Math 348 – Graphical Models (Spring 2008)

Instructor: Kevin Woods, King 220B, Kevin.Woods@oberlin.edu

Class: MWF 2:30-3:20pm, King 121.

Office Hours:

Monday 1:30-2:30pm, Tuesday 3-5pm, Wednesday 9-10am, Friday 1:30-2:30pm. Also, feel free to stop by any time my door is open (but be understanding if I say I am too busy).

Required Textbook:

Jensen and Nielsen, *Bayesian Networks and Decision Graphs*, 2nd edition. The most important place to find the material will really be your notes, but the book is a good reference. I will assign readings from this book and attempt to stick with the book's notation. The book will be on reserve at the library.

Other Recommended Books:

Richard Neapolitan, *Learning Bayesian Networks*. This book is easier to read, but a little "wordy", so if you like that it might be a useful reference. I don't think it is quite as mathematically rigorous as our text, and it has more of a CS bent. It will also be on reserve.

Blackboard:

I will post homework, reading, other announcements, and grades on Blackboard. If any changes to this syllabus need be made, the revised version will be put on Blackboard under Course Documents.

Grading:

Problem Sets (30%),
Project (20%),
Two Take-Home Midterms (15% each),
In-Class Final Exam (20%).

Problem Sets (30%).

The best way to learn the concepts in this course is to get your hands dirty! I hope you will work in groups on these, though your written solutions must be in your own words. This is also an opportunity to work on writing careful, clear proofs and explanations. Good mathematics is articulate mathematics! Explain things carefully and in complete sentences. Imagine that another student in the class who hasn't done this problem yet will read your solution: they should be able to understand it without having to ask you questions. These problems will be graded very strictly for how coherently written they are. Problem sets will be due approximately every Wednesday. Your lowest problem set grade will be dropped.

Honor Code: You should (but aren't required) to work together on these problems, but your written solutions must be your own. In particular, you should never look at another student's write-up. Please indicate on your solutions who you worked with. You may use outside sources, as long as they don't directly address the assigned

problem or a substantially similar one. Please cite any sources you use that helped you.

Late Work Policy: If they are handed in before I leave my office that day (no guarantee when that is), you get full credit. If they are handed in the next school day before I leave, you get 90%. Two school days, 70%, three school days 50%, more than that 0%.

Project (20%).

You will work in groups of 2 on a topic not covered in the course. This could be a topic in the textbook or some other book or journal article, or it could be an applied project, where you use Bayesian networks to do something. Your group will give a 30 minute presentation to the class on your topic, in the last couple of weeks of the semester. I will give more information soon about possible topics, requirements, etc.

Take-home midterms (15% each).

Tentatively due Wednesday, March 5 and Wednesday, April 16. You will choose a continuous 24 hour period within the span of about 4 days in which to take the test. The exams will be designed to be doable in 3 or 4 hours, but you'll have the extra time to "sleep on it." You will work alone and be able to use the textbook and notes, but no other outside sources.

In-Class Final Exam (20%).

Saturday, May 17, 7-9pm. The final exam will cover the entire course. It will be closed book, but you will be able to use something like an 8.5x11 sheet with notes.

Working together:

Math goes much easier with someone else around to bounce ideas off of. I encourage you to work together. I suggest that you take a minute at the end of class today to write down contact information for two other students:

Name: _____ Contact Information: _____

Name: _____ Contact Information: _____