Course Syllabus
MBF 508
Biometrics in Marine Science (3 Credits)
Fall 2009-2010

Instructor: Dr. Nelson M. Ehrhardt - CIMAS 207
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Teaching Assistant: TBA
Meeting time: Lectures Monday and Wednesday 13:30 - 14:55
Laboratory: TBA

Course Description

This course is intended for students in the biological sciences, especially those in biology, marine biology, marine affairs and fishery biology. The course is designed for students with a minimum acceptable level in quantitative sciences (mathematics and statistics) and it is expected that all students will obtain basic skills regarding the theoretical aspects of statistical inference and statistical data analyses. Therefore, special emphasis is on concepts and applications without the need to enter in the mathematical foundations of statistical inference. MBF 508 serves as the first of two courses offered in biometrics. The second course is MBF 615 Advanced Biometrics in Marine Science. Therefore, MBF 508 provides the theoretical basis for understanding more complex biological problems covered in MBF 615. Laboratory covers computer languages and fundamentals of computer programming, statistical software for problem solving.

Topics covered:

2. Normal distribution and sampling experiments. Chapter 6, S & R,
3. Student's t distribution. Chapter 7 S & R
4. Confidence intervals and tests of hypothesis. Chapter 7, S & R
5. Sample variance and the Chi-Square distribution. Chapter 7, S & R
7. Differences between sample means. Chapter 8, S & R
8. Analysis of variance: one-way, two-way and factorial ANOVA. Chapters 8-13, S & R
9. Linear and nonlinear regression models, least squares principles and analyses. Chapters 14-16, S & R
10. Covariance analysis. Chapter 14, S & R
11. Non parametric methods. Chapters 13 and 14, S & R
12. Bootstrapping and Monte Carlo experiments

**Class notes:** Class notes will be made available in electronic files.

**Grading System:** There will be 2 Mid-terms (25% of the final grade each) and 1 final examination (35% of the final grade). Each Mid-term covers approximately 40% of the material presented in the course and the Final Exam has emphasis on the remaining 20% of the materials not covered by the Mid-terms although it includes questions from all sections taught during the semester. Laboratory work (15% of the final grade) will consist of problem solving through 7 labs. Each lab will be individually graded and the final laboratory grade is prorated relative to the 15% of the final grade.