**Six Elements System Analysis - Student Performance Monitoring System**

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| **Process** | **System Roles** | | | | | |
| **Human** | **Non-Computing Hardware** | **Computing Hardware** | **Software** | **Database** | **Network & Communication** |
| User Account Creation | Admin:  1. Can create new users for the system.  2. Collect user information such as name, DOB based on their specific role.  3. Assigns a certain id and password for each individual user type.  Users:  1. Provide personal information such as name, DOB to the admin for their specific role. | Pen & Papers:  1. The information sometimes are recorded manually. | Computer:  1. All related data is searched and stored using computer. | MS Excel:  1. All related information are stored. | Other Sources: 1. All related information are stored in the specific location. | None. |
| Mapping COs with PLOs | Department:  1. IEB/UGC sends accreditation manual with  PLO’s defined to the department  2. Department then gathers information regarding Course Outcome from the website/ IEB manual.  3. If the course content exist in the course outline, review the course content else create a list of the course content.  4. Creates a list of the course outcomes.  5. Mapping the CO with the course content.  6. Mapping the received CO’s to specific PLOs.  7. Mapping CO’s to specific questions of mid-term, final & project. | None. | Computer:  1. All related data is searched and stored using computer. | None. | Other Sources: 1. All related information are stored in the specific location. | All related data are searched through the internet. |
| Provide Course Outline | Instructor:  1. For the current online class, Course Outline is uploaded to the online classroom (Google Classroom).  2. For offline classes, Course Outline is printed and distributed among the students.  3. At the end of the semester, Course Outline is submitted to the department. | None. | Computer:  1. All related data is searched and stored using computer. | None. | Other Sources: 1. All related information are stored in the specific location. | None. |
| Course Registration | Student:  1. On the reserved day for registration log in to IRAS with their id and password.  2. Go to registration page, load courses and select courses.  Can only select courses of which prerequisites have been completed and the course capacity is not exceeded.  3. Click on ‘DONE’ button to complete the registration process.  4. A message prompts saying ‘’Registration Successfully Done”. | Pen & Paper:  1. Sometimes course registration is done manually. | Computer:  1. All related data is searched and stored using computer. | IRAS:  1. IRAS has an interface for doing registration. | MS SQL Server:  1. IRAS is integrated with MS SQL Server.  Other Sources: 1. All related information are stored in the specific location. | Internet:  IRAS is a web-based application and requires internet to access. |
| Gather Student Marks from Courses they have enrolled | Instructor:  1. Receives CO’s to be achieved in that particular course.  2. Takes exams such as mid-term, final & project to assess students in various course outcomes.  3. Gather marks for different assessment including student id, course id, section, semester.  4. Convert the total marks for mid-term, final.  5. Calculate total for all the CO’s. | Pen & Paper:  1. Written exams conducted by the faculty to evaluate the students. | Computer:  1. All related data such as student name, id is searched and stored using computer. | MS Excel: 1. All related information are stored. | Other Sources: 1. All related information are stored in the specific location. | None. |
| Provide Student Marks | Instructor:  1. Provides students total CO marks achieved in all CO’s in mid-term, final & project to the department including student id, course id, section, semester.  Department:  1. Gather students marks in all CO’s achieved based on mid-term, final & project with student id, course id, section, semester.  2. Calculates CO percentages.  3. If greater than or equal to 40% CO’s have been achieved, a student passes that certain CO otherwise fails.  4. The corresponding CO’s are mapped against PLO’s and PLO achievements are recorded. | None. | Computer:  1. All related data is searched and stored using computer. | MS Excel:  1. All related information are stored. | Other Sources: 1. All related information are stored in the specific location. | All related data are provided through the internet. |
| Generate Report | Department:  1. Retrieve the student information of PLO achievement from previously calculated OBE marksheet.  2. Make reports after comparing results of multiple students.  3. Percentage of successfully passed or failed to achieve are calculated based on the total number of students. | None. | Computer:  1. All related data is searched and stored using computer. | MS Excel:  1. All related information are stored and calculated. | Other Sources: 1. All related information are stored in the specific location. | None. |
| Report Analysis | UGC/ IEB/ Higher Management:  Does analysis by  1a. Viewing number of students passing or failing in a certain PLO.  1b. Viewing progression of students with charts and graphs. | Paper:  1. Paper is required for the printing purpose. | Printer:  1. Print the report based on users’ request. | None. | Other Sources: 1. All related information are stored in the specific location. | None. |