



**MATH111** – *College Algebra for Science Majors*

Prerequisite:

Prerequisite to: **MATH113**

**Instructor:** \_\_\_\_\_  
**Consultation Hours:** \_\_\_\_\_

**Contact details:** \_\_\_\_\_  
**Class Schedule and Room:** \_\_\_\_\_

### Course Description

A course covering the number systems, algebraic functions, relations and graphs, equations, systems of equations, inequalities and inverse functions This is a basic algebra course for science students.

### Learning Outcomes

On completion of this course, the student is expected to present the following learning outcomes in line with the Expected Lasallian Graduate Attributes (ELGA)

| ELGA  | Learning Outcome   |
|---|--|
| Critical and Creative Thinker<br>Effective Communicator<br>Lifelong Learner<br>Service-Driven Citizen | At the end of the course, the students should be able to understand and explain the basic concepts of algebra. |

### Final Course Output

As evidence of attaining the above learning outcomes, the student is required to submit the following during the indicated dates of the term.

| Learning Outcome   | Required Output   | Due Date                    |
|--|---|-----------------------------|
| At the end of the course, the students should be able to understand and explain the basic concepts of algebra. | Students will be required to answer all assigned items in a given practice exercise set covering topics prior to each quiz. But items to be graded will be randomly chosen by the faculty and this will form part of the 5% of the final grade. | On each scheduled quiz date |

### Rubric for assessment

The following rubric will be used for grading students' written solutions to faculty chosen items in every required learning output.

| CRITERIA                              | Excellent (4)  | Good (3)   | Satisfactory (2)   | Needs Improvement (1)   |
|---------------------------------------|--|--|--|---|
| <b>Content and Organization (50%)</b> | In-depth and insightful discussion in addition to score 3 performance.         | Logical sequencing of information throughout. Sufficient supporting details.         | Logical sequencing of information most of the time. Details are given but inadequate to support the topic. | Information presented with little organization. Most of the details are irrelevant. |
| <b>Knowledge of Topic (30%)</b>       | Concepts in Algebra are presented correctly. Mistakes are justified correctly. | A few concepts are incorrectly stated and some mistakes are not correctly justified. | Majority of the mistakes committed are not correctly justified.  | No justification given.   |
| <b>Grammar (20%)</b>                  | No error   | Only one or two errors are committed.  | Three or four errors are committed.  | More than four errors are committed.  |

### Additional Requirements

- Quizzes (at least 3)
- Final Examination
- Seatwork, Assignment, Recitation, Homework

| Grading System                                  |  |                              |                             |  |
|---|--|------------------------------|-----------------------------|--|
|   | FOR EXEMPTED STUDENTS (w/out Final Exam) | FOR STUDENTS with FINAL EXAM |                             | <b>Scale:</b><br>95-100%      4.0<br>89-94%        3.5<br>83-88%        3.0<br>78-82%        2.5<br>72-77%        2.0<br>66-71%        1.5<br>60-65%        1.0<br><60%          0.0 |
|   |  | <i>with no missed quiz</i>   | <i>With one missed quiz</i> |  |
| Average of quizzes                              | 95%                                      | 65%                          | 55%                         |  |
| Seatwork, Homework, Board work, Learning Output | 5%                                       | 5%                           | 5%                          |  |
| Final exam                                      | -  | 30%                          | 40%                         |  |

| Learning Plan  |   |            |  |
|--|---|------------|--|
| LEARNING OUTCOMES  | TOPICS  | WEEK NO.   | LEARNING ACTIVITIES  |
| At the end of the course, the students should be able to understand and explain the basic concepts of algebra. | <b>Topic 1 Review Topics in Algebra</b><br>1.1 The Set of Real Numbers (p. 12 #1 – 50)<br>1.2 Integer Exponents (p. 25. #11 – 44)<br>1.3 Polynomials: Operations and Special Products (pp. 33-34. #1 - 100)<br>1.4 Factoring Polynomials (p 42 – 43. #1 - 120)  | Week 1 - 2 | Seatwork<br>Board work<br>Lecture and Discussion<br>Practice Exercises (see Recommended Exercises) |
|  | 1.5 Rational Expressions: Fractions and Operations (pp. 52 – 53. #7 – 70)<br>1.6 Rational Exponents and Radicals (p. 26 - 27. #65 – 70, #103 - 110)<br>1.7 Properties and Operations on Radicals (pp. 26 – 27 . #71 – 102, #111 - 118)<br>1.8 The Set of Complex Numbers (pp. 127 - 128. #1 – 68)   | Week 3 - 5 | Seatwork<br>Board work<br>Lecture and Discussion<br>Practice Exercises (see Recommended Exercises) |
|  | <b>Topic 2 Equations and Inequalities</b><br>2.1 Equations (pp. 92 - 93)<br>2.1.1 Linear Equations (#33 – 52)<br>2.1.2 Involving Rational Expressions (#56 - 70)<br>2.1.3 Literal Equations (#97 – 104)<br>2.2 Application of Linear Equations (pp. 103 - 106)<br>2.2.1 Number Relation (# 37 - 42)<br>2.2.2 Investment/Finance (#43 – 52, 71 - 72)<br>2.2.3 Mixture(#75 - 78)<br>2.2.4 Distance – Rate (#61 - 64)<br>2.2.5 Geometric | Week 6 - 7 | Seatwork<br>Board work<br>Lecture and Discussion<br>Practice Exercises (see Recommended Exercises) |

|  |   |              |  |
|--|---|--------------|--|
|  | (#57 – 58, 67 - 70)<br>2.3 Quadratic Equations in One Variable and Applications (pp. 117 – 128. # 1 – 48)<br>2.4 Other Equations in One Variable (p. 136. # 5 – 30, 35 - 58)  |              |  |
|  | 2.5 Linear Inequalities (pp. 146 - 147. # 25 - 56)<br>2.6 Polynomial and Rational Inequalities (pp. 157. #13 – 36, #41 - 50)<br>2.7 Equations and Inequalities Involving Absolute Values<br>2.7.1 Equations with Absolute Values (p 137. #71 - 76)<br>2.7.2 Inequalities with Absolute Values (p. 147. #57 - 72)                      | Week 8 - 9   | Seatwork<br>Board work<br>Lecture and Discussion<br>Practice Exercises (see Recommended Exercises) |
|  | <b>Topic 3 Systems of Equations and Inequalities</b><br>3.1 Systems of Linear Equations in Two Variables (pp. 673 - 674. #5 - 42)<br>3.2 Systems of Linear Equations in Three Variables (pp. 685. #11 – 44)<br>3.3 Systems Involving Quadratic Equations (pp. 662. #35 - 48)  | Week 10 - 11 | Seatwork<br>Board work<br>Lecture and Discussion<br>Practice Exercises (see Recommended Exercises) |
|  | <b>Topic 4 Graphs and Equation</b><br>4.1 Points in a Plane (p. 61. #5 - 14)<br>4.2 Graphs of Equations<br>4.2.1 Lines (p. 179. #17 – 28)<br>4.2.2 Circles (p. 85. #61 – 74)<br>4.3 Equations of a Line<br>4.3.1 Point-Slope Form<br>4.3.2 Slope-Intercept<br>4.3.3 Two-point Form<br>4.3.4 Intercepts Form (p. 179 – 180. #29 - 102) | Week 12 - 13 | Seatwork<br>Board work<br>Lecture and Discussion<br>Practice Exercises                             |
|  | <b>FINAL EXAMINATION</b>  | Week 14      |  |

## References

- Bittinger, M.L., Beecher, J.A., Ellenbogen, D.J., and Penna, J.A. (2009) *Algebra and Trigonometry: Graphs and Models (4<sup>th</sup> Edition)*. Boston: Pearson/Addison Wesley.
- Blitzer, R. (2007) *Algebra and Trigonometry (3<sup>rd</sup> Edition)*. Upper Saddle River, NJ: Pearson/Prentice Hall.
- Kauffman, J.E. and Schwitters, K.L. (2009) *College Algebra*. Belmont, CA: Thomson Brooks/Cole.
- Barnett, R.A., Ziegler, M.R. and Byleen, K.E. (2008) *College Algebra with Trigonometry*. Boston: McGraw Hill Higher Education.
- Larson R., Hostetler R., (2012), *Algebra and Trigonometry (8<sup>th</sup> edition)*, Cengage Learning Asia.

## Online Resources

- Elementary Algebra by Denny Burzynski, Wade Ellis from *Ebooks Directory* Accessed October 10, 2012 from: <http://www.e-booksdirectory.com/details.php?ebook=2122>
- Bernard J. Klein Publishing *Totally Free Math* Accessed October 10, 2012 from: <http://www.totallyfreemath.com/>

## Class Policies

1. The required minimum number of quizzes for a 3-unit course is 3, and 4 for 4-unit course. No part of the final exam may be considered as one quiz.
2. Cancellation of the lowest quiz is not allowed even if the number of quizzes exceeds the required minimum number of quizzes.
3. As a general policy, no special or make-up tests for missed exams other than the final examination will be given. However, a faculty member may give special exams for
  - A. approved absences (where the student concerned officially represented the University at some function or activity).
  - B. absences due to serious illness which require hospitalization, death in the family and other reasons which the faculty member deems meritorious.
4. If a student missed two (2) examinations, then he/she will be required to take a make up for the second missed examination.
5. If the student has no valid reason for missing an exam (for example, the student was not prepared to take the exam) then the student receives 0% for the missed quiz.
6. Students who get at least 89% in every quiz are exempted from taking the final examination. Their final grade will be based on the average of their quizzes and other prefinal course requirements. The final grade of exempted students who opt to take the final examination will be based on the prescribed computation of final grades inclusive of a final examination. Students who missed and/or took any special/make-up quiz will not be eligible for exemption.
7. Learning outputs are required and not optional to pass the course.
8. Mobile phones and other forms of communication devices should be on silent mode or turned off during class.
9. Students are expected to be attentive and exhibit the behavior of a mature and responsible individual during class. They are also expected to come to class on time and prepared.
10. Sleeping, bringing in food and drinks, and wearing a cap and sunglasses in class are not allowed.
11. Students who wish to go to the washroom must politely ask permission and, if given such, they should be back in class within 5 minutes. Only one student at a time may be allowed to leave the classroom for this purpose.
12. Students who are absent from the class for more than 5 meetings will get a final grade of 0.0 in the course.
13. Only students who are officially enrolled in the course are allowed to attend the class meetings.

Approved by:

Dr. Arturo Y. Pacificador, Jr.  
Chair, Department of Mathematics

April, 2014