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Statistics 252.001 Winter 2005
Final Exam Information

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The date and location of the final exam are

- Friday, April 22, 2005, 9:00 a.m. – 12:00 p.m.

- Classroom Building 417 (CL 417)

Please ensure that you know where the location of the test room is and that you arrive at least 20 minutes before the exam is scheduled to start.

YOU MAY BE ASKED TO SHOW YOUR UNIVERSITY ID AT THE DOOR. YOU MAY NOT BE ALLOWED ENTRANCE INTO THE FINAL EXAM WITHOUT PROPER IDENTIFICATION.

Calculators: You are permitted to use a calculator on this exam. Be sure that your calculator is working and has fresh batteries!

Notes: You may prepare **TWO** 8.5×11 yellow pages (double-sided) of handwritten notes for your personal use during the examination. Except for these pages of notes and a calculator, no other aids are allowed. Tables of normal, t, and χ^2 probabilities will be supplied as needed.

Examinable Material: The final exam will be comprehensive and will test all of the material covered in Statistics 252 this semester. This includes everything covered in lecture, and everything in *Mathematical Statistics with Applications, sixth edition* from Chapters 1, 8, 9 (excluding 9.3 and 9.5), 10, 11 (excluding 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14). Use your in-class lecture notes to serve as a guide to relative importance of, and to the emphasis on, these topics.

Note: From Section 9.4, we defined sufficiency via the Factorization Theorem (Theorem 9.4) and NOT via conditioning (Definition 9.3).

Note: From Section 9.8, we only studied the case $t(\theta) = \theta$. This reduces the formula on page 456 for an approximate level $(1 - \alpha)$ confidence interval for θ to

$$\hat{\theta}_{\mathrm{MLE}} \pm z_{\alpha/2} \frac{1}{\sqrt{nI(\hat{\theta}_{\mathrm{MLE}})}}.$$

Note: From Section 10.9 (pages 503–505), we did not cover the F-test.

Note: Our notation for the generalized likelihood ratio test differs from the notation in Section 10.11.

Your Grade: Your final exam counts for 45% of your course grade. However, course grades are subject to (upward) adjustment based on superior performance on the final exam.

Web Resources: The Stat 252 website, found at

> http://www.math.uregina.ca/~kozdron/Teaching/Regina/252Winter05/index.html

contains links to all of the materials distributed in lecture this semester.

Make sure that this examination has 10 numbered pages

University of Regina
Department of Mathematics & Statistics
Final Examination
200510
(April 22, 2005)

Statistics 252-001
Mathematical Statistics

Name: _____   **Student Number:** _____

Instructor: Michael Kozdron   **Time:** 3 hours

Read all of the following information before starting the exam.

*You have **3** hours to complete this exam. Please read all instructions carefully, and check your answers. Show all work neatly and in order, and clearly indicate your final answers. Answers must be justified whenever possible in order to earn full credit.* **Unless otherwise specified, no credit will be given for unsupported answers, even if your final answer is correct.** *Several problems require written explanations in context. Only complete solutions written in the context specified by the problem will be awarded full points, and points will be deducted for incoherent, incorrect, and/or irrelevant statements.*

You may use standard notation; however, any new notations or abbreviations that you introduce must be clearly defined.

*Calculators are permitted; however, you must still show all your work. You are also permitted to have **TWO** 8.5×11 yellow pages of handwritten notes (double-sided) for your personal use. Other than these exceptions, no other aids are allowed.*

Note that blank space is not an indication of a question's difficulty. The order of the test questions is essentially random; they are not intentionally written easiest-to-hardest.

*This test has **10** numbered pages with **7** questions totalling **150** points. The number of points per question is indicated.*

DO NOT WRITE BELOW THIS LINE

Problem 1 _____   Problem 2 _____   Problem 3 _____
Problem 4 _____   Problem 5 _____   Problem 6 _____
Problem 7 _____

                                              TOTAL _____