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| **Title and code** of the subject: **Pond culture and fisheries management, MTMVG7007A** | **ECTS Credit: 4** |
| **Type** of the subject: compulsory |
| **Ratio of theory and practice:** (credit%) **50/50** |
| **Type and number of classes per semester**: 28 hour(s) lecture and 28 hour(s) practice per **semester** Number of classes per week: 2+2 |
| **Type of exam**: exam |
| **Subject in the curriculum:** semester 1 |
| Preliminary requirements:- |

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| **Summary of content - theory**:  |
| Course objectives: to provide theoretic information on pond fish culture and fisheries management including key species, fish propagation, extensive and intensive technologies, including feeding as well as the significance of stock assessment and the factors influencing fish production in inland fisheries management.1. Current status and tendencies in pond fish culture
2. Pond construction, engineering and water management
3. Applied hydrobiology – plankton management
4. Fish biology propagation and larvae management
5. Feeding and nutrition
6. Pond management and harvesting
7. Multifunctional and integrated aquaculture
8. Aquatic and fisheries resources
9. Key fish species
10. Fish biology: growth, recruitment and management
11. Fish population ecology and dynamics
12. Stock assessment and management
13. Inland fishing methods and equipment
14. Inland fisheries engineering and construction
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| **Summary of content - practice**: |
| Skills to be learnt: information will be provided for the practical application of theoretic skills. The essays, calculations, plans to be submitted are closely related to the topics below:1. Basics of construction design and calculations for a pond farm
2. Plankton sampling, evaluation and calculations of plankton yield
3. Propagation and larvae rearing of selected freshwater fish species
4. Feed design and formulation
5. Management plan of a pond farm
6. Management plan of an intensive aquaculture system
7. Business plan of a conventional aquaculture enterprise (pond farm or intensive system)
8. Business plan of a multifunctional or integrated aquaculture enterprise
9. Stock assessment calculations for freshwater
10. Population dynamics estimation – yield & recruitment prediction
11. Technical details of inland fisheries structures (dam, waste dam, fish passage, etc.)
12. Financial sources and funding opportunities for fisheries and aquaculture investment and operation
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| **Literature, handbooks in English**  |
| 1. FAO (2016): The State of World Fisheries and Aquaculture 2016. Contributing to food security and nutrition for all. Rome. 200 pp.
2. Boyd, C.E., Lim, C., Queiroz, J., Salie, K., de Wet L., McNevin, A. (2012): Best Management Practices for Responsible Aquaculture. Aquaculture Collaborative Research Support Program [ACRSP]
3. Burke, D., Goetze, B., Clair D., Egna H. (1996): Pond Dynamics/Aquaculture. Collaborative Research Support Program. Office of International Research and Development Oregon State University, USA
4. Allan, G., Heasman H., Ferrar P. (2006): Aquaculture Nutrition: Report on the Aquaculture Nutrition Master Class held at Asian Institute of Technology, Bangkok Thailand 7-19 August 2006 ISBN 0 7347 1771 7
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| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**
* Knowledge of technical expressions of pond culture and fisheries management
* Knowledge of basic principles of pond culture and fisheries management technologies
* Knowledge of the methods of skill improvement and learning in the relevant field of study (pond culture and fisheries management)
1. **Skills:**
* Capable of using pond culture and fisheries management technologies
* Capable of improving his/her knowledge and to use various methods of obtaining knowledge and self-education
* Having good communication skills he/she is able to express his/her professional point of view in a debate
* Capable of using the on-line and printed literature in the relevant field
* Capable of problem solving individually or in a team
1. **Attitude:**
* Open for the opinion of others in the relevant field (pond culture and fisheries management)
* Open for the plans and questions of economic actors
* Determined for the improvement of pond culture and fisheries management technologies
1. **Autonomy and responsibility:**
* He/she is having the sense of responsibility and reflecting the consequences of his/her activities
* Expresses his/her opinion individually with full responsibility and based on professional knowledge
* Takes responsibility for the work of others
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| **Responsible lecturer: László Stündl, PhD, associate professor** |
| **Other lecturer(s): Milán FehérPhD, Péter Bársony, PhD** |
| **Terms of course completion:** |
| 1. Completing assignments / exercises
2. Submitting essays on practical topics
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| **Form of examination:** |
| Oral or written exam |
| **Requirement(s) to get signature:** |
| Completion of the assignments / exercises and submission of essays on practical topics |

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| **Exam questions:** |
| 1. What are the main characteristics of aquaculture?
2. What are the main characteristics of the EU fish production & consumption?
3. What are the main design, construction and operation features of embankment ponds and excavated (levee) ponds?
4. What should be considered when a pond is designed, as it regards engineering?
5. What are the key Bacterio-, Phyto- and Zooplankton taxons in a fish pond?
6. What are the factors of environmental regulation spawning?
7. Describe the steps of hormone-induced spawning of fish.
8. Describe the steps of fry rearing in earthen ponds.
9. What are the nutrient (protein energy vitamin minerals) requirements of fish?
10. Describe the main reasons of formulating feeds, including feed ingredients.
11. Why organic fertilizers are used and what are the figures of manure application?
12. Describe feeding and feeding plan.
13. Characterize the key issues of harvesting, conditioning, packaging and live-transport.
14. What are the functional elements, main advantages and constraints of pond farm and a multifunctional pond farm?
15. Describe the integrated extensive-intensive pond culture techniques.
16. Describe the difference between MSY (maximum sustainable yield) and OSY (optimal sustainable yield)
17. What are the main issues of modern inland fisheries management?
18. What are the main biological features of the key fish species?
19. What is the purpose of regulating the exploitation of fishery resources?
20. Explain the basic features of population dynamics: Recruitment (R), Natural mortality (M), Growth (G), Movement (M)
21. What are the features of population dynamics in fished populations?
22. What is the role of stock assessment?
23. What major gear types and methods are used by fisheries?
24. What river restoration types are known?
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