SEMESTER-IV

COURSE 9: IMMUNOLOGY

Theory Credits: 3 3 hrs/week

I. LEARNING OUTCOMES

On successful completion of the course, the students will be able to

1. Learn about types of immunity and cells of immunity
2. Learn about Antigen and Antibody
3. Learn about cell , humoral immunity and MHC molecules
4. Learn about Hypersensitivity and vaccines
5. Learn about immunological techniques

II. Syllabus

UNIT I Immune system:

1. History and scope of immunology, cells of imthe mune system -Tcells , B cells
2. Immunity, innate immune mechanism, Acquired immune mechanism
3. Organs of the immune system (Bone marrow, spleen thymus MALT)

UNIT II Antibody and Antigen:

1. Antibody structure and classes(Ig G,Ig M Ig A Ig E I g D , Antibody diversity
2. Antigen -Types of Antigens Antigenicity (factors affecting antigenicity).
3. Antigenic determinants – adjuvants and haptens , epitopes

UNIT III Immunity:

1. Humoral immunity, cell-mediated immunity -TC-mediated immunity, NK cell-mediated immunity, ADCC,
2. brief description of cytokines , Interleukins
3. Major histocompatibility complex (MHC)-Structure and Functions of Class I ,II , MHC Molecules

UNIT IV Hypersensitivity and vaccination :

1. General features of hypersensitivity, various types of hypersensitivity,
2. Vaccination: Discovery, principles, significance,
3. Types of Vaccines -live, attenuated, killed , recombinant, subunit

UNIT V Immunological Techniques

1. Antigen-antibody reactions: Precipitation, agglutination, complement fixation, immunodiffusion, - Radial immune diffusion, ouchterlony , double immune diffusion
2. Hybridoma technology: Monoclonal antibodies and their applications in immunodiagnosis.
3. ELISA , RIA , immunoelectrophoretic , Rocket electrophoresis

III . Skills Outcome

On Successful Completion of this Course, the Student shall be able to

1. Learn about the determination of blood group
2. Learn about immunodiffusion methods
3. Learn about production of antibodies

SEMESTER-IV

COURSE 9: IMMUNOLOGY

Practical Credits: 1 2 hrs/week

IV . Practical Syllabus: Hours 2 hours per week = 30 hours

1. Antigen – antibody reaction – determination of Blood group , Cross reactivity
2. Pregnancy test
3. Widal test
4. Ouchterloney immunodiffusion
5. Radial immunodiffusion
6. ELISA
7. Isolation of casein by isoelectric precipitation
8. Production of antibodies and their titration

V. REFERENCES

1. Kuby immunology, Judy Owen, Jenni Punt, Sharon Stranford., 7th edition (2012), Freeman and Co., NY
2. Textbook of basic and clinical immunology, 1st edition (2013), Sudha Gangal and Shubhangi Sontakke, University Press, India
3. Immunology, 7th edition (2006), David Male, Jonathan Brostoff, David Roth, Ivan Roitt, Mosby, USA.
4. Immuno diagnostics, 1996, By S.C. Rastogi, Publ: New Age
5. Introduction to Immunology- 2002, C. V. Rao- Narosa Publishing House

VI. CO-Curricular Activities

a) **Suggested C0-Curricular Activities**

1. Assignments
2. Seminars, Group Discussions on related topics
3. Charts on cell mediated immunity
4. Models on antibodies