

# **CURRICULUM SCHEDULER**

## **DESIGN DOCUMENT**

**Himakar, Siva, Asif – {cs10b039, cs10b028, cs10b034}@iith.ac.in**

---

### **1.1 Purpose**

The purpose of this document is to outline the functional requirements for a course scheduling system semester wise for an academic department in a University. . This document is meant to explain the features of the course scheduler so as to serve as a guide to the developers on one hand and a software validation document for the prospective client on the other.

### **1.2 Intended Audience and Scope**

This document is the only one that describes the requirements of the system. It is meant for use by the developers or students, academic staff and will be the basis for validating the final delivered system. Any changes made to the requirements in the future will have to go through a formal change approval process.

More specifically, this system is designed as a drag drop system. A file which has information about the constraints and the courses is given as an input. It is processed in such a way that we should drag and drop the courses in the semester slot provided for them. An error message will be popped up if the selection of any course violates the constraints. Final output is exported into a file.

### **1.3 Definitions, Acronyms, Abbreviations**

CSV: Comma separated value.

GUI: Graphical User Interface.

Course Type: Core course or Liberal Arts elective or Free elective or Department elective etc.

### **1.4 Document Overview**

Rest of the design document is divided into 3 sections

#### **System Overview**

This section gives the overall description of the software system which explains what system does.

#### **System Architecture**

This section includes the basic plan for the whole project which includes architecture design, decomposition description, design rationale.

#### **Data Design**

This section includes the data description and the data dictionary.

## 2. System Overview

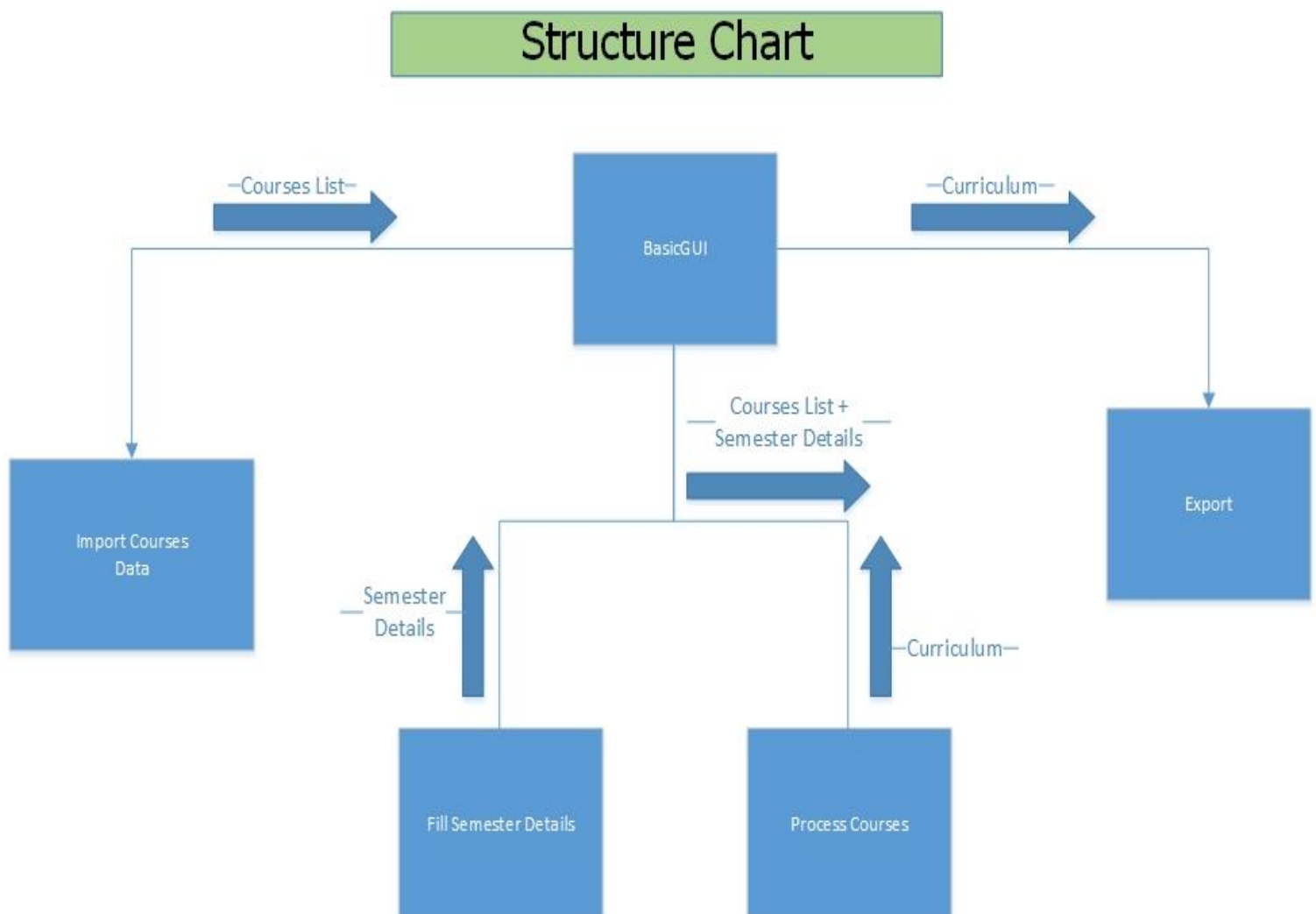
In a department, there are a set of courses that a student should complete in all the eight semesters. Each course has a unique course ID. For each course there are some constraints. E.g., a course must be completed between particular semesters and prerequisites for a course etc.

The system is to produce that specifies a list of courses every semester for all the eight semesters. Courses are dragged and dropped in the semester slot given. If a course added against the constraints specified, the system should produce a “conflict report” that the chosen course cannot be added to the particular semester slot and the constraint that is violated.

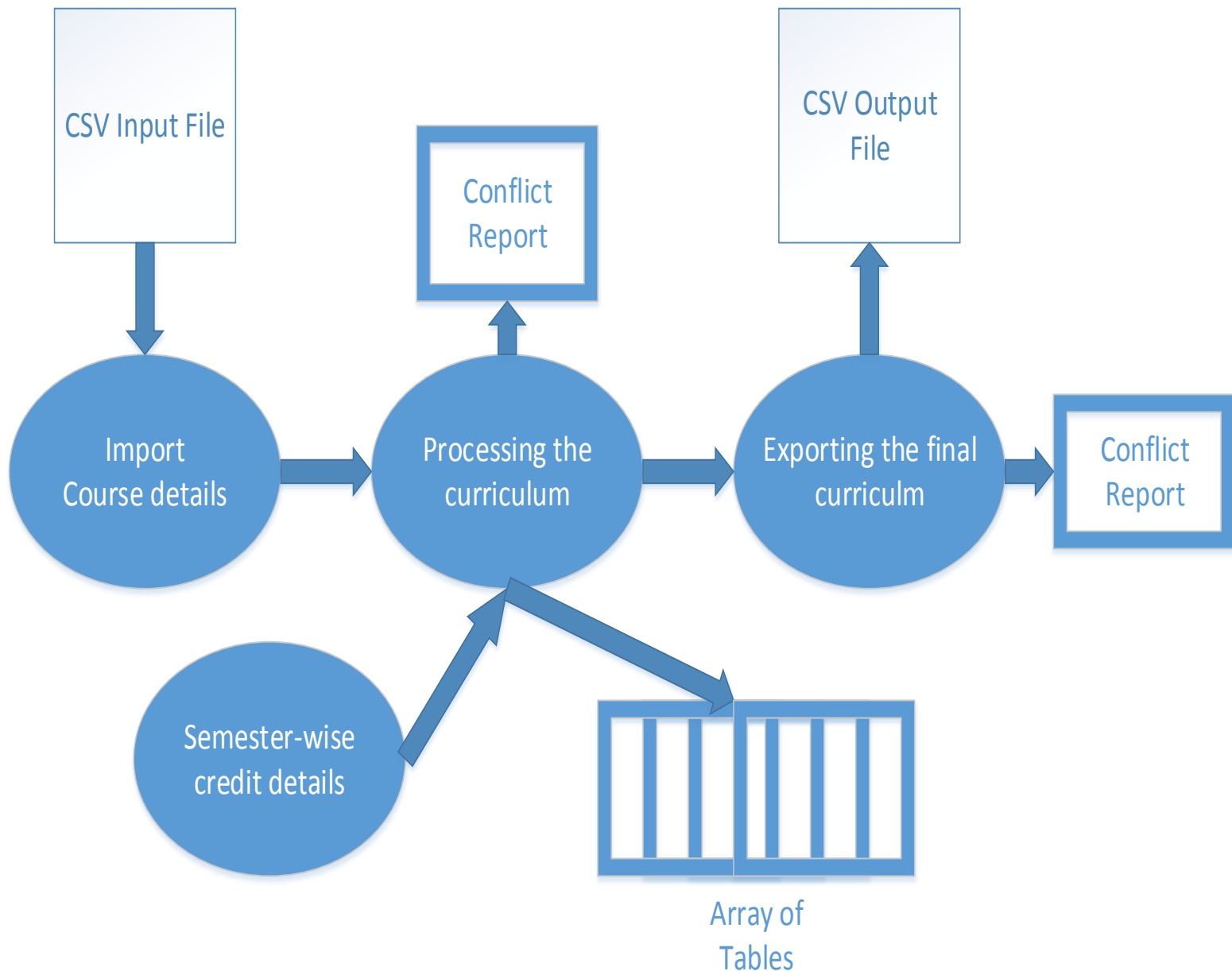
## 3. SYSTEM ARCHITECHTURE:

The system to be developed is for scheduling all the courses semester wise in a department for a batch based on the input of a file which consists about course details and entering details regarding number of minimum and maximum credits that a student must complete every semester and details about each course. The scheduler should satisfy different constraints.

### ARCHITECHTURE DESIGN



### DATA FLOW DIAGRAM



## DATA FLOW IN CURRICULUM SCHEDULER

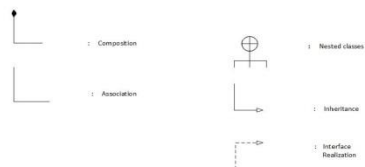
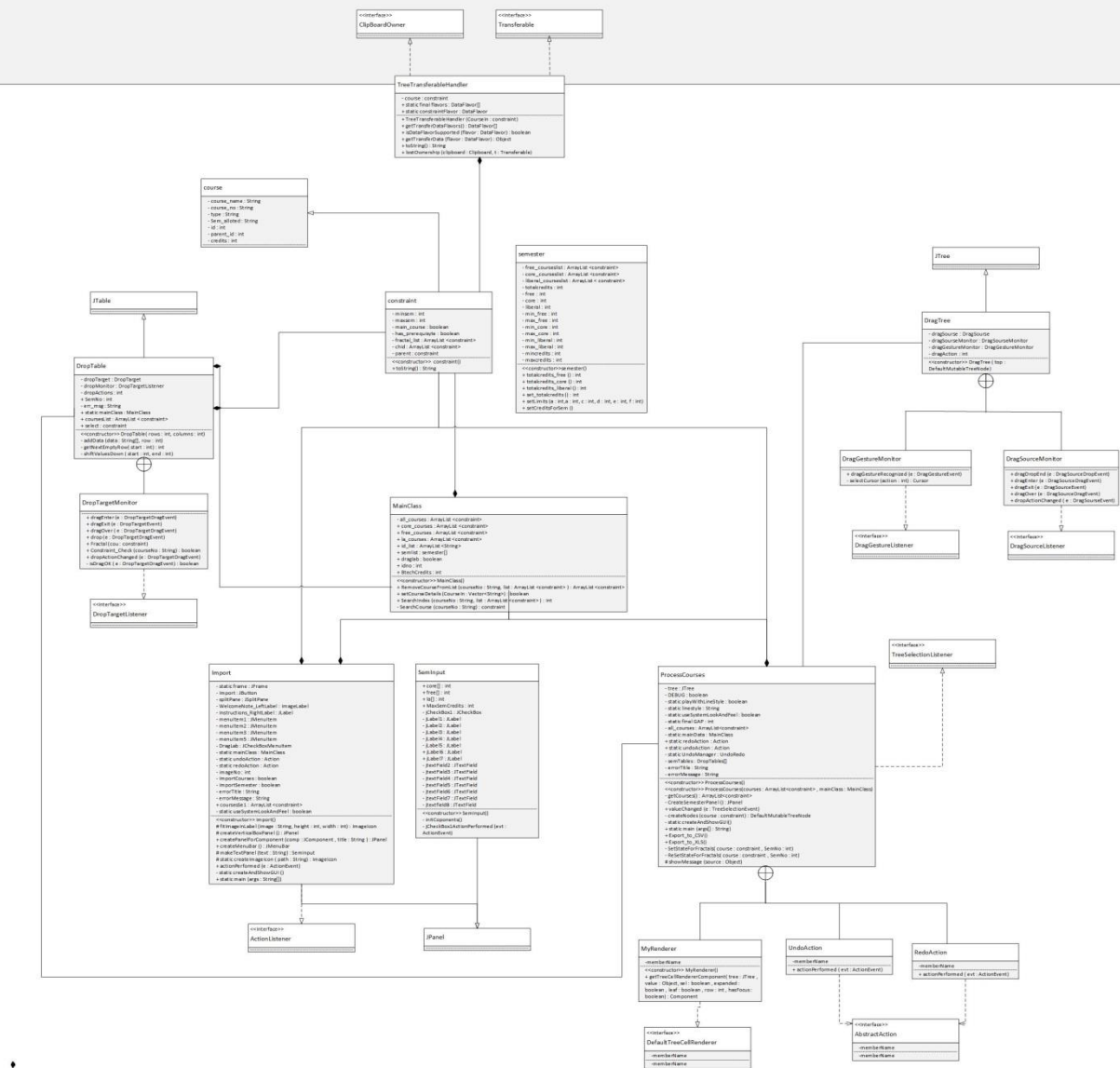
### 4. DATA DESIGN

#### Data description

We took the information about courses and semesters from the csv files and storing it in instance of class, “mainclass”. The following figure describes OO design of the modules in curriculum scheduler:

# CLASS DIAGRAM

## CURRICULUM SCHEDULAR UML CLASS DIAGRAM



## **Data Dictionary**

- Course
- Constraint
- DragGestureMonitor
- DragSourceMonitor
- DragTree
- DropTable
- DropTargetMonitor
- Import
- ImageLabel
- MainClass
- ProcessCourses
- RedoAction
- Semester
- SemInput
- TreeTransferHandler
- UndoAction
- UndoRedo

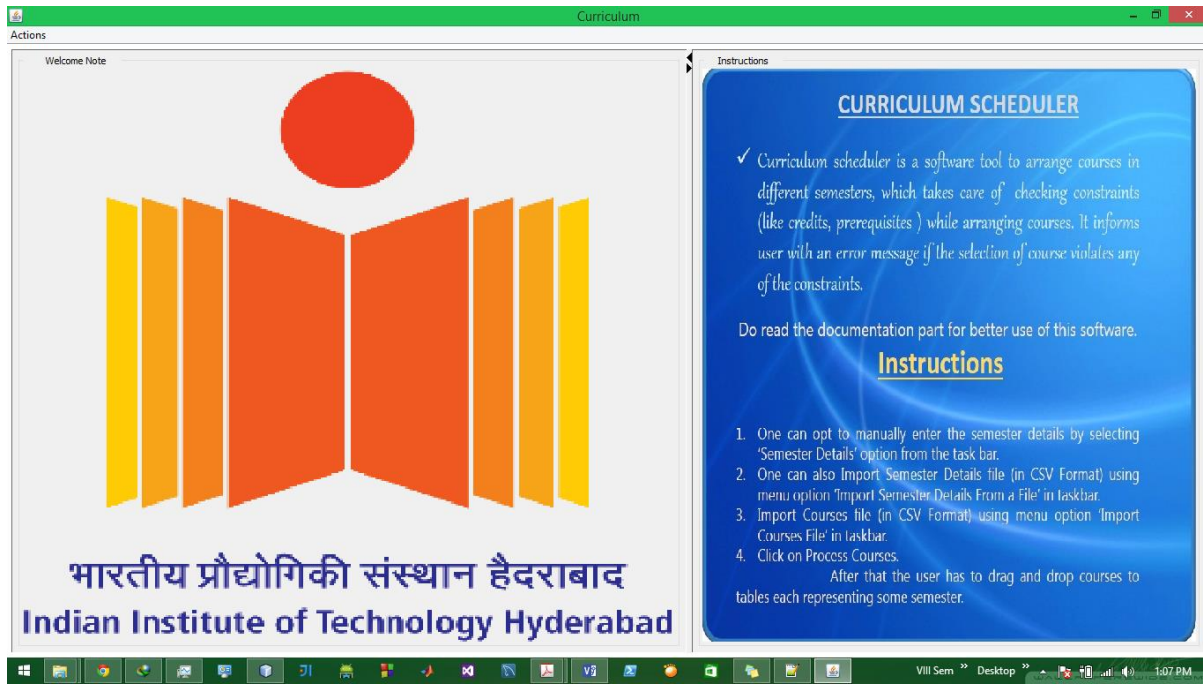
## **HUMAN INTERFACE DESIGN**

### **Overview of User Interface:**

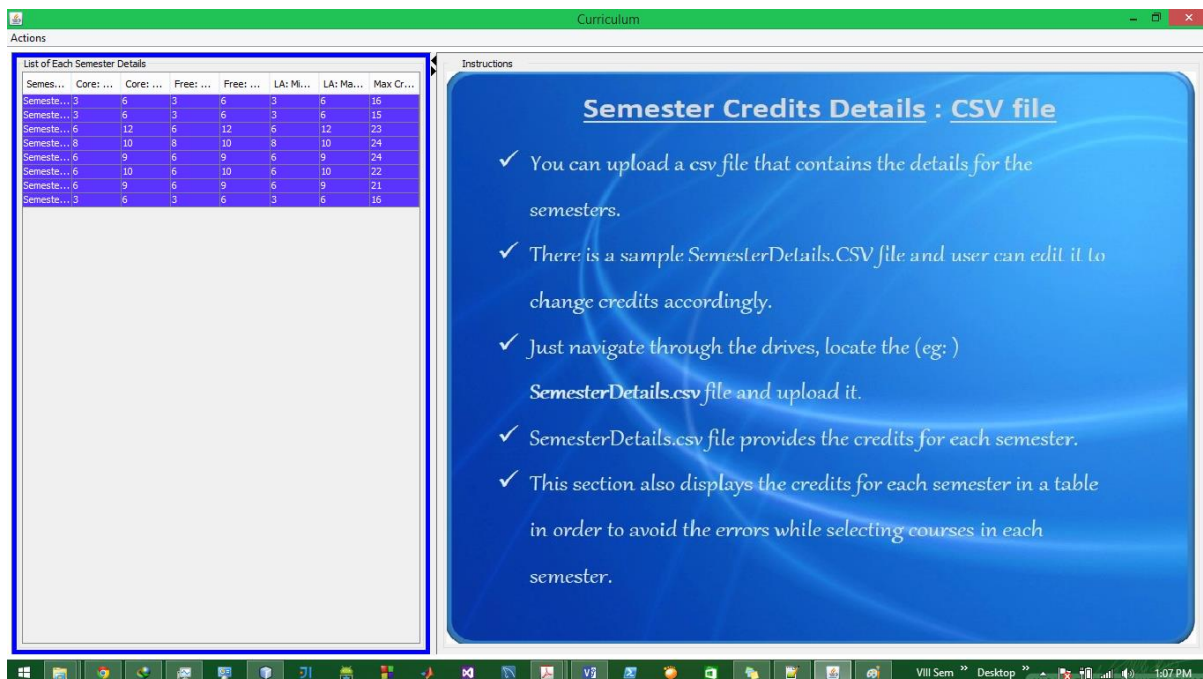
The entire software is a stand-alone application in JAVA. The user screen is split vertically into two panes. The left pane contains the UI for filling semester credit constraints, processing courses, which expands and contracts as per user action. The right part displays the instructions related to operations that are specified on the left pane. Either one of the left pane or right pane can be expanded partially or completely.

## Screen Images:

### WELCOME PAGE



### SEMESTER DETAILS



## CSV FILE FOR COURSE DETAILS

csv (Comma Separated Value) file stores tabular data (numbers and text) in plain-text form. Courses.csv file contains CourseName (String), CourseID (String), Fractal (boolean), Credits (int), Type (String), PreRequisite(CourseID), MinSem (int) , MaxSem (int), ElementaryCourse1 (CourseID), ElementaryCourse2 (CourseID)

The screenshot shows the 'Curriculum' application window. On the left, there is a 'List of Courses' table with columns: Cour..., Cour..., Fractal, Credits, Type, PreR..., MinSem, Max..., Elem..., Elem... The table lists various courses like CS2000, CS3001, CS3002, etc. On the right, there is an 'Instructions' panel titled 'Course Details through CSV File' with the following points:

- ✓ You can upload a csv file that contains the details of each course along with the constraints that are applicable to the course.
- ✓ There is a sample Courses.CSV file and user can edit it to change constraints accordingly.
- ✓ Read documentation for the format and meaning of Courses.CSV file
- ✓ Just navigate through the drives and locate the **Courses.csv** file and upload it.
- ✓ This section also displays the courses and their constraints in a table in order to avoid errors while selecting the course.

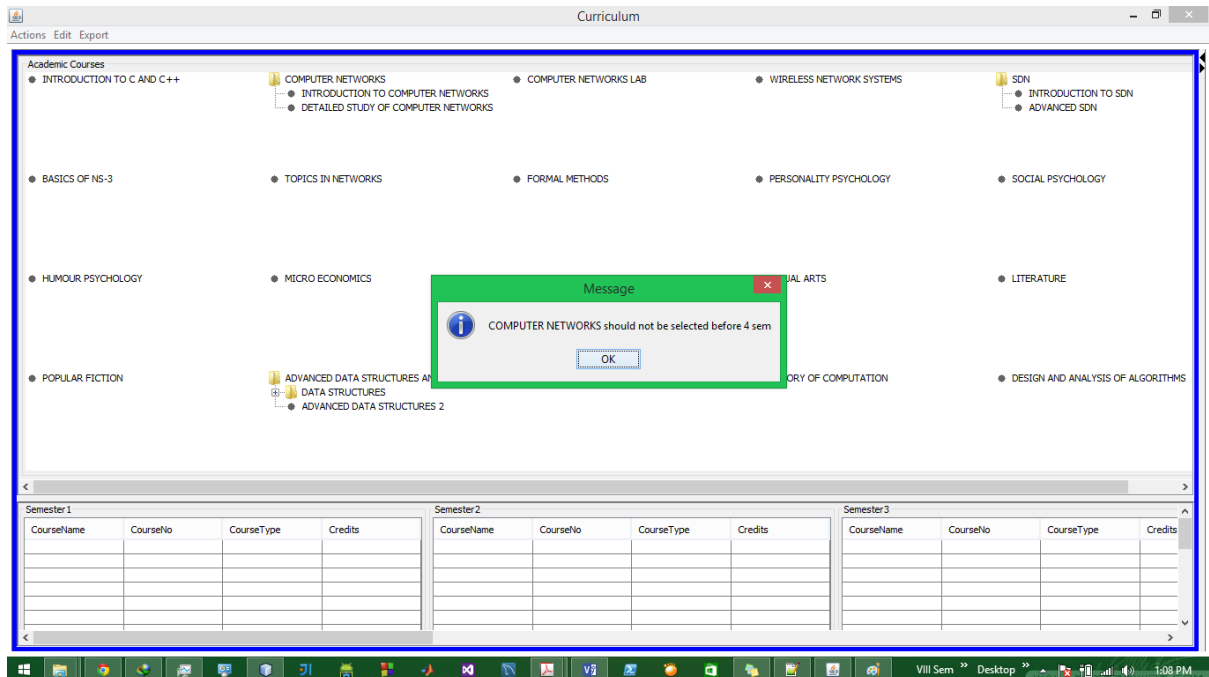
## PROCESSING THE CURRICULUM

The screenshot shows the 'Curriculum' application window. On the left, there is a 'Selection of courses' panel with a list of courses and their details. A tooltip shows: 'Course Name: MACRO ECONOMICS, Course No: LA3030, Course Type: LA, Credits: 3, Min Sem: 3, Max Sem: 4'. Below this, there are two tables for 'Semester 1' and 'Semester 2' with columns: CourseName, CourseNo, CourseType, Credits. On the right, there is an 'Instructions' panel titled 'Selection of courses' with the following points:

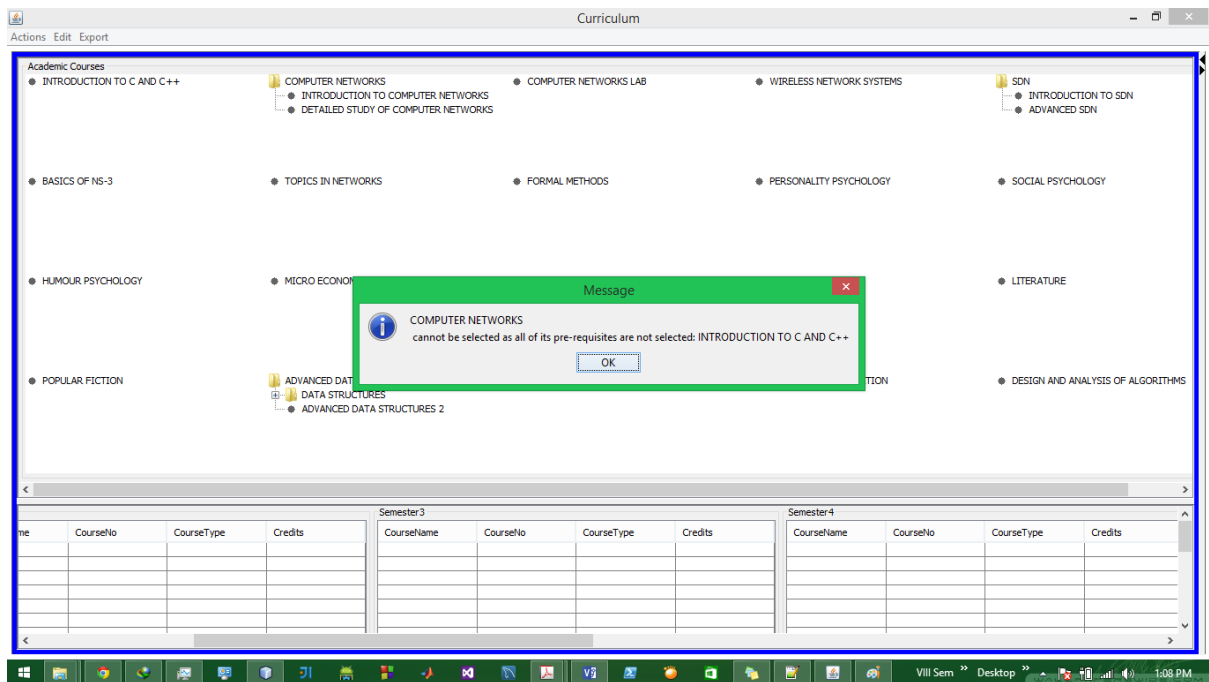
- ✓ This section lets you to drag and drop courses that you wish to take in a semester.
- ✓ When you drag a course, it displays an error message if there is any so that you can correct it.
- ✓ Also displays your selections with details like the type, credits of course for your convenience in order to avoid few errors.
- ✓ You can also edit your selections through EDIT option which consists of UNDO and REDO options.
- ✓ When you are done with the selection process, you can export your selected courses in different semesters to either CSV file or EXCEL file depending on your requirement.
- ✓ If there are any constraint violations, the export fails and an error message with the violations are displayed.



## IF ERROR OCCURS



## ERROR: PREREQUISITE





ERROR WHILE EXPORTING THE OUTPUT TO CSV FILE

