NORTHWESTERN UNIVERSITY | SCHOOL OF CONTINUING STUDIES

PREDICT 412: Advanced Modeling Techniques
Term Project Procedures

The term project is a team assignment that involves extensive programming and analysis. A business or general modeling problem provides the context for the assignment. The completed assignment is due at the end of Session 10, with checkpoint assignments due at the end of Sessions 2, 4, 6, and 8. Each term we identify five or six possible term project topics. These are rich case-study-based projects depicting challenging modeling problems.

Session 1 Bidding Process. The project bidding process utilizes a spreadsheet form available under Blackboard Assignments. Each student expresses his or her degree of interest in working on each of the possible term projects topics. Ratings are obtained using a 100-point constant-sum scale. In particular, each student distributes 100 points across the possible projects with no project receiving fewer than 5 points, with no project receiving more than 50 points, with no two projects receiving the same number of points, and with assigned points being integers. The term project bidding process utilizes a comma-delimited text-file spreadsheet.

The deliverable at the end of Session 1 is the individual preference ranking spreadsheet posted to Blackboard Assignments under Submission of Bid-Spreadsheet. A one-page statement of interest accompanies this preference ranking. This statement is posted to Blackboard Assignments under Submission of Bid–Statement of Interest

Project Teams. Small teams are best for creative tasks like designing computer software for predictive models. At the beginning of Session 2, following the results of the bidding process, students are assigned to teams of three to five students to work on term projects. Division of labor makes sense within teams. It may be good to organize the work around one or two programmers, one or two code and model testers, and one or two report writers. For each term project assignment, a common grade is assigned to all members of the team.

Each team should designate one student as team project manager, watching over the project development process, submitting papers to Blackboard Assignments, and submitting project-specific queries to the team's Q&A thread under the Discussion Board in Blackboard. The team project manager also serves as the host of team-specific Sync Sessions using Adobe Connect.

Session 2 Term Project Checkpoint. The end of Session 2 marks the first term project checkpoint. The student team provides an introduction to the term project, including a plan for completing the project, a plan for communicating with one another about the project, and team member responsibilities. The deliverable at this and all subsequent checkpoints is a two-page paper, double-spaced, in Adobe Acrobat pdf file format. One paper is submitted per team under Blackboard Assignments.

Session 4 Term Project Checkpoint. The end of session 4 marks the second term project checkpoint. The student team provides a review of the literature relating to the project, citing relevant academic journals and books. (The reference list itself is not included in the two-page limit for the paper.)

Session 6 Term Project Checkpoint. The end of session 6 marks the third term project checkpoint. The student team provides a description of the data and methods to be employed in completing the term project. Special emphasis should be placed upon modeling methods, algorithms, and techniques for comparing the performance of alternative methods and algorithms.

Session 8 Term Project Checkpoint. The end of Session 8 marks the fourth and final term project checkpoint. The student team reviews its preliminary research results, describing the modeling methods being used and the performance of those methods.

Session 10 Final Term Project Report. The completed term project is due at the end of Session 10. Reports are submitted as formal academic papers (not slide presentations or executive overviews). The final report is a team report, ten pages in length (not including the reference list), double-spaced, accompanied by a zip archive file including R program listings, output, statistical graphics, and/or maps. Reports and supporting materials are posted both as Blackboard Assignments and as attachments to the team's Blackboard Discussion Board thread for Session 10, so all students have the opportunity to view the reports of all teams. We should expect to see a wide range of applications and methods in predictive analytics.