

MATH C122 [03]

Calculus for the Social and Behavioral Sciences

An Independent Learning Course

Course Developer and Instructor

Dr. Don M. Jordon
Department of Science and Mathematics

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Distance Education [10]

6/3/1998

IMPORTANT INFORMATION

INDEPENDENT LEARNING THE UNIVERSITY OF SOUTH CAROLINA

WHERE TO GET HELP

For information concerning this and other independent learning courses please call:

1-800-922-2577

(nationwide)

or, if outside the United States, call

803-777-7210

If you would prefer to write or visit, our address is:

Independent Learning
University of South Carolina
Columbia, SC 29208

COURSE SUMMARY

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| Course Number: | MATH C-122 [03] |
| Course Title: | <i>Calculus for the Social and Behavioral Sciences</i> |
| Instructor: | Dr. Don M. Jordan |
| Credit Hours: | 3 |
| Prerequisite: | Qualification through placement or grade of C or better in MATH 111 or 115 |
| Assignments: | 10 Assignments |
| Exams: | 1 |

NOTE: YOU MUST PASS THE FINAL EXAM TO RECEIVE CREDIT FOR THIS COURSE

Required Text

Brief Calculus by Hallett, Gleason, Lock, Flathe, et al., Produced by the Consortium Based at Harvard. Published by John Wiley and Sons, Inc. Preliminary or 1st Edition, 1997.
ISBN: 0-471-17646-X

Course Description

Derivatives and integrals of elementary algebraic, exponential, and logarithmic functions. Maxima, minima, rate of change, motion, work, area under a curve, and volume.

INTRODUCTION

Meet Your Professor

Dr. Don Jordan is a professor of Mathematics in the College of Applied Professional Sciences at the University of South Carolina, Former President of the South Carolina Academy of Science, and Eastern Director of the United States Metric Association. He has authored a book on the metric system and established and directed the South Carolina Certified Metrication Program. He also headed a National Science Foundation program for increasing the access to careers in science, engineering and math for minority middle/elementary students in rural South Carolina. With support from the University of South Carolina and an Eisenhower grant from the Commission on Higher Education, he is also spearheading the creation of the S. C. Middle/Elementary Academy of Science, which will be the vehicle for involving middle school students and teachers in basic research projects and obtaining grants to fund those projects.

He is also the 1990 recipient of the Helms Citation of Excellence, awarded by the S. C. Science Council and the S. C. Hall of Science and Technology. The Helms award cites Jordan for developing education opportunities for students and teachers in science and technology and for raising the level of public consciousness toward science education. Specific accomplishments include his leadership as Executive Director of the South Carolina Junior Academy of Science and his creation in 1988 of a Trust Fund through SCAS/SCJAS to promote scientific research among middle school and high school students in South Carolina.

Don M. Jordan received his Ph.D. in Linear Algebra from the Department of Mathematics, University of South Carolina. Professor Jordan has developed several correspondence courses in mathematics in order to offer college credit to the student where circumstances might prevent physical attendance on campus. In addition to his teaching, he has presented talks on his research in Linear Algebra and Math Education at various universities throughout the United States. Dr. Jordan was nominated as one of the finalists for Distinguished Teacher of the Year Award by the faculty and students of the College of

Applied Professional Sciences at The University of South Carolina. Dr. Jordan received an award for best presentation, "Murder on the Coliseum Express," at the twelfth annual conference of the International Congress for Individualized Instruction at Windsor, Ontario.

He is faculty advisor to the Alpha Phi Chapter of the Alpha Tau Omega Fraternity and was selected fraternity advisor of the year in 1990. He is fluent in four computer languages and has taught Pascal in the summer program at USC for Talented and Gifted students (TAG).

Dr. Jordan has approximately 76 semester hours of graduate work with emphasis on Modern Algebra, Topology, Modern Analysis, Numerical Analysis, and Linear Algebra.

On a national level, Jordan served as President of the National Association of Academies of Science (NAAS) in 1992-93. The NAAS has a strong interest in the work of junior and collegiate academies of science and in encouraging young people interested in science. NAAS's (over 30,000 members) purpose is to provide an organization for the promotion of the common aims of the forty-five (45) state academies. He is the current NAAS representative for the South Carolina Academy of Science and the Editor of the NAAS National Newsletter. Dr. Jordan was elected to the Council of the American Association for the Advancement of Science (AAAS) the largest science organization in the world.

Dr. Jordan (February 1993) was elected a Fellow of the American Association for the Advancement of Science (AAAS), the largest science organization in the world. AAAS honors as Fellow those of its members whose efforts on behalf of the advancement of science are scientifically or socially distinguished. Within our own state of South Carolina he received the Helms Award of Excellence from the S. C. Science Council and the S. C. Hall of Science and Technology. Dr. Jordan won the distinguished researcher and scholar award for the College of Applied Professional Sciences in 1996, the highest honor a member of the College can obtain. In 1998 he was a finalist for the Teacher of the Year for the College of Applied Professional Sciences.

Professor's Personal Statement

My education, interests, and experience have been quite broad, ranging over both the natural and social sciences. The common thread which seems to run through all of these interests is the desire to “know,” to find potentially useful solutions to significant problems, and to help others achieve these goals. I sincerely want to be an excellent teacher, and I think that I can achieve this goal.

In addition to my teaching goal, I strive to be something different to the students of The University of South Carolina--to provide an environment which will make a student feel he or she is noticed. I would like to be involved in whatever ways possible for the betterment of science and mathematical education for all.

Don M. Jordan, Ph.D.
Professor, USC

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| <p>Math C 122 Calculus for Business Administration and the Social Sciences</p> |
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This is a one-semester course in Calculus at the University of South Carolina. Calculus for Business, Economics, Life Sciences, and Social Sciences is designed for a one-term Course in mathematics and for students who have had high school algebra or the equivalent. Emphasis is on computational skills, ideas, and problem solving rather than mathematical theory.

The USC Course description for Math 122 Calculus reads as follows:

Calculus for Business Administration and Social Sciences. (three hours) (Prereq: qualification through placement or grade of C or better in Math 111 or 115). Derivatives and integrals of elementary algebraic, exponential, and logarithmic functions. Maxima, minima, rate of change, motion, work, area under a curve, and volume.

You should read all the instructions pertaining to the course before you begin the first lesson assignment, and especially instructions regarding written work and the recommended study procedures.

Objectives of the Course Material

We would like this course to provide the best resources possible for you in the fundamentals of Calculus. The objective of the course is to develop the mathematical background and tools you will need to be ready to complete the math needed for Business Administration and Social Sciences. The guiding principal is to present to the student a slice of mathematics that is interesting, meaningful, and useful and that at the same time does not totally hinge on a student's ability with algebra. The goal of this course is to help students develop an understanding of Calculus. We assume that most students in this course will have completed two years of high school algebra.

COURSE INFORMATION
MATH C-122

Prerequisite: Two years of High School Mathematics or its equivalent

Number of credit hours: Three (3)

Number of lesson assignments: Ten (10)

Examination(s): Final Examination

Required textbook:

Brief Calculus

Hallett, Gleason, Lock, Flath, Et

Produced by the Consortium Based at Harvard

John Wiley & sons, Inc. Preliminary or 1st Edition 1997

ISBN: 0-471-17646-X

Customer Service: Phone: 1-800-428-3750

John Wiley & Sons, Inc.

605 Third Avenue

New York, NY 10158-0012

Recommended supplementary text:

(none of the recommended supplements are required)

Students` s Solution Manual to Accompany

Brief Calculus (not required)

TI-83 Graphics Calculator & Manual to Accompany

The Calculator

(Any graphics calculator will do, the TI-83 is used at USC)

You should use a calculator with this Course. but the Graphics Calculator is not required. You may use a calculator on the Final Exam. The Graphics Calculator can reduce computational time for this course. The features such as Nderiv and Intfn on the TI-83 will aid in the finding of Derivatives and Integrals. Most, if not all graphics calculators have similar features.

Criteria for the final grade:

The final grade will be determined by your performance on the written exercises and on the final examination. The final exam is important. Be sure to note the paragraphs below:

Because the final examination is the only supervised component of the course, a passing grade on the exam is required in order to earn credit for the course. The assignment grade will not count toward the final grade unless you pass the final examination. Failure of the exam means that you will receive a failing grade for the course, and this grade will be sent to the University Records Office for entry on your permanent record. A re-examination is not permitted to raise a grade or remove a failure. Therefore, prepare for the exam by taking time not only to complete the course assignments, but also to master the material. Pass/Fail option does not apply to independent learning.

The assigned grade will conform to the current grading system used at The University of South Carolina: A, B+, B, C+, C, D+, D, and F.

Directions for Sending in Written Work

1. You will find each assignment to be turned in the assignment package located at the back of this course outline.
2. Write all answers in the spaces provided. Label and show all work and, when necessary, use your own paper and include this with each assignment. Box in your answers on your written work.
3. Write clearly.
4. Try to work all the problems in each assignment sheet, but, should you have unusual difficulty, request a hint when you turn in your assignment. Be sure to state the problem on the assignment when you turn it in. Please do not ask me to look it up.

How to Study College Algebra

Success in the study of mathematics, like success in the study of other subjects, comes through the enthusiastic and serious work of you, the student. Keep an alert attitude and make up your mind to succeed in your study of this course. Go through each explanation in the textbook and keep handy a pencil and paper in order that you may dig into any steps you do not understand. Decide now not to leave a problem or an idea unless you really understand it. Come back to the difficult problems. Recognize the importance of keeping your work arranged neatly and in good order. Bear in mind that there may be several means of solving any given problem, and if you recognize that there is more than one method of solution, it is obvious that you should choose the method that seems easiest for you to use.

Recommended Study Procedures

1. Study carefully text material for each section assigned.
2. Try at all times to work an illustrative example given in the text by covering up the given solution first and then, after you have written out your solution on paper, uncover the solution to the example in order to see if you have worked it correctly.
3. Work all the illustrative examples and study the key terms and key formulas given in each chapter.
4. Choose a place to study that suits your study style.
5. Keep a glass of water handy.
6. Have a reward for yourself ready upon completion of an assignment.
7. Sometimes you simply have to push yourself--so do it if you have to.
8. Sometimes setting aside a specific time of each day to study this course is a good idea.
9. Use your own ideas for study that will work for you!