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| **Process** | **System Roles** | | | | | |
| **Human** | **Non-Comp**  **Hardware** | **Computing**  **Hardware** | **Software** | **Database** | **Network &**  **Communication** |
| Map Course  Outcomes (COs)  to Program  Learning  Outcomes (PLOs) | **IEB/UGC/ Ministry of**  **Education:**  1. Send Accreditation Manual  with PLOs defined to VC/ Board Of trusties.  **VC/ Board Of trusties**  1. Receive Accreditation Manual  from IEB.  2. Send the Accreditation manual  to Department Staff.  **Head of Department / Dean of**  **School:**  1. Send the Accreditation manual  to Department Staff.  . Direct Department Staff to tell  Course Instructors and  Coordinators to design Course  Outline and Course Assessment  Reports.  **Department:**  1. Send Course Instructors the  Accreditation Manual with  defined PLOs.  **Course Instructor:**  1. List course content.  2. List COs.  3. Map Course Content to Course  Outcomes (COs).  4. Map COs to PLOs.  5. Map COs to specific questions  of Mid-term, Final Exams  questions and Project Work.  6. Starting to design course  assessment report using course  outline, Course Content and COs. | **Pen and paper:**  1. Is used for noting  down intermediate  brainstorming ideas.  **Board and marker:**  1. Is used for noting  down intermediate  brainstorming ideas. | **Computer:**  1. Course  Coordinators use  computers to make  softcopies of Course  Outcomes (COs) of  the specific courses  they are experts in.  **Printer:**  1. To print out  hardcopies of Course  Outcomes (COs). | **MS Word:**  1. Course  Coordinators use  MS Word to make  a detailed course  outline and Course  Assessment  Reports with  Course Outcomes  (COs) mapping to  Program Learning  Outcomes (PLOs).  **Excel Sheet:**  1. Excel Sheet is  used by Course  Coordinators to  map specific  questions in the  Midterm, Final  exams and Project  work to specific  Course Outcomes  (COs). |  | 1. Use the internet and emails  to communicate with  UGC/IEB or other  stakeholders to discuss  important topics related to  mapping Course Outcomes to  Program Learning Outcomes.  **Others:**  1. Use phones or physical  means with stakeholders to  discuss important topics  related to mapping Course  Outcomes to Program  Learning Outcomes. |

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| Record Student  Assessment Data | **Faculty/ Course Coordinator:**  1. Assign project work and  assignments.  2. Take quizzes and exams  throughout the semester.  3. Record assessment data of  students throughout the semester  of each student for every  assessment (quizzes, assignments,  project, exams) on softcopies and  hardcopies.  4. Record marks for each specific  question in the midterms and final  exams.  5. Calculate total marks of  quizzes, assignments and midterm  and final exams and assign final  grades to each student of specific  courses.  6. Convert finals and midterms  marks.  7. Bring all the marks of every  student for a course into a  Marksheet.  8. Grade the student.  9. Upload students’ final grades on  IRAS.  10. Send the Marksheet to the  Department.  11. Send the Marksheet to admin to store in the database | **Pen & Paper:**  1. Use pen & paper to  record assessment  data and marks  obtained on physical  paper in tabular  format(hardcopies). | **Computer:**  1. Creating  softcopies of records  of all assessment data  for specific courses  are done on  computers. | **Excel Sheet:**  1. Record  necessary  assessment data  and final grades on  Excel Sheets.  **IRAS:**  1. Upload students'  final grades to  IRAS for viewing  by students or the  registrar’s office. | **Department**  **Storage:**  1. Records of  students’  assessment data  and final grades  may be saved in  the department  office and  registrar’s office  for future  reference.  **IRAS Database**  **server:**  1. IRAS uses a  database server to  store and maintain  student grades’ information. | **Internet:**  1. The Internet is used to  communicate with IRAS to  store final grades of students. |

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| Produce OBE  Marksheet &  Course  Assessment  Report | **Faculty:**  1. Calculate total marks received for  each CO by calculating the marks  received for questions and/or other  assessments mapped to COs.  2. Calculate total percentages received  for each COs on the OBE Marksheet.  3. Declare if a student has achieved a  specific CO (if CO percentage is  greater than or equal to 40).  4. Declare if a student has received a  PLO for a related CO.  5. Make a table giving the verdict and  analysis of how many students were  able to receive a certain CO and PLO  and other documents containing  necessary information and data.  6. Design Course Assessment Report  using Course Outline, Course Content  and Course Outcomes.  7. Send the final version of the OBE  Marksheet to the Dept. Office.  **Department Office:**  1. Send the OBE marksheet, Course  Assessment Report and others to the  Registrar’s Office.  2. Store the OBE Marksheet and  Course Assessment Report in the  department.  **Admin:**  1. Stores the OBE Marksheet and  Course Assessment Reports and other  documents and reports in the  Registrar's Office. | **Pen and Paper**  1. OBE marksheet  stored in hardcopy.  Additional markings  may be made to  further separate  between students. | **Computer/ Phone:**  1. Uses computers to  make softcopies of  the OBE Marksheet  and Course  Assessment Reports.  **Printer:**  1. Print hardcopies of  final versions of the  OBE Marksheets and  Course Assessment  Reports. | **Coded Excel**  **sheet:**  1.Faculty/Course  Coordinator uses  automated excel  sheets to calculate  the student’s  success/ failure in  achieving PLOs.  **MS Word:**  1. Used to make  Course  Assessment Report  softcopies. | **Department**  **Storage:**  1. Records of  students’  assessment data  and final grades  will be saved in  the department for  future reference.  **Registrar’s Office**  **Storage:**  1. OBE  Marksheets,  Course  Assessment  Reports and other  documents  submitted by the  department is  stored for future  reference. | **Internet/Mail:**  **1.** An Online platform (such as  Google Sheets) may be used  for processing the OBE  assessment data spreadsheet. |

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| View grades and  download  Transcripts | **Students**:  1. Log into IRAS.  2. Search semester wise result  for intended semester.  3. See grades for specific  semesters.  4. Download transcript through  browser into hard disk.  **Admin:**  1. Access IRAS.  2. View students’ grades if and  when it’s necessary.  3. Download their transcripts. | **Pen and Paper**  1. Tabulated  transcripts may be  printed onto paper.  Hardcopy is used as  the primary source of  truth during  applications and other  paperwork. | **Computer/**  **Phone:**  1. Used for accessing  IRAS.  **Printer:**  1. Used to print the  tabulated transcript.  Prints tabulated  transcripts. | **IRAS:**  1. **Store’s** letter  grades of each  completed course  2. Provides the  online user  **interface** for  viewing grades  and transcripts. | **Registrar’s Office**  **Storage:**  1. Student  information is kept  in admin in  hardcopies for  future reference.  **IRAS Database**  **Server:**  1. A Database  Management  Service is used to  store, maintain,  edit and receive  student grades  information in  IRAS.  **Web Server:**  1. User interface  and website pages  are served using a  remote web server. | **Internet/ Email**  1. The **Internet** is used to  communicate with IRAS to  store final grades of students.  2. Softcopies may be **mailed**. |

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| View Records  OBE Marksheets,  Course  Assessment  Reports over a  time period for  inspection and  analysis of student  performance trend | **IEB/ UGC:**  1. Inform the VC of a deadline  within which OBE Marksheets, Course  Assessment Reports and other documents  are needed for quality inspection to make  necessary improvements to degree  programs.  2. Inform the university head if govt.  official will visit the campus.  3. Visit university and relevant depts to  receive the necessary documents and  reports.  **Head of Dept/Dean of School:**  1. Request to view records of OBE  Marksheets, Assessment Reports to  analyze students’ performance trends.  2. Direct Department Staff to gather  necessary documents, OBE Marksheets,  Assessment report for a given time-period  specified by govt. officials.  3. Receive the necessary documents  gathered by the dept.  4. Evaluate the need to change/ improve  the department’s educational resources  based on students’ performance trends.  **VC/Board of Trustees:**  1. Request to view records of OBE  Marksheets, Assessment Reports to  analyze students’ performance trends.  **Departmental Staff:**  1. Gather necessary OBE Marksheets,  Assessment Reports & other documents.  2. Provide all the necessary documents to  govt. officials. | **Pen and Paper:**  1. May be used for  noting/marking down  key points of the  report.  2. Hardcopies of  reports may be used. | **Computer:**  1. Used to display  OBE Marksheet and  Course Assessment  Reports softcopies.  2. Send OBE and  Course Assessment  Reports to other  computers. |  | **Department**  **Records**  1. Retrieval of  OBE marksheets  and Course  Assessment  reports when  needed.  2. Stores records  on stakeholders’  interpretation of  student  performance  trends. | **The internet:**  1. OBE marksheets and course  assessment reports may be  **mailed** online.  2. Online platforms such as  Google Docs/Sheets display  reports of softcopies. |

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| Request for  review and change  of grades | **Students:**  1. Request for grade change and  review to faculty.  **Faculty/ Course Coordinator:**  1. Check exam papers and other  assessments upon request.  2. If change needs to be made,  send a grade change request of a  specific student to admin.  If not, end the process.  **Admin:**  1. Receive a request to change the  grade of a specific student.  2. Change grade of student based  on Faculty request. | **Pen and Paper:**  1. May be used to  note down key points  or marks on the  students’ answer  sheets. | **Computer/ Phone:**  1. Used for  communicating with  the faculty. | **IRAS**:  1. Used by the  admin for  changing the  grade. | **IRAS server:**  1. Update student  grade data.  **Department**  **Storage:**  1. Update student  grade data.  **Registrar’s Office**  **Storage:**  1. Update student  grade data. | **Internet:**  1. Email is primarily used for  communication.  **Phone:**  1. May be used for  communication. |