MATH 613. Graph Theory, Fall 2017
MWF 10:20–11:10, BLOC 121
Project Assignment

As the term project, you are required to write a short survey on a topic in graph Theory or the applications of graph theory. It should based on publicly available research results or articles, (published or circulated preprint). The topic should be mainly on theoretical research.

Your report should contain the following information:

1. Author of the report: your name and affiliation

2. Basic information of the topic you choose: Backgroound of the problem, brief history, area it belongs to, e.g., structure of graphs, extremal graph theory, set theory, discrete geometry, random graphs, etc. List the major references you used.

   You don't need to include ALL the articles on the topic your choose, nor do you need to give the complete report on the subject. On the other hand, as a survey paper, you need to cite at least three papers. (It is fine if the papers are from the same author(s).)

3. A summary of the main result and the main technique/approach. It is all right if you read a long article and only use a small portion of it.

4. Major steps of the proofs. Please give enough details, but not copy the whole article. You can leave out any straightforward computation or case-checking.

   Your report should contain enough details so that a typical Ph.D in Graph Theory and Combinatorics can get an idea of the whole proof after reading your report. In particular, if there is a progression on the topic, please state what are the new ideas and techniques in each stage.

5. Your comments and thoughts. Is there any special case that is familiar to you? Is there any connection to other combinatorial structures? Can you generalize the result or propose possible directions for investigation? (This is an important part and counts 30% of the grade.)

Please note that there is no need to evaluate any article. First of all, you should pick a topic that is interesting to you. If you find alternative solutions or obtain stronger results, just explain them.

Suggestions on Research Articles

You should choose the research article yourself. Some good resources are combinatorics journals, such as Journal of Combinatorics Theory, Discrete Mathematics, Journal of Graph

Theory, Electronic Journal of Combinatorics, Advances in Applied Mathematics, Combinatorica, European Journal of Combinatorics, etc. TAMU library has electronic access to these journals. Also, you can check some online preprint servers, such as the arXiv, under the area of Mathematics/Combinatorics: http://xxx.lanl.gov/list/math.CO/recent.

If you are not sure whether a topic is suitable for this course, please bring it to me for a check. You should decide which articles to work on and inform me by November 15, 2017. I will post all the choices on our course webpage. Each student should work on a distinct topic.

Requirement of the Report

Your report should be at least two pages long, but no more than 5 pages. It should be prepared by laTex, or any other version of Tex. Please use a font of size 11 points or larger. A font size of less than 10 points may be used for mathematical formulas or equations, figure, table or diagram captions and when using a Symbol font to insert Greek letters or special characters. The report should be in single-column format, and have a margin of at least one inch in all directions.

Please submit your project (pdf file) electronically by email.

Important Dates

- Topic decided: **November 15, 2017**
- Project due: **December 6, 2017, Wednesday**

Have fun and enjoy!