Lesson Plan – November, December 2020, January 2021

Group: 12th

Subject: Mathematics

Topics: Plane (Chapter 35), Straight Lines (Chapter 36), Linear Programming (Chapter 37), Mathematical Reasoning (Chapter 38)

Date: Nov 2020 - Jan 2021

Instructional Objectives:

Plane:

- Identify and represent a plane in 3-D space by an equation in different forms
- Find the angle between two given planes
- Find the distance of a point from a given plane

Straight Lines:

- Identify and represent a line in 3-D space by an equation in different forms
- Find the distance of a point from a given line
- Find the angle between a line and a plane
- Determine coplanarity of given lines

Linear Programming:

- Revisit graphing of linear inequalities
- Model a given commercial problem as a system of linear inequalities
- Graph the linear inequalities to identify a feasible region where all the given constraints are satisfied
- Identify the solution of the commercial problem by evaluating the vertices of the feasible region

Mathematical Reasoning:

- Justify if a given sentence is a mathematical statement or not
- Negate a given statement
- Identify component statements in a compound statement
- Work with statements with different types of implicationsFormally validate a given mathematical statement

Teaching Process:

Background Context:

Two-dimensional coordinate system, with different equation representations for straight lines has been covered last year. Linear Programming has been covered in 10th IGCSE as well as in 11th NIOS.

Teaching:

With the mixed-mode learning of offline work and online classes, the student will be assigned work to read up and solve, before coming to class. Challenging problems and specific doubts will be cleared during the online classes.

Zoom will be used for online classes. The Zoom whiteboard application will be used to solve problems and clear doubts in class. This application allows all participants to annotate and hence allows collaborative on-screen working. For more detailed working out, information will be typed out in MS Word or Powerpoint and shared with the student during online class, or via email.

Resources required:

Textbooks:

- The NIOS Mathematics Textbook 2 for Senior Secondary classes will be used as the main textbook
- ISC Mathematics Book II, for Class XII (O.P. Malhotra et. al.) will be used as an additional reference by the teacher for problems

Software Tools:

- Geogebra for Linear Programming

Evaluation tools:

Understanding of the topic will be evaluated through classroom interactions, homework corrections and a written test at the end of the topic

Modifications: Special Needs

The student has decided to join NEET coaching classes from the beginning of November. As a result, we get to meet just once a week, for 2 periods. Hence the pace of finishing these last four topics has been significantly impacted.

Since these are simpler chapters that can be completed through self-study, syllabus completion is not a cause for worry. The exact time of completion of these chapters and their evaluation will depend on the time the student allocates to work on them.

Suggestions:

We have adopted a mode where the student attends classes every Wednesday and writes one test a week.

Self-Reflection:

To be filled post-lesson for the teacher's reference.