MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2023-24
Module Code	3176
Module Title	Integrated Vector Management
Module Organiser(s)	Professor Jo Lines & TBC
Faculty	Infectious & Tropical Diseases
FHEQ Level	Level 7
Credit Value	**CATS:** 15 **ECTS:** 7.5
HECoS Code	100345:101317 (1:1)
Term of Delivery	Term 3
Mode of Delivery	For 2023-24 this module will be delivered by predominantly face-to-face teaching modes. Where specific teaching methods (lectures, seminars, discussion groups) are noted in this module specification these will be delivered by predominantly face-to-face sessions. There will be a combination of live and interactive activities (synchronous learning) as well as recorded or self-directed study (asynchronous learning), plus face-to-face laboratory classes.
Mode of Study	Full-time
Language of Study	English
Pre-Requisites	None. Those who have no knowledge at all of vector biology will be given a brief introduction and directed to sources where a few basic biological facts are presented in a simple and condensed format.
Accreditation by Professional Statutory and Regulatory Body	None
Module Cap (Indicative number of students)	18 to 25 (numbers may be capped due to limitations in facilities or staffing)
Target Audience	This module is aimed at anyone who wants to know about practical methods of disease vector control, their technical basis and operational requirements.
Module Description	Vector-borne diseases (VBD) including malaria, dengue, zika virus and yellow fever are a major public health problem

	worldwide. Together, they account for 10% of the total global burden of infectious disease and threaten 80% of the world's population, mainly in sub-Saharan Africa, south Asia and the Americas. Vector control is the backbone of efforts to control VBD. Integrated vector management is an approach to vector control that aims to use resources optimally, particularly by combining interventions across diseases and sectors. This module is designed to equip students with a practical knowledge of implementing vector control interventions, current challenges in the field and global vector control policy. The module provides an ideal foundation for students interested in working in vector control, from research to policy and implementation through national control programs.
Duration	5 weeks at 2.5 days per week
Timetabling slot	Slot E
Last Revised (e.g. year changes approved)	September 2023

Programme(s) This module is linked to the following programme(s)	**Status**
MSc Medical Entomology for Disease Control	Compulsory
MSc Control of Infectious Diseases	Recommended Option
MSc Medical Parasitology	Recommended Option

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • provide students with practical knowledge of how vectors can be controlled using a combination of interventions.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to: 1. Demonstrate knowledge and understanding of chemical, physical and biological methods of controlling vectors and intermediate hosts; 2. Make provisional recommendations, based on scientific evidence, about the appropriateness and cost-effectiveness of particular methods for addressing vector control problems in particular settings;

Module Intended Learning Outcomes
3. Formulate accurate responses to key questions about side effects and resistance problems arising from application of vector control and their management, as well as current challenges and policy in global vector control.

Indicative Syllabus

Session Content
The module is expected to cover the following topics: • Lectures on chemical control and how to apply it against various types of insect vector, rodents and snails, including insecticides and repellents; • Environmental management to prevent breeding of vectors and reduce human exposure to vectors; • Biological (including genetic) control methods; • Practical classes on mosquito larval control, repellents and insecticide resistance; • Field trip to observe mosquito larval and pupal populations in Epping Forest; • The technical and biological basis of public health policies.

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	56	37
Directed self-study	7	5
Self-directed learning	48	32
Assessment, review and revision	39	26
Total	**150**	**100**

Student contact time refers to the tutor-mediated time allocated to teaching, provision of guidance and feedback to students. This time includes activities that take place in face-to-face contexts such as lectures, seminars, demonstrations, tutorials, supervised laboratory workshops, practical classes, project supervision as well as where tutors are available for one-to-one discussions and interaction by email.

The division of notional learning hours listed above is indicative and is designed to inform students as to the relative split between interactive and self-directed study.

Teaching and Learning Strategy
Teaching includes lectures, on-campus laboratory practicals and demonstrations, and one field trip.

Assessment

Assessment Strategy
The assessment for this module has been designed to measure student learning against the module intended learning outcomes (ILOs) as listed above. Formative assessment methods may be used to measure students' progress. The grade for summative assessment(s) only will go towards the overall award GPA. The assessment for this module will online. **An essay** on a selected and individually-tailored topic in Integrated Vector Management (75% of the total mark for the assessment) **A short presentation** to the class on the same topic as the essay (25% of the total mark for the assessment)

Summative Assessment

Assessment Type	**Assessment Length (i.e. Word Count, Length of presentation in minutes)**	**Weighting** (%)	**Intended Module Learning Outcomes Tested**
Coursework	2,000 words (not including references)	75	1-3
Individual Presentation	7-8 minutes plus 2-3 minutes of questions	25	1-3

Resitting assessment
Resits will accord with the LSHTM's Resits Policy The task will be electronic submission of a PowerPoint presentation and electronic submission of an essay – presentations and essays cover the same topic

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Resources

Indicative reading list

1. Brady OJ, Godfray HCJ, Tatem A et al. *Vectorial capacity and vector control: reconsidering sensitivity to parameters for malaria elimination. Trans R Soc Trop Med Hyg* 2016; 110: 107-117.
2. Golding N, Wilson AL, Moyes CL, et al. Integrating vector control across diseases. *BMC Med*. 2015; 13: 249.
3. Guest, C, Pinder M, Doggett M et al. Trained dogs identify people with malaria parasites by their odour. *Lancet Infectious Diseases* 2019; 19: 578-580.
4. James S, Godfray H, Charles J, et al. Pathway to Deployment of Gene Drive Mosquitoes as a Potential Biocontrol Tool for Elimination of Malaria in Sub-Saharan Africa: Recommendations of a Scientific Working Group. *American J Trop Med Hyg* 2018; 98: 1-49.
5. Kleinschmidt I, Bradley J, Knox T et al. Implications *of insecticide resistance for malaria vector control with long-lasting insecticidal nets: a WHO-coordinated, prospective, international, observational cohort study. Lancet Infectious Diseases* 2018; 18 (6).
6. Seelig F, Bezerra H, Cameron M et al. The COVID-19 pandemic should not derail global vector control efforts. *PLOS Neglected Tropical Diseases* 2020; 14: e0008606.
7. Sim, S, Ng LC, Lindsay SW et al. A greener vision for vector control: The example of the Singapore dengue control programme. *PLOS Neglected Tropical Diseases* 2020; 14: e0008428.
8. Sinka ME, Pironon NC, Massey J et al. A new malaria vector in Africa: Predicting the expansion range of *Anopheles stephensi* and identifying the urban populations at risk. *PNAS* 2020 e202003976.
9. Sommerfeld J, Kroeger A. Innovative community-based vector control interventions for improved dengue and Chagas disease prevention in Latin America: introduction to the special issue. *Trans R Soc Trop Med Hyg* 2015; 109: 85-8.
10. van den Berg, H., Kelly-Hope, L.A. & Lindsay, S.W. (2013). Malaria and lymphatic filariasis: the case for integrated vector management. *Lancet Infectious Diseases* 2013; 13: 89-94
11. Wilson AL, Boelaert M, Kleinschmidt I, Pinder M, Scott TW, Tusting LS, Lindsay, SW. Evidence-based vector control? Improving the quality of vector control trials. *Trends Parasitol.* 2015; 31: 380-90.
12. Wilson AL, Dhiman R, Kitron U, Scott TW, van den Berg H, Lindsay SW. Benefit of insecticide-treated nets, curtains and screening on vector borne diseases, excluding malaria: a systematic review and meta-analysis. *PLoS Negl Trop Dis* 2014; 8: e3228

Other resources

1. WHO. A toolkit for integrated vector management in sub-Saharan Africa. Geneva: World Health Organization, 2016.
2. WHO. Global Vector Control Response 2017-2030. Geneva: World Health Organization, 2017.
3. Hmooda Kafy, 2018. IVM in Sudan. https://endmalaria.org/sites/default/files/Hmooda-Kafy_IVM-in-Sudan.pdf

Teaching for Disabilities and Learning Differences

The module-specific site on Moodle gives students access to lecture notes and copies of the slides used during the lecture. Where appropriate, lectures are recorded and made available on Moodle. All materials posted on Moodle, including computer-based sessions, have been made accessible where possible.

LSHTM Moodle is accessible to the widest possible audience, regardless of specific needs or disabilities. More detail can be found in the Moodle Accessibility Statement which can also be found within the footer of the Moodle pages. All students have access to "SensusAccess" software which allows conversion of files into alternative formats.

Student Support Services can arrange learning or assessment adjustments for students where needed. Details and how to request support can be found on the LSHTM Disability Support pages.