IB 138 Syllabus. Biology of Chemical Mediation, or "Comparative Endocrinology"

Instructor: George Bentley.
Spring Semester 2007.

Texts: The primary textbook for IB 138 is:

Norris, D.O. (2006). "Vertebrate Endocrinology" 4th edition, Academic Press, ISBN 0120887681.

Course Structure and Approach:
The course will be based on lectures, the textbook, outside readings, and a group project. There will be two midterms and a final exam, all worth 100 points. In addition, there will be a group presentation, worth 50 points.

The primary goal of this course is to provide students with a broad understanding of hormonal regulation of physiological systems in several vertebrate systems. In addition, students will gain an understanding of the experimental methods used in endocrine research.

COURSE OBJECTIVE:
To introduce students to the evolution and diversity of endocrine control of physiological systems, using a comparative approach.

The total course scores will be as follows:
2 midterm Exams:
200 pts
1 Comprehensive Final:
100 pts
Group Presentation:
50 pts
Total:
350 pts

For the group presentation, students will be divided into groups and assigned a topic, or the group can decide on a topic of their choice. Following 2 weeks to allow background research, groups will give 25-min presentations.

Course Outline:

Lectures (3 per week) plus one discussion session (with GSI).

Areas to be covered:

1) Overview of Chemical Regulation (categories, organization and origins of hormones)

2) Molecular Bases for Chemical Regulation (groups, structures and metabolism of hormones)

3) Endocrine Research Methods (experimental design, methods of analysis)

4) Organization of the Mammalian Hypothalamo-Hypophysial System (hypothalamus, adenohypophysis, neurohypophysis, some clinical aspects)

5) Comparative Aspects of the Hypothalamo-Hypophysial system (fishes, other non-mammals)

6) Hormones of the Pars Nervosa

7) Thyroid – Mammalian and Comparative Aspects (development, organization, biological actions, evolution)

8) Adrenal system – Mammalian and Comparative Aspects (glucocorticoids, mineralocorticoids, physiological roles, evolution of adrenal hormones)

9) Reproduction – Mammalian and Comparative Aspects (overview, cycles, disorders, fishes, amphibians, reptiles and birds)

10) Digestive system (hormones of the gastrointestinal tract; regulation and comparative aspects)

11) Metabolism (major elements of metabolism, pancreas, nonpancreatic hormones and nonmammalian vertebrates

12) Calcium and Phosphate regulation (importance in mammals and nonmammals, some clinical disorders).