Instructions

○ About the course.

1. MA321 OPTIMIZATION [3-0-0-6], Prerequisites: Nil. (Though written nil, a good understanding of calculus, linear algebra, discrete mathematics and some skills of understanding algorithms will be required.)

2. Classification and general theory of optimization; Linear programming (LP) - formulation and geometric ideas.

3. Simplex (and revised simplex – outdated) method, duality and sensitivity.

4. Transportation and assignment problems.

5. Integer programming problems (if time permits).

6. Nonlinear optimization, method of Lagrange multipliers, Karush-Kuhn-Tucker theory.

7. Convex optimization (if time permits).

8. Numerical methods for unconstrained and constrained optimization (gradient method, Newton's and quasi-Newton methods, penalty and barrier methods –whatever time permits).

9. Texts:
   M. S. Bazaraa, J. J. Jarvis and H. D. Sherali, Linear Programming and Network Flows, 4th Ed., Wiley, 2011.
   N. S. Kambo, Mathematical Programming Techniques, Revised Ed., Affiliated East-West Press, 2008.

○ Evaluation.

There will be two quizzes (1 hour each, 20 marks each) one midsem (1 hour, 20 marks) and one endsem (2 hours, 40 marks). These exams could be descriptive or objective type. The dates would be notified in due time.

○ For any queries please write to pati@iitg.ac.in

○ You can study any text you like. I will be providing you with my own notes. (This I intend to publish as a book in future. So please do not share them with anyone.)

○ We will have classes in D1 slot. That is, Friday 3-4, Monday and Tuesday 4-5.

○ As time is very short, many of the topics will be covered without discussion of proofs in the class. However, proofs of some of the results, techniques will be available in the texts. Many of the results and techniques are developed by me only, so you may find the proofs in my notes. You are advised to go through the proofs at least once.

○ The classes will be on time on the respective days using 'teams'. You just join the meeting.

○ I shall use a pre-printed pdf file with spaces to write and explain on it. After the class is over the document can be saved and the pdf will be posted. (As I requested you earlier, please do not share it with anyone to protect my interest.)

○ There are many exercises in the notes. Some are standard. Some are more thought provoking. Some are frustrating and interesting. If you are worried for exam, then these are the type of questions you may see. Something new may be there in the exam.

○ There is no way of having a repeat or a make-up exam. The grades will be according to the following scheme.

F [0,20) DD [20,30) CD [30,40) CC [40,50) BC [50,60) BB [60,70) AB [70,80) AA [80,90) AS [90,100]

∘ In any exam, students scoring full marks will get some gifts (I will decide the amount depending on the number of such students).

∘ Finally, remember that what you practice today decides what you will become tomorrow.