



DE LA SALLE UNIVERSITY
College of Science
 Department of Mathematics



ABSTAL2– *Abstract Algebra 2*
 Prerequisite: *ABSTAL1*

Prerequisite to: *MODEGEO*

Instructor: _____
Consultation Hours: _____

Contact details: _____
Class Schedule and Room: _____

Course Description

ABSTAL2 is a major course for BS Mathematics students. It is a second course in Abstract Algebra which introduces students to other algebraic structures such as rings, integral domains and fields. It is designed to enhance the students' skills in logical reasoning and analysis.

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 Effective Communicator Lifelong Learner Service-Driven Citizen	At the end of the course, the student will be able to apply the appropriate mathematical concepts, well-known results, thinking processes, tools and technologies in solving various conceptual or real-life problems, whenever possible.

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 student will be able to apply the appropriate mathematical concepts, well-known results, thinking processes, tools and technologies in solving various conceptual or real-life problems, whenever possible.	A well-thought out solution to a problem set which requires the application of the various concepts discussed in the course, and the exercise of judgment on the part of the student.	Week 13

Rubric for assessment

A. Problem Set				
CRITERIA	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
Understanding 30%	There is no solution, or the solution has no relationship to the task.	The solution is not complete indicating that parts of the problem are not understood.	The solution shows that student has a broad understanding of the problem and the major concepts necessary for its solution.	The solution shows a deep understanding of the problem including the ability to identify the appropriate mathematical concepts and information necessary for its solution.
Strategies and Procedures 20%	No evidence of a strategy or procedure uses strategy that does not help solve the problem.	Uses a strategy that is partially useful, leading some way toward a solution but not to a full solution of the problem. Some parts may be correct but a correct answer is not achieved.	Uses strategy that leads to a solution of the problem. All parts are correct and a correct answer is achieved.	Uses a very efficient strategy leading directly to a solution. Applies procedures accurately to correctly solve the problem and verifies the result.
Organization and Presentation 25%	There is no explanation or the solution	There is some use of appropriate mathematical representation but	There is a clear explanation and appropriate use of accurate	There is a clear, effective explanation, detailing how the problem is solved.

	cannot be understood or it is unrelated to the problem.	explanation is incomplete and not clearly presented.	mathematical representation.	There is a precise and appropriate use of mathematical terminology and notation.
Appropriateness of Concepts and Results Used in the Solution 25%	Incorrect use of concepts and results and majors errors in computations	Some errors in the use of concepts and results as well as in the computations were noted.	A few errors in the use of concepts and results and in the computations were noted.	Computations and solutions are correct and concepts and results were correctly applied.

Additional Requirements

- Skills Check (Seatwork/Quizzes/Assignment/Boardwork)

Grading System

Learning Output:	10%	Scale:	95-100%	4.0
Skills Check:	60%		89-94%	3.5
Final Exam:	30%.		83-88%	3.0
Total:	100%		78-82%	2.5
Passing Grade: 60%			72-77%	2.0
			66-71%	1.5
			60-65%	1.0
			<60%	0.0

Learning Plan

LEARNING OUTCOME:	TOPIC	NO. OF HOURS/ WEEK NO.	LEARNING ACTIVITIES
At the end of the course, the student will be able to apply the appropriate mathematical concepts, well-known results, thinking processes, tools and technologies in solving various conceptual or real-life problems, whenever possible.	II. IDEALS AND QUOTIENT RINGS 1. Subrings 2. Ideals 3. Quotient Rings 4. Prime and Maximal Ideals QUIZ 1	7 Hours (Weeks 1-3)	Review of concepts from Absta1 Library Work Class Discussions Skills Exercises
	III. RING HOMOMORPHISMS 1. Isomorphism Theorems 2. Field of Quotients of an Integral Domain QUIZ 2	1.5 hours 12 Hours (Weeks 4-7)	Library Work Class Discussions Skills Exercises Group Work
	IV. POLYNOMIAL RINGS 1. Basic Concepts 2. Division Algorithm 3. Factor Theorem and Remainder Theorem 4. Irreducible Polynomials and Eisenstein's Criterion	1.5 hours 8 hours (Weeks 8-10)	
	V. DIVISIBILITY IN INTEGRAL DOMAINS 1. Some Concepts from Number Theory 2. Primes, Irreducibles and Associates QUIZ 3	7 hours (Weeks 10-	

	3.Principal Ideal Domains 4.Unique Factorization Domains 5.Euclidean Domains	12) 1.5 hours	
	FINAL EXAMINATION	2 hours (Week 14)	

References

- Fraleigh, J.B. (2002) *A First Course in Abstract Algebra* (7th edition), Addison-Wesley Publishing Co.
- Gallian, J. (2010), *Contemporary Abstract Algebra* (7th edition), Brooks/Cole CENGAGE Learning
- Herstein, I.N. (1986) *Abstract Algebra* (3rd edition), Prentice-Hall, Inc.

Online Resources

- Wah, A. and H. Picciotto, *Algebra: Themes, Tools and Concepts*. Accessed October 22, 2012 from www.mathedpage.org/abs-alg/abs-alg.pdf
- *Abstract Algebra Online: Lessons, Tutorials and Lecture Notes*. Accessed October 22, 2012 from archives.math.utk.edu/tutorials.html

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