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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. Receive Accreditation Manual  from IEB.  2. Send the Accreditation manual  to SPM  3. Direct Department Staff to tell  Course Instructors and  Coordinators to design Course  Outline and Course Assessment  Reports.  **Course Instructor:**  1.Check if previous course content is present from SPM, otherwise make new 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). | **IRAS Database**  **server:**  1. IRAS uses a  database server to  store and maintain  student grades’ information.  **SPM**  **database:**  1. Records of  PLOs | 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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| Check Number of student enrollment in a department from SPM | **Student:**  1. Student enroll in a specific Degree program.  2. Student information is sent to SPM from IRAS.  **Department Head/Dean:**  1.Recieve the data from SPM  2. School-wise, department-wise and program-wise student enrollment comparison can be seen.  **VC/Board of Trustees:**  1.Recieve the data from SPM  2. School-wise, department-wise and program-wise student enrollment comparison can be seen. | **Pen and Paper**  1. Sheet of number of students in a department is made along with student’s information. | **Computer/ Phone:**  1. Uses computers to  make softcopies of  report or sheet of student information in departments.  **Printer:**  1. Print hardcopies of report and sheet | **Coded Excel**  **sheet:**  1.Deparment head or dean uses  automated excel  sheets to calculate  the number student’s  in the department.  **MS Word:**  1. Used to make  report  softcopies. | **IRAS database**  1. Records of  students’ enrollment in the department.  **SPM**  **database:**  1. Records of  students’ enrollment for all the departments. | **Internet/Mail:**  **1.** An Online platform (such as  Google Sheets) may be used  for processing the student information data spreadsheet.  **2.** Internet to access to SPM |

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| Register for course | **Student:**  1. Login to IRAS  2. Student enroll in a specific if all the pre requisite courses are completed otherwise can’t process end.  3. Request for bill  4. Receive for bill  5. Pay the bill    **Instructor**  1. Receive data of enrolled student.  2. Add student data in OEB marksheet. | **Pen and Paper**  1. Sheet of number of students enrolled for the course. | **Computer/ Phone:**  1. Uses computers to  make softcopies of  report or sheet of student information enrolled for the course.  **Printer:**  1. Print hardcopies of report and sheet | **Coded Excel**  **sheet:**  1.Instructor uses  automated excel  sheets for the semester OEB marksheet.  **MS Word:**  1. Used to make  report  softcopies. | **Department**  **Storage:**  1. Records of  students’ enrollment in the course.    **IRAS database:**  1. Records of  students’ enrollment in the course. | **Internet/Mail:**  **1.** An Online platform (such as  Google Sheets) may be used  for processing the student information data spreadsheet. |

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| Record Student  Assessment Data to SPM | **Faculty/ Course Coordinator:**  1. Assign project work and  assignments according to course outline.  2. Take quizzes and exams  throughout the semester according to course outline.  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. SPM 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 according to current mark distribution if no change is needed else adjustment has been made.  9. Submit students’ final grades and marksheet on  SPM. | **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.  **SPM**  1. Upload student from IRAS to SPM | **SPM:**  1. Records of  students’  assessment data  and final grades  may be saved in  the SPM  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.  2.Internet to access SPM |

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| Produce OBE  Marksheet &  Course  Assessment  Report to SPM | **Faculty:**  1. Upload Marks in SPM to calculate total marks received for  each CO by calculating the marks  received for questions and/or other  assessments mapped to COs.  2. SPM 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. SPM 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. Submit the final version of the OBE  Marksheet to the SPM | **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 from SPM.  **Printer:**  1. Print hardcopies of  final versions of the  OBE Marksheets and  Course Assessment  Reports from SPM | **Coded Excel**  **sheet:**  1.Faculty/Course  Coordinator uses  automated excel  sheets to calculate  the student’s  success/ failure in  achieving PLOs from SPM  **MS Word:**  1. Used to make  Course  Assessment Report  softcopies.  **SPM**  1. Store CLO and PLO information to SPM | **SPM**  **Storage:**  1. Records of  students’  assessment data  and final grades  will be saved in  the department for  future reference in the SPM | **Internet/Mail:**  **1.** An Online platform (such as  Google Sheets) may be used  for processing the OBE  assessment data spreadsheet.  2. Internet to Access SPM |

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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.  **Dean/DOH:**  1. Log into SPM.  2. Search semester wise result  for intended semester for a specific student.  3. See grades for specific  semesters.  4. Download transcript through  browser into hard disk.  **Faculty/Higher Officials:**  1. Log into SPM.  2. Search semester wise result  for intended semester for a specific student.  3. See grades for specific  semesters.  4. Download transcript through  browser into hard disk. | **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.  **SPM**  1. Store transcript data | **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.  **SPM**  **Storage:**  1. Records of  students’  assessment data  and final grades  will be saved in  the department for  future reference in the SPM | **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 from SPM | **IEB/ UGC:**  1. Login to SPM  2. View records of OBE marksheet course Assessment report over time period for inspection and analysis of student performance trend  3. Download OBE marksheet course assessment report  **Head of Dept/Dean of School:**  1. Login to SPM  2. View records of OBE marksheet course Assessment report over time period for inspection and analysis of student performance trend  3. Download OBE marksheet course assessment report  performance trends  .  **VC/Board of Trustees:**  1. Login to SPM  2. View records of OBE marksheet course Assessment report over time period for inspection and analysis of student performance trend  3. Download OBE marksheet course assessment report  **Faculty/Higher Officials:**  1. Login to SPM  2. View records of OBE marksheet course Assessment report over time period for inspection and analysis of student performance trend  3. Download OBE marksheet course assessment report | **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 from SPM.  2. Send OBE and  Course Assessment  Reports to SPM.  3. View OBE Marksheet from SPM | **SPM**  1.Store information of OBE into SPM | **Department**  **Records**  1. Retrieval of  OBE marksheets  and Course  Assessment  reports when  needed from SPM  2. Stores records  on stakeholders’  interpretation of  student  performance  trends from SPM | **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.  3. Internet to access SPM |

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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,  grade is changed in SPM and re-submitted.  If not, end the process. | **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. | **SPM**:  1. Used by the  admin for  changing the  grade. | **SPM 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. |