Module/Subject outline

Module/Subject general information	
1. Specialization: Medical biotechnology	**2. Credit level:** Level 1 **3. Mode of Study:** Stationary
4. Year: II	**5. Semester:** IV
6. Module title: English language teaching module **Subject title:** Biology of parasites	
7. Module/Subject status: subject to selection	
8. Contributing Unit: Department of Parasitology 41-200 Sosnowiec, Jedności 8, tel. +48 323641190, solarzk@sum.edu.pl, http://zaklad-parazytologii.slam.katowice.pl	
9. Module/Subject director: (contact details, surname, name, e-mail address): Prof. Krzysztof Solarz PhD, solarzk@sum.edu.pl	
10. Aims of the Subject: This subject aims to provide students with the knowledge, critical understanding, practical competencies and expertise in biology of the most important parasites of man. This subject looks at the importance of human parasites, including medical aspects, parasite biology, life-cycles, ecology, host responses, principles of parasite epidemiology and transmission as well as the strategies for parasite detection, diagnosis and control. It will concentrate also on the population biology, ecology, epidemiology, diagnostics and control of parasitic protozoa, helminths of medical impact, and selected arthropods, including the principal vectors and reservoirs of infectious diseases of man. Moreover the module/subject aims to provide students with the basic knowledge on the molecular biology and biochemistry of parasites, different interactions between parasites and the immune system of human hosts, and also on the most important parasitic diseases of man with an emphasis on the practical methods used in diagnosis, control and treatment, on the transmission and control of vectors of parasites, on and on new methods or techniques used in modern parasitology, including studies of parasites, their biology, vectors, hosts and studies on parasitic arthopods and diseases transmitted by them.	
11. Entry requirements: It is recommended that students have passed anatomy, pathomorphology, medical histology and physiology, microbiology, metabolic processes, molecular biology, genetics, hygiene and epidemiology, environmental toxicology, basic systematics of plants, animals and fungi.	

12. Learning Outcomes

Learning Outcome Number	Learning Outcomes Upon successful completion of the module/Subject, the student will be able to:	In relation to the learning outcomes for the program	In relation to the learning outcomes for the subject area
01	assess and discuss the nature of zoonotic relationships in the transmission of parasitic protozoans and helminths, demonstrate knowledge and understanding of the epidemiology of parasitic diseases of man, identify the unique adaptations of parasites and critically review their importance in survival and completation of their life cycles, and be able to critically evaluate how this information can be used to develop effective control measures;	K1_U17	M1_U04
02	use laboratory diagnostic techniques to detect and identify the majority of most important human parasites and their vectors or hosts and apply a range of diagnostic techniques of molecular biology and critically interpret research results, apply a range of	K1_W19	M1_W03

	immunological techniques and critically interpret the outcomes;		
03	demonstrate an in-depth knowledge of the life cycles and biology of the most important parasitic protozoans, helminthes and arthropods, apply this knowledge to an understanding how diseases are transmitted to humans and how the parasites cause disease pathologies, critically review the exploitation of differences in the molecular biology and biochemistry between parasites and their vectors and hosts in relation to therapy in parasitic diseases and vaccine research;	K1_U17	M1_U04
04	demonstrate competency in a range of laboratory skills and bioinformatic tools relevant to the field of parasitology and vector biology;	K1_U03	M1_U01
05	demonstrate knowledge and understanding of key concepts in the parasite population biology and genetics, and discuss their relevance to the biology and control of vectors, and critically evaluate current thinking on human parasitology and biology of parasites and their vectors.	K1_W17 K1_W20	M1_W03 M1_W04

13. Acitvity forms in relation to the learning outcomes

Number Learning Outcomes	Teaching methods					
	lecture	seminar	Laboratory	practical lab	other	e-learning
01			X			
02			X			
03			X			
04			X			
05			X			

14. Programme contents

14. Teaching method: Laboratory		**Number of Hours**
S1	Fundamental biology and life cycles of human parasitic protozoans, helminths and their vectors; biology and life cycles of human parasitic arthropods; differences of molecular biology, cell biology and biochemistry between parasites and their vectors and/or hosts.	6
S2	Diagnostic parasitology techniques, including diagnostic methods of molecular biology and a range of immunological techniques.	6
S3	Zoonotic relationships in the transmission of parasitic protozoans and helminths, epidemiology of human parasitic diseases, adaptations of parasites, vector biology and control.	6
S4	Medical importance of major human parasitic protozoans, helminths and their vectors; immunology of parasitic infections; most important parasitic diseases of man – preventive treatment, vaccination and therapy.	6
S5	Most important parasitic arthropods – medical impact, transmission of diseases and control.	6
Total		**30**
Total number of hours for the module/subject		**30**

15. Teaching methods

15.1. Laboratory	Communicative methods: introductive lecture, informative talk, program learning, student oral presentations, critical analysis of research papers and/or

	data bases
15.2. Laboratory	Exhibiting methods: demonstration of photos, films, multimedia presentations, demonstration of photos, e-books, Internet data bases, video channel
15.3. Laboratory	Practical methods: demonstration of microscopic slides and total specimens of parasites, practical exercises

Learning outcomes verification methods

Learning outcome number	Verification methods	Pass requirements
01	1. Class test. 2. Practical identification of particular developmental stages of selected species of parasites.	1. Student must pass tests at 65 percent or higher. 2. Student must identify 3/5 or more microscopic slides with selected parasites.

17. Obciążenie pracą studenta

Acivity form	Average number of hours for the particular activity	
Hours in contact with an Academic Teacher	participation in Labs	30
	participation in seminars	0
	Consultations	5
	Total/together	**35**
Own Student's Work	Preparation for seminars	0
	Preparation for oral examinations and tests on seminars	20
	Preparation for labs	30
	Total/together	**50**
Altogether		**85**
Total number of the ECTS points for the Subject/Module		**3**

18. Summarizing indicators characterizing the subject

Number of the ECTS points obtained during the obligatory seminars requiring the presence of academic teachers	2
Number of the ECTS points obtained for the obligatory seminars	1

19. Literature

19.1. Basic

1. Markell, E. K., Voge, M., John, D. T., 1992 (or later editions). *Medical Parasitology*. W.B. Saunders Co.
2. Marr, J., Nilsen, T. W., Komuniecki, R. W., 2003. *Molecular Medical Parasitology*. Academic Press.
3. Hyde, A., 1990: *Molecular Parasitology*. Open University Press.
4. Bogitsh, B. J., Oeltmann, T. N., Carter, C. E., 2005. *Human Parasitology*. Third Edition. Academic Press.
5. Neva, F. A., Brown, H. W., 1994. *Basic Clinical Parasitology*. Appleton & Lange.
6. Leventhal, R., Cheadle, R., 2002. *Medical Parasitology: A Self-Instructional Text*. F. A. Davis Co.
7. Crampton, J. M., Beard, C. B., Louis, C., 1997. *Molecular Biology of Insect Disease Vectors: A methods manual.* Chapman and Hall.
8. Smith, D. F., Parsons, M., 1996. *Molecular Biology of Parasitic Protozoa (Frontiers in Molecular Biology)*. Oxford University Press.
9. Moore, J., 2002. *Parasites and the Behavior of Animals (Oxford Series in Ecology and Evolution)*. Oxford University Press.
10. Marr, J., Muller, M., 1995: *Biochemistry and Molecular Biology of Parasites*. Academic Press Limited.
11. Morand, S., Beaudeau, F., Cabaret, J., 2011. *New Frontiers of Molecular Epidemiology of Infectious Diseases.* Springer Science.
12. John, D. T., Petri, W. A., Markell, E. K., Voge, M., 2006. *Markell and Voge's Medical Parasitology*. Elsevier Health Sciences.

13. Beaver, P. Ch., Jung, R. C., Cupp, E. W. 1984. *Clinical Parasitology*. Lea & Febiger.
14. Gillespie, S. H., Person, R. D., 2001. *Principles and Practice of Clinical Parasitology*. Wiley & Sons Ltd.
15. Bartosik, K., Buczek, A., Cielecka, D., Cisowska, A., Grytner-Zięcina, B., Kiziewicz, B., Kosieliński, P., Kuźna-Grygiel, W., Myjak, P., Olszewski, T., Olszewski, K., Piasecki, W., Pokora, Z., Solarz, K., Stańczak, J., Turkowicz, M., Wojnicz, D., 2006. *Parasitology for Medical Students* (A. Buczek ed.). Koliber.
16. Bartosik, K., Buczek, A., Cielecka, D., Cisowska, A., Grytner-Zięcina, B., Kiziewicz, B., Kosieliński, P., Kuźna-Grygiel, W., Myjak, P., Olszewski, T., Olszewski, K., Piasecki, W., Pokora, Z., Solarz, K., Stańczak, J., Turkowicz, M., Wojnicz, D., 2007. *Parasitology for Medical Students* (A. Buczek ed.). Second Edition. Koliber.

19.2. Additional literature

1. Ash, L. R., Lawrence, R., Orihel, T. C., 2007. *Atlas of Human Parasitology*. American Society for Human Pathology Press.
2. Gullan, P.J., Cranston, P. S., 2000. *The Insects. An Outline of Entomology*. Second Edition. Blackwell Science Oxford.

20. Additional helpful information about the module/subject

20.1. Number of Students per group	Seminary group – 20 students
20.2. Materials for seminars	Notice-board, schedule of seminars, website of the Department of Parasitology, hand-outs for the particular seminars
20.3. Place	Department of Parasitology, 41-218 Sosnowiec, Jednosci 8, Room 202
20.4. Place, day and hour of consultations	Department of Parasitology, Room 201, Wednesday and Thursday, 13:00-15:00
20.5. Others	

21. Forms of assessment – details

Outcome	For the score 2	For the score 3	For the score 4	For the score 5
Outcome 01	Student is not able to explain basic problems in relation to the subject	Student demonstrates low knowledge and competency in relation to the subject	Student demonstrates good (sufficient) knowledge and competency in relation to the subject	Student demonstrates very good knowledge and competency in relation to the subject
Outcome 02	Student is not be able to explain basic problems in relation to the subject	Student demonstrates low knowledge and competency in relation to the subject	Student demonstrates good (sufficient) knowledge and competency in relation to the subject	Student demonstrates very good knowledge and competency in relation to the subject
Outcome 03	Student is not be able to explain basic problems in relation to the subject	Student demonstrates low knowledge and competency in relation to the subject	Student demonstrates good (sufficient) knowledge and competency in relation to the subject	Student demonstrates very good knowledge and competency in relation to the subject
Outcome 04	Student is not be able to explain basic problems in relation to the subject	Student demonstrates low knowledge and competency in relation to the subject	Student demonstrates good (sufficient) knowledge and competency in relation to the subject	Student demonstrates very good knowledge and competency in relation to the subject
Outcome 05	Student is not be able to explain basic problems in relation to the subject	Student demonstrates low knowledge and competency in relation to the subject	Student demonstrates good (sufficient) knowledge and competency in relation to the subject	Student demonstrates very good knowledge and competency in relation to the subject