



UNIVERSITY OF SARGODHA

Office of the Registrar (Acad Branch)

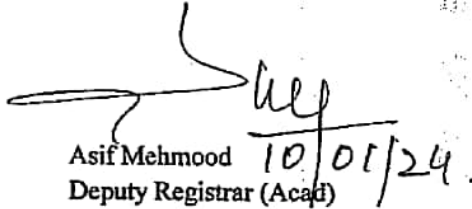
Ref: SU/Acad/24/24
Dated: 10.01.2024

The Controller of Examinations
University of Sargodha.

Subject: DEFICIENCY COURSES OF MATHEMATICS OF 6 CREDITS FOR STUDENTS OF PRE-MEDICAL BACKGROUND ADMITTED IN ADP-IT BS-CS, BS-IT AND BS-SE PROGRAMS AT AFFILIATED COLLEGES, SESSION 2023-2027 AND 2023-2025

Kindly refer to the subject cited above.

1. ^{BS-BS, BS-IT, BSSE} I am directed to enclose herewith the contents of deficiency courses of Mathematics-I and Mathematics-II each carrying 3-credit Hours to be offered to the students of pre-medical background admitted in BS-CS, BS-SE, BS-IT under session 2023-2027 in the first two semesters, in addition to already notified scheme of studies of relevant programs.
2. ^{ADP-IT} Further, the Vice Chancellor has allowed to offer the same courses to the enrolled students of ADP-IT, Session 2023-2025 having pre-medical background in the first two semesters, in addition to already notified scheme of studies, subject to approval of the Academic Council / Syndicate.
3. In view of the above, I am directed to request you to disseminate the above to the relevant Colleges and take further necessary action accordingly.


Asif Mehmood
Deputy Registrar (Acad)

99
Dated 15.01.24

Encl: As Above

C.C:

- Director Academics
- Director QEC
- Deputy Registrar (Affiliation)
- Deputy Registrar (Registration)
- Secretary to the Vice-Chancellor
- P.A to Registrar

NO: Ac/EC/BS/449
Dated: 17.01.24



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The goal of Mathematics I is to prepare students for first-year Calculus. Helping students gain proficiency in their understanding and ability to utilize real-valued functions, the primary tool in Calculus, accomplishes this goal. Students are presented a broad set of 'function tools', including a general understanding of function properties together with a 'library' of commonly used functions. It is intended that students become skilled at recognizing the different families of functions and the primary properties that set each apart, are able to apply the general function properties to each type of function, and are able to use the special set of algebraic skills associated with each. Students are also expected to become adept in utilizing and interpreting the results from graphing calculators, as an important investigative tool.

Contents

1. Preliminaries
- ✓ 2. Real-number system, complex numbers
- ✓ 3. Introduction to sets, set operations, functions, types of functions.
- ✓ 4. Matrices Introduction to matrices, types, matrix inverse, determinants, system of linear equations. Cramer's rule.
5. Quadratic Equations
6. Solution of quadratic equations, qualitative analysis of roots of a quadratic
7. Equations reducible to quadratic equations
8. Cube roots of unity, relation between roots and coefficients of quadratic
9. Sequences and Series
10. Arithmetic progression
11. Geometric progression
12. Harmonic progression
13. Binomial Theorem
14. Introduction to mathematical induction
15. Binomial theorem with rational and irrational indices.
16. Trigonometry, Fundamentals of trigonometry, Trigonometric identities.

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Recommended Texts

1. Thomas, G. B., & Finney, A. R. (2005). *Calculus*. Reading: Addison-Wesley.
2. Anton, H., Bevens, I., & Davis, S. (2005). *Calculus: A new horizon* (8th ed.). New York: John Wiley.

Suggested Readings

1. Stewart, J. (1995). *Calculus* (3rd ed.). Pacific Grove, California: Brooks/Cole.
2. Swokowski, E. W. (1983). *Calculus and analytic geometry*. Boston: PWS-Kent Company.
3. Thomas, G. B., & Finney, A. R. (2005). *Calculus* (11th ed.). Reading: Addison-Wesley.

Calculus is the mathematical study of continuous change. It has two major branches, differential calculus and integral calculus. Both branches make use of the fundamental notions of convergence of infinite sequences and infinite series to a well-defined limit. Modern calculus is considered to have been developed in 17th century. A course in calculus is a gateway to other, more advanced courses in mathematics devoted to the study of functions and limits, broadly called mathematical analysis. Calculus is used in every branch of the physical sciences, actuarial science, computer science, medicine, demography, and in other fields. It allows one to go from rates of change to the total change or vice versa, and many times in studying a problem we know one and are trying to find the other. This course aims to provide students with the essential concepts of mathematics and how these can be employed for analyzing real data.

Contents

- 1. Preliminaries
- ✓ 2. Real-number line
- ✓ 3. Functions and their graphs
- 4. Solution of equations involving absolute values, inequalities.
- ✓ 5. Limits and Continuity
- 6. Limit of a function
 - 7. Left-hand and right-hand limits
- ✓ 8. Continuity
- 9. Continuous functions.
- ✓ 10. Derivatives and their Applications
- ✓ 11. Differentiable functions
 - 12. Differentiation of polynomial
 - 13. Rational and transcendental functions, derivatives.
- 14. Integration and Definite Integrals
- 15. Techniques of evaluating indefinite integrals
- ✓ 16. Integration by substitution, integration by parts
- 17. Change of variables in indefinite integrals.

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Recommended Texts

- 1. Thomas, G. B., & Finney, A. R. (2005). *Calculus*. Reading: Addison-Wesley.
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