MANGALORE UNIVERSITY

DEPARTMENT OF BIOSCIENCES

MSc BIOSCIENCES

SOFT CORE COURSES

BSS 552 ENVIRONMENTAL PHYSIOLOGY 39hrs

Course Outcomes:

After successful completion of the course, students will be able to:

- Enhance the knowledge how the organisms are physiologically adapted to various environmental conditions.
- Know the basic principles of plant responses to environment.
- Understand the physiology of flowering, senescence and abscission.
- Gain the knowledge about stress physiology; how the plants response to various biotic and abiotic stress.
- Know how plant adapted to the radiation environment.
- Comprehend the physiology of circulation and respiration, including under special environmental conditions, such as high altitude and deep sea diving.
- Know how some respiratory diseases are caused.

Unit I (13 hours)

Principles of plant responses to environment; Problems of environment; Ecotypes - the role of genetics.
Photoperiodism and its significance, endogenous clock and its regulation and development. Physiology of flowering, Senescence- types, causes , physiology of senescence and its significance; Abscission.

Unit II (13 hours)

Stress physiology: Plant response to biotic and abiotic stress. Stress tolerance, HR and SAR, water deficit and drought resistance, salinity stress, metal toxicity, freezing and heat stress, oxidative stress; Plant adaptation to the radiation environment.

Unit III (13 hours)]

Circulation: Types of heart and body fluids (blood and lymph); buffering properties of blood; blood circulation ; Physiology and patterns of circulation ; Circulatory physiological features in special environment Viz., high altitude, deep sea diving.
Respiration: Transport of oxygen and carbon dioxide; regulatory mechanisms of respiration, respiratory physiological features in special environments viz. high altitude, deep sea diving; respiratory diseases.

References:

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2. Prosser, C.L. & Brown, 1983. Comparative Animal Physiology. W.B. Saunders.
3. Hoar, W.S. 1976. (2nd Edition). General and Comparative Physiology. Prentice Hall of India, New Delhi.
4. Wilson, J.A. 1979. Principles of Animal Physiology. MacMillan Pub., New York.
5. Hopkins, W.G. (1995). Introduction to Plant Physiology. John Wiley and Sons, Inc. New York.
6. Galston, A.W., 1989. Life processes in plants. Springer- Verlag, New York.
7. Nobel P.S., 1999. Physico-chemical and Environmental plant physiology.
8. Academic Press, SAn Diego, U.S.A.
9. Taiz and Zeiser, E., 1998. Plant physiology. Wordsworth Publishing Co., California, U.S.A.
10. Baldwin, E. 1964. An Introduction to comparative biochemistry Cambridge Univ. Press, Cambridge.
11. Berne, R.M. & Levy, M.N. 1991. Physiology. The C.V. Mosby Company, St. Louis.
12. Ganong, W.F. 1971. Review of Medical Physiology (5th Edition) Kotheri Book Depot, Bombay.
13. Guyton, A.C. & Hall, J.E. 1996. Text Book of Medical Physiology. 9th Ed. W.B. Saunders Company, Philadelphia.
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