Sveučilište u Zagrebu Agronomski fakultet
Svetošimunska cesta 25, 10000 Zagreb
Telefon: +385 (0)1 2393 777
E-mail: dekanat@agr.hr
Web: www.agr.unizg.hr

Ichthyology (296591)

Nositelj kolegija

prof. dr. sc. Marina Piria

Opis kolegija

Significance and development of fish study. Fish evolution. Morphology, anatomy and physiology of fish. Fish reproduction. Embryonic and juvenile development. Fish genetics. Classification of fish. Fish biology and ecology. Fish pathology. Fish stock assessment (composition of ichthyocenosis, population structure, abundance, CPUE, length-mass relationship, fish condition, age, mortality, ichthyoproduction). Fishery management. Fish sampling. Work with aquaria. Use of the key for fish species determination. Section of fish. Induced fish spawning. Individual and team work in creating and presenting own research (field work, laboratory analyses, processing of data, literature investigation, writing and presenting the seminar).

ECTS: **6.00**

E-učenje: **R1**

Sati nastave: 60
Predavanja: 28
Laboratorijske vježbe: 8
Vježbe u praktikumu: 4
Seminar: 12
Terenske vježbe: 8

Izvođač predavanja

- prof. dr. sc. Marina Piria
- prof. dr. sc. Ana Gavrilović

Izvođač vježbi

- prof. dr. sc. Daniel Matulić
- prof. dr. sc. Tea Tomljanović

Izvođač seminara

- dr. sc. Ivan Špelić
- dr. sc. Tena Radočaj
- prof. dr. sc. Tea Tomljanović
- prof. dr. sc. Marina Piria

Ocjenjivanje

Dovoljan (2): 60-69 %
Dobar (3): 70-79 %
Vrlo dobar (4): 80-89 %
Izvrstan (5): >90%

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Vrsta kolegija

- Graduate studies / MS Courses taught in English (Izborni kolegij, 1. semestar, 1. godina)

Opće kompetencije

Students acquire knowledge on the fish biology, ecology and taxonomy, as well as on the methods for independent and team work in ichthyology and fisheries.

Oblici nastave

- Lectures
- Laboratory practice/exercises
  Analyses of sampled material
- Practicum
  Work with fish preparations and models
- Field work
  Fish sampling in situ
- Seminars
  Independent student group laboratory analysing, literature searching, writing and presenting specified case study

Ishodi učenja i način provjere

Ishod učenja	Način provjere
Basic knowledge in fundamental ichthyology	Oral exam
Advanced knowledge in applied ichthyology	Oral exam
Capability for independent field and laboratory work	Exercises
Capability for independent check and processing of scientific literature	Seminar
Capability for independent writing of minor scientific papers and presentation of results	Seminar
Capability for applying and performing expert projects	Exercises
Capability for assisting in applying and performing scientific projects	Exercises

Način rada

Obveze nastavnika

Regular maintenance of all forms of teaching. The time for consultations out of lectures.

Obveze studenta

Regular attending at classes and performing assigned tasks.

Polaganje ispita

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Elementi praćenja	Maksimalno bodova ili udio u ocjeni	Bodovna skala ocjena	Ocjena	Broj sati izravne nastave	Ukupni broj sati rada prosječnog studenta	ECTS bodovi
1st exam oral	16 %					1
2nd exam oral	16 %					1
3rd exam oral	16 %					1
4th exam oral	16 %					1
5th exam oral	16 %					1
Final exam Seminar written and oral	20 %					1
Total	100 %					6

Elementi praćenja	Opis	Rok	Nadoknada
Seminar	Participation in guided seminars	Making within timetable released at the beginning of the semester	Deadlines determined at the beginning of the semester
Oral exams	In parts, according to the given paragraphs	Deadlines determined at the beginning of the semester	Deadlines determined at the beginning of the semester
Final oral exam	Public presentations of seminars with answering at questions	Deadlines determined at the beginning of the semester	Deadlines determined at the beginning of the semester

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Tjedni plan nastave

1. Significance of ichthyology. Fish evolution. L - General principles of ichthyology. Significance and role of fish in the ecosystem. Evolution of fish from the first Agnatha. Main directions in fish evolution.
2. Basics of fish morphology. Basic anatomy of fish. L - Living condition and morphology. Morphometric and meristic characters. All organic systems of fish.
3. Basic physiology of fish. Basics of fish embryology and development. L - Function of fish physiology in different ecological conditions, phases in life and in the year cycle. Development of fish since the fertilization of eggs till hatching. Larval phase, juveniles, recruits, adult fish stages.
4. Basics of fish genetics and taxonomy. Basics of fish pathology. L - Qualitative, quantitative and molecular fish genetics. Basic fish taxonomy. Causes of fish diseases. Diseases caused by mistakes in nutrition, environmental factors and bioagressors.
5. Fish ecology. Basics of fish biology. L - Niches of fish. Biology of the most important fish species.
6. Methods in ichthyology I, II L - Methods of fish sampling for scientific research. Methods of the analyses of the population structure.
7. Methods in ichthyology III, IV L - Methods of the fish stock assessment. Management of fish populations. Case studies. Preparation of scientific and expert projects.
8. Field work I, II F - Fish sampling. Sorting of fish catch in the field.
9. Field work III, IV F - First analysis of fish catch in the field. Writing register of the results of the field work.
10. Key for fish species determination. Fish section. Lab - Using of key to determine fish species. Section of fish to study basic moršhology and anatomy of fish.
11. Analysis of fish samples I, II Lab - Fish species composition. Length and weight analysis. Sex and age composition.
12. Practicum I, II P - Lower fish taxons. Higher fish taxons.
13. Seminar I, II S - Collecting and processing of scientific literature. Statistical analysis of data.
14. Seminar III, IV S - Seminar structure. Written seminar.
15. Seminar V, VI S - Power point preparation. Seminar presentations.

Obvezna literatura

1. Moyle P. B., Cech J. J. (2004): Fishes: an introduction to ichthyology. Prentice Hall, Upper Saddle River
2. Cowx I. G. (ed.), (1996): Stock assessment in inland fisheries. Fishing News Books (A division of Blackwell Science Ltd.), Oxford
3. Sparre, P., Venema S. C. (1992): Introduction to tropical fish stock assessment. Part 1-Manual. FAO, Fish Tech. Pap., 306/1, 110 pp.
4. Hart P. J. B., Reynolds J. D. (2008): Handbook of Fish Biology and Fisheries, Volume 1: Fish Biology. Wiley, 413 pp

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Preporučena literatura

1. Hilborn R., Walters C. J. (2001): Quantitative Fisheries Stock Assessment. Kluwer Academic Publishers,Boston, Dordrecht, London
2. Stiassny M. L. J., Parenti L. R., Johnson G. D. (eds), (1996): Interrilationships of Fishes. Academic Press, San Diego
3. Lagler K. F., Bardach J. E., Miller R. R., May Passino D. R. (1977): Ichthyology. John Wiley & Sons, New York
4. Ricker W. E. (ed), (1971): Methods for Assesment of Fish Production in Fresh Waters. Blackwell, Oxford

Sličan kolegij na srodnim sveučilištima

- Ichthyology, Humboldt State University, Berlin, Germany
- Introduction to Fish Biology, The Arctic University of Norway, Fishery College
- Ichthyology, University of Kansas, USA
- Fish Biology, Mendel University in Brno, Czech Republic

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