Need and requirement of first aid. First aid equipment and upkeep. First AID Techniques, First aid related with respiratory system. First aid related with Heart, Blood and Circulation. First aid related with Wounds and Injuries. First aid related with Bones, Joints Muscle related injuries. First aid related with Nervous system and Unconsciousness. First aid related with Gastrointestinal Tract. First aid related with Skin, Burns. First aid related with Poisoning. First aid related with Bites and Stings. First aid related with Sense organs, Handling and transport of injured traumatized persons. Sports injuries and their treatments.

# Semester IV

## Engineering Mathematics-II                                            3 (3+0)

### Objective

To make the students acquainted with the application of various advanced mathematics such as vector calculus, Fourier series and Laplace transform and applications of numerical methods in engineering

### Theory

Vector calculus: Scalar and vector point functions, vector differential operator Del, gradient of scalar point function, divergent and curl of vector point function and their physical interpretations, line, surface and volume integrals, Green's, Stock's and Divergence theorem (without proofs), functions of a complex variable, limit, continuity and analytic function, Cauchy-Reimann equations, harmonic functions.

Fourier series: Periodic functions, Euler's formulae, functions having arbitrary period, even and odd functions, half range series expansion, series expansion of functions with finite discontinuity; Laplace Transform: rules for Laplace transform and inverse Laplace transform, applications to find solutions of ordinary and simultaneous differential equations.

Numerical methods: Finite difference operators and their relationship, factorial notation. Newton's forward and backward interpolation formula, Newton's divide difference interpolation and Lagrange's interpolation formula, numerical differentiation and integration rule, numerical solutions of ODE by Taylor's series, Euler's and modified Euler's method, Runge-Kutta method of order four.

### Suggested Readings

1. Grewal, B S. 2004. *Higher Engineering Mathematics*. Khanna Publishers Delhi.
2. Narayan, S. 2004. *A Text Book of Vector*. S. Chand and Co. Ltd., New Delhi.
3. Narayan, S. 2004. *Differential Calculus*. S. Chand and Co. Ltd., New Delhi.
4. Narayan, S. 2004. *Integral Calculus*. S. Chand and Co. Ltd. New Delhi.

    Ramana, B. V. 2008. *Engineering Mathematics*. Tata McGraw-Hill, New Delhi.

## Theory of Structures                                            2 (1+1)

### Objectives

To make the students acquainted with the principles of structural design and to enable them to design small and medium RCC and steel structures