Your actual time may vary depending on reading speed, number of students in the class or group, personal effort toward the subject, etc. If this is a traditional 15 week course, set aside **approximately 6-9 hours** a week for work on this course.

Each week's activities begin on the first day the class is scheduled to meet and ends at midnight on the day before the following weekly meeting. For example, if the class is scheduled to meet on Wednesday, then Wednesday of the first week of class starts the week. All course work for that week must be completely by the following Tuesday night at midnight unless otherwise specified. If this is **an on-line course**, the class begins on the published first day of class and ends on the published last day of class.

- You may expect to have at least one week ahead available to you on the previous Wednesday, however, if you choose to work ahead, please don't expect feedback until after the assignment due date.
 - Assignments are submitted electronically through the Grade Book. All assignments count as part of the final grade.
 - During the on-campus weeks for blended sections, make sure to complete work that is noted as necessary to be completed prior to the on-campus meeting.

General Course Policies

1. Reading: Students must read all assignments and be prepared for class. All assignments will be considered for assessment material.

2. Cheating: Not allowed. Do your own work. You may be surprised by how much you really know and can demonstrate. Please refer to the academic integrity policy located in the college catalog. http://www.goodwin.edu/pdfs/Academic_Integrity_Policy_2010.pdf

3. Electronics: Electronic devices can be disruptive. Please keep these items off or SILENT during class and don't use them during class. Computers in the class are intended for the course at hand, not for other activities or other classes. Computer activity not associated with the current class will be terminated.

5. Make up assessments: Given by arrangement. They are the responsibility of the student to arrange with the instructor at a mutually convenient time. Make-up assessments must be completed within 7 days of the original assessment date. Final assessments must be completed during finals' week. There is no make-up on missed quizzes. See instructor.

6. Grammar and Spelling: Employment in the business, non-profit or government workforce requires competent reading and writing skills. Students are required to use proper grammar, spelling, and punctuation. Assignments with grammar and spelling errors will be graded down. Assignments that do not meet acceptable standards will be returned without a grade. Returned assignments will be considered late. Assignments that are late may be graded down unless first approved by the instructor.

7. Late assignments may be graded down if not first discussed this with the instructor. More than a week late, the item will not be accepted albeit with extenuating circumstances.

8. Problems: If you need help with studying, reading, writing, note taking skills, or if you have other problems that interfere with your academic work, see the instructor or your advisor. We are here to

help. The College has many resources to assist you in your academic endeavors. Please avail yourself to them.

9. **Attitude: Attitude is everything.** Come prepared to contribute, learn, share your perspectives and teach. It will make all the difference between an exciting semester or just another course for credit.

Attendance Policy

Attendance Policy: You are expected to attend all class sessions on time. Tardiness or leaving early will be considered a ½ cut. No more than ONE absence is permitted without affecting the participation portion of your grade. Any student experiencing TWO or more absences should immediately contact the instructor or this may result in a diminished grade due to low class participation. Please follow the class schedule. You are expected to notify the instructor when you will not be present for an examination.

Class Cancellation Policy: Should the class be canceled please follow the class schedule for assignments and refer to the weekly activities section of the course in Blackboard for further information.

Communication

General questions regarding assignments and other activities should be posted to the **Student Lounge** on the **Discussion Board** in BlackBoard. Students are encouraged to help their classmates by routinely reading and replying to these postings. Personal or sensitive communications, i.e. a question about a quiz item, personal issue, etc. should be handled via email to the instructor (or phone call).

Written Work

- Written work assigned for this class should be prepared using **MS Word** and delivered in compliance with APA style. Written work should use the following format:
 - One-inch margins on top, bottom, left and right.
 - The first page should contain in the upper left section (typed, **single-spaced**) the following:
 - Student Name (i.e. Jones, Margaret)
 - Instructor Name
 - Course Number & Title
 - Assignment Title
 - Date (i.e., July 12, 2016)
- Written work should be submitted on-line to the course Grade Book and in hard copy when requested by the instructor.

*****Written work will ONLY be accepted by the instructor if it is attached as a Word document. No other form of submissions will be accepted unless stated by the instructor.*****

Discussion Board Guidelines

Post on time. Participate in the discussion during the assigned week. **For Full Discussion Board Credit**, your **initial** Discussion Board posting must be submitted by Friday at 11:59p. All discussion board responses for a given week must be completed by 11:59p on 6th day of the week. It is recommended that you post early in the week then check the discussion board again later in order to make replies. Late postings are not beneficial to the group and will **not be considered** in the grading process.

1. Be concise but complete. Initial posts should be thoroughly developed in 200-250 words to adequately articulate your responses to the prompts.

2. Connect your comments to what you are learning in the course. Integration of required course materials to support your contributions is expected. Additional inclusion of outside references is strongly encouraged. ***Cite your sources.***
3. Reply to other students, however, you should post an appropriate comment(s) on at least two (2) classmate's posting for full credit. These exercises should encourage dialogue and an exchange of ideas and confirmations.
4. Be informative. Go beyond just agreeing or repeating by adding to the conversation.
5. Bring together or synthesize comments from the discussion.
6. Illustrate your points with examples.
7. Relate personal experiences, but be careful not to release confidential information.
8. Utilize professional conventions of communication (e.g. etiquette, grammar and word usage).
9. The instructor may not respond to every thread or posting, however, the instructor's role is to facilitate and guide the discussion where necessary as in a classroom. In this environment, adult students bring vast knowledge and experience to the class and this is where it gets demonstrated.

Grading Policy (hybrid)*

5%	– Participation (class discussions, attendance).
25%	– Homework/Quizzes
30%	– Mid-term
40%	- Final Exam

*Grading matrix is subject to change depending upon the make-up of the class and integration of group work. Grading will be specified by the instructor at the beginning of the course.

Incompletes

Satisfactory progress is computed for all courses taken for credit. An incomplete is a temporary grade assigned by the faculty member. Course Incompletes are counted as credit hours attempted but not earned. Generally, if a student receives an "Incomplete," (s)he has two (2) weeks from the end of the course to complete all course requirements in order to receive a grade for that course. If requirements are not met, the incomplete will be converted to an "F". Academic standing will be recomputed after the "INC" is replaced with a grade. In both cases the final grade will then be included in calculating the student's GPA and count as credits attempted. In cases where the Incomplete has been issued for a pre-requisite course, the student may not be allowed to move on to the higher level course if the Incomplete has not been replaced with a satisfactory grade

Course Outline

Refer to the course BlackBoard **Weekly Assignments** tab for a detailed class-by-class breakdown of assignments with dates for the following:

- Lecture/discussion topics; reading and written assignments; dates of quizzes, term papers, tests, midterm exams, final exam, etc., include dates of holidays and no class
- A summary is provided below:

Date	Topic(s) Covered	Assignments/Reading and homework to be completed after class	Assessment Schedule – (In-class quiz to be taken during the <u>next</u> scheduled class)
Wk 1	Common fractions	Reading:	Quiz problems provided by the

Jan 11, 2016	addition, subtraction, multiplication and division and decimal fractions	Smith & Peterson Sec. 1 pp. 1- 30 (168 minutes) Homework: Section 1 Unit 1: 4. (C, F) 5. (E, G) 7. (I) 8. (D) 9. (E), 10. (A) Unit 2: 4, & 7 Unit 3: 7.(D) 8.(A,C) Unit 4: 7.(B,D) 11.(C) 13. Unit 5: 9. 13. 15.	instructor covering: Common fractions addition, subtraction, multiplication and division and decimal fractions
Wk 2 Jan 18, 2016	HOLIDAY		
Wk 3 Jan 25, 2016	Combined operations of common fractions; decimal fractions	Reading: Smith & Peterson Sec. 1 pp. 31 – 64 SKIP UNIT 7 (150 minutes) Homework: Section 1 Unit 6: 7. (B, J) 8. (D) & 10. Unit 8: 7. 10. 15. 20. 27. 31. 35. 58. Unit 9: 15. 19. 26. 29. 33. Unit 10: 7. (G) 8. (D) & 12. (D) Unit 11: 7. (C) Unit 12: 7. (B)	Quiz problems provided by the instructor covering: Combined operations of common fractions; decimal fractions.
Wk 4 Feb 1, 2016	Decimal fractions, powers and roots	Smith & Peterson pp. 64 – 88 (114 minutes) SKIP UNIT 16 Homework: Section 1 Unit 13: 10. & 13. Unit 14: 8. 9. & 11. Unit 15: 8.	Quiz problems provided by the instructor covering: Decimal fractions, powers and roots
Wk 5 Feb 8, 2016	Ratios and proportions	Reading: Smith & Peterson pp. 94 -132 (144 minutes) Homework: Section 2 Unit 18: 21. 28. 32. 37. Unit 19: 7. (A, B) Unit 20: 13. 24. 38. & 47. Unit 21: 9. 27. 47. Unit 22: 8. 10. & 19. Unit 23: 1. 8. 13. (A) 15. (B) 16. (C) 17. (A) 18. (A) & 20. (A)	Quiz problems provided by the instructor covering: Ratios and proportions.
Wk 6 Feb 15, 2016	Measurements	Reading: Smith & Peterson pp. 133 -168 (198 minutes) SKIP UNITS 26 & 27 Homework: Section 3 Unit 24: 7. (D) 13. (D) 14. (C) & 15. (C)	Quiz problems provided by the instructor covering: Measurements, precision, tolerance

		Unit 25: 7. (B) 10. (A) 13. (B) Unit 28: 7. (K) 8. (A)	
Wk 7 Feb 22, 2016	HOLIDAY	No Class (<i>micrometers & calipers to be covered elsewhere</i>)	None
Wk 8 Feb 29, 2016	Algebraic operations and equations Review for Mid-Term Exam	Reading: Smith & Peterson pp. 209-230 (144 minutes) Homework: Section 4 Unit 37- 8. 14. (A) 15. (A) 19. (E) 21. (B) 23. (A) Unit 38- 7. (A) 8. (C) 9. (C) 10. (C) 11. (C) 12. (H) 13. (G) 14. (I) 15. (H) 16. (B) 17. (E) 21 Unit 39- 12. 17. 23. 36. 46. 66. 79	Quiz problems provided by the instructor covering: Algebraic operations and equations. (60 minutes)
Wk 9 Mar 7, 2016	Mid-term	Mid-term In class after mid-term Reading: Smith & Peterson pp. 238 – 258 (126 minutes) Homework: Section 4 Unit 40- 9. 27. 39. 51. 59. 70. 88. 100. 112. 119. 124. 136. 145. Unit 41- 8. 10. 16. 28. (C) 29. (B) 30. (A, B) 31. 33. 36. 39. 46.	
Wk 10 Mar 14, 2016	Solutions to equations, applications to machining	Reading: Smith & Peterson pp. 258 – 297 (186 minutes) Skip Unit 46 Homework: Section 4 Unit 42- 48. 53. 64. 83. 91. 113. & 117. Unit 43- 7. 12. 18. 33. 42. 55. 63. (A) 64. (A) 66. 70. 83. 92. Unit 44- 8. 15. 20. 26. 37. 51. 56. 62. & 64. Unit 45- No Problems	Quiz problems provided by the instructor covering: Solutions to equations, applications to machining

<p>Wk 11 Mar 21, 2016</p>	<p>Lines, angles, triangles</p>	<p>Reading: Smith & Peterson pp. 311 – 339 Unit 49: <u>Skip section on Bevel protractor with Vernier scale.</u> Unit 50: <u>Skip Principles 4 & 6</u> (264 minutes) Homework: Section 5 Unit 48- 7. (B, C) 8. (C, D) 9. 10. 20. 30. 40. 48. 56. 58. 66. 74. 76. Unit 49- 21. (B) & 22. (B) Unit 50- 9. (B, F) 12. & 13. (A) Unit 51- 8. 10. 11. 14. 21. 27. & 29.</p>	<p>Quiz problems provided by the instructor covering: Lines, angles, triangles.</p>
<p>Wk 12 Mar 28, 2016</p>	<p>Circles, rectangles, parallelograms</p>	<p>Reading: Smith & Peterson pp. 358 – 411 (276 minutes) Unit 53: <u>Just follow class notes (the book unit is too confusing).</u> Unit 54: <u>Read only through example 2 on p. 370</u> Unit 55: <u>Skip</u> Homework: Section 5 Unit 52- 7. 8. (B) 10. 13. & 17. (B) Unit 53- 7. 11. (B) & 16. Unit 54- 7. & 13. Unit 56- 1. (A) 4. 10. 11. & 13. (C) Unit 57- 7. 10. 21. 23. & 43.</p>	<p>Quiz problems provided by the instructor covering: Circles, rectangles, parallelograms</p>
<p>Wk 13 Apr 4, 2016</p>	<p>Area of triangles, circles, sectors, and segments, Cartesian coordinates</p>	<p>Reading: Smith & Peterson pp. 409 – 446 Homework: Section 6 Unit 58- 7. Unit 59- 7. Cartesian Coordinates SKIP UNITS 60, 61, 62 Unit 63- 1. 7. 10. 13. 22. & 25.</p>	<p>Quiz problems provided by the instructor covering: Trigonometry, physical applications, Cartesian coordinates, Law of sines & cosines.</p>
<p>Wk 14 Apr 11, 2016</p>	<p>Trigonometry, physical applications, , Law of sines & cosines Review</p>	<p>Reading: Smith & Peterson pp. 453 – 477 Homework: Section 7 Unit 64- 10. 23. (only sin, cos and tan) 24 (only sin, cos and tan), 29, 30, 31, & 32 Unit 65- 7. 8. & 9. Unit 66 – 7. Unit 67 - 7. Review for Final Exam</p>	<p>Quiz problems from topics in the course Study for the Final Exam</p>

		(126 minutes)	
Wk 15 Apr 18, 2016	Final Exam		

Assessment

This course will incorporate an accreditation assessment that is tied to the course outcomes and by extension, programmatic outcomes. This assessment may or may not be part of an assignment that contributes to your grade for this course. For BMM 140, the assessment will be a multi-part manufacturing math and measurement problem which will assess Programmatic Outcome #3 and Course Outcomes #5 and #6.

Student Support Services

Academic Success Center & The Math Lab

The Academic Success Center is located in room 209 and The Math Lab is located in room 219 of the River Campus. Both centers are staffed with Peer and Professional tutors that students can see on a walk-in or appointment basis. The centers provide students with consistent support and guidance throughout the learning process and encourage students to be actively involved. This is done through one-on-one, group tutoring and Academic Skills Workshops.

Academic Success Center & Math Lab Hours:

Monday-Friday 8am-9pm

Saturday 8am-2:30pm

To make a tutoring appointment please call 860-913-2090, email ASCStaff@goodwin.edu or walk into either center

eTutoring

Goodwin College offers eTutoring services through an agreement with the Connecticut Distance Learning Consortium (CTDLC). Students using the eTutoring platform may work with an eTutor in a live session or may submit a question or course assignment for an instructor to correct and/or provide feedback. eTutoring offers instruction, guidance and resources to help each student succeed. Specific information concerning eTutoring is located on the Academic Success Center webpage: http://www.goodwin.edu/academic_success_center/

Testing

The ASC also provides testing services for those who have missed a test in their class or who have accommodations approved by the Office of AccessAbility Services. Students must talk to their teachers to test in the ASC. Students with accommodations may have their tests proctored

in alternate locations. The Academic Success Center provides two testing rooms for students to make up tests that have been previously dropped off by their instructor. These rooms are located in the center.

Scheduling Exams:

Students should contact the Academic Success Center to schedule an appointment in advance. Students can walk-in or call 860-913-2090 to schedule their exam. It is strongly recommended that students reserve a testing room in advance and confirm that their exam has been delivered to the center.

Students are also welcome to take their test without reserving a room; however, if both rooms are occupied or if they are scheduled to be occupied before the student would finish their test (given the time allotted by their teacher), the student will be unable to take their test and will instead be asked to make a reservation or to return when a room becomes available.

Library Services

Read the following paragraph or download the Hoffman Family Library APP to your phone!

The Hoffman Family Library is open seven days a week (7am-9:30pm Monday to Thursday, 7-9 Fridays, 8-4 Weekends). Librarians are on site during all open hours to help students conduct research, find valuable resources, and create citations. There are many ways to get help from a librarian: call 860-913-2042, text ASKGOOD and your question to 66746, email GoodwinLibraryPersonnel@goodwin.edu, click the "Ask a Librarian" button on the library web site, or just walk in. The campus library offers computers, Wi-Fi, group study rooms, a quiet atmosphere, and an ever-growing collection of resources. The majority of the library's resources are available online 24/7 via the web site <http://www.goodwin.edu/library>. Through the web site students can access the research databases and find helpful guides and tutorials on where to find good resources for any subject, tips on how to write great papers with proper citation and formatting, and much more.

Counseling Services

Counseling services are free, confidential and available to currently enrolled students. Students visit counseling services for a variety of reasons, including:

- Mental Health: anxiety, depression, low self-esteem, mood disorders
- Relationships: family, friends, partner, bereavement
- Financial: medical, housing, food, employment
- Physical: poor body image, sexual orientation, gender identity, eating disorder
- Academic: lack of study skills, struggling with a learning disability or yet to be identified, challenges with a professor, not getting accepted into your career choice, low GPA

Please visit the website for further details: <http://www.goodwin.edu/counseling/>

- Also on the Counseling page you will find a tab on the left labeled “Resources” that offers many links to supports that may be helpful as well.

Goodwin College Policies

These general academic policies of Goodwin College may be found on the college web site at <http://www.goodwin.edu/policies/>. Additional information may be found in the college catalog at <http://www.goodwin.edu/academics/catalogs.asp>.

Academic Integrity

The Academic Integrity Policy prohibits cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty as well as other forms of fraudulence. It is the students’ responsibility to know and observe the requirements of the Goodwin College Code of Academic Integrity. The entire policy is located in the Academic Dean’s Office. Academic Integrity policy may be found at http://www.goodwin.edu/student_handbook/

AccessAbility Services

Students with disabilities may be eligible to receive accommodations as mandated by the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Students may request accommodations by contacting the AccessAbility Services Coordinator. Accommodations become effective on the date that a Letter of Accommodation is delivered to the professor. Accommodations are not retroactive. Please visit the website for further details: <http://www.goodwin.edu/AccessAbility/>

Establishing Attendance

Students must establish attendance in each course for which they are registered. Faculty report attendance on Census Day which occurs on the fifteen calendar day of each semester/module and records attendance through the fourteenth calendar day. Students who have not attended and/or participated in their course by the fourteenth day of the semester or module will be withdrawn from the course.

In order to establish attendance, students must do at least one of the following, prior to Census Day:

- Student attends an on-ground class OR
- Student posts to online discussion about an academic matter OR
- Student submits an academic assignment either on-ground or online OR
- Student takes a quiz or test either on-ground or online

Please note that posting to an introductory discussion board assignment does not constitute as establishing attendance.

Students who do not establish attendance will be administratively withdrawn from the course(s) and will be listed as a No Start (NS). These courses will not be listed on the transcripts or counted as credits attempted.

For students who do not establish attendance for all/any course(s) by Census Day a refund of 100% of applicable tuition charges less applicable fees and books, less \$500 for course withdrawn will be granted.

Students receiving Title IV funds should reference the Financial Aid and Refund Policy in the catalog or on the Goodwin College website for any financial consequences related to non-attendance.

Online Discussion Board Policy

Faculty members retain the right to remove posts deemed to contribute to a negative online environment.

Technology Policy

Access to all computer systems, networks and electronic devices owned by Goodwin College imposes certain responsibilities and obligations to all faculty, staff and students. The college's technology policy outlines the acceptable usage for all computers and peripherals, network resources, telephones and all other electronic devices owned and maintained by Goodwin College. Users failing to adhere to this policy may face disciplinary actions by Goodwin College and/or local and federal law enforcement agencies. The complete technology policy is located on the Goodwin website <http://www.goodwin.edu/pdfs/policies/technologypolicy.pdf> and in the student handbook.

This course adheres to all policies outlined in the Goodwin College catalog. For further information, see Academic Regulations as stated in the catalog.