

UNIVERSITY OF MADRAS
B.Sc. DEGREE COURSE IN MATHEMATICS
SYLLABUS WITH EFFECT FROM 2020-2021

BMA-CSC03

CORE-III: TRIGONOMETRY
(Common to B.Sc. Maths with Computer Applications)

Inst.Hrs : 4

Credits : 4

YEAR: I

SEMESTER: II

Learning outcomes:

Students will acquire Knowledge

- About the expansions of Trigonometric Functions, Hyperbolic Functions and sum of Trigonometric Series.

UNIT I

Expansions of powers of $\sin\theta$, $\cos\theta$ - Expansions of $\cos^n\theta$, $\sin^n\theta$, $\cos^m\theta\sin^n\theta$

Chapter 2, Section 2.1, 2.1.1, 2.1.2, 2.1.3

UNIT II

Expansions of $\sin n\theta$, $\cos n\theta$, $\tan n\theta$ - Expansions of $\tan(\theta_1+\theta_2+\dots+\theta_n)$ - Expansions of $\sin x$, $\cos x$, $\tan x$ in terms of x - Sum of roots of trigonometric equations – Formation of equation with trigonometric roots. Chapter 3, Section 3.1 to 3.6

UNIT III

Hyperbolic functions - Relation between circular and hyperbolic functions - Formulas in hyperbolic functions – Inverse hyperbolic functions Chapter 4, Section 4.1 to 4.7 .

UNIT IV

Inverse function of exponential functions – Values of $\text{Log}(u+iv)$ - Complex index.

Chapter 5, Section 5.1 to 5.3

UNIT V

Sums of Trigonometric series – Applications of binomial, exponential, logarithmic and Gregory's series - Difference method. Chapter 6, Section 6.1 to 6.6.3

Content and treatment as in

Trigonometry by P. Duraipandian and KayalalPachaiyappa, Muhil Publishers.

Reference:-

1. Trigonometry, Calculus, Dr. P.R. Vittal, Margham Publications, Chennai.
2. Trigonometry by T.K. Manickavachagam Pillay, S. Viswanathan (Printers and Publishers) Pvt. Ltd.

e-Resources:

1. <http://mathworld.wolfram.com>
2. <http://ocw.mit.edu/courses/mathematics/>