ZOE506: INFECTIOUS DISEASES

Teaching Hours 10/Unit

COURSE OUTCOME

1. This course mainly deals with different parasites that are responsible for various human diseases and their epidemiology and to introduce the students to current knowledge on the morphological features and life cycles of principal human parasites.
2. Outstanding progress will be achieved to understand serious parasitic infections caused by obligate parasites, facultative and opportunistic parasites.
3. To learn methods for accurate diagnosis of parasites responsible for food poisoning.
4. To know disease transmission processes.
5. Methods of prevention and to control the spread of these parasites.
6. This course is offered as an open elective choice for students from other departments who are interested in understanding different parasite born human infections and its control.

UNIT-I

Introduction to parasitic infections : historic perspectives, Koch's hypothesis, General events in establishment of infection, infection dose, lethal dose, infectious diseases, epidemiology types of infections, nosocomial infections, antisepsis.
Modes of disinfection/sterilization

UNIT-II

Different types of animal association- parasitism and types of parasites, primary and secondary hosts, transmission of parasitic infection. Host- parasitic interactions (with reference to bacterial, viral, fungal and parasitic infections). Epidemiology of parasitic zoonosis,

UNIT-III

Parasitic protozoans- Life cycle, pathology and control measures of Mastigophora – Trypanosoma, Giardia. Sarcodina- Entamoeba. Chilophora-Balantidium. Sporozoa-Toxoplasma. Helminth parasites - Life cycle, pathology and control measures of Nematode (Ascaris, Enterobius, Wuchereria),Trematoda(Fasciola) ,Cestoda(Taenia)

UNIT-IV

Morphology, life history and medical importance of disease transmitting vectors- Diptera-Aedes, Culex, Anopheles, and House fly. Siphonoptera:,Echidnophaga, Tunga. Phthiraptera – Pediculus, Pthirus. Hemiptera _ Cimex, Triatoma

Morphology, life history and importance of Acarines Ticks: Argas,Boophilus. Mites: Sarcoptes, Psoroptes

UNIT V

Antibiotics and drug resistance: Principles for mechanisms of antibiotic action, bacteriostatic and bacteriocidal effect. Mechanisms of antibiotics resistance and its importance within the healthcare: MRSA, MDR and XDR in tuberculosis. Antiviral, antifungal, antihelminth drugs.

REFERENCES

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3. Berger, S. A., MarrJ. (2006)Human Parasitic Diseases Sourcebook, Jones & Bartlett.
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5. Despommier, Gwadz, Hotez, Knirsch(2005) Parasitic Diseases 5th edition, Apple Trees Productions, LLC.
6. Farrar, J., Hotez P., Junghanss T., Kang G. Lalloo D. and White N. J. (2013) Manson's Tropical Diseases, 23rd edition. Elsevier publication.
7. Margo, W. M. S., PybusJ. And KocanA.A. (2008). Parasitic Diseases of Wild Mammals, 2ndedition, Iowa State University Press, Ames, Iowa, USA
8. Pommerville J.C. Alcamo’s Fundamentals of Microbiology. Jones and Bartlett Publishers.
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10. Smyth J.D, Introduction to Animal Parasitology. Cambridge University Press.

ZOS507 – VERMITECHNOLOGY

Teaching Hours 10 /unit

COURSE OUTCOME

1. The course is structured to impart training on Earthworm culture technology, to create knowledge on Self - Employment opportunity
2. In general soil earthworms, their characteristic features, occurrence, their influence on soil fertility and solid waste management are included.
3. Vermicomposting technology broadly followed at the global level and some Indigenous methods, role of microbes in increasing the soil fertility by the action of earthworms, their advantages and limitations dealt.
4. Role of microbes in worms and in decomposition is discussed.
5. Vermiculture products and their benefits in agriculture practice, economics of vermitechnology along with the practical difficulties are included.
6. Students will be trained on how to maintain a small vermicompost bin as a simple method for converting the Kitchen waste.

UNIT I

Introduction to Vermitechnology. General characters and classification of Annelida. The habitat of earthworm: soil-major types (red soil, black soil, alluvial soil). Diversity and distribution of earthworms. Collection and preservation of earthworms. Earthworm as farmer's friend-role of earthworms in soil fertility. The selection of earthworms (endemic and exotic species) for vermitechnology.

UNIT II

Vermiculture and vermicomposting techniques. Methods of vermicomposting. Large scale manufacture of vermicompost. Factors affecting –Ph, moisture, temperature. Worm casts, vermiwash production and its applications. Evaluation of nutritional status of vermicomost. Use of vermicompost for crop production, use of vermicompost in land improvement and reclamation.

UNIT III

Role of earthworms in waste management, solid wastes an option for resource recovery, expert system for hotel waste management. Recycling of food and agricultural wastes. Growth response of some forest tree species to its application in a nursery. Vermifilter. Earthworms as bioreactors. Influence of chemical inputs on earthworm activity.

UNIT IV

Earthworms and microorganisms. The effects of earthworms on the number, biomass and activity of microorganisms. Importance of microorganisms as food for earthworms. Dispersal of microorganisms by earthworms. Role of intestinal microbes of earthworms on the decomposition of organic wastes.

UNIT V

Economic importance of earthworms. Uses of earthworms in food and medicine - ayurvedic and unani. Influence of pests and parasitic microbes affecting earthworms. Measures to control them. Packaging and marketing of vermicompost products and financial support by governments and NGOs for vermiculture. Potentiality of vermibiotechnology in India.

REFERENCES

1. Chauhan, A. (2012) Vermitechnology, Vermiculture, Vermicompost and Earthworms: Vermiculture, Vermicomposting, Vermitechnology and Mirobes, Lambert Academic Publishing, Germany.
2. Christy, M. V. (2008) Vermitechnology, 1st edition, MJP Publishers.
3. Dash, M. C. (2012) Charles Darwin's Plough Tool for Vermitechnology, I.K.. International Publishing House Pvt Ltd. New Delhi, India.
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5. Gupta, P.K. 2008: Vermicomposting for sustainable agriculture [2nd edition] – Agrobios – India.
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7. Kumar, A. (2005) Verms and Vermitechnology, APH Publishing.
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9. Ranganathan, L.S. – 2006 – Vermicomposting technology – from soil health to human health.
10. Sinha, R. K. et.al (2010) Vermitechnology-The Emerging 21st Century Bioengineering technology for sustainable development and protection of human health and environmentReview, Dynamic Soil and Dynamic Plant, Global Science Books.
11. Sharma S. et .al, (2009) Earthworm and Vemitechnology –Review, Dynamic Soil and Dynamic Plant, Global Science Books.
12. Talashikar, S.C. 2008: Earthworms in Agriculture – Agrobios - India