



KENYATTA UNIVERSITY

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF ZOOLOGICAL SCIENCES

**MASTER OF SCIENCE (M. SC.) (APPLIED PARASITOLOGY)
PROGRAMME**

REVISED 2018

NAME OF DEGREE: MASTER OF SCIENCE (MSC.) (APPLIED PARASITOLOGY) PROGRAMME

1.0 GENERAL INFORMATION

1.1 VISION

The vision of Kenyatta University is to be a dynamic, an inclusive and a competitive centre of excellence in teaching, learning, research and service to humanity.

1.2 MISSION

The mission of the University is to provide quality education and training, promote scholarship, service, innovation and creativity and inculcate moral values for sustainable individual and societal development.

1.3 PHILOSOPHY OF KENYATTA UNIVERSITY

Kenyatta University's philosophy is sensitivity and responsiveness to social needs and the right of every person to knowledge.

1.4 UNIVERSITY ADMISSION REQUIREMENTS

1.4.1 MINIMUM UNIVERSITY ENTRANCE REQUIREMENTS

The common regulations for all masters' degree in the University shall apply.

The general regulations for Master's degree in the School of Pure and Applied Sciences shall apply. The following shall be eligible for registration in the Master of Science in Applied Parasitology:

- a) A holder of a Bachelor of Science degree with at least an upper second class Honour's with Zoology or Botany as a single subject or as one of the two science subjects.
- b) A holder of a Bachelor of Education degree who has studied Zoology to degree level and has attained an upper second class Honour's degree.
- c) A holder of a Bachelor's degree in any other relevant areas of study such as Microbiology with at least an upper second Honour's degree and has taken units related to Parasitology.
- d) A holder of Bachelor's degree with a lower second class may be accepted provided they can produce evidence of two years' experience relevant to Parasitology.

1.4.2 PROCEDURE OF APPLICATION FOR ADMISSION TO THE UNIVERSITY

Applicants shall fill prescribed applications forms, which shall then be submitted to the Registrar (Academic). The applications will then be analyzed by the departmental postgraduate committee. The recommendations are transmitted to Registrar (Academic) office. Final approval is given by the Senate if the applicant is qualified.

1.5 ACADEMIC RESOURCES

1.5.1 Facilities and Equipment

(a) Lecture Rooms

Kenyatta University has adequate and spacious lecture rooms for postgraduate students located at the Graduate School.

(b) Library

The Post-Modern Library is equipped with cutting edge information and knowledge resources for quality services for students.

(c) Information and Communication Technology

Kenyatta University has large computer laboratories for students. In addition, the School of Pure and Applied Sciences boasts of well-equipped computer laboratory located in the Department of Zoological Sciences.

(d) Laboratories

The Department of Zoological Sciences has three laboratories, which have the capacity for capability of carrying out Histology, Microbiology, Immunology and Parasitology practicals.

(e) Museum

The Department has a well-stocked Museum with specimen covering the whole animal kingdom.

(f) Animal House

The Department has one of the best animal and insect breeding units producing animals such as rabbits, guinea pigs, rats, mice and insects.

(g) Animal Farm

There is an animal farm where rearing of animals such as goats and sheep is done. This also doubles as the experimental farm for courses in Immunology, Parasitology and Physiology.

1.5.2 Reference Materials

(a) There are core texts recommended for the programme.

(b) Kenyatta University Library has subscribed to E-resources through the OPAC for both Springer and Science direct databases.

(c) The KU library has also subscribed to print journals, as well as E-journals.

1.5.3 ACADEMIC STAFF

(a) Teaching Staff

The Department has 18 competent academic staff out of which 15 are Ph. D holders. The Department has 2 Associate professors, 5 senior lecturers, and 11 lecturers.

(b) Technical staff

The Department has ten highly trained technical and support staff.

2. THE CURRICULUM

2.1 Title of the Programme: Master of Science (M.sc.) (Applied Parasitology)

2.2 Philosophy of the Programme

The philosophy of the M. Sc. (Applied Parasitology) is learner -centred approach to learning and teaching through seminars, case studies and research on issues facing society.

2.3 Rationale of the Programme

The proposed programme will train scientists who will be equipped with the relevant skills and knowledge on diagnostic techniques of human and animal parasites, protozoa and bacteria and control measures. The programme seeks to produce graduates capable of research and management of the parasitic incetions that tropical countries are endowed with. It was designed enable the graduates have the required skills and knowledge to deal with the myriad of parasitic infections facing the world today including challenges in diagnosis, development of vaccines, reduction in transmission, drug development and control measures in line with the Sustainable Development Goals and the economic and social pillars of the Kenya vision 2030. The review of M.Sc (Applied Parasitology) programme was carried out in order ensure that the courses are rich and are in line with current demands of the job market and the emerging global trends in improvement of human health through reduction of new infections, improvement of current treatment regimes and better diagnostic techniques and control measures such vaccines development among others. The graduates of M.Sc. (Applied Parasitology) will be equipped with current information to enhance their employability and tackle issues facing society.

2.4 Goal of the Programme

The goal of this programme is to train graduates capable of undertaking cutting-edge research and innovations in parasitology sciences.

2.5 Expected Learning Outcomes of the Programme

Upon completion of the programme, students will be able to:

- (a) Apply the principles and concepts of immunology in parasitic infections for their diagnosis.
- (b) To be able to describe the biology, host-parasite interactions and diseases of helminthes the biology of protozoa, host-parasite interactions and diseases caused by protozoa in humans and animals in different parts of the world
- (c) To be able explain major pathogenic bacteria of public health importance.
- (d) Identify of arthropods of epidemiological public health importance.
- (e) Apply laboratory techniques for parasite diagnosis.
- (f) To be able to explain control of parasite diseases and their causative agents; majorly Protozoa, helminthes, ectoparasites and disease vectors

2.6 Mode of Delivery of the Programme

The programme shall be offered on a Full Time and Institutional Based Programme (IBP). The organization of semester work (number of units covered) for the specific units will be in accordance to the University regulations.

2.7 Academic Regulations of the Programme

2.7.1 Admission Requirements for the Programme

The common regulations for all Masters' degree in the University shall apply.

The general regulations for master's degree in the School of Pure and Applied Sciences shall apply. The following shall be eligible for registration in the Master of Science in Applied Parasitology:

- a) A holder of a Bachelor of Science degree with at least an upper second class Honour's with Parasitology as a single subject or as one of the two science subjects.
- b) A holder of a Bachelor of Education degree who has studied Parasitology courses to degree level and has attained an upper second class Honour's degree.
- c) A holder of Bachelor's degree with a lower second class may be accepted provided they can produce evidence of two years' experience relevant to Parasitology.

2.7.2 Course Requirements

- (a) Students are expected to attend all classes punctually. Class attendance will be taken during each lecture.
- (b) Lecturers are expected to be present during every lecture period to facilitate learning.

2.7.3 Student Assessment Policy

(a) Continuous Assessment Tests-30%

End of Semester examination-70%

Laboratory work, assignments and other tests shall be assessed as part of continuous assessment tests (CATs). All assessments shall foster critical thinking and application of knowledge.

2.7.4 Grading System

70% and above- A

60-69%- B

50-59%- C

Below 50%-E

2.7.5 Examination Regulations

The common Kenyatta University and Graduate School examination regulations and requirements for the award of a Master's degree for the University shall apply.

All units will be examined at the end of each semester, where, 30% of the marks will account for CATS while 70% accounts for final examination. Students will also write a thesis, which shall be examined and orally defended. The oral defense shall constitute 30% while thesis examination shall constitute 70% of the marks.

2.7.6 Examination Moderation

Examinations shall be set by internal examiners and moderated by the departmental examinations moderation committee.

2.7.7 Graduation Requirements

After successful completion of course work with a pass of at least 50% in all courses registered for a student shall proceed to the second year of study. A student who fails in any unit shall be required to take a supplementary examination. Following successful defense of thesis, a student shall be given permission to graduate.

2.7.8 Classification of the Degree

Upon successful oral defense of thesis, a candidate shall be awarded M. Sc. (Applied Parasitology) degree.

2.7.9 Description of the Thesis

(a) The programme will be offered through course work, examination and thesis. The Master of Science degree in Applied Parasitology shall extend for a period of at least eighteen months. In the second year of study, students will carry out research work and present a thesis.

- (b) Rationale of the thesis: The theses will provide students with a firm grip on research experience and scientific communication skills.
- (c) Facets of the thesis: A student shall be required to submit a research proposal following guidelines provided by Graduate School. The proposal is submitted to the Department of Zoological sciences, which then submits it to Graduate School through the School of Pure and Applied Sciences. After approval by Graduate School, the student shall be given permission to collect data. The student then writes the thesis, following guidelines from Graduate School.
- (d) Regulations of the thesis: The regulations governing all higher degrees of Kenyatta University shall apply. These will be taken together with regulations of Graduate School and School of Pure and Applied Sciences.

2.8 Course Evaluation

The program will be evaluated after a 4 year cycle to ensure it meets its goals and objectives. This will be accomplished through stakeholder surveys involving current learners, alumni, and current employers. Exit surveys will be done to monitor satisfaction of learners.

2.9 Management and Administration of the Programme

The programme will be managed and administered by the Department of Zoological Sciences. It shall be headed by a senior academic staff member with specialization in the area of Parasitology and taught by qualified academic staff. Quality assurance will be undertaken by the Directorate of Quality Management Systems of Kenyatta University. Students present proposals and findings at departmental seminars to ensure quality.

2.10 Programme Structure

Students registered for a Master's course in Applied Parasitology will take a total of 10 units, one of which is thesis.

2.10.1 Distribution table

The units are:

YEAR ONE (ALL CORE)				
Course Code	Course Title	Semester		Contact hours
		1	2	
SCU 800	Research Methods for Pure and Applied Sciences (School Unit) (Existing)	+		35
SCU 801	Scientific Data Analysis (School Unit) (Existing)		+	35
SZL 846	Immunology Of Parasitic And Infectious Diseases (Existing)	+		35

SZL 851	Advanced Medical Protozoology (Existing)	+		35
SZL 852	Advanced Medical Helminthology (Existing)		+	35
SZL 853	Medical Microbiology (Existing)		+	35
SZL 854	Arthropod Vectors Of Medical Importance (Existing)		+	35
SZL 855	Laboratory Methods In Parasitology (Existing)	+		35
SZL 856	Control Of Parasites (Existing)		+	35
YEAR TWO				
SMR 810	Thesis			

COURSE OUTLINES

SCU 800: Research Methods for Pure and Applied Sciences

Purpose

To impart to students knowledge on application of the correct fundamentals and mechanics of research and scientific report writing.

Expected Learning Outcomes

Upon completion of the course, the student will be able to:

- ◆ formulate research hypotheses;
- ◆ design experiments based on formulated research hypotheses;
- ◆ develop data collection tools used to collect data;
- ◆ apply the principles of quantitative and qualitative data management practices;
- ◆ apply various techniques of proposal writing;
- ◆ apply the appropriate ethical principles to research;
- ◆ competently write a thesis.

Course Content

Introduction to research, research problem, research design, legal and ethical issues, literature review, conceptual and theoretical framework, data collection methods, referencing and annexures or/and appendixes, proposal writing techniques, report and thesis writing & presentation.

Mode of Delivery

Lectures, tutorials, peer learning, forum discussions, group work, presentations, quizzes, e-learning

Instructional Materials/Equipment

Course notes, lecture handouts, marker boards, white board marker, dusters, computer and LCD projector.

Course Assessment

Laboratory reports, field reports, assignments, quizzes, forum discussions, sit-in continuous assessment tests and end of semester examinations.

Continuous Assessment Tests-	30%
End of semester examination -	70%
Total	- 100%

Course reference materials

Text Books

Cone, J.D. & Foster, S.L. (2006). Dissertations and theses from start to finish. Washington, DC: APA. BF 76.5.C645 2006

Council of Science Editors (2006). Scientific style and format: The CSE manual for authors, editors, and publishers. 7th edition. Reston, VA: The Council. REFERENCE AC1.S386 2006

Fowler, H.R. & Aaron, J.E. (2010). The Little, Brown handbook (11th ed.). New York, NY: Longman. REFERENCE PE1112.F64 2010

Gilpin, A.A. (2000). A guide to writing in the sciences. Toronto, Canada: UTorontoP. T11.G53 2000

Gustavii, B. (2003). How to write and illustrate a scientific paper. New York, NY: Cambridge. T11.G86 2003

cMillan, V.E. (2012). Writing papers in the biological sciences (5th ed.). Boston, MA: Bedford/St. Martin's. REFERENCE AC1.M36 2012

Turabian, K.L. (2007). A manual for writers of research papers, theses, and dissertations. Chicago, IL: University of Chicago Press. REFERENCE AC1.T8 2007

Journals

Journal of Research Methods and Methodological Issues

Journal of mixed method research

Journal of research practice

e-Materials

e-learning methodologies - A guide for designing and developing

www.fao.org/docrep/015/i2516e/i2516e.pdf

Teaching research methods in e-learning environments

<https://www.ncbi.nlm.nih.gov> › NCBI › Literature › PubMed Central (PMC)

e-learning methodological issues

<https://www.slideshare.net/grainne/elearning-research-methodological-issues>

SCU 801: Scientific Data Analysis

Purpose

To enable students apply scientific techniques in the collection, organization, analysis and interpretation of information for the purpose of decision making.

Expected Learning Outcomes

Upon completion of the course, the student will be able to:

- ◆ analyze data using various types of statistics;
- ◆ analyze different sources of data for research;
- ◆ formulate appropriate hypothesis to solve research problems.

Course Content

Types of statistics. Samples versus census. Sources of data. Measures of central tendency. Dispersion. Probability of distributions. Estimation point and interval. Hypothesis testing. Parametric and non-parametric. Regression and correlation. Goodness of fit.

Mode of Delivery

Lectures, tutorials, peer learning, forum discussions, group work, presentations, quizzes, e-learning

Instructional Materials

Course notes, lecture handouts, marker boards, white board marker, dusters, computer and LCD projector.

Course Assessment

Practical work, field reports, assignments, quizzes, forum discussions, sit-in continuous assessment tests and end of semester examinations.

Continuous Assessment Tests -	30%
End of semester examination -	70%
Total	- 100%

Course reference materials

Text Books

Buckland, S. T., Anderson, D. R., Burnham, K. P. and Laake, J. L. (1993). Distance Sampling: Estimating Abundance of Biological Populations. Chapman and Hall, London. 446 p.

Das, M. N. and Giri, N. C. (1979). Design and Analysis of Experiments. Wiley Eastern Ltd. New Delhi. 295 p.

Kothari, C.R (2009). Research methodology. 2nd Revised edition. Dharmesh Art Process, Delhi

Magurran, A. E. (1988). Ecological Diversity and its Measurement. Croom Helm Limited, London. 179 p.

Searle, S. R. (1966). Matrix Algebra for the Biological Sciences (Including Applications in Statistics). John Wiley and Sons, Inc., New York. 296 p.

Sukhatme, P. V., Sukhatme, B. V., Sukhatme, S. and Asok, C. (1984). Sampling theory of Surveys and Applications. Iowa State University Press, U.S.A. and ISAS, New Delhi. 526 p.

Journals

Journal of Applied Statistics

Journal of Computational Statistics and Data Analysis

Journal of Official Statistics

e-Materials

Computational Statistics and Data Analysis

<https://www.journals.elsevier.com/computational-statistics-and-data-analysis/e-learning-methodologies> - A guide for designing and developing **Statistical Applications in Genetics**: <https://www.degruyter.com/view/j/sagmbe-learning-methodological-issues>

https://en.wikipedia.org/.../Statistical_Applications_in_Genetics_and_Molecular_Biology

Computer Applications-Mathematics and Statistics

www.concordia.ca › Academics › Undergraduate programs

SZL 846: IMMUNOLOGY OF PARASITIC AND INFECTIOUS DISEASES

Purpose: To expose learners to knowledge of immunology of parasitic infection relevant for their management.

Expected Learning Outcomes

Upon successful completion of the course, the student will be able to:

- Analyze the important classes of clinical disease parasites;
- Assess the antigens of immunological importance and mode of parasite pathogenesis in animals;
- Apply the principles of immunoparasitology in the diagnosis of parasitic infections.
- Apply the principles of immunoparasitology in the management of parasitic infections.

Course Content

Host resistance to infection: immune responses, microbial and parasite antigens. Host immune responses to parasites: protozoa, helminthes and ectoparasites. Parasites evasion of host immunity. Immunological diagnosis of parasitic infections. Immunodiagnostic reagents: preparation, and quality control and standardization. Immunization and immunoprophylaxis. Vaccines: development, New approaches to vaccine development.

Mode of Delivery

Lectures, Group assignments, Class discussion, Literature search and Practical sessions.

Instructional Material/Equipment

LCD projector and computers, Black /white boards, smart board, Chalk, white board markers, dusters, Class hand outs,

Course Assessment:

Take away assignments, Practical session reports, Sit-in CATs: 30%,

Final Examination : 70%

Total 100%

Core Reading Material:

Journals

Nature immunology

Journal of Immunology

Immunity

Journal of Clinical Immunology

European Journal of Immunology

Textbooks

Chapel H, Haeney M, Misbath S. and Snowden N. (1999).Essentials of Clinical Immunology. Oxford, Blackwell Science.

Roitt IM, Brostoff J. and Male DK. (2001). Immunology. Sixth Edition. Edinburg: Mosby.

Alt FW. (2004). Advances in Immunology. Volume 82, Amsterdam: Elsevier Academic Press.

Immunology Publication: San Diego, California Elsevier 2006 . 243p

Immunology by Kubly, Janis Publication: New York W. H. Freeman and co. 1992 . 585 p. : ill.

SZL 851 ADVANCED MEDICAL PROTOZOLOGY

Purpose

To equip students with advanced knowledge on biology of protozoa, host-parasite interactions and diseases caused by protozoa in humans and animals in different parts of the world.

Expected Learning Outcomes

Upon successful completion of the course, the student will be able to:

- ◆ Identify taxonomically various medically important protozoa both in the environment and in host tissues;
- ◆ Apply knowledge on life cycles of common disease-causing protozoan to their control;
- ◆ analyze mechanisms of host-parasite interactions relating to the diseases caused;
- ◆ Relate pathologic changes in tissues caused by protozoa to clinical manifestations of disease.
- ◆ Assess factors that affect geographical distribution of protozoan diseases;
- ◆ Evaluate the economic and public health importance of parasites;
- ◆ Suggest preventive and management measures of diseases and other problems caused by the parasites;
- ◆ Diagnose protozoan infections;
- ◆ Apply principles learnt to research on protozoan infections;
- ◆ Apply the techniques and skills learnt to identify taxonomically the vectors of protozoan pathogens.

Course Content

Taxonomy, morphology and life cycles, biochemistry, physiology, ecology of protozoan parasites of human and domestic stock in the genera: Entamoeba, Endolimax, Iodamoeba, Dientamoeba, Acanthamoeba, Naegleria, Balantidium, Trypanosoma, Leishmania, Theileria,

Babesia, Giardia, Trichomonas, Plasmodium, Chilomastix, Isospora, Eimeria, Toxoplasma and Sarcocystis.

Mode of delivery

The course will be conducted by lectures, student group work research, discussions and presentations, individual written assignments, review of research papers, practical classes and demonstrations as well as field exposure in scientific and diagnostic laboratories/ institutions.

Instructional materials and Equipment

Course lecture notes/ module, course books and journals in the library, white boards and markers, dusters, computer and LCD projector. Laboratory materials, equipments and reagents for practical, transport to scientific laboratories/ institutions.

Course Assessment

CATS- 30%, End of Semester Examinations – 70% , Total 100%

Course Reference materials

Text Books

Foundations of Parasitology by L.S. Roberts and J. J. Janory

Animal Parasitology by J.D Smith

Microbiology and Microbial infections 10th Edition by Topley and Wilsons publis.

General Parasitology by T.C. Cheng

Medical Parasitology by K.J. Ryan and C.G. Ray Eds : An introduction to infectious diseases 4thEdn. McGraw, US

Journals

- Journal of Parasitology, Published by: American Society of *Parasitologists* Open Access
- Journals of Tropical Medicine and Hygiene.
- The East and Central Africa Medical Journal
- Trends in Parasitology
- International Journal for Parasitology - Elsevier
- Parasitology - Cambridge Journals Online
- Journal of Parasitology Research — An Open Access Journal
- Parasitology Research - Springer
- African Journal of Parasitology Research Open Access

E- Materials

<https://parasitesandvectors.biomedcentral.com/articles/10.1186/1756-3305-1-3>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4130665/>

<http://www.cdc.gov/parasites/sleepingsickness/biology.html>

<http://www.ncbi.nlm.nih.gov/pubmed/22023441>

https://en.wikipedia.org/wiki/Entamoeba_histolytica

<http://emedicine.medscape.com/article/212029-overview>

SZL 852 ADVANCED MEDICAL HELMINTHOLOGY

Purpose

To equip students with advanced knowledge on biology, host-parasite interactions and diseases of helminthes, particularly, Nematodes, Trematodes and Cestodes which cause diseases in humans and animals in different parts of the world or are of economic importance.

Expected Learning Outcomes

Upon successful completion of the course, the student will be able to:

- ◆ Identify taxonomically various medically important helminthes of the Phyla; Platyhelminthe and Nematoda.
- ◆ Apply knowledge on life cycles of helminthes to their control;
- ◆ Analyze mechanisms of host-parasite interactions of helminthes relating to the diseases caused;
- ◆ Relate pathologic changes in tissues caused to clinical manifestations of disease;
- ◆ Assess factors that affect geographical distribution of helminthes parasites;
- ◆ Evaluate the economic and public health importance of helminthes parasites;
- ◆ Suggest preventive and management measures of diseases and other problems caused by the helminthes;
- ◆ Diagnose helminthic infections;
- ◆ Apply principles learnt to research on helminthic parasites;
- ◆ Apply the techniques and skills learnt to identify taxonomically the vectors of helminthic parasites.

Course Content

Taxonomy, morphology and life cycles, biochemistry, ecology and physiology of helminthic parasites of humans and domestic animals. Pathology and diseases, treatment and control. Genera: Taenia, Echinococcus, Hymenolepis, Dipylidium, Diphylobothrium, Moniezia, Stilesia, Schistosoma, Clonorchis, Opisthorchis, Heterophyes, Metagonimus, Fasciolopsis, Fasciola. Intestinal nematodes. Blood and tissue nematodes.

Mode of delivery

The course will be conducted by lectures, student group work research, discussions and presentations, individual written assignments, practical classes and demonstrations as well as field exposure in scientific and diagnostic laboratories/ institutions.

Instructional materials and Equipment

Course lecture notes/ module, course books and journals in the library, white boards and markers, dusters, computer and LCD projector. Laboratory materials, equipment and reagents for practical, transport to scientific laboratories/ institutions.

Course Assessment

CATS- 30%, End of Semester Examinations – 70% , Total 100%

Course Reference materials

Text Books

Manson's tropical diseases. By Farrar, Jeremy, -- editor. | Manson, Patrick, -- Sir, -- 1844-1922. --Tropical diseases. Edition statement: 23rd edition .

Foundations of Parasitology by L.S. Roberts and J. J. Janory

Parasitology Publication: London Hodder Arnold 2005 . 889 p.:ill. Availability: Items available: Main Campus Health Sciences [QR 251 .P3 2005] (1),

Parasitology by Marquardt, William C. Publication: New York Macmillan 1985 . 636p.

Animal Parasitology by J.D Smith

Medical Parasitology by K.J. Ryan and C.G. Ray Eds : An introduction to infectious diseases 4th Edn. McGraw, US

Journals

- Journal of Helminthology
- Journal of Parasitology, Published by: American Society of *Parasitologists* Open Access

- The East and Central Africa Medical Journal
- Trends in Parasitology
- International Journal for Parasitology - Elsevier
- Parasitology - Cambridge Journals Online
- Journal of Parasitology Research — An Open Access Journal
- Parasitology Research - Springer
- African Journal of Parasitology Research Open Access
- Pete r J. Hotez, Paul J. Brindley, Jeffrey M. Bethony, Charles H. King, Edward J. Pearce, and Julie Jacobson (2008) Helminth infections: the great neglected tropical diseases. The Journal Clinical Invest.118(4); 118(4): 1311–1321

e-Materials

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2276811/>

<http://www.mfub.bg.ac.rs/dotAsset/59048.pdf>

www.ncbi.nlm.nih.gov/.../articles/PMC...

<https://genomebiology.biomedcentral.com/articles/>

www.sciencedirect.com/science/article/

[tp://emedicine.medscape.com/article/212029-overview](http://emedicine.medscape.com/article/212029-overview)

SZL 853: MEDICAL MICROBIOLOGY

Purpose:

To equip students with knowledge and skills on major pathogenic bacteria of public health importance.

Expected learning outcomes

Upon successful completion of the course, the student will be able to:

- ◆ Apply the techniques learnt to identification of pathogenic bacteria in body systems;
- ◆ Diagnose bacterial infections in humans;

- ◆ Suggest the major public health measures to control pathogenic bacteria infections;
- ◆ Apply knowledge on pathogenic bacteria to research of public health importance.

Course content

Techniques applied in pathogenic bacteria identification for diagnosis. Pathogenic bacteria affecting respiratory system, digestive system, urinal-genital system, other body systems. Public health measures to control pathogenic bacteria infections

Mode of delivery

Lectures, discussions, field visit for demonstration and practical learning, assignments

Instructional materials/equipment

Course assessments

Laboratory reports, assignments, sit-in continuous assessment tests and end of semester examinations.

CATS	30%
End of semester examination	70%
Total	100%

REFERENCES

Journals

Microbiology

Journal of microbiology

Microbiology Research

Journal of Bacteriology

Journal of Clinical Microbiology

Textbooks

Microbiology for the healthcare professional by VanMeter, Karin C. Publication: Maryland Heights Mosby/Elsevier 2010 . 522 p. : ill.

Environmental microbiology and biotechnology by Singh, D. P. Publication: New Delhi New Age International 2004 . 239 p. : ill.

Microbiology: an evolving science by Slonczewski, Joan L. Publication: New York W.W.Norton & Company, inc. 2009 . 1096, [150] p. : illustrations

Prescott's microbiology by Willey, Joanne Publication: New York McGraw-Hill 2013 . 1149 p. : ill.

Prescott, Harvey and Klein's microbiology by Willey, Joanne Publication: New York McGraw-Hill 2008 . 1082[79] p. : ill.

SZL 854 – ARTHROPOD VECTORS OF MEDICAL IMPORTANCE

Purpose

To provide students with knowledge and skills on the identification of arthropods of epidemiological public health importance.

Expected learning outcomes

Upon successful completion of the course, the student will be able to:

- ◆ Analyze the role of arthropods in parasitic disease epidemiology in man and animals;
- ◆ Classify various arthropod species of public health importance;
- ◆ Taxonomically identify the arthropod species of public health importance;
- ◆ Apply knowledge on life cycles and morphology of arthropods of medical importance to their control;
- ◆ Apply knowledge acquired to research on arthropod species of public health importance.

Course content

Biology of the main vectors of human and veterinary importance including; mollusca, Pentastomida, Heteroptera, Acarina, Anoplura, Siphonoptera, Diptera, Coleoptera and Hemiptera. Crustacea, Arachnida.

Mode of delivery

Lectures, discussions, assignments, laboratory practical lessons (for morphological classification and identification)

Course assessment

Laboratory reports, assignments, continuous assessment tests and end of semester examination.

CATs 30 %

End of semester examination – 70%

Total – 100%

Course reference materials

REFERENCES

Journals

Parasites and vectors
Experimental Parasitology
Journal of Parasitology
International Journal of Parasitology
Parasitology
Parasites

Textbooks

Medical Entomology: A Textbook on Public Health and Veterinary Problems Caused by Arthropods. Eldridge Bruce F. Edman John D. (eds.) Kluwer Academic Publishers, Norwell, MA, (2000) 659 pp., Hardcover, ISBN 0-7923-6320-5

A Colour Atlas of Arthropods in Clinical Medicine -By Wallace Peters. 304 pp., illustrated. London, Wolfe, 1992.. ISBN: 0-8151-6679-6 (Distributed in the U.S. by Mosby-Year Book, St. Louis).

A guide to human parasitology: for medical practitioners by Vlacklock, D.B.Publication: London The English Language Book Society 1977 . 216p.

Textbook of medical parasitology by Paniker, C.K.JPublication: New Delhi Jaypee brothers 1989 . 224p.:ill

Animal models in parasitology : proceedings of... by Owen, Dawn G - ed.Publication: London Macmillan 1982 . 232p.:ill

Essentials of parasitology by Schmidt, Gerald D | Meyer, Mavin CPublication: New Delhi Universal book stall 1988 . 294p.:ill

Progress in Parasitology by Mehlhorn, Heinz.Publication: Berlin, Heidelberg : Springer Berlin Heidelberg, 2011

E resources

Electronic atlas of parasitology by Sullivan, John T.Publication: [U.S.A.] McGraw-Hill 2000 . 1 CD-ROM

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2276811/>

<http://www.mfub.bg.ac.rs/dotAsset/59048.pdf>

www.ncbi.nlm.nih.gov/.../articles/PMC...

<https://genomebiology.biomedcentral.com/articles/>

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[tp://emedicine.medscape.com/article/212029-overview](http://emedicine.medscape.com/article/212029-overview)

SZL 855: LABORATORY METHODS IN PARASITOLOGY

Purpose

To provide candidate with skills and knowledge on application of laboratory techniques for parasite diagnosis.

Expected learning outcomes

Upon successful completion of the course, the student will be able to:

- ◆ apply the principles and concepts of quality control and assistance in parasitological diagnosis;
- ◆ identify the pathological lesions associated with parasitological infections through post mortem description;
- ◆ Apply concepts learnt to research.

Course content

Principles and concepts of quality control and assistance in parasitological diagnosis. Parasitological diagnosis of Protozoa, Helminthes, Ectoparasites. Pathological lesions associated with parasitological infections by post mortem description

Mode of delivery

Lectures, discussions, field visit for demonstration and practical learning, assignments
Instructional materials/equipment

Course assessments

Laboratory reports, assignments, sit-in continuous assessment tests and end of semester examinations.

CATS	30%
End of semester examination	70%
Total	100%

REFERENCES

Journals

Experimental Parasitology
Journal of Parasitology
International Journal of Parasitology
Parasitology
Parasites

Textbooks

A guide to human parasitology: for medical practitioners by Vlacklock, D.B. Publication: London The English Language Book Society 1977 . 216p.

Textbook of medical parasitology by Paniker, C.K. Publication: New Delhi Jaypee brothers 1989 . 224p.:ill

Animal models in parasitology : proceedings of... by Owen, Dawn G - ed. Publication: London Macmillan 1982 . 232p.:ill

Essentials of parasitology by Schmidt, Gerald D | Meyer, Mavin C Publication: New Delhi Universal book stall 1988 . 294p.:ill

Progress in Parasitology by Mehlhorn, Heinz. Publication: Berlin, Heidelberg : Springer Berlin Heidelberg, 2011

E resources

Electronic atlas of parasitology by Sullivan, John T. Publication: [U.S.A.] McGraw-Hill 2000 . 1 CD-ROM

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2276811/>

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SZL 856 CONTROL OF PARASITES

Purpose

To equip students with advanced knowledge on control of parasite diseases and their causative agents; majorly Protozoa, helminthes, ectoparasites and disease vectors, which cause diseases in humans and animals in different parts of the world or are of economic importance.

Expected Learning Outcomes

Upon successful completion of the course, the student will be able to:

- ◆ Relate disease causing agents, such as protozoa, helminthes and ectoparasites to environmental characteristics;
- ◆ Analyze the biology of disease causing agents in their hosts and vectors and other natural environments;
- ◆ Relate epidemiological patterns and geographical distributions of disease causing parasites to their modes of transmission;
- ◆ Apply the concepts of disease control, eliminations, extinctions and eradications to local and global research;
- ◆ Assess priority diseases for intervention in different countries using WHO criteria.
- ◆ Recommend strategies for control of different types of parasitic diseases, whether vector-borne, food borne, water-borne or otherwise.
- ◆ Evaluate challenges facing disease control and prevention particularly in tropical countries.

Course Content

Epidemiology of vector borne diseases. Biological control of vectors. Immunological control of parasitic infections. Chemotherapy and chemoprophylaxis. Problems associated with control of parasites and their vectors.

Mode of delivery

The course will be conducted by lectures, student group work research, discussions and presentations, individual written assignments, practical classes and demonstrations as well as field exposure in research and diagnostic laboratories/ institutions.

Instructional materials and Equipments

Course lectures and notes, course books and journals in the library, white boards and markers, dusters, computer and LCD projector. Laboratory materials, equipments and reagents for practical, transport to scientific laboratories/ institutions.

Course Assessment

Laboratory reports, assignments, sit-in continuous assessment tests and end of semester examinations.

CATS	30%
End of semester examination	70%
Total	100%

Core Reference materials

Text Books

Control of Human Parasitic Diseases By David H. Molyneux Lymphatic Filariasis Support Centre, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool, L3 5QA, UK

Prevention and control of intestinal parasitic infections: WHO Technical Report Series N° 749 Report of a WHO Expert Committee

The Treatment and Control of Parasitic Diseases Philip Davis Marsden *Reviews of Infectious Diseases* Vol. 4, No. 4, The Biology of Parasitic Infection: Workshop on Interactions of Nutrition and Parasitic Diseases(1982), pp. 885-890. Published by: Oxford University Press. Stable URL: <http://www.jstor.org/stable/4452850>

Foundations of Parasitology by L.S. Roberts and J. J. Janory

Medical Parasitology by K.J. Ryan and C.G. Ray Eds : An introduction to infectious diseases 4thEdn. McGraw, US

Journals

- Journal of Helminthology
- Journal of Parasitology, Published by: American Society of *Parasitologists* Open Access
- The East and Central Africa Medical Journal
- Trends in Parasitology
- International Journal for Parasitology - Elsevier
- Parasitology - Cambridge Journals Online
- Journal of Parasitology Research — An Open Access Journal
- Parasitology Research - Springer
- African Journal of Parasitology Research Open Access
- Pete r J. Hotez, Paul J. Brindley, Jeffrey M. Bethony, Charles H. King, Edward J. Pearce, and Julie Jacobson (2008) Helminth infections: the great neglected tropical diseases. *The Journal Clinical Invest.* 118(4); 118(4): 1311–1321

E- resources

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