

**CONCEPTNOTE
ON
DEVELOPMENT OF COMPLETE IT
SOLUTION TO AUTOMATE THE
FUNCTIONING OF CFTIs**

he intent of SLIET is to translate the existing students related academic business processes and procedures through fit/gap analysis to conform to the standard processes delivered with the application. The application should be state-of-art technology to improve the delivery of services through workflow and web-enabled access.

SCOPE OF WORK

Detailed Process Study: Detailed analysis of the existing systems, whether automated or manual is essential. This shall include analysis of documentation in use, detailed information requirements, reporting procedures and formats, reporting levels, coding and classification being followed etc. Identification of unique data elements, their size, format, source, use and sequence of data storage, data volume, its frequency of updating, responsibility of the department/sections for updating, inter-system flow of data, current volume and growth rate etc. are also mandatory.

Configuration, Customization, Implementation, Data Load and Acceptance Testing: After completion of the above tasks, the bidder shall be asked to implement the systems. System implementation for each application shall include:

- Configuration of system as per the process
- Implementing customizations if any
- Collection and preparation of data
- Data entry and validation
- Trial run with live data for 6-8 weeks under actual conditions.
- Implementation of systems and handing over to the users for acceptance and operation
- Preparation of user manual

The duration of the trial run for the system shall be mutually decided by the SLIET and the bidder keeping in view the complexity of the system.

Training: The bidder shall provide training on appropriate aspects of the Software per module at appropriate location of the concerned department/section to System Analysts, Programmers, Operating staff, Senior executives etc of the user department or such other persons nominated by the SLIET in a systemic manner according to a suitable training schedule.

Maintenance of Application Systems shall include:

- Maintenance of the Application systems during warranty and support period i.e. for a period of three years from the date of Go-Live of the complete system. During this period system will be supported for any issues as reported by the users.
- Maintenance of the Application Systems after the expiry of the warranty period on agreed terms.

DELIVERABLES: The deliverables expected from the supplier are:

- Implementation plan containing schedule and milestone details
- Software Build Tools (if any)
- Released Software
- Test Case Document and Test Report
- Configuration Details
- User Manual
- Maintenance Manual
- Installation document with media
- Annual Support proposal (AMC) for 3 years after the completion of the warranty period
- Functional Requirements Specification (FRS)
- Design Documents (DFD), Process flow diagram
- Complete Source Code of the application

System Requirements: This section details the system environment in which the campus software should operate.

Hardware / Software Considerations

- **Hardware Configuration:** Vendor should suggest the compatible hardware (Servers & Data Storage) to meet the requirement of MIS.
- **Software Platform:** Software should be developed using open-source (OS, database & tools).

Performance Characteristics

- Speed, throughput, and response time of software should cater to 5000 registered users, (with a maximum of 500 users accessing simultaneously), with flexibility for augmentation of the number of users and the simultaneous accesses, through hardware augmentation, and not calling for any software changes.

Ownership of Source Code and Licensing

- The source code of software including plans, drawings, CASE tools, specifications, designs, reports and other documents prepared by the bidder in the execution of the contract shall become and remain the property of SLIET and before termination or expiration of this contract, the bidder shall deliver all such documents to SLIET, together with source code of the Application Software or used under the contract along with the detailed inventory thereof.
- The source code should be submitted on any permanent media to SLIET

ELIGIBILITY CRITERION / BIDDER QUALIFICATIONS

1. The Bidder should be primarily an IT Company and Service provider dealing with application development & management services for education domain and should have been in the business for a period exceeding five years as on date - Memorandum and Articles of Associations should be enclosed
2. The Bidder should have readymade software solution for Universities and Educational Institutions
3. The Bidder should be the owner / OEM of the software product
4. The Bidder should have been engaged in at least five projects involving development & implementation of University Management Solution and minimum three or more should be a Higher Education Institution of National Importance (INI) in India. Copy of Purchase Order/ Contract from the concerned Institution to be attached.
5. One of the projects in Institution of National Importance should be of value more than 5 crores.
6. Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of India ("GOI")/ State governments/ Regulatory agencies.
7. SLIET reserves the right to carry out the capability assessment of the Bidders and its decision in this regard shall be final & binding to all.
8. Upon award of work order, the successful Bidder shall sign an agreement with SLIET within 15 days.

PHASE-WISE IMPLEMENTATION: SLIET would go for a phase wise implementation methodology and following are the suggested phases;

- **Phase 1 (to go live in 3 months from the start of project)**
 - a. Admission Management Module
 - b. Academic Management
 - c. Student self service portal
 - d. Fee Management
 - e. Communication and notification management module
- **Phase 2 (To go live in 6 months from the start of project)**
 - f. Examination Module
 - g. Financial accounting module
 - h. Payroll management module
 - i. Learning Administration and Management
- **Phase 3 (To go live in 8 months from the start of project)**
 - j. Materials and store Management Module
 - k. HRMS module
 - l. Employee and Alumni Portal
 - m. Office Automation

CONCEPT PLAN

1. Specific Requirements

1.1. User Interfaces

User interfaces mentioned in this section shall not be construed as operating system's structure, design or functionalities. The section outlines that the desired product shall have interface for each stakeholder, which shall be linked to the operating modules of their respective processes. This involves both internal and external users, spanning partly or completely over both internet and intranet networks. Main users of the product are listed below.

1.2 Student

- Every student shall have his/her own secured interface protected by a user id and password to log-in and access information.
- Various request forms related to student's life cycle in the institute shall be embedded in his/her interface.
- Designated fields in these forms shall be auto-filled by existing databases linked to his/her roll number or any other unique identifier.
- This interface shall queue tasks to be completed by the student as a result or outcome of another task or request completed or initiated in any other process by him/her or any other individual e.g. task of subject registration to be done by the student. This task queue shall also include those tasks, which require his/her approval as per the approval hierarchy in a given process.
- This interface may be divided into sections, which can be accessible over internet and intranet networks on desktop or mobile or hand-held devices.
- This interface shall create a central ledger to track all financial transactions related to the student, which are pushed from multiple processes executed in departments of the institute including but not limited to fee, dues, scholarship, honorarium, fellowship, monetary awards and rewards, medical reimbursements, travel advances and grants, research grants, thesis grant, department grants etc.
- Information available in his/her interface shall include but not be limited to the following:
 - Personal Information
 - Family Information
 - Academic Information
 - Hall Information
 - Student Activities (Gymkhana) Information

- o Student Placement Information
- o Student Counseling Information
- o Scholarship Information
- o Fellowship Information
- o Honorarium Information
- o Fee and Dues Information
- o Health Center Information
- o Leave Information
- o Student Survey Information
- o Attendance Information
- o Office Order Information
- o Prizes and Medals Information
- o Counseling and Placement Information
- o Status of initiated requests
- o Any other related information

1.3 Faculty Member

- Every faculty member shall have his/her own secured interface protected by a user id and password to log-in and access information.
- Various request forms related to faculty member's service in the institute shall be embedded in his/her interface.
- Designated fields in these forms shall be auto-filled by existing databases linked to his/her PF number or any other unique identifier.
- This interface shall queue tasks to be completed by the faculty member as a result or outcome of another task or request completed or initiated in any other process by him/her or any other individual e.g. task of filling the assessment sheet. This task queue shall also include tasks, which require his/her approval as per the approval hierarchy in a given process.
- This interface may be divided into sections, which can be accessible over internet and intranet networks on desktop or mobile or hand-held devices.
- This interface shall create a central ledger to track all financial transactions related to the faculty member, which are pushed from multiple processes executed in departments of the institute including but not limited to payroll, honorarium, monetary awards and rewards, medical reimbursements, travel advances and grants, research grants, department grants, CPDA, LTC, Pensionary Contribution during FST & Deputation, leave encashment, pension entitlements and monthly pension, research project grants (DORC Projects), advances (loans) etc.
- Information available in his/her interface shall include but not be limited to the following:

- Personal Information
- Family Information
- Recruitment and Establishment Information
- Institute Housing Information
- Service Book Information
- Honorarium Information
- Pay-grade and Payroll Information
- Income Tax Liability and Deduction Information
- Chair & Research Fellowship Information
- Positions Held and Committee Membership Information
- Internally or Externally Sponsored Project Information
- Health Center Information
- Leave/CPDA Information
- Institute Advances (Loans) Information
- Service Assessment Information
- Academic Calendar / Classroom Information
- Attendance Information
- Office Order Information
- Prizes, Awards and Medals Information
- Paper, Books and Conferences Information
- Outstanding Advance Settlement Information
- Reimbursement Details
- Status of initiated requests
- Any other related information

1.4 Staff Member

- Every staff member shall have his/her own secured interface protected by a user id and password to log-in and access information.
- Various request forms related to staff member's service in the institute shall be embedded in his/her interface.
- Designated fields in these forms shall be auto-filled by existing databases linked to his/her PF number or any other unique identifier.
- This interface shall queue tasks to be completed by the staff member as a result or outcome of another task or request completed or initiated in any other process by him/her or any other individual e.g. task of filling the assessment sheet. This task queue shall also include tasks, which require his/her approval as per the approval hierarchy in a given process.
- This interface may be divided into sections, which are accessible over internet and intranet networks on desktop or mobile or hand-held devices.
- This interface shall create a central ledger to track all financial transactions related to the staff member pushed from multiple departments in the institute including but not

limited to payroll, honorarium, monetary awards and rewards, medical reimbursements, travel advances and grants, department grants, CPDA, LTC, leave encashment, pension entitlements and monthly pension, Admin advances (loans) etc.

- Information available in his/her interface shall include but not be limited to the following:
 - Personal Information
 - Family Information
 - Recruitment and Establishment Information
 - Institute Housing Information
 - Admin Advances (Loans) Information
 - Service Book Information
 - Honorarium Information
 - Pay-grade and Payroll Information
 - Income Tax Liability and Deduction Information
 - Health Center Information
 - Leave/CPDA Information
 - Service Assessment Information
 - Attendance Information
 - Office Order Information
 - Prizes, Awards and Medals Information
 - Outstanding Advance Settlement Information
 - Reimbursement Details
 - Internally or Externally Sponsored Project Information
 - Paper, Books and Conferences Information
 - Status of initiated requests
 - Any other related information

1.5Administrative Users

- Administrative users are internal users of the institute who hold administrative positions for managing various departments. These may include, but not be limited to, Director, Deans and Registrars
- Apart from the information required in their personal capacity as faculty member or staff, such users shall be given information required to manage their departments.
- This set of information is dynamic and may vary from administrator to administrator and department to department.
- Common things under such users may include attendance record of the department, over-view of roles assigned to department manpower, status of critical processes, pending tasks at each level in the department, etc.
- These users may require access to special information, based on their role in the department and institute e.g. Dean of Student, Faculty Affairs may require access to

admission database for analyzing information of student mix so that room allocation logic may be set on best-fit-diversity mix.

- Such users shall access this administrative information from user-ids provided to them in individual capacity but in a different tab, which can be plugged in & out whenever required.

1.6 External Users

- External users shall be provided with log-in ids and password as per the requirement to access varied information.
- Vendors supplying items to the institute shall be given an interface for online registration and updating product list.
- External students and research fellows shall be provided with an interface to apply or reach students or research fellows or faculty members of the institute.
- This interface shall queue tasks to be completed by the external user as a result or outcome of another task or request completed or initiated in any other process by him/her or any other individual e.g. task of dispatching an item against a PO. This task queue shall also include tasks, which require his/her approval as per the approval hierarchy in a given process.
- This interface shall be accessible over the internet on desktop or mobile or hand-held devices.
- Information available in his/her secured interface shall vary as per the given process and illustrated therein.

2. Functional Requirements

This section contains summarized automation requirements of various departments in the institute, beginning with common plug-n-play modules and extending to specific departmental processes.

2.1 Common Module (plug-n-play)

This section details functionalities of those modules, which shall remain common across departments and can be used by simply plugging to their user roles with minor or no customizations. Unless specified, the term “user” in this section denotes the operating desk in the concern department.

2.1.1 Workflow & Tasks

- This module shall play a pivotal role in realizing the vision of paperless office.
- Users shall be given an option to fill an online form through their interfaces, as mentioned in 1.1 User Interfaces. These forms shall have option to upload documents / images and generate a reference number for the request, with which its status shall be tracked.
- Uploaded documents / images shall be stored in a directory identified by the reference number for the request and remain available for search / view / download / print.
- In case, the user is not able to fill the form online then operating desks within the department shall have the option to input details by themselves in the form and push it through the designated workflow.
- These forms shall flow online within the approval hierarchy of the given process, in form of tasks.
- Tasks shall be assigned by the module to the next authority as per the approval hierarchy.
- Tasks shall be categorized in to process specific groups, priority and aligned as per task status i.e. Pending / On-Hold / Rejected / Executed or Accepted.
- It shall enable the process executing department to define levels up to which the user can withdraw his/her request.
- These tasks shall be linked to the operating modules used by the user and communicate to update the status of the task.
- Complete tasks shall remain available in the user interface for record purposes.
- It shall enable users to assign or re-assign their respective tasks to other users or deputies, in any event deemed fit.
- It shall enable users to give remarks over the tasks assigned to them.
- It shall also enable users to appoint “acting authority” in their leave of absence. This appointment shall be available on all or selective powers or processes or approval hierarchies, in which the user is a member.
- It shall enable user to appoint multiple “acting authorities” for one or multiple powers or processes or approval hierarchies.
- “Acting authority” appointments shall be done in two modes viz. (i) Time bound wherein the appointment is revoked by the system at the end of the duration in order to return to normalized workflow hierarchy, and (ii) Indefinite assignment wherein the appointment

is revoked manually by the user.

- Once the request is approved online, it shall capture digital signatures of all approvers on the form and store a copy of the form for record purposes. It shall enable user to download and print the form with digital signatures, if required.
- The initiator of the request and others shall be able to view the status of the request in the workflow along with remarks entered by various approval hierarchies, which may or may not require him/her to act.
- Almost every process shall be using this workflow within their respective approval hierarchies; hence it is necessary that the platform used to build this workflow shall allow seamless and easy modification options in approval hierarchies.
- Users shall have access to workflow on hand-held devices for executing tasks on-the-go.
- Though the vision is to enable paperless office, an option shall be provided to users to print from the modules, whenever required. However, admin shall have an option to disable the print functionality at every step to facilitate behavioral change management whenever deemed fit.

2.1.2 DAK (Dispatch System)

- This module shall track the dispatch or receipt of documents within and outside the institute i.e. internal or external dak.
- It shall enable departments/users to receive the dak and generate a unique tracking number for the same.
- It shall enable departments/users to link the dak with its online request via biometric/barcode/RFID features enabled tracking, wherever applicable e.g. if a faculty member submits an online LTC request and deposits the physical bill along with the print out of online request, then it shall enable department/users to link the dak with that reference number and reflect the receipt and current location of the dak in the user interface of the requester.
- It shall generate the unique tracking number only at the origin department/user and propagate the same to another user/department, to whom the dak has been assigned or re-assigned i.e. a dak shall be traced by the same number in all departments/users.
- It shall enable department/user to assign or re-assign the dak to users within the department as well.
- It shall enable department/user to mark dak received for follow-up with the assignee. If the dak is just for information, it shall enable department to mark the status as “FYI”.
- It shall enable department/user to bifurcate dak based on its origin as “Internal” or “External” at the origin department/user and not allow subsequent assignees to change

the same.

- It shall enable department/user to enter remarks at each stage of assignment or re-assignment and allow all previous and subsequent assignees to view the remarks trail.
- It shall enable department/user to update dispatch details of the dak sent outside the institute with fields such as dispatch mode, AWBs, dispatch dates and fare etc. along with returned receipts, if any.
- It shall generate a unique out-going tracking number for all such dispatches.
- It shall enable department/user to upload scanned images of documents dispatched and receipts with the dispatch entry.
- Along with other reports as defined by user, it shall generate a dispatch report for all dispatches and allow department/user to print the same.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on tracking number, department, date of dispatch etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

2.1.3 Reports (Configuration & Generation)

- This module shall form an intrinsic part of every process.
- There shall be two kinds of reports within each process viz. (i) Pre-defined Reports, and (ii) Configurable Reports.
- Pre-defined reports shall be defined in each process and with specified input and output fields.
- Configurable reports shall be dynamic reports, which a user can configure and generate as per ad-hoc requirements. It shall be based on the platform, which allows user to select input and output fields (based on his/her role level access and authentication) in the given process and configure reports for one time or repetitive usage.
- Such reports shall also be available on the user interface, wherein he/she can apply filters on the parameters and view the results.
- Reports configured by one user shall be available to other users based on their role level access and authentication.
- Some of the pre-defined or configurable reports shall be available for auto-generation at a specified date and time. Module shall also auto-trigger emails with these reports as attachments, to intended recipients.

- Advanced reports shall be available for generation using different logical and binary operators.
- All reports shall be available in formats like .csv, .xlsx, .txt, .pdf, .doc, .docx, open office formats, etc. (dynamic requirement) for view, download and print.

2.1.4 Attendance Module

- This module shall serve the purpose of taking attendance of students, staff and other members of the institute.
- It shall be based on biometric and/or card swipe methodology and/or any better technology as suggested by bidder, for taking attendance.
- It shall be linked to the ID Card module to identify the person, as biometrics and card information are stored in the database created by the cell while issuing ID cards.
- It shall retrieve data from various biometric devices installed/movable at multiple locations within the institute and maintain a log of in and out timings. These terminals may also be soft-terminals which can be used as applications in hand-held devices or mobile or laptops.
- It shall uniquely identify the terminal and thus the purpose of attendance associated with it e.g. if a student attends a class of Mathematics in lecture hall L7, then the module shall identify his attendance for the specified subject and provide record of attendance to the designated course instructor.
- Student attendance shall take account of change in timetable and change of instructor, in case of multiple instructors for single course.
- It shall store institute holidays and communicate with leave module to differentiate between absenteeism and on-leave instances. Such demarcations shall be distinctly visible in the reports from this module.
- It shall push attendance to the leave module and update joining date of the person after he/she joins back from leave.
- Student attendance shall be linked to the scholarship modules in F&A section.
- It shall also throw exceptions, if a person is marked on leave but is attending designated department or class in that period.
- In case of students, it shall reflect a class attendance to the course instructor for each student/period/semester/program/subject and attendance to students for each period/semester/program/subject in their respective user interfaces.
- In case of students, it shall have in-built business rules to alert him/her if he/she is running short of attendance in any of the subjects or classes.

- It shall also serve the purpose of restricting access to secured laboratories and units with the institute.
- It shall allow the person to mark attendance through his/her user interface, if he/she misses recording biometrics or swiping card at the terminal. Such a request shall flow to the concerned section head or course instructor for approval through the workflow.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID / Roll No.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

2.1.5 Leave Module

- This module shall serve the purpose for applying, approving and tracking all categories of leaves as applicable for members of the institute including students, staff and faculty members through their user interfaces and workflow.
- It shall enable requester to apply for leave by filling an online form through his/her user interface.
- It shall generate a unique reference number on successful submission of request.
- It shall enable entire approval process through the workflow.
- It shall have in-built business rules to check the eligibility conditions for the applied category of leave and display the appropriate message to the requester, if he/she is not eligible for the category of leave selected by him/her.
- It shall communicate with multiple databases viz. student/staff/faculty to retrieve eligibility and personal details of the requester.
- It shall auto-adjust leave balance after approval and show leave balance and history for all categories of leave availed with dates.
- It shall not allow requester to submit back-dated leave application for more than three counts in the year except for Medical / Commuted Leaves. For students, back-dated leaves shall not be allowed at all.
- It shall enable requester to extend a particular category of leave, show reference to original leave reference number in this extension request and link both the records. Extension may or may not be allowed for all categories of leaves for all members of the institute.
- It shall enable requester to modify or cancel the approved leave till a day before the leave starting date. Approval hierarchy may or may not be required for leave cancellation

based on type of stakeholder e.g. for students, modification / cancellation of leave can only be done by Various Committees / Authorities.

- It shall communicate with the attendance module to update joining after the leave.
- It shall enable respective operating desks / authorities in the concerned departments with admin rights to apply, modify, cancel leaves for the requester, if required.
- It shall enable respective operating desks / authorities in the concerned departments to maintain leave balance at year end for carry-forward and lapses for next year, as applicable. This exercise shall not be applicable for all members of the institute and governed by institute policies pertaining to the member.
- It shall auto-credit the new leaves for each category in the New Year, as per business rules, at a defined date.
- It shall enable user to en-cash leaves, as required.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID / Roll No. / Leave Id No. 2
- It shall trigger intimations in form of email and/or sms as applicable in the process.

2.1.6 Electronic Payment Gateway Module

- This module shall serve the purpose of enabling users to make online payments for various facilities and services, including fee and dues.
- It shall be flexible to link to any interface with a “Make Payment” action button.
- It shall allow multiple payment options to the user i.e. Net Banking, Credit Card, and Debit Card etc.
- It shall generate receipt for the payment made by the user with a unique transaction id.
- It shall provide a return string for all payments with status e.g. successful, failure, reversed etc.
- It shall identify the interface with which it has been linked to and distinctly show the differentiation in reports.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on transaction id and / or receipt number.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

2.1.7 No-dues Module

- This module shall serve the purpose of managing dues of members of the institute and clearance at the time of exit from the institute.
- It shall enable each department to maintain an internal dues module to capture dues against the staff or student or faculty in terms of monetary and non-monetary dues.
- It shall enable each department to record dues details like nature of dues, due amount, etc.
- It shall retrieve details of members from DOAA/DOSA/Admin/DOFA/DORD database.
- It shall enable departments to aggregate dues against a particular roll number and PF number.
- It shall enable departments to update dues status as paid or unpaid.
- It shall enable members to pay the dues online through integration with electronic payment gateway module.
- It shall reflect the dues in member's user interfaces.
- No-dues clearance at the time of exit from institute:-
 - It shall enable member to apply for no-dues clearance by filling an online form through their user interface.
 - It shall retrieve details of members from DOAA/DOSA/Admin/DOFA/DORD database to auto-fill designated fields in the form.
 - For students, it shall enable them to mention bank account and address details for return of caution money.
 - It shall generate a unique reference number on successful submission of the form.
 - It shall trigger intimations to all departments/units from which dues-clearance is required for the member. List of departments shall vary with the category of the member.
 - It shall enable all such departments to retrieve details from their dues modules to update aggregate monetary and non-monetary dues against the member.
 - It shall enable member to view the dues updated by the departments.
 - It shall enable member to clear the dues online through electronic payment gateway.

- It shall enable departments to update dues-clearance status and allow member to view the status.
- It shall enable member to re-submit the request, once all departments have updated no-dues status.
- It may have a predefined sequence in which departments have to clear dues or no pre-requisites and every department may clear the dues on as and when basis e.g. student gymkhana may clear dues for the student only after other departments have cleared dues.
- It may have external bodies involved in dues clearance e.g. bank dues. For such cases, it shall enable user to update dues status in coordination with the external agency.
- For students, it shall push date to the refund process of caution money only after he/she appears in the graduating list.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on the unique reference number, roll number, PF number etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

2.1.8 Online Feedback or Survey Module

- This module shall serve as a customizable survey creation tool.
- It shall enable user to create customized survey forms with multiple varieties of questionnaire formats e.g. rating scales, text boxes, radio buttons etc.
- It shall enable user to modify the existing survey created by the same user or create a copy of the survey created by another user to make a new survey.
- It shall enable user to customize look and feel with custom themes, colors/background, logos, pictures and font's type/size/color.
- It shall enable user to assign/modify time range within which, the survey shall remain active.
- It shall enable user to release the survey to intended recipients either internal or external.
- It shall enable user to pre-define groups of common recipients to send surveys, if required.
- It shall enable user to create surveys, which maintain anonymity of the recipients.

- It shall provide instant reports to user such as display of survey response rate.
- It shall enable user to send reminders to intended recipients of the survey, who have not responded.
- It shall create visual analytics in form of bar-graphs, pie charts, etc. to help user understand responses to his/her survey.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on unique reference number of the survey.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

2.1.9 Bank Reconciliation Module

- This module shall serve the purpose of managing bank reconciliation process.
- It shall integrate with the accounting modules of different departments.
- It shall enable user to upload the files received from the bank.
- It shall match two set of data based on rules and categories defined by the user.
- It shall enable user to define elaborative rules for running matches e.g. using comparisons (<, <=, >, >=, =, !=) on the set parameters.
- It shall tag matched and un-matched records distinctly, for easy search and reference.
- It shall roll-forward unmatched entries to subsequent period, till they are matched.
- It shall be able to match one-to-one and one-to-many entries based on category of entries and sub-entries with reference to total amount.
- It shall generate reconciliation report for the category of data/entries.
- It shall show the records in both files which are not getting matched as concurrent tables.
- It shall enable user to export reconciled reports for feeding into accounting module or for reporting purposes.
- It shall store period wise reconciliation reports with unique reference number.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on the unique reference number, date of comparison, bank account number, etc.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

2.1.10. Letter Forwarding Module

- This module shall serve the purpose of managing letters forwarded to authorities for approval.
- It shall enable user to create letters in form of online requests with fixed and dynamic headers from his/her user interface.
- It shall communicate with various department's database to auto-fill designated fields in the online form.
- It shall generate unique reference number on successful submission of the request.
- It shall enable entire approval process of the request to flow online through the workflow.
- It shall enable user to manually define the approval hierarchy in the workflow at the time of submission of request. It shall retrieve details from departments for approvers selected by user.
- It shall auto-generate the digitally signed letter in the specified format, once the last authority in the user-defined approval hierarchy approves the online request.
- The digitally signed letter shall contain digital signatures of all members in the approval hierarchy along with the user, himself.
- It shall auto-trigger email to the user along with digitally signed letter as attachment and also allow user to view/download/print the letter against the online request from his/her user interface.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on letter reference number, date of letter, etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3. Academic Module

3.1. Admission Module

- This module shall serve the purpose of managing admission of students in the institute.
- It shall enable applicants to apply for various programs in one or many departments of the institute through the internet based admission portal.
- It shall enable user to update number of seats sanctioned for each program in every department in the academic year. It shall retrieve details of existing students (every

semester) in the department to calculate number of seats available for new admissions under various programs in that semester for each department of the institute.

- It shall enable user to create business rules for eligibility conditions for admission, which may vary from program to program and department to department and semester to semester. This interface may be given to departments, as well.
- It shall enable user to retain or copy business rules for eligibility conditions within and across programs and departments, if required.
- It shall enable applicant to create user-id and password on the admission portal.
- It shall enable applicant to fill the online applicant form with unique application number through this admission portal and apply in one or many programs in one or many departments. Each application shall be treated separate from the applicant.
- It shall not allow applicant to re-submit application for the same program in the same department from the same user-id log-in in the same semester against the same admission advertisement.
- It shall enable applicant to save and later continue with the application process and modify the information as many times as required, before finally submitting the application form.
- It shall not allow applicant to modify any information in the application after paying the application fee.
- It shall allow applicant to pay via following modes:
 - o Electronic Payment Gateway: It shall integrate with electronic payment gateway module and enable applicant to pay the application fee as per his/her category.
 - o Challan:

It shall enable applicant to pay through Challan at nearest SBI branch.

It shall generate Challan with unique reference number (related to application no. of the applicant against which the Challan is generated) in the specified format for applicant to download and print.

It shall embed the Challan number in the application form.

It shall enable user to download report of Challan numbers generated and update payment status against every successfully submitted application.

It shall enable applicant to view payment status in his/her admission portal.

- o Demand Draft:

It shall enable applicant to select option of payment through demand draft.

It shall enable applicant to update demand draft details in the application form.

- It shall allow applicant to submit the form after paying/selecting/updating payment status in the form. Once submitted, no changes shall be permitted.
- It shall enable applicant to print the form after successful submission.
- It shall enable applicant to upload certificates such as category certificate, experience certificate etc., Challan copy, photo and signature.
- It shall create a list of documents uploaded by the applicant and enable user to rename title of the documents after submission of form, if required.
- It shall intimate referees and enable them to submit online referrals in case of Ph.D. applicants.
- It shall enable the approval process internally within the institute (Departments/D of Academics/ Committees) to flow online through the workflow, after form submission.
- It shall push data of all online forms to respective departments and enable them to create filters using comparisons (<, <=, >, >=, =, !=) on the set parameters (e.g. GATE discipline, qualifying degree marks, preferences, etc.) to retrieve selective data in excel formats from the submitted applications i.e. the department shall create filters in the data with mathematical parameters such as all applicants where "Degree = B.Tech." AND "Age" >= 29", etc. to shortlist applications for final selection.
- It shall enable department to update application status and enable applicant to view same on the portal.
- It shall generate call letter (in the specified format) for the applicant, once it is selected by the department for interview/written test and trigger email to the applicant with required details, links and attachments as defined by user.
- For applicant's TA expenses, it shall enable department to mark attendance for applicants arrived for the interview/written test and push all such records to Accounts module as a task for processing TA reimbursements in bulk.
- It shall enable department to update selection/rejection status after the interview /written test and allow applicant to view same on the portal.
- It shall generate offer letter (in the specified format) for the applicant, once he/she is selected by the department and trigger email to the applicant with fee structure and links of other forms, which needs to be filled by the applicant for advancing in admission process.

- It shall enable applicant to download the offer letter through admission portal as well.
- It shall enable applicant to accept or reject the offer through the admission portal. Once accepted, it shall re-direct the applicant to links of other forms which needs to be filled by the applicant for advancing in admission process including uploading transcript and other documents.
- Once the offer is accepted by the applicant, it shall enable him/her to pay the seat blocking fee before the due date, against the application number through same modes as used for paying the application fee.
- It shall enable departments to release waitlist candidates as well and open the admission portal for subsequent rounds, if any of seats are left vacant.
- For foreign students coming directly to the institute under various sponsorship schemes and Indian students under various MOUs, the online application process shall not be applicable. It shall enable such students/departments to fill separate online admission forms. Same might be applicable for walk-in interview options for Ph.D.
- It shall enable department to generate list of all selected applicants and push the approval process through the workflow.
- Once approved by Admission Committee Chairman, it shall push data of all selected applicants Student Database to Academic Dean for generating roll numbers and capturing other details via same modes as illustrated in admissions.
- It shall communicate with Student database to retrieve student details viz. registration status, fee payment status, hall allocation etc.
- It shall push data in ID cell for issuance of identity card and health booklet.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number, name, application number etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.2 Branch Change Module

- This module shall serve the purpose of managing branch change process for first year completing UG/Dual Degree students.
- It shall enable students to fill an online application form through their user interface.
- It shall enable students to give preferences for branches, as desired by them.
- It shall enable students to modify their preferences, as many times as required, till the due date.

- It shall communicate with DOSA/DOAA database to auto-fill designated fields in the form.
- It shall communicate with grade module to retrieve CPI and grade sheet of the student.
- It shall generate unique reference number on successful submission of online form.
- It shall enable DOAA office to update number of seats available in each branch under each category of the student viz. General, SC, ST, PH etc.
- It shall enable DOAA office to run the allotment script for all applications received with the due date.
- It shall allot branches to the students by merit in CPI within student categories, as defined by DOAA office and preferences given by the student.
- It shall run in loops of allotment to fill those seats which are left vacant due to branch change of the student i.e. if a ME student gets CSE, then his seat in ME needs to be filled by the student who has given ME in his/her preference. This essentially means that a student will be allotted and re-allotted seats based on his preferences multiple times till the seats getting vacant in between of allotment process are filled again.
- It shall enable DOAA office to define a tie-break rule and halt the allotment process if a tie can't be broken by existing rules specified by the DOAA office. The process shall resume, only after the tie is settled.
- It shall reflect the result on user interfaces of students/DUGC/DPGC/HOD etc.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number, department, academic year etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.3 Core Course Timetable Module

- This module shall serve the purpose of creating and managing core course timetable for students of the institute.

- Program Course Template:

It shall enable Dean Academics office to create department wise program course templates for structuring courses in each semester for every program into core courses, department compulsory courses, department electives, open electives, PG courses and/or any other courses offered.

It shall retrieve Lecture-Tutorial-Practical attributes of the courses from the approved course module.

It shall calculate number of credits for every semester and overall program.

It shall enable Dean Academics office to define minimum and maximum number of credits required for graduation in the program overall and within categories of courses.

It shall communicate with core course and department timetable modules to reflect which courses shall be offered in which semesters.

It shall reflect the program course template in the HOD/ Various Academic Committed /Faculty Member/Student's user interface.

B.Tech. (Aerospace Engineering)

C O U R S E	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH
	HSS-11 3-1-0-0(11) MTThF9-10(8-1)	CHM101A 0-0-3-0(03) LAB	AE201A(M) 3-0-0-0(05) MWF12-1(5-1)	AE211A 3-1-0-0(11) MWF9:00,T9:00	AE311A 3-0-0-0(09) MF8-5,T9-10(11)	AE322A 3-0-0-0(09) TTh14-16,W11-12	AE401A(M) 0-0-2-2(02)	AE421A(M) 1-0-2-0(03) Th8-9
	LIF101A 2-0-0-0(06) WF2-3(2-1)	CHM102A 2-1-0-0(08) MWF9-10		AE251A 2-0-2-0(08) TF12-1	AE321A 3-0-0-0(09) T12-1WF4-5(81)	AE341A 3-0-0-2(11) MW8-9,F11-12	AE441A(M) 3-0-0-1(05) TWTh8-9(82)	AE462A 1-0-1-0(04) F8-9
	MTH101A 3-1-0-0(11) MWF10-11(3-1)	ESC101A 3-1-3-0(14) MWF12-1	ESO204A 3-1-0-0(11) MWF11-12(41)		AE331A 3-0-0-0(09) T5-6,WF2-3(6-2)	AE351A 0-0-4-1(05) LAB	AE451A 0-0-3-2(05) LAB	DE-4 3-0-0-0(09)
		MTH102A 3-1-0-0(11) MWF10-11	ESO209A 2-1-0-0(08) MTW5-6,3Q(7-1)	ESC201A 3-1-3-0(14) MWF8-9	HSS-21 3-0-0-0(09) MWF5-6(7-1)	AE361A 0-0-3-0(03) LAB	AE461A 1-0-2-2(07) F3-4(2-2)	HSS-23 3-0-0-0(09)
	PE101A 0-0-0-0(03)	PE102A 0-0-0-0(03)	MSO202A(M) 3-1-0-0(06) MSO203B(M) 3-1-0-0(06) WTFE9-10(2-1)	ESO201A 3-1-0-0(11) MWF11-12		HSS-22 3-0-0-0(09)	AE471A /UGP-2 DE-2 0-0-3-0(09)	
	PHY101A 0-0-3-0(03) MTWTh10-11 lab		HSS-12 3-1-0-0(11) MWF8-9(1-1)	ESO202A 3-1-0-0(11) MTDE8-9			/UGP-3 0-0-3-0(09)	
	PHY102A 3-1-0-0(11) MWF3-4(2-2)							OE-5 3-0-0-0(09)
	TA101A 2-0-3-0(09) TTh2-3(6-2)	PHY103A 3-1-0-0(11) MWF11-12	TA202A 1-0-3-0(06) T8-9(8-1)	TA201A 1-0-3-0(06) T9-10	OE-1 3-0-0-0(09)	OE-2 3-0-0-0(09)	DE-3 3-0-0-0(09)	OE-6 3-0-0-0(09)
			COM200 1-0-2-0(05)		UGP1(09) PERSIA 3Q 0-0-3-0(09)	DE-1 3-0-0-0(09)	OE-4 3-0-0-0(09)	UGP2 3-0-0-0(09)
421	54	50	58	61	45	55	55	43

Figure 1- Sample Program Course Template

o Slot Master:

It shall enable Dean Academics office to create slots in various categories viz. Slot 1, Slot 2, Slot 3 for core courses, OE slots for open electives, DE slots department electives, PG slots for PG courses etc.

It shall enable Dean Academics office to assign days along with time intervals for each slot e.g. Slot 1 = MWF 9:00 – 10:15 AM

It shall push these slots in the core course and department timetable.

It shall allow departments to use only OE, DE and PG slots while creating department timetable and hide Slot 1, Slot 2 etc. from them.

It shall allow only Dean Academics office to edit these slots, if required.

o Core Course Timetable:

It shall enable Dean Academic office to prepare timetable in combinations of even and odd semesters for each program in every department.
It shall retrieve course ids from the approved course module.

It shall retrieve slots from the slot master.

It shall enable Dean Academic office to assign core courses as per slots for Lecture-Tutorial-Practical attributes.

It shall enable Dean Academic office to mark slots for department courses in the timetable.

Day	Semester	8:00-8:50	9:00-9:50	10:00-10:50	11:00-11:50	12:00-12:50	14:00-14:50	15:00-15:50	16:00-16:50	17:00-18:00
M	4 th	ES0202	AE211			ES0201	ESC201 LAB (D3(AE-10), D5) [14:00 – 16:50]	AE211 LAB (D4) [14:00 – 16:50]		ESC201
	6 th	AE340 (L)		HSS-11 (L) DE-9 DE (T) OE (T)	HSS-11 (L) DE-10 OE-10	DE-4 (L) DE-10 OE-10				OE-2 [17:10 – 18:25]
	8 th	DE-4 / OE-4	OE-3				AE421a LAB [14:00 – 16:50]			PG-9 [17:10 – 18:25]
	10 th / PG	PG-15	PG-7	PG-1	PG-2	PG-4	PG-10	PG-11 PGLAB.		PG-9 [17:10 – 18:25]
T	4 th		TAM11 (L)			AE211	TA301 LAB (D3(AE-10), D4, D5(AE-10)) [14:00 – 16:50]			ESC201
	6 th			DE-4 (L) [9:00 – 10:15]	DE-2 (L) [10:30 – 11:50]	DE-3 (L) [12:00 – 13:15]	AE211 (L) [14:00 – 15:15]	DE-5 / OE-5 [14:00 – 15:15]	DE-4 / OE-4 [15:30 – 16:50]	OE-3 [17:10 – 18:25]
	8 th									PG-9 [17:10 – 18:25]
	10 th / PG	PG-14	PG-4		PG-5	PG-6	PG-12	PG-13 PGLAB.		PG-9 [17:10 – 18:25]
W	4 th	ES0202	AE211			ES0201	ESC201 LAB (D4) [14:00 – 16:50]	AE211 LAB (D3(AE-10), D5(AE-10)) [14:00 – 16:50]		ESC201
	6 th	AE340 (L)		HSS-11 (L) DE-9 DE (T) OE (T)	AE322 (L)	DE-3 (L) [12:00 – 13:15]				OE-2 [17:10 – 18:25]
	8 th	DE-4 / OE-4	OE-3							PG-9 [17:10 – 18:25]
	10 th / PG	PG-15	PG-7	PG-1	PG-3	PG-6	PG-10	PG-11 PGLAB.		PG-9 [17:10 – 18:25]
TH	4 th	ES0202	AE211 (T)			ES0201				ESC201
	6 th		OE (T)	HSS-11 (L) DE-10 OE-10	HSS-11 (L) DE-11 OE-11	DE-2 (L) [12:00 – 13:15]	AE211 (L) [14:00 – 15:15]			OE-3 [17:10 – 18:25]
	8 th	AE440 (L)	DE (T)				DE-4 / OE-4	AE462 LAB [15:00 – 16:50]		PG-9 [17:10 – 18:25]
	10 th / PG	PG-14	PG-4 PG (T)	PG-2	PG-3	PG-5	PG-15	PG-10	PG-11	PG-9 [17:10 – 18:25]
F	4 th	ES0202	AE211			AE211				ES0201
	6 th			HSS-11 (L) DE-10 OE-10	AE340 (L)	HSS-11 (L) DE-9 OE-9	AE211 LAB [14:00 – 16:50]			
	8 th	AE421a (L)	OE-3		HSS-11 (L) DE-11 OE-11	DE-4 (L) DE (T) OE (T)	DE-5 / OE-5 [14:00 – 15:15]	DE-4 / OE-4 [15:30 – 16:50]		OE (T) DE (T)
	10 th / PG	PG-14	PG-7	PG-2	PG-3	PG-4	PG-12	PG-13 PGLAB.		PG-9 PG (T)

4th Semester Slots

6th Semester Slots

8th Semester Slots

4th, 6th and 8th Semester Slots

6th and 8th Semester Slots

2nd and 4th Semester M. Tech. and Ph.D Courses (PG-1 to PG-9, PG-15)

4th Semester M. Tech and Ph.D Courses only (PG-10 to PG-14)

Figure 2 - Sample Timetable

o For 1st Year Students

For first year students, all courses shall be core courses and their timetable shall be decided by Dean Academic office, itself.

It shall enable Dean Academic office to divide these students into two batches of approximately equal strength by allocating departments in each batch.

Batch A: AE, BSBE, EE, ME, CHM, PHY, ECO

Batch B: CHE, CE, CSE, MSE, MTH

It shall retrieve course ids from the approved course module and enable Dean Academics office to define course schedule for each batch e.g.

Batch A:

1st Semester: MTH101A, PHY102A, TA101A, LIF101A, PHY101A, HSS-1 / ENG112A, PE101A

2nd Semester: MTH102A, PHY103A, ESC101A, CHM101A, CHM102A, PE102A

It shall enable Dean Academic office to further divide each batch into sections with approximately equal strength for laboratory classes. This division may be manual or auto-executed by this module, based on user specified rules.

It shall enable Dean Academic office to retrieve slots from the slot master and fix lectures, tutorials and lab sections of courses in these slots.

It shall generate the timetable in the following format and reflect the same to concerned instructors/tutors/student in their user interface.

			08:00-08:50	09:00-09:50	10:00-10:50	11:00-11:50	12:00-12:50	Lunch	14:00-14:50	15:00-15:50	16:00-16:50	17:10-18:00
M	2 nd Semester	Batch A		CHM102A (L)	MTH102A (L)	PHY103A (L)	ESC101 (L)		ESC101 (P) [A4, A5, A6]	CHM101 (P) [A7, A8, A9]		
		Batch B			TA101 (P) [B4, B5, B6]	PHY101 (P) [B7, B8, B9]			CHM102 (L)	PHY102 (L)	MTH102 (L)	
		Repeat										
T	2 nd Semester	Batch A			MTH102 (T)	PHY103 (T)	ESC101 (T)		ESC101 (P) [A1, A2, A3]	CHM101 (P) [A10, A11, A12]		
		Batch B			TA101 (P) [B1, B2, B3]	PHY101 (P) [B10, B11, B12]			LIF101 (L)	TA101 (L)	CHM102 (T)	
		Repeat	MTH101A (L)									
W	2 nd Semester	Batch A		CHM102 (L)	MTH102 (L)	PHY103 (L)	ESC101 (L)		ESC101 (P) [A7, A8, A9]	CHM101 (P) [A4, A5, A6]		
		Batch B			TA101 (P) [B7, B8, B9]	PHY101 (P) [B4, B5, B6]			CHM102 (L)	PHY102 (L)	MTH102 (L)	
		Repeat	MTH101A (L)									

Figure 3 - Sample Core Course Timetable for 2nd Semester of 1st Year Students

o Laboratory Section Assignment:

While batches are created for students for running courses in alternate Semesters through batch wise semester wise course schedule as illustrated earlier for 1st year students, sections are created for distribution of students in laboratories for practical classes.

It shall enable Dean Academic office to divide batches in equal strength of sections.

From 2nd year onwards, it shall enable Dean Academic office to divide students into various sections, firstly basis batches i.e. C1 to C12/15 and D1 to D12/D15 for C and D batches of 2nd year students and secondly O1 to O12/15 sections, which shall be formed by combinations of either C's and D's in partial or complete strength e.g. O1 = D6 (partial) + D7 (full).

Allotment of students in these sections shall be done by Dean Academic office after completion of registration process i.e. when exact numbers of students are known.

This module shall enable Dean Academic office to either auto-allocate students in these sections based on user defined algorithm or manually assign or re-assign students in these sections.

Laboratory Section Assignment in 4th Semester Courses

Semester	Course	Maximum Registration	Compulsory Seats	Extra Seats	Laboratory Sections
Even	ESC201A (Electronics) 3-1-3-0 (14)	444	CHE*: 76 AE*: 48 MSE*: 97 CE*: 105 PHY*: 28 ECO*: 40 CHM*: 28 Total: 422	22 (for back-loggers)	M/T/W/Th/F: 14:00 – 16:50 Monday: D3, D5, D8, D12(24) + Others Tuesday: D1, D6, D7, D2(13), D15(10) + Others Wednesday: D4, D13, D14, D12(4), D15(18) + Others Friday: D9, D10, D11, D2(15) + Others Up to 111 students per day i.e., three (3) sections per day, each with up to 37 students

Figure 4 - Sample Laboratory Assignment

- It shall enable Dean Academic office to generate exam schedule basis the approved timetable.
- It shall push the approved timetable along with exam schedule on the user interfaces of faculty members and the students.
- It shall push the approved timetable in the facilities booking module for assigning lecture halls.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester,

department and course id etc.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.4 Department Timetable Module

- This module shall serve the purpose of managing department timetable for the semester, once core course timetable is fixed by Dean Academic office.
- It shall assign a unique reference number to the department timetable for the semester.
- It shall float the timetable to faculty members/HOD/stream wise convener for filling up the courses and slots.
- It shall retrieve course ids of the department from the approved course module and enable faculty members/HOD/stream wise convener of the department to select courses, individually for the semester in different categories i.e. UG Department Elective, UG Open Elective, UG Minors and PG Courses.
- It shall retrieve predefined OE, DE and PG slots from the slot master and enable faculty members/HOD/stream wise convener to select these predefined slots for the chosen course.
- It shall retrieve Lecture-Tutorial-Practical attributes of the course from the approved course module to facilitate faculty members in choosing appropriate slots.
- It shall enable faculty members/HOD/stream wise convener to choose slots separately for Lecture and Tutorial. It shall enable faculty members/HOD/stream wise convener to view last timetable for reference purpose.
- It shall enable faculty members/HOD/stream wise convener to manually input time-slots for laboratories (for practical classes) in consultation with timetable in-charge of the department.
- It shall not allow faculty members/HOD/stream wise convener to add any slots other than pre-defined OE, DE and PG slots against the courses except for seminar, project courses and laboratories.
- It shall enable faculty members/HOD/stream wise convener to give remarks for modifying the pre-defined slots against the courses, they have chosen. Such remark shall be visible to entire approval hierarchy of the department and pushed to Dean Academics office, after the department timetable is approved.
- It shall enable faculty members/HOD/stream wise convener to provide tentative course strength for their courses.
- It shall aggregate inputs of faculty members/HOD/stream wise convener in the

department and reflect the aggregated department timetable to the department timetable committee.

- It shall reflect the approved department timetable to Dean Academic module and enable Dean Academic office to make changes in it, if feasible.
- It shall not allow department to make any changes in the timetable, once it is approved by the department approval hierarchy and pushed to Dean Academic module.
- It shall push approved department timetables in the pre-registration module for student to choose courses by avoiding clashes.
- It shall enable Dean Academic office to add new courses, which department may want to offer even during pre-registration period and reflect the same instantly in pre-registration module.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on timetable reference number, course type etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.5 Pre-registration Module

- This module shall serve the purpose of managing pre-registration of students. Pre-registration for a semester shall happen in the preceding semester.
- Pre-requisites to pre-registration process: It shall verify fulfillment of pre-requisites before enabling user to initiate the pre-registration process. List of pre-requisites are as follows:
 - Finalization of Core Course Timetable.
 - Finalization of Department Course Timetable.
 - Finalization of minimum and maximum credits for each program along with minimum and maximum credits for OE/DE/HSS/ESO/SO courses during the term.
- Pre-registration process is time-bound and executed in phases, hence it shall enable Dean Academic office to define start and end date each phase and for the entire process.
- Eligibility for Pre-registration: It shall only allow eligible students to participate in the pre-registration process:
 - Universe: Students which are registered in the current semester.
 - Not Eligible students include:

Students, who are on leave (during the pre-registration process)

- Students, who have gone for student exchange program
- Students, who have taken semester drop
- Students, who have been terminated
- o It shall enable Dean Academic office to manually tag students as non-eligible for special reasons, if required.

- Phase – I: Submission of requests by Students:

- o In this phase, it shall enable students to apply for courses through their user interface.
- o It shall enable flow of requests through the workflow.
- o It shall enable students to view:

Suggestive Course Template:

It shall pick the program course template basis program of the student and enable him/her to view the suggestive structure of courses that he/she shall pursue.

For PG students, it shall enable Dean Academics office to create department wise suggestive specialization wise course templates and reflect such templates in student's user interface at the time of pre-registration.

Offered Courses List:

It shall pick list of courses offered in the semester from the core course timetable and department timetable and enable student to view the same.

It shall enable student to view the offered courses in categories of core courses, department compulsory, DE, OEetc.

It shall enable students to view details of courses like course title, course id, short-description of the course, department which is offering the course, course credits, course timetable, course instructor name, course sanctioned strength, course exam schedule, course pre-requisites etc.

It shall communicate with approved course module to retrieve available details and enable Dean Academic office to maintain masters for remaining details.

It shall perform smart but simple, visually aided analytics (bar charts, pie charts etc.) to enable students to view details like composition of departments (whose students) took a particular course in last semester, ratios of number of students who applied

for a particular course to number of students who were allotted the course in last semester etc.

It shall enable students to search a course on multiple search filters like course title, course id, department, course category, instructor name etc.

It shall enable student to search courses basis key-words in the short-description of the course e.g. if a student is looking for a course that includes topics on “applied statistics” then this module shall enable student to type the keyword and communicate with approved course module to show him/her list of all courses with the key-word either in title or description.

Backlog Course List:

It shall retrieve courses from earlier semesters of the student and enable him/her to view such courses, which were in the suggestive template of his/her program but he/she didn't enroll for same.

It shall enable student to view, if these backlog courses are offered in the pre-registration process or not.

Fail Course List:

It shall retrieve courses from earlier semesters of the student and enable him/her to view such courses in which he/she got “E” and “F” grade.

It shall enable student to view if these courses are offered in the pre-registration process or not.

Pass/Fail Course Template:

It shall create a pass/fail course template for each student which shall enable him/her to view a snapshot all courses taken by him/her in all semesters including current semester.

Courses with “E” and “F” grades shall be highlighted in red for ease in identification. It shall enlist number of courses that the student has failed but not cleared either as repeat or substitute.

Graduating Course Template:

It shall create a graduating course template for each student which shall enable him/her to view courses that he/she must study for graduating the program.

It shall retrieve details from the program course template and

make a list of courses under each semester.

It shall retrieve details from earlier semesters of the student and enable him/her to view courses that he/she has completed or not-completed.

It shall retrieve grades against the completed courses from the grades module to enable him/her to view number of credits earned. For courses that he/she is studying in the current semester shall be shown as "Current Semester Course".

If a student fails in a particular course and later clears it as repeat or substitute course, then it shall reflect the new grade against same or substitute course respectively with trail of earlier grade or course.

It shall update enrollment and completion of courses by the student as per course categories e.g. core courses shall be matched basis course title and course ids, OE/DE/HSS courses shall be updated on First In First Out (FIFO) basis i.e. if a student has a DE course in 5th semester but he opted for the course in 3rd semester then this module shall update the record under 5th semester DE course and enable him/her to view the semester in which he/she completed the course vs the semester in which it was suggested as per program course template.

In case a student completes more courses than required as per graduating template, then this module shall act in following modes:

- o Courses shall be updated in the graduating template basis sequence of semesters i.e. courses completed in 6th semester are updated before courses completed in 7th semester irrespective of the semester in which this course was supposed to be done by the student, according to program course template.
- o If a student has completed all required DE/OE courses till 6th semester, then any DE/OE course taken in 7th semester shall be shown as extra course and student shall not be given the option to replace DE/OE courses completed till 6th semester by DE/OE courses completed in 7th semester even if grade of 7th semester DE/OE course is better.
- o If a student is left with, let's say 2 DE courses, as per his/her graduating template and he/she opts for 3 DE courses during the pre-registration then it shall enable student to

choose which two courses he/she wishes to include in his/her graduating template after retrieving the grades from the grade module. The 3rd DE courses shall be shown as extra course.

It shall retrieve minimum credits required under each course category e.g. minimum 40 credits in ESO/SO courses, from the program course template and enable student to view deficit credits against credits earned by him/her till last semester.

It shall enable student to forecast number of credits he/she will earn in the current semester and include these forecasted credits with credits already earned till last semester to view net deficit credits.

It shall enable student to view if these courses are offered in the pre-registration process or not.

- o It shall enable students to make request for a course by selecting the course id, category of course (Core course / DE / OE) and nature of course as “Fresh/Repeat/Substitute”.
- o It shall auto-reflect nature of the course as “core course”, if student opts for a core course as per his/her program course template.
- o It shall retrieve details from the grade module to auto-populate a course as “repeat”, if the student has earlier earned “E” or “F” grade and do not allow student to change the course nature.
- o It shall constraint student to enter original course id against which he/she is opting a substitute course in pre-registration.
- o If a student is opting for extra course as mentioned earlier in graduating course template, then it shall show relevant message to the student e.g. “credits earned in this course shall not counted over all grading”
- o It shall allow student to apply for limited number of courses as per following guidelines. These guidelines are dynamic and it shall enable Dean Academic office to maintain these in rules master.

Normal UG Students (with no AP):

Maximum 65 credits plus 1 course

Minimum 35 credits

Overload

Normal PG Students (with no AP): Strictly based on new PG Manual, section 4.3. Semester Load Requirements.

Full Semester Load:

- o Maximum 45 credits
- o Minimum 26 credits
- o Overload clause

Part-time Student:

- o Maximum 36 credits
- o Minimum 17 credits
- o Overload clause

External Registration Program Student:

- o Maximum 27 credits
- o Minimum 9 credits
- o Overload clause

MBA:

- o Maximum 54 credits
- o Minimum 36 credits
- o Overload clause

UG students under AP:

Maximum 65 credits plus 1 course
Minimum 30 credits
Overload clause

PG Students under AP:

Maximum 40 credits
Minimum 30 credits
Overload clause

- o It shall allow student to apply for as many OE courses during pre-registration, as listed in his/her program course template under the semester for which pre-registration is scheduled e.g. a student shall be allowed to make requests for 2 OE courses, subject to conditions of maximum credit registration as mentioned above, if his/her program course template is as below:

4 th Semester		
MTH102A	PHY102A	CHM102A
OE/DE/HSS	OE/DE	ESO

Table 3 - Sample program semester-course template for pre-registration choices

- o If a student has backlog for courses under OE, then it shall allow that student to add as many additional OE requests as he/she has backlog, but within conditions of maximum credit registration.
- o It shall check timetable clash for courses selected by the student, prompt appropriate message to the student but still allow him/her to make a request for that course. It is to be noted here that timetable clash functionality shall be available to Dean Academics office as script which can be used in any process or module, as desired.
- o It shall enable student to apply for courses one by one and prepare the list of courses for his/her pre-registration subject to maximum credit registration.
- o It shall enable student to delete or add requests as many times as student wishes subject to maximum credit registration.
- o It shall enable student to view total number of requests made by all students, for a particular course.
- o It shall enable these requests to flow to the user interface of instructor in read only mode.
- o It shall enable instructor to view course clashes for students opting his/her course through visually aided analytics (pie chart/bar chart etc.) like percentage of student facing time-clashes and within which course etc.
- o It shall enable instructor to view grid of timeslots (retrieved from core course and department course timetable slots) and visually figure out a new timeslot for his/her course, if proportion of clashes is substantial. This grid shall enable instructor to drag and drop courses from one slot to another slot i.e. either swapping the courses or filling vacant slots. If he/she finds an alternative slot then, it shall enable Dean Academics office to verify the same in this grid and modify the slot in the already fixed core course and department course timetables. It shall auto-reflect such changes in the pre-registration module. For such changes, this module shall auto-correct clashes in the student's requests and at instructor's user interface. It shall trigger auto-intimations to all students affected by such changes i.e. those whose clashes have been resolved and those whose courses have developed clashes, if any, due to these changes.
- Phase – II: Submission of requests made by students for instructor and **Department of Undergraduate Committee (DUGC)/Department of Post Graduate Committee(DPGC)**approval
 - o As per timelines defined by Dean Academics office, it shall auto-trigger phase - II wherein:

module auto-accepts requests for those courses which are either core

courses and/or department compulsory courses for the student basis matching between student's request and his/her semester's courses, as illustrated in the program course template, instructors shall be able to accept or reject or hold (in waiting or for one-to-one-meet with the student) the course requests, students shall be able to add more requests, if earlier requests are rejected by instructors, students shall be able to delete those requests which are still to be acted upon by instructors, student shall not be able to re-apply for the rejected course,

student shall be able to add all approved requests in the pre-registration form and submit the same for DUGC/DPGC approval,

DUGC/DPGC shall be able to view the submitted pre-registration forms along with other details and take action i.e. accept or reject or hold.

Module auto-approves those pre-registration forms on behalf of DUGC/DPGC which follow the suggestive course template.

Module auto-approves those pre-registration forms of PG students on behalf of DUGC/DPGC which follow suggestive specialization course templates within each department e.g. electrical department may have various specialization for PG students.

o Instructor's Role:

It shall enable instructors to view the course requests in different tables for categories of core courses, department compulsory courses, OE courses, DE courses.

It shall further create different sub-tables under each course category for students who have applied for the course as backlog, for students who have applied for the course as repeat and a combined table for students who have applied for the course as fresh and substitute.

It shall align course requests for the course on FIFO basis (i.e. requests applied earliest appears first in the list) and enable instructor to view student's roll number, name, photograph, department, semester, course nature, date of request, and time of request.

It shall enable instructor to sort the requests in ascending or descending order on any of the aforementioned fields.

It shall reflect status of the request to the instructor as auto-approved, lottery-approved, manually-approved, rejected, hold for waiting, hold for one-to-one meeting and pending. It shall also reflect the same status in student's pre-registration form.

It shall keep moving requests, which are either approved or rejected at the bottom of the table and keep pending and hold status at the top of the

table.

It shall enable instructor to manually set rules for approving or rejecting requests by creating logical conditions (using OR, AND and NOT) using comparisons (<, <=, >, >=, =, !=) on parameters such as department, semester and date & time of request, e.g., approve all requests where Student is from "semester <= 4" OR "department != PHY", etc.

It shall enable instructor to set these rules basis filters on the request parameters available for him/her to view and save such rules for future reference.

It shall enable instructor to define the threshold limit that a particular rule can approve, i.e., the rule shall get auto-terminated, if it approves as many requests as its threshold limit. Requests shall be approved on first-come-first-served basis, based on the request date & time.

It shall enable instructor to set these rules for one or many sub-tables/tables of the requests and copy rules set for one sub-table/table to another sub-table/table.

It shall enable instructor to run these rules as many times as required either manually or automatically at specified frequencies e.g. after every 4 hours.

It shall enable instructor to manually approve or reject or hold requests either one by one or in bulk for entire sub-tables/tables.

It shall enable instructor to revoke any approved request, if required.

It shall enable instructor to view visually aided analytics (bar chart/pie chart etc.) for course requests e.g. proportions of requests approved, rejected, on hold, pending etc.

o Student's Role:

It shall enable students to view the status of his/her request in his/her pre-registration form.

It shall enable students to view visually aided analytics (bar chart/pie chart etc.) for proportions of requests accepted/rejected/hold/pending to withdraw any of his pending requests and re-apply for new courses where he/she may find better probability of approval.

In addition to bullet points mentioned under first point in phase-II heading, it shall enable student to add approved courses in his/her final form for DUGC/DPGC approval.

It shall check the number of credits, a student is submitting for DUGC/DPGC approval and constraint student to put remarks if credits

submitted are either less than the minimum number as prescribed for the student in phase – I section or more than those prescribed in suggestive course template.

It shall not allow student to make changes in his/her final form once he/she submits the same for DUGC/DPGC approval.

If the form is accepted or rejected or kept on hold by DUGC/DPGC, it shall auto-reflect the status in student's user interface.

If the form is rejected by DUGC/DPGC, it shall enable student to re-submit the form after completing required modifications.

It shall be noted here that student can apply for new course only up to the maximum limit of credit registration (as mentioned under phase – I) i.e. if DUGC/DPGC has instructed student to take a particular course in the semester then student can either:

add the required course to his/her final form in place of the earlier course, if the required course is already available with him in the pre-registration list of approved courses, or

request instructor to reject his already approved course and then place a request for the new course, or

place a request for the new course, if he/she is still under the maximum limit of credit registration (as mentioned under phase – I).

o Department of Undergraduate Committee (DUGC)/Department of Post Graduate Committee (DPGC's) Role:

It shall enable DPGC/DUGC to view forms submitted by the students into two categories – as per suggestive course template and others.

It shall further create different tables within others category for those students who are either backlog cases or fail cases or Academic Probation cases or terminated but re-instated cases or normal students, with status as normal load, under-load and over-load basis number of credits in the form vis-à-vis number of credits in suggestive course template and number of minimum credits required in the semester.

It shall enable DUGC/DPGC to view remarks given by the student against under-load and over-load forms.

It shall enable DUGC/DPGC to create rules as facilitated to instructors.

It shall enable DUGC/DPGC to create mass approval templates for approving pre-registration forms of the students who fall in "normal"

[sub-category] of “others” [main category] as mentioned in above point. These mass approval templates shall function like suggestive course template and auto-approve all “normal” sub-category students whose pre-registration forms follow these templates. It shall also enable DUGC/DPGC to store these templates and use already stored templates of last years to use in current year. It shall provide one pre-defined mass approval template for PG students wherein the condition would be that, if a PG student has completed all courses and is only opting for thesis courses in his/her pre-registration form then all such pre-registration forms shall be auto-approved. It shall enable Dean Academics office to enable/disable such mass approval templates, if required.

It shall enable DUGC/DPGC to view all details of students and functionalities as provided to instructors.

It shall enable DUGC/DPGC to view student’s graduating course template and pass/fail course template.

It shall enable DUGC/DPGC to identify forms which are re-submitted for approval after earlier rejection(s).

It shall enable DUGC/DPGC to view status of requests at instructor’s levels via visually aided analytics (bar chart/pie chart etc.) for proportions of requests accepted/rejected/hold/pending for each instructor.

It shall enable approval proxies to view the same categories/tables as visible to DUGC/DPGC but restricted to subset of data as defined by DUGC/DPGC.

- Phase – III: Approval by DUGC/DPGC and selective intervention by instructors and students

- As per timelines defined by Dean Academics office, it shall auto-trigger phase - III wherein:

DUGC/DPGC shall continue to approve/reject/hold forms as in phase – II,

instructors would have to complete their course request approval/rejection process in phase – II,

students would have to submit their finalized forms in phase – II,

only those students shall be able to make changes in their forms whose forms have been rejected by DUGC/DPGC,

students with rejected forms shall have similar privileges as in phase – II,

instructors shall be able to make modifications (reject or approve course

requests) for only those students whose forms have been rejected by DUGC/DPGC,

- Once the form is approved by DUGC/DPGC, it shall push the approved course list in the graduating course template of the student.
- HOD's Role:
 - HOD shall have the dual role of being head of the department and instructor for his/her courses in all phases of the pre-registration process.
 - It shall enable HOD to view number of requests and status of requests at each instructor level via visually aided analytics (bar chart/pie chart etc.) for proportions of requests made/accepted/rejected/hold/pending.
 - It shall enable HOD to view details of all requests and their status to the detail as visible to the instructor.
 - It shall enable HOD to create approval proxies for the instructor, if he/she is out-of-town or in special cases, as required. It shall enable instructor to revoke the approval proxies for his/her courses as and when required.
- It shall enable Dean Academic office to share more information (date fields in addition to aforementioned) with instructors, DUGC/DPGC and HOD in one or all phases of pre-registration process, as required.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.6 Academic Registration Module

- This module shall serve the purpose of managing academic registration at the beginning of new semester.
- Academic registration is a time-bound process hence it shall enable Dean Academic office to define start date and end date of the process.
- At the start date of the process, it shall automatically update status of all pre-registered students as "Registered" except:
 - students, who have failed in courses of the previous semester,
 - students, whose branch change requests have been granted,
 - students, who have appeared in Academic Probation(AP) list,
 - students, who have appeared in the Terminated list,
 - students, who are manually marked for non-registration by Dean Academics

office

- It shall highlight those courses in the pre-registration form of such students in which either he/she has failed or whose prerequisite (that he/she was enrolled in last semester) he/she has not been able to clear.
- At the start date of the process, it shall automatically allow following students to apply for registration:
 - who have not done pre-registration but now allowed by Dean Academics office,
 - who have been reinstated after termination,
 - who have failed in courses of the previous semester,
 - whose branch change requests have been granted,
 - who have appeared in Academic Probation (AP) list,
 - who have returned from semester drop,
 - who have returned from student exchange program,
 - who have returned from leave
- It shall enable students to apply for courses in the similar manner as pre-registration module with the exception that these requests shall neither flow to instructors nor to DUGC/DPGC.
- It shall generate the registration form of such students in the specified format and allow them to save and print the same. Within the form, it shall differentiate between courses as:
 - Courses which were earlier approved during pre-registration
 - Courses which are newly applied and manually signed/approved by instructors
- It shall enable Dean Academic office to validate this physical form with online request form of the student and make changes, if required.
- It shall auto-update status of students whose forms are validated by Dean Academic office as “Registered”.
- It shall auto-replace/modify/update details in the graduating course template as mentioned in the pre-registration process with any changes made during academic registration process.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.7 Examination Scheduling Module

- This module shall serve the purpose of scheduling examination for students.

- It shall be integrated with core course and department timetable modules.
- It shall retrieve courses for each program under each department from the timetable modules and enable Dean Academic office to set the timetable of the students.
- It shall enable Dean Academic office to choose number of days and dates for scheduling exams.
- It shall enable Dean Academic office to choose slots for scheduling exams on the pre-defined dates.
- Exam scheduling shall happen with respect to slots defined by Dean Academic office during timetable preparation and also checked once again after academic registration for changes, if any.
- It shall show exam clashes of students while scheduling exams.
- It shall show consecutive exam schedules of students.
- It shall show more than 2 exams in a day schedules of students.
- It shall provide Dean Academic office an interface where they can select, subjects to slots during and across days. While executing this process, it shall highlights exam slots facing problems of clashes, consecutive exams or more than 2 exams in a day or any other parameter set by Dean Academic office.
- To facilitate above, it shall enable Dean Academic to set filters, rules and parameters for checking exam schedule for various issues.
- It shall show the set exams schedule to all students during pre-registration process.
- It shall enable Dean Academic office to generate and print exam schedules of each department/program separately. Also reflect same in user interfaces of student, instructor, HOD, DPGC/DUGC, etc.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.8 Learning Management Module

- This module shall serve the purpose of managing curriculum, training materials, and evaluation tools.
- It shall enable instructors to maintain course curriculum and share same with students.

- It shall enable blended learning options to instructors and students including:
 - E-learning
 - Classroom Learning
 - Virtual Learning
- E-Learning: It shall enable instructor to:
 - Organize and schedule online quizzes
 - Track performance of participants
 - Upload lectures and study material
 - Create online content for the subjects using animations and visual aids.
- Classroom Training Management: It shall enable instructor to:
 - Plan and schedule sessions
 - Nominate workflow for students and tutors
 - Create wait-list options for students opting for sessions
 - Upload and download session schedules to calendars.
- Virtual Classroom Management: It shall enable instructor to:
 - Create and schedule any number of virtual meetings
 - Pull reports on participants' details
 - Invite participants to register for such sessions
 - Chat with participants either in private or broadcast
 - Share whiteboard
 - Connect to already available sharing platforms like Webex, GoToMeeting, etc.
- Knowledge Collaboration: It shall enable users to: Blend with communication modules
 - Interact on global discussion boards
 - Create forum for a particular subject or sub-forums on various topics in that subject.
 - 'Ask an Expert' feature
- Customizable Interface: It shall enable users to:
 - Customize their learning dashboards
 - Blend with communication modules
 - Interact on global discussion boards
 - Create forum for a particular subject or sub-forums on various topics in that subject.
 - 'Ask an Expert' feature
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.9 Grade Module

- This module shall serve the purpose of managing grades of the students.
- It shall be run in standalone atmosphere with nobody but faculty members have access to data stored under this module.
- It shall retrieve the list of approved courses offered in the semester from the core-course and department course timetable, for the faculty member in his/her user interface.
- It shall enable faculty members to create an evaluation program for specified the course i.e. create number of quizzes, number of tests, number of exams, number of practical, number of tutorials, number of lectures, attendance, etc. and assign weightage to each of the parameters in the final grade calculation.
- It shall enable faculty members to edit this evaluation program at any point in time, if required.
- It shall enable faculty members to assign initiation and submission deadlines to various parameters in the evaluation program and notify students enrolled in the course. It shall communicate with the finalized registration form to retrieve list of students registered in the specified course.
- It shall enable faculty members to distribute common messages to the registered students along with presentations, doc/pdf files, audio-video files, etc.
- It shall enable faculty members to update evaluation of the parameters set for course evaluation in either grade or marks or % format.
- It shall enable faculty to define the formula for grade calculation and calculate the grade of the student by itself.
- It shall enable faculty member to import and export excel files for updation of marks/grades/% in the parameters sets for course evaluation.
- It shall enable faculty members to track the student performance via visually aided analytics (bar charts, pie charts etc.) in the parameters set for course evaluation and share the same with the student in their user interfaces.
- It shall enable faculty members to freeze the grades, when finalized. Post finalization, it shall push details to Dean Academic office and not allow faculty members to make any modifications. For project courses/seminars and thesis courses, DUGC/DPGC shall also have rights to update and freeze grades.
- It shall not allow faculty members to freeze the grades unless grades have been awarded to all students.

- It shall enable faculty members to keep “I” – Incomplete grade at the time of freezing grades.
- It shall enable Dean Academic office to generate reminders to faculty members who have given “I” grade to their students and reflect list of such students in the user interface of faculty members to update.
- It shall enable Dean Academics office to auto-convert all “I” grades to “F” grades on a specified date.
- It shall enable Dean Academics office to tag exceptions to aforementioned auto-conversion of “I” grades. This exception tagging shall not be allowed for thesis courses.
- It shall enable Dean Academics office to release finalized grades of the student to different stakeholders in partial or full either through emails or reflecting grades on user interfaces of students/faculty members/DUGC/DPGC/HOD/counseling service etc.
- It shall enable grade submission in encrypted and secured way.
- It shall maintain audit trail for changes in grades at any point in time with old and new data and user log-in credentials.
- It shall facilitate GPA/ CGPA calculation based on the mathematical formulae defined by the user.
 - It shall enable such calculations to be done for a particular student, a particular semester, a particular department, a particular batch or program or for all the students, etc.
 - It shall enable user to roll back and re-calculate, if required. Roll back and re-calculate option shall also be available in various ways, as illustrated above.
 - It shall handle cases of back and forth migration of UG students to PG programs.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.10. Add / Drop Course Module

- This module shall serve the purpose of managing the process of add/drop courses after academic registration.
- Add/drop is a time-bound process hence it shall enable DOAA office to define start date and end date of the process.

- It shall enable “Registered” students to add and drop courses from their DUGC/DPGC approved registration forms.
- It shall enable students to apply for adding courses in the same manner as pre-registration process. It shall enable students to replace any course in the DUGC/DPGC approved registration by “approved” courses in the pre-registration list that he/she didn’t add to his/her registration form while submitting the same for DUGC/DPGC approval.
- It shall enable students to add “Audit” courses, which are over and above the maximum limit of credit registration as defined in the pre-registration process. It shall constraint student to provide choice of grading the audit courses as letter grade i.e. A to F or S/X grade. Such courses shall appear in the extra course list and not accounted for SPI/CPI calculation.
- It shall enable students to apply for dropping courses through the workflow and instructors to approve / reject the request.
- It shall have same rules as defined for minimum and maximum credit registration in pre-registration process, hence for a student to add a new course; he/she may have to drop a course first if he/she has reached the maximum credit registration limit.
- Over-load and under-load conditions and functionalities shall remain the same as in pre-registration process.
- Once the students finalize their course after adding and/or dropping, it shall enable them to submit their forms to DPGC/DUGC in the same manner as defined in pre-registration process.
- It shall have same functionalities as of pre-registration process with same privileges for students, instructors, HOD, DUGC/DPGC except that add/drop shall have no phases and students shall be able to apply for dropping courses online.
- It shall auto-replace/modify/update details in all templates and lists including the graduating course template as mentioned in the pre-registration process with any changes made during add/drop process.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.11. Summer Registration Module

- This module shall serve the purpose of managing course registrations in summer semester.

- Summer registration process is time-bound process, hence it shall enable DOAA office to define start and end date for the entire process.
- Eligibility for summer registration: It shall all students, who are enrolled in the institute to participate in the summer registration process.
- It shall enable DOAA office to circulate templates for each department to update list of courses which shall be offered in the summer semester through the workflow.
- It shall retrieve courses offered by the department in last summer semester and show the list as a reference for HOD's to decide courses in current summer semester.
- It shall communicate with approved course module to retrieve approved course ids.
- It shall aggregate inputs from all departments at DOAA office and prepare a list of all offered courses based on their categories viz. core courses, UG Department Elective, UG Open Elective, UG Minors and PG Courses.
- It shall reflect list of such courses on student's user interface as and when summer registration timelines are set by DOAA office.
- It shall reflect all templates and lists, as illustrated in phase – I of pre-registration process, on student's user interface.
- It shall enable students to place multiple course requests with preferences.
- It shall enable DOAA office to run lottery of courses under summer registration similar to course allotment through lottery module.
- It shall enable DOAA office to set priority in the randomization of requests in lottery basis defined business rules.
- It shall allot maximum 3 courses to each student as per his/her preference list and availability through abovementioned lottery system. For PG students, limit shall be half the normal semester load, as defined in section 4.4. Summer Term Registration in new PG Manual.
- It shall enable DOAA office to set timetable of courses as per number of allotments and show time-clashes for courses and number of students within such courses.
- It shall enable DOAA office to view grid of timeslots and visually figure out a new timeslot for a course, if proportion of clashes is substantial. This grid shall enable DOAA office to drag and drop courses from one slot to another slot i.e. either swapping the courses or filling vacant slots.
- After the lottery results and time-clash checking, it shall enable DOAA office to finally allot courses to students within the maximum limit as mentioned above.

- It shall enable DOAA office to create a wait-list of students, as well.
- If a student faces time-clash in his/her top choices allotted through lottery, then he/she has to drop one of the course.
- It shall enable students to place their course requests (after allotment by DOAA) for approval to DUGC/DPGC through the workflow.
- It shall enable DUGC/DPGC to have similar functionalities for approval/rejection/hold as in pre-registration process.
- It shall push the number of approved courses of each student to DOSA – Fee Generation module for generating fee to be paid by the students in summer registration.
- It shall communicate with the DOSA – Registration module to retrieve fee paid by the student for summer registration.
- If a student has not paid the fee for one or multiple courses, then it shall constraint the student to drop one or multiple courses allotted and approved to him/her.
- In case of seats left vacant, it shall enable DOAA office to allot courses to wait-listed students and follow the same process for fee generation and payment as for normal students. This process shall continue till either seats are filled or student list is exhausted.
- It shall impact the graduating template in similar manner as other semesters, as illustrated in pre-registration process.
- It shall enable DOAA office push the final list of students and allotted courses to students / faculty members / DUGC/DPGC / HOD's user interfaces.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.12. APEC Module

- This module shall serve the purpose of managing the process warning, academic probation and subsequent termination of the student on academic grounds.
- It shall enable DOAA office to set business rules for categorizing students for warning, academic probation and termination. Usually, warning, academic probation and termination is a sequential phenomenon but not necessarily, always.
- It shall enable DOAA office to run the APEC script based on set business rules on the specified date. These rules shall be broadly based on credits earned by the student.

- It shall communicate with grade module and finalized registered course list of the student to retrieve details and identify student.
- It shall only take into account those semesters in which student is “registered” for calculation purposes.
- It shall auto-update student status as “Warning”, “AP”, as applicable. Decision on termination is taken by the senate and status shall be updated manually by DOAA office.
- It shall enable DOAA office to manually update student status, if required.
- It shall compare the list of students falling under Warning, AP and Termination in current and previous semester to identify students who have either cleared Warning, AP in current semester or re-appeared in the Warning, AP list or degraded further from Warning to AP or AP to Termination or Warning to Termination.
- It shall enable DOAA office to generate APEC report with both pre-defined and configurable tables, as illustrated under reporting module in common modules.
- It shall create academic summary (in the specified format) of the students who fall under the criteria of termination.
- It shall push student’s status in the pre-registration process to enable system to set maximum and minimum credit registration and eligibility for pre-registration process.
- It shall push details in the grade module and auto-update details in all templates and lists including the graduating course template as mentioned in the pre-registration process.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

3.13. Appeal against Termination Module

- This module shall serve the purpose of managing the student’s appeal against termination on academic grounds.
- It shall enable students to fill an online appeal form through their user interface.
- It shall retrieve details from student database to auto-fill designated fields.
- It shall communicate with the APEC module to retrieve AP and Termination details.
- It shall generate unique reference number on successful submission of the appeal request.

- It shall enable online approval of appeal request through the workflow though the request shall flow to all approvers in parallel mode and every one of them shall have the right to vote for or against the appeal request.
- It shall aggregate all votes at the DOAA office level and prepare a summary (in the defined format) which shall be pushed to SPGC/SUGC through the workflow.
- It shall enable DOAA office to update the final decision of senate against the appeal request and enable student to view same in his/her user interface.
- It shall push details in the grade module and auto-update details in all templates and lists including the graduating course template as mentioned in the pre-registration process.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on appeal request reference number, semester, department, roll number and course id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

4 Graduating List and Other Reports Module

- This module shall serve the purpose of generating graduating list and other reports on the user interfaces of HOD, DUGC/DPGC and faculty members.
- It shall have all the functionalities as mentioned in the reports module under common modules.
- It shall enable HOD and DUGC/DPGC to view various specified and dynamic reports in their user interfaces and also create various filters, parameters and rules to view data as per their need.
- It shall enable Dean Academics office to share data fields which shall be available for HOD and DUGC/DPGC to view and generate reports.
- Such reports shall include queries like how many students are registered in the department, how many students are registered in the course ran by faculty member of the department, how many students are graduating, who is guide for which student, roll list of students (those who are registered in the department), how many students have not done compulsory courses, how many students have course back-logs, how many students have “E” and “F” grade in subjects, what is the course performance summary, what is the category of students etc. All such queries shall have filters for academic year, department, semester, course, student roll number, faculty member name, course title, course id etc.
- Graduating List:

- It shall create a list of students who are likely to graduate i.e. students who have registered for all courses as per their graduating course template till current semester and students who have earned minimum number of credits in the courses as defined in the program course template.
- Once grades for the current semester are finalized, it shall remove those students who have secured “E” and “F” grades in the courses registered in the immediate ended semester from the likely graduate list.
- Graduating conditions for PG students shall be as per guidelines mentioned in section 12. Graduation Requirements of new PG manual.

4.3 Students Affairs Module

4.1.1 Student Registration Module

- This module shall serve the purpose of registering new and existing students in various UG and PG programs in the institute.
- It shall communicate with the Dean Academic module to retrieve the list of students whose roll numbers have been generated at the time of admission.
- It shall communicate with the Fee Generation module and enable students to view their fee and dues for the semester in their user interfaces.
- It shall be linked to the Electronic Payment Gateway module to enable students pay their fee and dues under various headers grouped into categories for institute, hall and mess.
- It shall have the capability to distribute the fee paid by the student into headers under each category e.g. Rs. 35,000/- paid by the student for Institute category shall get distributed into various headers like tuition fee, books fee, admission fee etc.
- It shall have the capability to define preferences for distribution of consolidated amount paid by the student into various headers under each category to account for situations where short or excess money has been paid by the student. This distribution shall follow the order defined by the user in the fee distribution precedence master.
- It shall have the capability to create ledger like page for the student and create head wise entries at every instant of fee payment by the student.
- It shall push these student ledgers into the F&A module where they can be maintained for refund or recovery of fee and/or dues.
- It shall push data to various departments of the institute which generated dues for the student in the given semester.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number of the student.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

4.1.2 Fee Generation Module

- This module shall serve the purpose of generating student's fee and dues for the semester including both new and existing students.
- It shall enable user to create fee master under defined headers for every program in each semester for all categories and batches individually for Hall Residents and Day Scholars/Other Scholars as per Fee structure released by Student Affairs Department/Dean.
- Fee structure released by Student Affairs Department/Dean is a combination of various parameters attributable to institute and students. This module shall be dynamic to adjust to changes in fee structure in future, if any, for a given student or batch of students or given program.
- It shall generate fee for each student from the defined master for every semester at a specified date and time. This functionality shall work for all students at once and for an individual student on demand.
- For new students, it shall have a provision to record the advance fee paid during seat allotment or token money deposited for blocking the seat and generate remaining fee payable at the time of admission in the institute.
- It shall enable departments to generate dues and fine for a particular student at any given date and time and consolidate all such entries at the end of semester to reflect the aggregate payable amount. In case, the dues / fine are paid by the student before the end of semester then such entries shall not reflect in the aggregate payable amount.
- It shall enable aggregation of fee from the fee master and dues / fine to reflect the total amount payable by each student at the time of registration under categories as prescribed in Registration Module.
- It shall enable user to roll back (modifications) fee for individual as well as all students.
- It shall generate Registration Register for total fee to be paid, dues and fine to be paid, advance paid, net payable amount, net amount paid and excess or shortfall student wise.
- It shall enable capturing of fee in different currencies.
- It shall enable user to record exceptions in individual student's fee changes / roll back in special conditions / approvals. These changes shall be local in nature and not reflect in next semester's fee structure of the student unless initiated by the user.
- It shall enable users, based on role level access & authentication, to access this database

for reference or reporting or updation purposes with a search option on roll number of the student.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

4.1.3 Hostel & Room Allotment Module

- This module shall serve the purpose of allotting rooms to the student at the beginning to each semester or in between the semester.
- It shall enable central bodies like Student Affairs Department/ Dean to view hostel room inventory i.e. number of available rooms.
- It shall enable hostel in-charges to add attributes to the rooms like occupancy capacity (1 bed or 2 beds or 3 beds), nature (students, reserved, guest rooms) and inventory (1 tube light, 1 bed, 1 table, 1 chair etc.) etc.
- It shall enable student counseling services to centrally allot rooms' basis roll number either individually or in bulk through an upload option.
- It shall enable hostel in-charge to allot vacant room for special purposes like outside students or during technical and cultural events in the institute.
- It shall push central allocation of rooms, mentioned in the aforementioned point, to individual hostels and enable hostel in-charges to generate room allotment form while handing over room keys to the student.
- It shall restrict swapping of rooms within the Hostel only within powers of Warden.
- It shall have the provision of two hostels against each student viz. 1. Residing Hostel and 2. Mess Hostel. In all semesters except summer, both the hostels shall have same values i.e. value of one will reflect into another and mess hall field shall remain in read only mode. However in summer, user shall have the access to edit mess hall.
- It shall have the provision of transferring students from one hall to another through an online request originating from original hostel to new hostel. New room shall be allotted to the student only after the old room is vacated and transfer request is accepted by the new hostel.
- In case of transfer from one hostel to another, the module shall allow the student to vacate the allotted room only after dues against his roll number are cleared. It shall have the provision to transfer the entire hall caution money from old hostel to new hostel. Such a transfer shall be approved by Hostel Warden on workflow and linked to no-dues module of the Hostel.
- It shall store hostel and room history of the student throughout his/her term in the institute and enable central bodies like Student Affairs Department/ Dean office and student to view these details.

- It shall enable students to view and book guest rooms in the hall and Hostel Warden to approve such request on workflow.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number and room no. of the student.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

4.1.4. Mess Billing Module

- This module shall serve the purpose of generating mess bill every month for students in a hostel.
- It shall have the provision to calculate individual meal cost based on the cost of ingredients used to prepare the meal.
- It shall have the provision to generate mess bill for the entire month including meal cost and other expenses and thus calculate BDMR sheet (Basic Daily Mess Rate) basis numeric logic set by the hall.
- It shall have the provision to calculate net mess bill payable by each student considering arrears from past bills, scholarship rebates, fine on late payment and special events like donations etc.
- It shall enable the user to enter details for the food coupons (cash coupons) sold by the mess during the month and take into account the money aggregated from these food coupons while calculating BDMR.
- It shall enable user to capture bill of the guest room booked by the student against his/her roll no. and include same in his/her monthly mess bill.
- It shall create ledger for each student with entries for amount paid and arrears, if any, at any given date and time.
- It shall enable the user to update bill payment details against each student either individually or in bulk through an upload option and calculate late payment fine for payments received after due date. This module shall include all such fines in arrears for next month's mess bill.
- It shall enable user to update these payments details under each header of bill e.g. mess bill, arrear, fine, donations etc. basis the precedence order set by the user for distribution of money in headers.
- It shall push mess bill on the user interface of students and integrate with electronic payment gateway module for online payment.

- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number and room no. of the student.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

4.1.5. Refund of Caution Money and Excess Payment Module

- This module shall serve the purpose of processing refund of caution money and excess payment to the student.
- It shall communicate with Dean Academics module to retrieve cases which have got clearance on dues.
- It shall enable student to fill an online form for refund of excess payment.
- It shall verify duplication of such requests against the same student and alert the user accordingly.
- It shall enable entire approval process to flow through the workflow.
- It shall enable user to process refund excess payment either through bank transfer or cheque/DD issuance in the name of the student.
- For caution money refund, it shall enable Student Affairs Department/ Dean office to approve the request on the workflow and propagate the request to Accounts for payment.
- It shall communicate with the Registration module to reflect the excess payment made by the student and subsequently update the registration module on refund.
- It shall generate a receipt for refund of excess payment to the student.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number of the student.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

4.1.6. Hostel& Mess Accounting Module

- This module shall serve the purpose of maintaining accounting ledgers of student's hostel and mess.

- It shall enable user to carry out standard accrual accounting practices for all bank accounts maintained by the hostel and mess.
- It shall enable user to carry out budgetary exercise in the year beginning with carry forward option and compare budget vs. actual at the end of year for reporting purposes.
- It shall enable user to create bank/cash books for every bank account and ledgers thereafter for day-to-day transactions.
- It shall enable user to create vendor wise ledgers for purchases. It shall communicate with the common inventory management module attached to the hall and the mess for asset purchases, depreciation, buys back and condemnation etc.
- It shall enable navigation for searching entries or vouchers in system in layers format with inter-connected fields i.e. user clicks on one link in the layer to reach the sub-layers and then clicks on link in sub-layers to reach the sub-sub layers and so on till the hierarchy exists. For practical reference to the requirement, the search option should be versatile to handle searches on heads and sub- heads (expandable/compressible).
- It shall minimize situations to open a new screen or tab as far as possible.
- It shall enable user to generate consolidate reports of ledgers and bank/cash books for a specified period.
- It shall generate a consolidate statement of earnings and expenses for all accounts.
- It shall generate account wise and consolidated trial balance and PnL balance sheet for the hall.
- It shall aggregate bank accounts and ledgers of all hostels in the institute and reflect a consolidate picture to Student Affairs Department/ Dean office.
- It shall enable user to create JV with unique voucher no. for the approved request.
- It shall enable multiple debit and credit entries in the Journal Voucher from/to multiple heads.
- In case of any penalty to be deducted from the supplier for any clause under the contract, it shall enable user to deduct penalty from the voucher screen and credit that penalty as institute income while not decreasing the asset value in the asset register created by department.
- It shall calculate statutory and regulatory deductions on the bills basis user defined deduction brackets while preparing JV and park them temporarily in dummy ledgers and later file consolidated taxes to the government
- It shall enable user to communicate with online vendor registration module to retrieve

vendor id.

- It shall allow user to manually create vendor id, if required.
- It shall enable voucher approval process to flow through the workflow.
- It shall show hyperlink to the approved PO, to the approver when JV flows for approval through the workflow.
- It shall auto-generate PV with unique voucher no. from the approved JV.
- In case of multiple payments to multiple ledgers or parties from one JV then it shall auto-create multiple PV i.e. one PV for every payment to each party / ledger.
- It shall enable linking of multiple PV(s) originating from one transaction.
- It shall allow user to manually generate PV, if required.
- It shall show the hyperlink to view approved JV and special approval when PV flows for approval through the workflow.
- It shall enable user to issue cheques or execute bank transfer against all payment vouchers issued.
- It shall enable user to maintain cheque inventory for each bank account.
- It shall enable user to cancel the issued cheque, if required and re-issue a new cheque for the same voucher.
- It shall enable user to mark cheques as “Cheque Stale” and re-issue a new cheque for the same voucher, if required.
- It shall enable user to mark cheques as “Cheque Destroyed” either individually or in bulk and re-issue a new cheque for the same voucher, if required.
- It shall enable user to update status of cheque as passed or bounced and re-issue a new cheque for the same voucher, if required.
- It shall enable printing of cheques.
- In case of combined order with any other department, it shall generate report for amount outstanding as receivable from that department.
- It shall enable user to create transfer vouchers to facilitate transfer of funds in between bank books / ledgers / budget sub-heads.
- In case of payments issued to the supplier i.e. payments made before final settlement (including charges), it shall show these payments as “Advances” in trial balance/balance sheet and remaining amount as liability for that year, until the settlement payment is

made. Once the payment is settled, it shall reverse the advance payment entry into expense entry for the year in which advance was issued and pass the expense entry of the remaining amount for the year in which settlement is made.

- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on ledger / voucher no. / vendor registration no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

4.1.7. Scholarship Module

- This module shall serve the purpose of managing scholarships.
- It shall enable students to online apply for scholarships through their user interfaces.
- It shall enable students to apply for multiple scholarships.
- It shall enable user to define eligibility criteria for each kind of scholarship.
- It shall prompt eligibility criteria to the student while applying for the scholarship but do not prevent him/her from applying.
- It shall generate a unique reference number on successful submission of the request.
- It shall generate eligibility report against all those who have failed either one or multiple eligibility criteria.
- It shall communicate with Dean Academics module to auto-fill designated fields in the form.
- It shall enable user to filter applications basis the eligibility report and sort to extract report of student applications for reviewing.
- It shall enable user to update the status of the student application, once it is approved reflect same in student's user interface.
- It shall perform mathematical functions like average, standard deviation, variance, median for GPA/CGPA of students.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number, scholarship type, scholarship name, year, semester etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

5. Faculty Module

5.1. Faculty Recruitment Module

- This module shall serve the purpose of inviting applications for job advertisements by potential candidates and executing the recruitment process.
- It shall enable user to create job advertisements with unique job ids and related attributes like eligibility conditions and location etc. and post them on institute website.
- It shall enable candidates to create a log-in id on an internet based interface and fill an online application form for the specified job advertisement.
- It shall differentiate between internal and external job applications and auto-fill designated fields in the online application form through integrating with relevant databases of staff or faculty.
- It shall generate unique registration number for each application in each post in every advertisement i.e. if an applicant applies for two posts in same advertisement then he will have two registration numbers.
- It shall enable tracking of candidate's application basis this registration number and show the status of his/her application within the recruitment process.
- It shall enable candidate to view his past applications and provide him/her with an option to copy his/her details in a new application from any of older applications that he/she had submitted.
- It shall push all such applications directly to concerned head of the department for initiating the recruitment process.
- It shall enable entire approval/selection process to flow through the workflow.
- It shall enable user to skip levels in approval hierarchy, if required, basis role level access and authentication.
- It shall enable selected candidates to fill online joining form after selection with reference to their application registration number.
- It shall push contents of online joining form for verification and include them into faculty database only after due approval.
- It shall communicate with faculty user interface to reflect required details.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on job id / registration number / Employee ID.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

5.2. Miscellaneous Updates in Faculty Database

- This module shall serve the purpose of updating faculty information for various events during the term of faculty member in the institute.
- It shall provide user with multiple update options e.g. Pending Reports for Newly Joined Faculty, Confirmation, Promotion, Department Transfer, Status Extension, Re-employed, Retired / Resigned / Terminated, Awards / Chairs / Honors / Fellowship and Dependent Details etc.
- Faculty members may be allowed to update some of the fields online through their user interface. This module shall push contents of those updates to the user through workflow and reflect them into faculty database only after due approval.
- It shall generate reference number for each update and store complete details of the update including audit trail for future reference.
- It shall create service book of the faculty member with all details pertaining to his/her term such as appointment and joining, grant of increment, withholding of increment, grant of selection grade, crossing of efficiency bar, fixation pay, grant of leave, deputation, transfer, promotion, etc.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on reference no. / Employee ID.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

6. Admin / Staff HR Module

6.1. Staff Recruitment Module

- This module shall serve the purpose of managing staff recruitments.
- It shall have similar functionalities as that of faculty recruitment module with just different governing rules.

6.2. Personnel Management Module

- This module shall serve the purpose of managing personnel data throughout and beyond the tenure of staff members.
- It shall integrate with recruitment module to retrieve details of new staff members.

- It shall enable users to add/edit/delete staff information such as joining date, confirmation, promotions, awards, appraisals, etc.
- Staff members may be allowed to update some of the fields online through their user interface. This module shall push contents of those updates to the user through workflow and reflect them into staff database only after due approval.
- It shall generate reference number for each update and store complete details of the update including audit trail for future reference.
- It shall create service book of the staff with all details pertaining to his/her term such as appointment and joining, grant of increment, withholding of increment, grant of selection grade, crossing of efficiency bar, fixation pay, grant of leave, deputation, transfer, promotion, etc.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on reference no. / Employee ID.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

7. Research and Consultancy Module

7.1. Donations & Receipts Module

- This module shall serve the purpose of receiving donations from alumni & external donors through online and offline modes and generating ITR for income tax benefits to donors.
- It shall enable donors to create secured user profiles on the internet based interface. Registration shall be on-time activity and post registration donor shall be able to make online donations.
- This interface shall host the donation form and keep track record of donor's past donations.
- It shall create a unique donor id at the time of donor registration and use it as a tracking mechanism for all activities related to the donor.
- It shall enable donor to update his profile with personal and professional details whenever required. Push such updates to the Donor Database Manager and update the donor database after he/she approves such updates.
- It shall push donor profiles to the donor database with audit trail for changes in his/her attributes.

- It shall be integrated with the Electronic Payment Gateway module and enable donor to use multiple modes to make online donations.
- It shall enable user to search the donor based on name or email id or donor id for updating details of offline donations or retrieving information for reference or reporting purposes.
- It shall generate Thank You letter in the specified format for the donations made by the donor.
- It shall generate a covering letter for the ITR receipt against the donation along with a standardized ITR receipt (in duplicate) with a unique receipt number.
- It shall limit ITR receipt generation only once. Any duplicate copy shall only be restricted at either Assistant Registrar (AR) /Deputy Registrar (DR) or higher authority as decided by the institute.
- It shall allow back-dated ITR receipt generation only after AR/DR or higher authority as decided by the institute approves the request on the workflow.
- In case of duplicate or new copy of ITR receipt, it shall enable user to either cancel the earlier receipt or enter suitable remarks against the new receipt.
- It shall record audit trail of all receipts generated against one transaction id.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on donor id and transaction id etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

7.2.Research and Consulting Accounting Module

- This module shall serve the purpose of maintaining accounting for entire Research and Consulting Department activities starting from donations to refundable receipts to investments to general expenses.
- It shall enable user to carry out standard accrual accounting practices for all bank accounts maintained by Research and Consulting Department.
- It shall enable user to carry out budgetary exercise in the year beginning with carry forward option and compare budget vs. actual at the end of year for reporting purposes.
- It shall enable user to create bank/cash books for every bank account and ledgers thereafter for day-to-day transactions.
- It shall enable user to create vendor wise ledgers for purchases. It shall communicate with the common inventory management module attached to Research and Consulting

Department for asset purchases, depreciation, buys back and condemnation etc.

- It shall enable user to create purpose wise ledgers in integration with new purpose registration module.
- It shall generate financial table for each purpose including the donations received till the year beginning, interest received till the year beginning, donations received during the year, interest accrued from investments during the year, expenses during the year, balance available at the end of year bifurcated into both donations and interest.
- Investments are made by Research and Consulting Department in consolidated amount i.e. combination from donations received in multiple purposes, refundable receipts and other sources of funds hence the interest accrued from the investment has to be divided in proportions of amount and time of investment date into aforementioned components of consolidated amount. This module shall execute this division of interest basis specified business rules and integrate with purpose registration module to reflect the balances in the purpose ledger.
- It shall enable passing adjustment entries for reallocating funds between various purposes and charges.
- It shall enable navigation for searching entries or vouchers in system in layers format with inter-connected fields i.e. user clicks on one link in the layer to reach the sub-layers and then clicks on link in sub-layers to reach the sub-sub layers and so on till the hierarchy exists. For practical reference to the requirement, the search option should be versatile to handle searches on heads and sub- heads (expandable/compressible).
- It shall minimize situations to open a new screen or tab as far as possible.
- It shall enable user to generate consolidate reports of ledgers and bank/cash books for a specified period.
- It shall generate a consolidate statement of earnings and expenses for all accounts.
- It shall generate account wise and consolidated trial balance and PnL balance sheet.
- It shall enable user to create JV with unique voucher no. for the approved request.
- It shall enable multiple debit and credit entries in the Journal Voucher from/to multiple heads.
- In case of any penalty to be deducted from the supplier for any clause under the contract, it shall enable user to deduct penalty from the voucher screen and credit that penalty as institute income while not decreasing the asset value in the asset register created by department.
- It shall calculate statutory and regulatory deductions on the bills basis user defined deduction brackets while preparing JV and park them temporarily in dummy ledgers and later file consolidated taxes to the government.

- It shall enable user to communicate with online vendor registration module to retrieve vendor id.
- It shall allow user to manually create vendor id, if required.
- It shall enable voucher approval process to flow through the workflow.
- It shall show hyperlink to the approved request, to the approver when JV flows for approval through the workflow.
- It shall auto-generate PV with unique voucher no. from the approved JV.
- In case of multiple payments to multiple ledgers or parties from one JV then it shall auto-create multiple PV i.e. one PV for every payment to each party / ledger.
- It shall enable linking of multiple PV(s) originating from one transaction.
- It shall allow user to manually generate PV, if required.
- It shall show the hyperlink to view approved JV and special approval when PV flows for approval through the workflow.
- It shall enable user to issue cheques or execute bank transfer against all payment vouchers issued.
- It shall enable user to maintain cheque inventory for each bank account.
- It shall enable user to cancel the issued cheque, if required and re-issue a new cheque for the same voucher.
- It shall enable user to mark cheques as "Cheque Stale" and re-issue a new cheque for the same voucher, if required.
- It shall enable user to mark cheques as "Cheque Destroyed" either individually or in bulk and re-issue a new cheque for the same voucher, if required.
- It shall enable user to update status of cheque as passed or bounced and re-issue a new cheque for the same voucher, if required.
- It shall enable printing of cheques.
- In case of combined order with any other department, it shall generate report for amount outstanding as receivable from that department.
- It shall enable user to create transfer vouchers to facilitate transfer of funds in between bank books / ledgers / budget sub-heads.

- In case of payments issued to the supplier i.e. payments made before final settlement (including charges), it shall show these payments as “Advances” in trial balance/balance sheet and remaining amount as liability for that year, until the settlement payment is made. Once the payment is settled, it shall reverse the advance payment entry into expense entry for the year in which advance was issued and pass the expense entry of the remaining amount for the year in which settlement is made.

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- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on ledger / voucher no. / vendor registration no. / purpose registration no.
 - It shall trigger intimations in form of email and/or sms as applicable in the process.

8. Alumni Contact Module and Alumni Database Management Module

- This module shall serve the purpose of creating and executing alumni contact programs.
- This module shall essentially work in two parts viz. (i) extracting data for creating alumni contact programs basis specified parameters like batch, location, profession, industry sector etc. and (ii) for executing the campaign via a voice and non-voice infrastructure.
- It shall integrate with Alumni Database module to let user retrieve alumni contact information for creating and executing programs.
- It shall enable user to select multiple alumni attributes for creating contact programs and push that set of data for executing contact programs through voice and non-voice module.
- This module shall serve the purpose of managing alumni database.
- It shall receive inputs from the Donation database and embrace the donor id as the unique identifier for the donor and his/her information.
- It shall provide user with admin rights to approve or reject any information push into this database by donation database in event of donor updating details in his/her profile.
- It shall receive inputs from Dean Academics database for students who are passing out of the institute and enable user to add them in the alumni database through individual or upload option in the defined schema of the database.
- It shall keep record of all changes made in the alumni database along the years.
- It shall have highest level of security as the database is highly confidential to the institute.

- It shall provide user with admin rights to approve or reject any information pushed by callers through voice or non-voice module while talking or interacting with the alumni.
- It shall enable user to change schema of the existing database, if required.
- It shall enable user to mark specified alumni as “blocked” for various contact programs and not reflect details of such alumni while creating contact programs in alumni contact program module.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updating purposes with a search option on roll no. / donor id / alumni name.

9. Research and Development Module

9.1. Project Registration Module

- This module shall serve the purpose of processing proposals for projects and registering them after receiving approval from the sponsoring agency.
- It shall enable PI to upload proposal through his/her user interface and generate unique proposal number for tracking.
- It shall communicate with Faculty module to retrieve details of PI.
- It shall enable entire approval/selection process to flow through the workflow.
- It shall enable PI to assign approval authorities in the workflow.
- It shall enable PI to view list of proposals submitted by him/her in his/her user interface and fill New Project Registration form by clicking on any of the proposals for which he/she has received approval from the sponsoring agency.
- It shall enable user to generate endorsement letter in the specified format.
- It shall enable project registration request to flow through workflow for approval.
- It shall enable user to capture projects details once it is approved and generate unique project registration number in the specified format.
- It shall enable user to create year wise budget heads under the project and give preferences for expenses basis nature of the expense in the applicable budget heads e.g. travel expenses may be allowed from multiple budget heads like TA and CONTG but CONTG can only be used if entire amount in TA has been utilized by PI hence user will give preferences for travel related expenses as 1st TA and 2nd CONTG. Subsequent modules in Research and Development Department shall account for these preferences and allow expenditure accordingly.

- It shall enable user to generate Utilization Certificate (UC) for a project in the format specified by the sponsoring agency i.e. there can be multiple UC formats for same or multiple agencies depending upon the nature of the project.
- It shall enable user to generate statement of expenditure for a project in the format specified by the sponsoring agency i.e. there can be multiple formats for same or multiple agencies depending upon the nature of the project.
- It shall enable user to mark a project as flexible or non-flexible. A flexible project shall enable PI to make expenses irrespective of amount allocated under a specified budget head while a non-flexible project shall put a constraint in terms of expense basis allocation in the specified budget head e.g. for a budget head "SALARY", a flexible project can pay salary to the project staff from the entire sanction amount for the project irrespective of amount allocated to SALARY while a non-flexible project can pay salary only to the limit of amount sanctioned under SALARY budget head.
- It shall reflect all details of the project including sanction amount, grant received, budget head allocations and expenses made till date etc. in PI's user interface.
- It shall enable PI to give view rights of his/her project details to any other member of the institute.
- If a project has Co-PI, then it shall enable PI to give rights either equivalent to him/her or lesser for either approving or spending project funds.
- For the department project account in which a portion from overheads of the projects executed by that department's faculty is transferred, this module shall enable HOD to view the faculty wise project wise contribution.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on proposal no. / project registration no. / year wise.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

9.2. Project Grant Receipt Module

- This module shall serve the purpose of receiving grant for the approved projects from sponsored agencies and accounting them in the respective projects.
- It shall be based on fund based double entry system.
- It shall enable user to create payment receipt in specified project against the funds received through either cheque or bank transfer.
- It shall enable user to deduct various values from the grant such as Service Tax (ST), Overheads (OH) and subsequently distribute OH into various projects as applicable.

- It shall identify nature of project and retrieve values or % for deductions from the grant.
- It shall generate a unique payment receipt number and triplicate copies of receipts (in the specified format) upon submission of payment receipt.
- It shall auto-generate individual payment vouchers for all types of deductions and pass entries in all required projects and bank books upon voucher approval. Some of the payment vouchers may include PV for Service Tax Deductions, for R&D Fund Account, for DPA, for PDA etc.
- It shall enable approval of all types of vouchers through the workflow.
- It shall communicate with the cheque and accounting module for SR creation and cheque issuance, if required for the specified project.
- It shall auto-create entries in the project under the specified budget head as per the payment receipt and reflect all details in the PI interface instantaneously.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on project no. / payment receipt no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

9.3 Project Recruitment Module

- This module shall serve the purpose of managing recruitments in the project. This doesn't include daily wage workers.
- It shall enable PI / candidate to fill the online form through their user interface. In case, the candidate is from outside the institute then he shall be given a web based interface to fill the form.
- It shall generate a unique reference number for the form and push the entire approval process through the workflow.
- It shall enable PI to view expected expenditure by adding candidate in his/her project and balance in the specified budget head for salary payment. In case of insufficient balance (basis sanction amount in the specified budget head and not grant received), this module shall notify PI and not allow submission of the request.
- It shall enable to commit payable amount to the candidate in the specified project under the specified head for the entire duration as soon as the PI submits or approve the request. This money shall remain blocked for any other usage till the PI doesn't cancel the recruitment request.
- It shall enable PI to cancel the request at any given stage before Employee ID. generation (i.e. after selection) and automatically un-block the funds in the project.

- It shall notify task queues of all approval authorities as “Task Cancelled” upon request cancellation by PI.
- It shall identify appropriate approval hierarchies basis the category of the candidate and push the approval through the workflow to relevant approvers.
- For recruitments which are routed through committees, enable user to input committee decision against the reference number of the request.
- It shall generate unique Employee ID. in the specified format after the candidate is selected. Format of Employee ID. may vary with respect to category of candidate e.g. for a student, it may start with S. This Employee ID. shall be linked with the reference no. of the recruitment request generated earlier.
- It shall generate appointment letter for the candidate in the specified format.
- It shall generate experience certificate for the candidates in the specified format.
- It shall communicate with Salary Module and reduce the committed amount for salary disbursed to the recruited candidate. In case, he/she leaves the project or terminated before ending of term then basis Employee ID. and Reference No. linkage, this module shall un-commit the remaining amount from the committed funds.
- It shall maintain complete employment history of project employees.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on PF number / recruitment request reference number, etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

10. Work Assignment Module

- This module shall serve the purpose of managing process of work assignment for contractual members under empanelled agency. Under a set of empanelled agencies, contractual members are inducted into a project, basis PI decision. These members are categorized into 4 groups viz. (i) Unskilled Helper (Worker); (ii) Semi-skilled (Mechanic/Electrician/Plumber/Helper); (iii) Skilled (Mechanic/Electrician/Clerical/PC Operator) and (iv) Highly Skilled. Minimum daily wages for these members are fixed as per ministry guidelines and empanelled agencies raise monthly bills for these members for Wages, ESIC and EPF separately.
- It shall enable PI to assign contractual member in his project through his user interface by viewing list of available members under the agency.
- It shall enable PI to view expected expenditure by adding candidate in his/her project

and balance in the specified budget head for salary payment. In case of insufficient balance (basis sanction amount in the specified budget head and not grant received), this module shall notify PI and not allow submission of the request.

- It shall generate unique reference number of the contractual member when PI adds him/her to his/her project.
- As soon as the PI submits or approve the request, it shall commit payable amount to the candidate in the specified project under the specified head for the entire duration. This money shall remain blocked for any other usage till the PI doesn't cancel the recruitment request.
- It shall communicate with Salary Module and reduce the committed amount for salary disbursed to the recruited candidate. In case, he/she leaves the project or terminated before ending of term then basis Employee ID. and Reference No. linkage, this module shall un-commit the remaining amount from the committed funds.
- It shall create Salary Structure of each skill type of contractual member based on specified parameters.
- It shall enable to opt-in or out of EPF deduction.
- It shall create payment table of all contractual members in each empanelled agency for each project basis the specified rules and calculation.
- It shall enable user to change project number against a contractual member by removing and re-assigning the reference number against the new project number of PI.
- It shall auto-create individual vouchers for Wages/EPF/ESIC/TDS for each empanelled agency at month-end basis payment table.
- It shall enable user to manually create vouchers, if required
- It shall enable approval of vouchers through the workflow.
- It shall auto-create entries in the specified projects and books upon approval of vouchers.
- It shall communicate with the cheque and accounting module for SR creation and cheque issuance, if required for the specified project.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on reference no. / empaneled agency.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

10.1. Advance Issuance Module

- This module shall serve the purpose of managing advances issued from the project for expenses.
- It shall enable requester to fill the online form through his/her user interface.
- For travel related expenses, it shall communicate with the leave module to pick leave duration and approval status for International Travel basis leave application id entered by requester.
- It shall check balance in the specified budget head and in case of insufficient balance (basis sanction amount in the specified budget head and not grant received), this module shall notify PI and not allow submission of the request.
- It shall generate unique reference number for the request.
- It shall allow entire approval process of request to flow through workflow.
- It shall commit the funds in the project as soon as the request is approved by PI.
- It shall un-commit the funds if it is cancelled or withdrawn by PI before SR. No. generation for vouchers.
- It shall auto-create vouchers as soon as the final approving authority approves the request in the workflow.
- It shall also allow user to manually generate voucher, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall auto-convert the commitment entry to debit entry upon approval of vouchers and release any remaining amount in the committed funds.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference no. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

10.2. Advance Settlement Module

- This module shall serve the purpose of settling advances issued from the project.

- It shall enable requester to fill and submit online form for project e-advance settlement by selecting a particular request from the list of un-settled-but-approved project e-advance requests through his/her user interface.
- It shall generate unique reference number for every such request.
- It shall enable entire approval process of either payable or recoverable settlement to flow online through the workflow.
- For payable against the advance taken, it shall auto-create vouchers as soon as the final approving authority approves the settlement request in workflow.
- It shall auto-create vouchers as soon as the final approving authority approves the request in the workflow.
- It shall also allow user to manually generate voucher, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque/cash issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- For recoverable amount, it shall generate email to the requester and enable him/her to pay the amount through electronic payment gateway or at Cash Branch.
- It shall auto-adjust advance amount against payable or recoverable amount at the time of settlement.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on advance request reference no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

10.3. Travel Reimbursements Module

- This module shall serve the purpose of settling travel reimbursements from the project.
- It shall enable requester to fill an online form through his/her user interface.
- It shall enable PI to view balance in the selected budget head of his/her project as against the amount for which reimbursement is requested.
- It shall check balance in the specified budget head and in case of insufficient balance (basis sanction amount in the specified budget head and not grant received); this module shall notify PI and not allow submission of the request.

- It shall generate unique reference number for the request.
- It shall allow entire approval process of request to flow through workflow.
- It shall commit the funds in the project as soon as the request is approved by PI.
- It shall un-commit the funds if it is cancelled or withdrawn by PI before SR. No. generation for vouchers.
- It shall auto-create vouchers as soon as the final approving authority approves the request in the workflow.
- It shall also allow user to manually generate voucher, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- For payment to Vendor, it shall create two vouchers i.e. Net Payment Voucher to credit the vendor and TDS deduction voucher.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall auto-convert the commitment entry to debit entry upon approval of vouchers and release any remaining amount from committed funds.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference no. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

10.4. Non-Travel Reimbursements Module

- This module shall serve the purpose making reimbursements with each bill less than Rs.25,000/- under the project with an exception to fee and books where the limit of Rs.25,000/- is not applicable. Scope of this module shall include all reimbursement bills except travel related.
- It shall enable requester to fill an online form through his/her user interface.
- It shall check balance in the specified budget head and in case of insufficient balance (basis sanction amount in the specified budget head and not grant received), this module shall notify PI and not allow submission of the request.
- It shall restrict submission of any bill greater than Rs.25,000/- for categories other than

fee and books.

- It shall generate unique reference number for the request.
- It shall allow entire approval process of request to flow through workflow.
- Remaining functionalities shall remain same as travel related reimbursement module.

11. Direct Purchase (Import) Module

- This module shall serve the purpose managing direct purchases for imported items in the project.
- It shall enable requester to fill an online form through his/her user interface.
- It shall check balance in the specified budget head and in case of insufficient balance (basis sanction amount in the specified budget head and not grant received), this module shall notify PI and not allow submission of the request.
- It shall generate unique reference number for the request.
- It shall allow entire approval process of request to flow through workflow.
- It shall commit the funds in the project as soon as the request is approved by PI.
- It shall un-commit the funds if it is cancelled or withdrawn by PI before SR. No. generation for vouchers.
- It shall enable user to capture details against the request reference number on receipt of bills – both supplier and logistics vendor.
- It shall auto-create individual vouchers for Supplier: Bank Adjustment for payment made to supplier in foreign currency with equivalent in INR and Logistics Vendor: Net Payment Voucher, TDS Voucher and any reimbursable expense voucher.
- It shall create linkage between multiple vouchers created for the same request.
- It shall communicate with online vendor registration module to retrieve the vendor id while creating vouchers.
- It shall also enable user to manually create party code, if required.
- It shall generate Bank Covering Letter in specified format.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.

- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall auto-convert the commitment entry to debit entry upon approval of vouchers and release any remaining amount from committed funds.
- It shall integrate with inventory management module to create stock-cum-asset register with asset value reflecting from the payment voucher and depreciation, buy-back and decimation of the asset, as and when entries are passed.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference no. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

11.1. Direct Purchase (Indigenous) less than Rs.50,000/- Module

- This module shall serve the purpose managing indigenous direct purchases less than Rs.50,000/- from the project.
- It shall enable requester to fill an online form through his/her user interface.
- It shall check balance in the specified budget head and in case of insufficient balance (basis sanction amount in the specified budget head and not grant received), this module shall notify PI and not allow submission of the request.
- It shall not allow any amount greater than Rs.50,000/- for any purchase under this process.
- It shall generate unique reference number for the request.
- It shall allow entire approval process of request to flow through workflow.
- It shall auto-create individual vouchers for payment to supplier and deductions like TDS, ST, VAT etc.
- Remaining functionalities shall remain same as direct purchase import.

11.2. Indigenous Purchase through PO Module

- This module shall serve the purpose managing indigenous purchases by issuing PO to the supplier.
- It shall be integrated with departmental quotation and purchase committee approval module for seeking details of approved proposals.

- It shall allow entire approval process of request to flow through workflow.
- It shall retrieve committed the funds in the project as soon as the request is approved by PI from the departmental quotation and purchase committee approval module.
- It shall un-commit the funds if it is cancelled or withdrawn by PI before SR. No. generation for vouchers.
- It shall generate Sanction Sheet with unique reference number in the specified format for the purchase request.
- It shall generate Purchase Order with unique reference number in the specified format for the sanction sheet.
- It shall push details of purchase order to central store module for stock-cum-asset register creation on receipt of asset and IR generation and approval from the department.
- It shall communicate with Central Store module to retrieve details of stock-cum-asset register along with IR details and reflect the asset value, depreciation, buy-back and decimation in the stock-cum-asset register from the payment voucher as and when entries are passed. This stock-cum-asset register shall be shared between Central Store, Department and Research and Development module.
- It shall auto-create individual vouchers against the PO for payment to supplier and deductions like TDS, ST, VAT etc.
- It shall create linkage between multiple vouchers created for the same request.
- It shall communicate with online vendor registration module to retrieve the vendor id while creating vouchers.
- It shall also enable user to manually create party code, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall auto-convert the commitment entry to debit entry upon approval of vouchers and release any remaining amount from committed funds.
- For combined projects with F&A, it shall auto-create receivable entry in the project if entire payment is made through the project.

- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference no. / SS no. / PO no. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

11.3. Import Purchase through PO Module

- This module shall serve the purpose managing import purchases by issuing PO to the supplier.
- This module shall remain similar to Indigenous PO with difference to issuance of SS and PO by store and payment by Research and Development Department.
- Additionally, it shall generate Bank Covering Letter in the specified format.

12. Joining Report of Project Recruitment Module

- This module shall serve the purpose managing joining of project recruitments.
- It shall enable selected candidate to fill the online form through his/her user interface.
- It shall generate unique reference number for every such form.
- It shall enable the entire approval process through workflow.
- It shall enable user to input earnings and deductions for the selected candidate.
- It shall enable user to mark “Stop Salary” whenever required.
- It shall communicate with project balance data and recruitment database to retrieve information. It shall reflect joining in PI’s user interface.
- It shall enable user to input deductions with reducing balance i.e. under installments.
- It shall communicate with Salary database to push earnings and deductions for payroll generation.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference no. / Employee ID. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

12.1. Payroll Generation Module

- This module shall serve the purpose of generating payroll of project staff.

- It shall auto-run payroll for all project staff members including all deductions and earnings on 25th of the month.
- It shall enable user to stop auto-run and manually initiate the payroll script, if required.
- It shall communicate with estate office & RD hall module to retrieve quarter maintenance charges for required project staff in the deduction screen under appropriate codes.
- It shall exclude cases whose term are going to end in this month or whose project are going to end by automatically marking them for “Stop Salary” if not marked by user already.
- It shall auto-generate IT deductions for all project staff members every month based on earnings till end of that month and deduct tax liability of income earned till that month from the salary. Once deducted, it shall continue adjusting the new tax liability in the next month against the cumulative income and tax already paid to calculate tax deductions.
- It shall reflect entire payroll details in the project staff’s user interface.
- It shall auto-create summary sheet, head wise detailed report, bank list and salary voucher once the script is run for payroll generation.
- It shall enable entire approval process of vouchers through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall communicate with recruitment and project balances database and reduce the committed amount for salary disbursed to the recruited candidate.
- It shall generate salary slips as the vouchers are SR-done.
- It shall allow salary roll-back only before SR can be done. It shall allow both options of roll back i.e. individual employee roll-back and roll-back for all by adding or deducting a common amount under the allowance or deduction code for all project staff.
- It shall allow user to print only those pages in the bank list where corrections have been made rather than printing the whole report again in case of salary roll-back.
- It shall enable user to generate Form 16.
- It shall enable user to add other income for the project staff, if declared. This shall not form part of payroll and only used for calculation of income tax.

- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

12.2. Student Stipend Module

- This module shall serve the purpose of managing student stipends employed under the project.
- It shall enable student to fill the online form through their user interface.
- It shall generate unique reference number for every such form.
- It shall communicate with the recruitment database and retrieve stipend norms. It shall not allow any amount greater than the stipend norms.
- It shall communicate with recruitment and project balances database and reduce the committed amount for salary disbursed to the recruited candidate.
- It shall auto-create vouchers as soon as the final approving authority approves the request in the workflow.
- It shall also allow user to manually generate voucher, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall reflect the payment in the student's and PI's user interface.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

12.3. Fellowship Module

- This module shall serve the purpose of managing student stipends employed under the project.

- It shall enable selected fellow to fill the online form through his/her user interface.
- It shall generate unique reference number for every such form.
- It shall enable entire approval process through the workflow.
- It shall allow user to create a dummy parent project for the sponsoring agency and child projects under this parent project for every selected fellow.
- It shall communicate with Dean Academics database for internal fellows.
- It shall aggregate entries of all child projects in the parent project
- It shall generate notification letter for the fellow as Employee ID. is generated.
- It shall communicate with F&A module for internal fellows to retrieve funds already paid by F&A to such fellows.
- It shall allow payment to external fellows only if funds are available in their respective child projects.
- It shall auto-create vouchers for internal fellows and allow approval process through the workflow.
- It shall also allow user to manually generate voucher, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall communicate with payroll module for payment to external fellows and reflect entries in their respective child projects.
- It shall generate Claim Bill for internal fellows in the format as defined by the agency.
- It shall generate Utilization Certificate (UC) for external fellows in the format as defined by the agency.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

12.4. Pension Module

- This module shall serve the purpose of managing pension of quasi permanent employees in Research and Development Module.
- It shall be similar to pension module detailed in the Finance & Accounts section.

12.5. Dues Clearance Module

- This module shall serve the purpose of managing dues clearance process for project staff / student.
- It shall enable project staff / student to submit the form online through their user interface.
- It shall be similar to dues clearance module detailed under common modules.
- It shall reflect in the project database once No-dues request is approved through the workflow.
- It shall auto-create vouchers (Salary & TDS) as soon as the final approving authority approves the request in the workflow.
- It shall also allow user to manually generate voucher, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

12.6. Honorarium Payment Module

- This module shall serve the purpose of managing honorarium payments from the project.
- It shall enable PI to fill the form online through his/her user interface.

- It shall check balance in the specified budget head and in case of insufficient balance (basis sanction amount in the specified budget head and not grant received), this module shall notify PI and not allow submission of the request.
- It shall generate unique reference number for the request.
- It shall allow entire approval process of request to flow through workflow.
- It shall commit the funds in the project as soon as the request is approved by PI.
- It shall un-commit the funds if it is cancelled or withdrawn by PI before SR. No. generation for vouchers.
- It shall auto-create vouchers (Net Payment & TDS) as soon as the final approving authority approves the request in the workflow.
- It shall also allow user to manually generate voucher, if required.
- It shall allow entire approval process of vouchers to flow through workflow.
- It shall communicate with cheque and accounting module for SR. No. generation and cheque issuance.
- It shall auto-create entries in the respective projects and books upon approval of vouchers.
- It shall auto-convert the commitment entry to debit entry upon approval of vouchers and release any remaining amount from committed funds.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference no. / project no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

12.7. Bank Book & Cash Book Management Module

- This module shall serve the purpose of managing bank books and cash books in research and development module.
- It shall treat bank book as a different project number and pass double entry at the time of receipt of funds in the bank account i.e. when user enter details for receipt of funds into specified project number, a double entry of credit and debit should be passed into the project number belonging to bank book before crediting the specified project number.

- It shall generate voucher for this double entry which shall get auto-approved with the voucher approved for receipt of funds into the specified project number.
- It shall allow user to maintain daily bank balance in all the bank accounts maintained by the institute in the module and generate statement of account.
- It shall enable user to generate voucher for crediting cash book by debiting bank book.
- It shall intimate cash branch whenever balance goes below a minimum threshold.
- It shall enable user to generate consolidate reports of ledgers and bank/cash books for a specified period.
- It shall generate a consolidate statement of earnings and expenses by aggregating all accounts of department.
- It shall generate trial balance and PnL balance sheet.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on ledger / voucher no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13. Finance & Accounts Module

13.1. Generic Functionalities of F&A Module

- This module shall serve as an illustration for generic functionalities expected out of F&A module. It shall be a fund based double entry accounting system.
- It shall enable user to carry out standard accrual accounting practices for all bank accounts / ledgers / bank or cash books.
- It shall auto-create entries in the trial balances, ledgers, bank books, department heads and budget heads as and when cheques are issued against the PV. Between cheque issuance and PV approval, all entries shall stand as payable in books to create liability.
- In case of payments issued to the supplier i.e. payments made before final settlement (including charges), it shall show these payments as "Advances" in trial balance/balance sheet and remaining amount as liability for that year, until the settlement payment is made. Once the payment is settled, it shall reverse the advance payment entry into expense entry for the year in which advance was issued and pass the expense entry of the remaining amount for the year in which settlement is made.
- It shall enable navigation for searching entries or vouchers in system in layers format

with inter-connected fields i.e. user clicks on one link in the layer to reach the sub-layers and then clicks on link in sub-layers to reach the sub-sub layers and so on till the hierarchy exists. For practical reference to the requirement, the search option should be versatile to handle searches on heads and sub- heads (expandable/compressible).

- It shall minimize situations to open a new screen or tab as far as possible.
- It shall enable user to create bank/cash books for every bank account and ledgers thereafter for day-to-day transactions.
- It shall enable user to create vendor wise ledgers for purchases. It shall communicate with the common inventory management module attached to the unit for asset purchases, depreciation, buys back and condemnation etc.
- It shall enable user to generate consolidate reports of ledgers and bank/cash books for a specified period.
- It shall generate a consolidate statement of earnings and expenses for all accounts.
- It shall generate account wise and consolidated trial balance and PnL balance sheet.

13.2. Common Functionalities – Funds Commitment

- This module shall serve as common functionalities in all process of F&A wherever funds are committed for the request placed by the requester.
- It shall enable user to commit funds in the budget code of the department basis the submitted request. This money shall remain blocked for any other usage until the request is cancelled.
- Commitment of funds shall be temporary and virtual. As soon as the cheque is issued for the request, system shall over-write the commitment of funds with the debit entries in the account equivalent to the amount sanctioned. Upon settlement, if sanctioned amount is lesser than committed amount then system shall release the remaining committed amount basis the reference number of the request.
- It shall reflect committed balance against the approved request while generating SR No. by retrieving information from budgetary module and do not allow SR. No. generation for value more than the committed balance.
- In case of multiple payments from the committed amount i.e. payment in parts, it shall show reducing balance out of committed amount every time a SR No. is generated for subsequent payment voucher against the same request.
- Upon settlement, if the amount is higher than the committed balance, it shall show pop-up box to user for special approval and auto-raise special approval request with unique reference number in the workflow.

13.3. Common Functionalities – Voucher Creation & Approval

- This module shall serve as common functionalities in all process of F&A wherever vouchers are created and approved with minor or no modifications.
- It shall enable user to create JV with unique voucher no. for the approved request.
- It shall enable multiple debit and credit entries in the Journal Voucher from/to multiple heads.
- In case of any penalty to be deducted from the supplier for any clause under the contract, it shall enable user to deduct penalty from the voucher screen and automatically credit that penalty as institute income while not decreasing the asset value in the asset register created by department.
- It shall enable voucher approval process to flow through the workflow.
- It shall show hyperlink to the approved PO, to the approver when JV flows for approval through the workflow.
- It shall auto-generate PV with unique voucher no. from the approved JV.
- In case of multiple payments to multiple ledgers or parties from one JV then it shall auto-create multiple PV i.e. one PV for every payment to each party / ledger.
- It shall enable linking of multiple PV(s) originating from one transaction.
- It shall allow user to manually generate PV, if required.
- It shall allow creation of payment voucher only after SR No. generation and modification only before SR No. generation.
- It shall check sufficient balance in the specified budget head before generating SR. No.
- It shall show the hyperlink to view approved JV and special approval when PV flows for approval through the workflow.
- It shall communicate with cheque issuance module for issuing cheques basis approved PV.
- In case of combined order with any other department, it shall generate report for amount outstanding as receivable from that department.
- It shall calculate statutory and regulatory deductions on the bills, basis deduction brackets defined by user at the time of JV creation.
- It shall enable user to communicate with online vendor registration module to retrieve vendor id.

- It shall allow user to manually create vendor id, if required.
- It shall enable user to create transfer vouchers to facilitate transfer of funds in between bank/cash books / ledgers / budget sub-heads/departments.

13.4. Department Budgeting Module

- This module shall serve the purpose of managing budget allocations to departments for the financial year.
- It shall enable user to capture budgeted amount to departments in the Plan and Non-Plan sub-heads. Structure of heads and sub-heads is as follows:

Major Head (Plan and Non-Plan) Minor Head (list of sub-heads) Budget Code (Codes for sub-sub heads in the sub-head)

- It shall enable user to carry-forward Non-Committed expense under the specific budget code of previous F.Y. to current F.Y. by marking the flag as “Yes” and show it in the current F.Y. budgetary details as Opening Balance.
- By default, it shall mark all budget codes as “No” for carry-forward and enable user to change flags for appropriate budget codes. Any amount for budget codes with flag “No” shall be considered as lapsed but shown as balance in previous F.Y.
- It shall generate department wise Budget Allocation letter for the F.Y.
- It shall push budgetary details entered and posted by the user to the user interfaces of respective HOD(s) and enable them to edit/approve amount in the sub-heads of Plan and Non-Plan Heads but ensuring that sum of sub-heads in Plan and Non-Plan Heads do not change.
- It shall enable alterations to be approved on the workflow.
- It shall enable user to transfer funds from one budget code to another within Plan and Non-Plan Head but not between Plan and Non-Plan Head.
- At any given point in time, it shall show committed expense, balance, actual expense, previous committed amount and previous actual amount under each budget code by retrieving values from other databases of F&A units.
- It shall enable user to generate Statement of Committed and Actual against Committed Expenses report for the F.Y. as on date for a department.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on budget heads and sub-heads, departments, F.Y. etc.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.5. Indigenous & Import Purchase Order Module

- This module shall serve the purpose of managing imported purchases through issuance of PO.
- It shall be integrated with departmental quotation and purchase committee approval module for seeking details of approved proposals.
- It shall allow entire approval process of request to flow through workflow.
- It shall enable user to commit funds (as per common functionalities of fund commitment) in the budget code of the department basis sanction sheet retrieved from either Central Store or Research and Development database.
- It shall enable user to create JV and PV as per common functionalities of voucher creation and approval.
- Upon settlement, if the amount is higher than the committed balance, it shall show pop-up box to user for special approval and auto-raise special approval request with unique reference number in the workflow.
- It shall enable user to search all payments made against the PO number basis a unique identifier like PO Number.
- It shall communicate with Central Store module to retrieve details of stock-cum-asset register and reflect the asset value, depreciation, buy-back and decimation in the stock-cum-asset register from the payment voucher as and when entries are passed. This stock-cum-asset register shall be shared between Central Store/Department and F&A.
- In case of penalty deductions, it shall show the gross value i.e. amount paid plus penalty in the asset register as asset value.
- It shall generate covering letter for bank in the specified format.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on SS No. / NC No. / PO No. / Voucher No. / Vendor Id No. / Amount etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.6. Direct Purchase & Non-Plan Expenditure Module

- This module shall serve the purpose of managing direct purchases and non-plan expenditures of the institute.

- It shall enable purchaser to put an online request for purchasing the asset through his user interface.
- It shall communicate with online vendor registration module for selecting vendor and the items.
- It shall communicate with Admin / Faculty database and auto-fill designated fields.
- It shall verify available balance (excluding committed funds) in the selected budget head and allow purchaser to submit the request only when sufficient balance is available for purchasing the asset.
- It shall generate a unique reference number on successful submission of the online form.
- It shall enable user to commit funds in the budget code of the department basis request as per common functionalities of fund commitment.
- It shall enable approval process to flow online through the workflow.
- It shall enable user to create JV and PV as per common functionalities of voucher creation and approval.
- It shall check if the same bill no. has already been processed for the supplier while creating JV and do not allow duplicate processing of bills.
- Upon settlement, if the amount is higher than the committed balance, it shall show pop-up box to user for special approval and auto-raise special approval request with unique reference number in the workflow.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Voucher No. / Vendor id / Amount etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.7. Children Education Allowance Module

- This module shall serve the purpose of managing children education allowance reimbursements given to employees of the institute.
- It shall auto-create a virtual children education allowance account for each employee against the Employee ID. at the beginning of each year by communicating with Faculty and Admin database for new recruits.
- It shall enable user to manually create the virtual account for an employee, if required.
- It shall enable user to update the master for applicable permissible limit for the fund for the year. It shall auto-populate values in virtual children education allowance account for

each employee from this master.

- It shall enable user to manually update individual records, if required.
- Amount left in previous year shall not be carry-forwarded in the current year however it shall allow reimbursement from previous year remaining funds, if required.
- It shall enable employee to put an online request for reimbursement through his/her user interface.
- It shall communicate with Admin / Faculty database and auto-fill designated fields.
- It shall verify available balance (excluding committed funds) in the virtual account of the employee and allow employee to submit the request only when sufficient balance.
- It shall generate a unique reference number on successful submission of the online form.
- It shall enable user to commit funds in the virtual account basis request as per common functionalities of fund commitment.
- It shall check if the request has been submitted by the spouse of the employee if both of them are working for the institute. If yes, show the pop-up box to the employee seeking his declaration that this is not a duplicate reimbursement request.
- If employee has requested credit with salary then it shall enable user to generate report of all such employees and forward it to Salary Group (F&A) for adding the amount as earnings in the subsequent pay-roll processing.
- It shall enable approval process to flow online through the workflow.
- It shall enable user to create JV and PV as per common functionalities of voucher creation and approval.
- It shall check if the same bill no. has already been processed for the supplier while creating JV and do not allow duplicate processing of bills.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Voucher No. / Employee ID. / Amount etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.8. Payroll Processing Module

- This module shall serve the purpose of managing payroll process for employees of the institute.
- It shall auto-run payroll for all employees including all deductions and earnings on 25th

of the month.

- It shall enable user to stop auto-run and manually initiate the payroll script, if required.
- It shall communicate with estate office & PND office to retrieve quarter maintenance charges and electricity charges for the employees as deductions under appropriate codes.
- It shall enable user to create/modify rules for earnings and deductions for the employees in the payroll.
- It shall exclude cases whose term is going to end in this month by automatically marking them for “Stop Salary” if not marked by user already.
- It shall communicate with Income Tax module to push and pull income details and tax deductions respectively.
- It shall enable user to capture instalment based deductions from the salary based on reducing amount.
- It shall communicate with Admin and Faculty database to retrieve details of new recruitments.
- It shall enable user to generate supplementary salary of the employee, if required.
- It shall auto-create summary sheet, head wise detailed report, bank list, cheque list, cash list, deduction wise detailed report and individual JV for refundable and non-refundable receipts.
- It shall generate separate list for modes of payment of salary.
- It shall enable user to JV and PV as per common functionalities of voucher creation and approval.
- It shall generate salary slips in the specified format.
- It shall allow salary roll-back before vouchers are approved. It shall allow both options of roll back i.e. individual employee roll-back and roll-back for all by adding or deducting a common amount under the allowance or deduction code for all employees.
- It shall enable user to apply increments for all employees grade wise, whenever applicable.
- It shall reflect payroll details in the user interfaces of employees.
- It shall reflect PF details in the PF management module.
- It shall reflect loan recovery installments in the loan management module.

- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID. / F.Y. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.9. Income Tax Module

- This module shall serve the purpose of calculating income tax liabilities for employees of the institute.
- It shall communicate with payroll database to retrieve earnings and deductions of the employees.
- It shall enable user to capture other income of the employees in bulk or individually.
- It shall calculate the total income of the employees for the entire F.Y. on projection basis.
- It shall account for retirement date while projecting income for the entire F.Y. i.e. if an employee is retiring during the year then it shall calculate expected monthly pension and then project income for the F.Y.
- It shall be dynamic in projecting income for the F.Y. basis any modifications in payroll or addition of other income for the employee.
- It shall enable employees to declare their investments in the beginning of the F.Y. and push section wise declaration in the income tax database.
- It shall enable user to create/modify income tax rules as prescribed by Govt. of India on periodic basis.
- It shall calculate income tax liability of the employee for the year basis projected income and user defined income tax rules.
- It shall divide the total liability in equated monthly installments, every month and push them as deductions in the payroll module.
- It shall enable employees to confirm declaration of investment in the last quarter of the year and re-calculate income tax liability after such confirmation is approved.
- It shall enable user to calculate as on date income tax liability and payment basis employee request or in special cases like full-and-final settlement for resigned or terminated employees.
- It shall re-calculate income tax liability and thus modify monthly instalments whenever there is change in projected income of the employee.

- It shall generate Form 16 for the employees in the specified format.
- It shall generate Challan for tax deducted and deposited for every employee.
- It shall push income tax details on the user interface of the employees.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Employee ID. / Key No. / F.Y. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.10. Provident Funds Management Module

- This module shall serve the purpose of managing provident funds of employees of the institute.
- It shall enable auto-creation of PF virtual account of every employee through integration with salary module.
- It shall communicate with salary database to update values in the PF virtual account of the employee.
- It shall enable requester to fill the online form for withdrawal or advances from PF account from his/her user interface.
- It shall communicate with Admin / Faculty database and auto-fill designated fields.
- It shall check the available balance (excluding non-refundable withdrawal and committed funds) in the PF account and allow requester to submit the request only when sufficient balance is available.
- It shall generate a unique reference number on successful submission of the online form.
- It shall commit funds in the employee's PF account as per common functionalities of funds commitment.
- It shall enable entire application approval process to flow online through workflow.
- It shall enable user to capture required information and generate recoverable installments for the advance.
- It shall enable system to show past advances / withdrawals by the employee and calculate recoverable installments basis the total outstanding amount till date.

- It shall enable user to JV and PV as per common functionalities of voucher creation and approval.
- It shall enable user to generate excel extractable report for intimating Salary Group on recoverable installments.
- It shall communicate with salary database and auto-update recovery of installments in the PF account statement of the employee.
- It shall generate statement of PF account of the employee showing extensive details about monthly PF contribution, advances, withdrawals, recovery of advances, outstanding advances, interest earned on the PF balance, opening and closing balances for each F.Y.
- It shall push PF account entries in the employee's user interface.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Voucher No. / Employee ID. / Request Reference no. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.11. Monthly Pension Payment Module

- This module shall serve the purpose of managing monthly pension payment of employees of the institute.
- It shall auto-populate earnings of the pensioners from PPO, Part B, Part C, Part D and Commutation Report generated at the time of retirement.
- In case of death of pensioner and initiation of family pension, it shall auto-populate those figures along with updated bank account number for pension payment.
- It shall enable user to manually edit both earnings and deductions (excluding IT deductions) for pensioners either in bulk or individually before PVs are approved. In case, any corrections after approval of PVs is required, it would only be treated for arrears with next month pension i.e. user shall input that arrear as earnings or deductions for the next month.
- For any rolling deductions, it shall auto-calculate opening and closing balance and stop the deduction as and when the opening balance becomes zero.
- It shall enable user to mark "Stop Pension" for any pensioner either individually or in bulk, as required. It shall exclude such cases while running the monthly pension payment script.
- Auto-run monthly pension payment script for all pensioners including all deductions and

earnings on 25th of the month after the Income Tax script is initiated and completed by the system.

- It shall communicate with Income Tax module to retrieve tax information. It shall enable user to stop auto-run and manually initiate the pension script for an individual or for entire population, if required.
- It shall auto-create summary sheet, head wise detailed report, bank list and JV once the monthly pension payment script is run.
- It shall enable user to create JV and PV as per common functionalities of voucher creation and approval.
- It shall generate pension slips as the PVs are approved.
- It shall reflect pension details on employee's user interface.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Voucher No. / Key No. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.12. Loan Disbursement and Recovery Module

- This module shall serve the purpose of disbursing loans (advances) to employees of the institute.
- Advances can be of different types viz. House Building, Computer, Motor Vehicle (2 and 3 wheeler), Cycle, Festive etc. with each having different set of rules for rate of interest, EMI allowed, principal and interest recovery method. This module shall enable user to create/modify business rules related to different types of advances given to the employee.
- It shall enable employee to fill an online application form through his/her user interface.
- It shall generate unique reference number on successful submission of the form.
- It shall calculate eligible amount for the employee basis user defined business rules.
- It shall show employee tentative EMI – principal and interest amount & nos. while applying for loan.
- It shall enable application approval process to flow online through workflow.
- It shall enable user to create loan id for the sanctioned loan of the employee.

- It shall calculate principal and interest amount along with EMI amount and nos. of instalments on the sanctioned amount.
- It shall enable user to levy penalty interest if loan conditions are not fulfilled by the employee.
- It shall enable user to generate foreclosure statement based on user defined business rules, if employee wishes to foreclose the loan.
- It shall account for lum-sum payments given by employee in addition to EMI and re-calculate EMI nos. and amount.
- It shall communicate with the payroll database and retrieve recovery of advances from the salary to show amount remained.
- It shall enable user to issue NOC to the employee on loan closure.
- It shall enable user to create JV and PV as per common functionalities of voucher creation and approval.
- If an employee has taken multiple nature of advances (an employee can take multiple advances but no two of same nature), it shall calculate outstanding amount and reflect loan details in the user interface of employee.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Loan No./ Employee ID. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

13.13. Medical Group Reimbursement Module

- This module shall serve the purpose of managing medical reimbursement both OPD and Admit cases of employees of the institute.
- It shall enable user to define standard rates and treatment / test allowed for reimbursements.
- It shall communicate with the Health Center module to retrieve the details of approved requests for medical reimbursements.
- It shall enable user to calculate eligible amount and capture against the claim amount.
- It shall enable user to JV and PV as per common functionalities of voucher creation and approval.
- It shall reflect details of reimbursements i.e. claim amount vs passed amount in the user interface of employees.

- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Request Reference No. / Employee ID. / Roll No. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

14. Institute Works Department (IWD) Module

14.1. Complaint Management Module

- This module shall serve the purpose of managing complaints flowing to IWD for various repair and constructions works in the institute.
- It shall enable complainant to fill an online form for recording his/her complaint in his/her user interface.
- It shall include categories and sub-categories of complaints for easy categorization.
- It shall communicate with Various Offices database to auto-fill designated fields in the form.
- It shall generate a unique reference number for the complaint.
- It shall enable user to define complaint allocation matrix to auto-allocate complaint to the appropriate person for resolution.
- It shall enable user to close the complaint when resolved.
- It shall enable complainant to re-open the complaint if he/she is not satisfied with the resolution.
- It shall enable initial assignee of the complaint to assign the complaint to his/her higher authority if he/she is not competent to resolve the complaint through the workflow.
- It shall push complaints to job order database of IWD for further action, if required.
- It shall communicate with inventory issued for the complaint.
- It shall store all complaints lodged by the complainant along with their resolution remarks, date and time in his/her user interface.
- It shall enable user to record complaints manually if complainant is not member of the institute or otherwise, whenever required.
- It shall generate escalation to higher authorities if complaints are not resolved within the defined period.

- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on Complaint Id / Employee ID. / Roll No. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

14.2. Job / Work Order Generation Module

- This module shall serve the purpose of generating and managing job orders for complaints registered with IWD.
- It shall integrate with the complaint management system to retrieve complaints against which job number is to be generated.
- It shall enable user to record inventory used against each complaint.
- It shall enable user to create measurement book for each complaint. A measurement book details the work done in a complaint e.g. kind of material used, rate of the material, amount of material used in quantity and dimensions, etc.
- It shall enable user to create estimates based on the details captured in measurement books for one or many job orders.
- It shall enable approval of estimates to happen online through the workflow.
- It shall enable user to create work orders, which are generated for a larger job order or any larger project initiated in the institute like new building construction, etc.
- It shall communicate with F&A budgeting module and allow work-order creation only if sufficient balance is available in the specified budget head.
- It shall enable user to upload agreements entered with the vendor and create a project plan. It shall enable user to link multiple work orders e.g. work order a new construction may have sub-orders, each for electric work, civil work, maintenance work etc.
- It shall enable user to manage cost of the project with running bills, advances and final settlement on completion of the work.
- It shall enable user to allocate the project cost into stages of work as milestones for payment.
- It shall enable user to process bills submitted by the vendor and deduct taxes, as required.
- It shall integrate with F&A for payment of such bills.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on job number,

work order number, vendor id, etc.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

14.3. Archival / Digitization of Physical Records Module

- This module shall serve the purpose of managing physical records created by IWD department in various projects.
- It shall include index and search, data classification and migration, retention and deletion, litigation hold and even data reduction technologies, such as data deduplication.
- It shall enable user to define titles of the document and enter short description for ease in search.
- It shall search within the text of the archived document to find keywords entered by the user.
- It shall enable user to link these archived documents with the job number and work orders.
- It shall enable user to share all or partial documents within a job number or work order with different users in the department.
- It shall enable user to encrypt certain documents, if required.
- It shall support all types of files for archival from text to images to audio/video extensions.
- It shall enable user to create department wise year wise archives.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on job number, work order number, document title, keyword search, etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

15. Central Store Module

15.1. Indigenous Purchase Module

- This module shall serve the purpose of managing indigenous purchase made by departments of the institute or PI of research projects through central store.
- It shall enable departments to place PO via two modes:

- o Quotations through Department/PI: In this scenario, departments/PI shall call quotations by themselves and intimate central store for purchase through the selected vendor.
 - o Quotations through Central Store: In this scenario, central store shall call quotations on behalf of departments/PI and submit a comparative to the department/PI for selecting the vendor.
- For quotations through department, please refer to departmental quotation and purchase committee module under Common Modules section.
- It shall enable departments/PI to fill an online application form for requesting a purchase through central store.
- It shall communicate with departmental quotation and purchase committee module to retrieve details of the selected supplier, if department has sought quotations by itself.
- It shall generate a unique reference number on successful submission of the request.
- It shall enable the entire approval process of the application form to flow online through the workflow.
- It shall enable user to seek quotations if department/PI has requested central store for same and capture details of all quotations received.
- It shall enable user to generate comparative statement for both one bid (combined bid for technical and financial) and twin bid quotations (both technical and financial bid separately) in the specified format.
- It shall enable user to update the vendor selected by the department/PI from the comparative statement.
- It shall enable user to generate indent and sanction sheet (in the specified format) based on the request submitted by the department.
- It shall enable entire approval process of sanction sheet to flow online in the workflow.
- It shall push the approved sanction sheet to F&A for committing funds in the department budget head if payment is through F&A.
- It shall enable user to generate PO in the specified format once sanction sheet is approved. PO shall be generated in two formats – one which is to be given to the vendor and other to be circulated internally.
- It shall trigger auto-email to the vendor along with signed PO and push it internally to billing module and receipt module of central store, F&A or Department (as applicable), IA along with the department or PI.

- It shall enable user to amend or modify the PO once it is issued. In case of amendment, PO number shall be assigned suffix “A1” or “A2” based on number of amendments while in case of modifications, PO number shall remain same as that of original.
- It shall enable user to extend the delivery period for the PO, if required and generated delivery extension letter in the specified format. This module shall auto-trigger email to the vendor with delivery extension letter attached to it once it is approved by DR(S&P) through the workflow.
- It shall reflect all changes in the original PO to all concerned departments to whom original PO was sent including amendments, modifications and delivery extensions.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference no. / indent no. / SS no. / PO no. / project no. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

15.2. Indigenous Purchase Billing Module

- This module shall serve the purpose of managing billing of indigenous purchases made by departments/PI through central store.
- It shall retrieve PO details from the indigenous purchase module.
- It shall enable user to issue payment as per payment conditions captured in the PO.
- It shall enable user to issue payment under both advance and settlement (final payment) modes against the PO.
- It shall enable user to capture invoice details and deduct charges, if any, from the installment or the final payment.
- It shall enable user to generate the advance/settlement payment order in the specified format with unique reference number and push it to F&A or department as applicable once it is approved by Deputy Registrar(S&P) through the workflow.
- It shall link multiple advances paid against the PO and show user the previous payments made while processing the subsequent advance or settlement against the PO.
- It shall not allow user to issue any advance/settlement payment order, if cumulative value of all advances are exceeding the PO value.
- It shall retrieve approved IR details from the receipt module of central store while making the settlement (final) payment and enable user to process final payment only after IR is approved by department (HOD) or PI through the workflow.

- It shall auto-generate reminders in the specified formats to Indenter (Department or PI) for pending IR and Requisition Slips at frequencies defined by the user.
- It shall auto-generate reminders in the specified formats to the vendor for submitting performa invoice, final bill or delivery of the item within delivery time at frequencies defined by the user.
- It shall auto-stop reminders when either approved IR is received or payments are processed. This module shall allow user to manually stop reminders, if required.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on PO No. / advance payment order no. / department / project no. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

15.3. Import Purchase Module

- This module shall serve the purpose of managing purchases of imported items made by departments/PI through central store.
- It shall have similar functionalities as that of indigenous purchase module till sanction sheet preparation.
- It shall enable user to capture Insurance Policy details in the insurance master and reflect the reducing value while creating sanction sheet and purchase orders.
- It shall enable user to repeat order within 120 days of quotation date which means that same details as that of original order shall get replicated in this new order.
- It shall enable user to upload scanned images of documents with the indent, sanction sheet or purchase order, as required.
- It shall trigger auto-email to the vendor along with signed PO, email a copy to Indian agent of the vendor and push it internally to receipt module of central store, F&A or Department (as applicable), IA along with the department or PI.
- It shall enable user to generate IR and Requisition Slip in the specified format through the receipt module of central store and push it to the indenter for online approval through the workflow.
- It shall generate reminders in the specified format for pending IRs to the indenter at frequencies defined by the user such as one reminder after a month of IR generation and subsequent reminders after 15 days each.
- It shall auto-stop reminders when approved IR is received. This module shall allow user to manually stop reminders, if required.

- It shall enable user to issue payment as per payment conditions captured in the PO either through TT, LC or Net 30.
- It shall enable user to issue payment under both advance and settlement (final payment) modes against the PO.
- It shall enable user to capture invoice details and deduct charges, if any, from the installment or the final payment.
- It shall enable user to generate the advance/settlement covering letter in the specified format with unique reference number and push it to F&A or Department as applicable once it is approved by DR(S&P) through the workflow.
- It shall link multiple advances paid against the PO and show user the previous payments made while processing the subsequent advance or settlement against the PO.
- It shall not allow user to issue any advance/settlement payment order, if cumulative value of all advances are exceeding the PO value.
- It shall retrieve approved IR details from the receipt module of central store while making the settlement (final) payment and enable user to process final payment only after IR is approved by department (HOD) or PI through the workflow.
- It shall enable user to track stages of the order processing by dividing the complete process into user defined milestones and capturing dates for each of them. This module shall reflect these stages in the user interface of the indenter for his/her tracking purposes.
- It shall auto-create a map for flow of activities in addition to these stages and reflect the same in the user interface of the indenter for his/her tracking purposes.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on PO No. / advance payment order no. / department / project no. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

15.4. Receipt Module

- This module shall serve the purpose of managing receipt of items purchased by departments/PI either through central store or cleared through documents provided by central store.
- It shall communicate with both indigenous and import purchase modules to retrieve details of the purchase order.

- It shall integrate with inventory management module to create stock-cum-asset register on receipt of items in central store.
- This stock-cum-asset register shall be shared with all units of central store, F&A/respective department and PI.
- Values in the stock-cum-asset register shall flow from the PO and vouchers prepared by F&A/Department for final payments to the vendor.
- It shall enable user to update depreciation, buy back, auction and decimation values in this stock-cum-asset register.
- It shall enable user to create IR with unique reference number in the specified format at the time of in-warding the asset in the inventory management module.
- It shall push the IR to the indenter for online approval through the workflow.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on PO No. / asset id / department / project no. / IR reference no. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

15.5. Inventory Management Module

- This module shall serve the purpose of recording and tracking consumption of inventory in various departments of the institute.
- It shall enable user to record items purchased or already existing and create an asset cum stock register at the billing/payment stage.
- It shall enable user to capture varied attributes related to the items such as dimensions, quantity and quality etc. The module shall have dynamic fields for capturing attributes of items as attributes can be of different varieties for different items.
- It shall provide user to capture billing/payment details and use this information to create abovementioned asset cum stock register.
- It shall enable user to capture these details either through barcode reader or manually.
- It shall create a barcode or asset id for every item purchased at the billing/payment stage. Asset id shall contain department name, asset category, year of purchase and a running serial number.
- It shall enable department to issue/re-issue items to individuals or places like rooms and laboratories from the asset cum stock register and create a consumption register for issued items.

- It shall enable user to move online request to the department while handing-over the asset issued to him/her.
- It shall enclose details related to re-order level, pricing, depreciation, buy-back and decimation of the asset.
- It shall communicate with the payment module to retrieve the amount paid for the asset to the supplier inclusive of all taxes and other charges and reflect these figures independently in the asset cum stock register.
- It shall enable user to share (view and edit, as required) asset cum stock registers with Accounts and Central Store and departments in the institute.
- It shall provide comparative charts for purchase of items with average pricing for multiple purchases.
- It shall enable department to generate list of items for auction purpose with fields like Item No. Goods Name. Total Value. Stock Entry. Year of Purchase.
- Department/Central Store to update auction values in the asset-cum-stock register and remove the asset from the department's stock list after auction. Same shall be applicable for buy-back and decimation.
- It shall enable user to capture the buy-back values as adjustment against new assets and auction values as income of the institute.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on asset id of the item.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

15.6. Online Vendor Registration & Order Placement Module

- This module shall serve the purpose of registering vendors for various purchases in the institute and placing orders to registered vendors on a web interface much like an online marketplace.
- It shall enable vendors to register online on an internet based interface and update list of items along with other attributes like cost, images, delivery timelines etc.
- It shall have restricted access outside institute's domain except for registered vendors. Once approved, a user-id and password for log-in shall be allotted to the vendors for access.
- It shall enable entire approval process to flow through the workflow.

- It shall integrate with purchase modules and enable users to select the item and vendor to place the order.
- It shall generate bill of purchase or purchase order for the item selected the user and intimate the vendor for delivery.
- It shall enable vendor to provide confirmation for fulfilling the order.
- It shall communicate with Central Store database, wherever applicable, for updating new vendor registration, purchase records and delivery performance.
- It shall provide users with purchase history and show a comparative analysis between the vendors for parameters like cost, delivery performance for the selected item.
- It shall integrate with the Electronic Payment Gateway module to make online payments for the order, if required.
- It shall track the order from request to delivery to payment and provide entire history to both vendors and users of the institute.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on vendor registration number and/or order number.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

16. Legal Module

- This module shall serve the purpose of recording and tracking progress of legal cases.
- It shall enable user to create/modify/cancel/reopen a case along with its information.
- It shall generate a unique case reference number to every such case.
- It shall enable user to upload documents in individual cases.
- It shall enable user to define view rights to members either for all information of the case or for specified portions of it.
- It shall enable the user to track proceedings in the case including hearings, remarks, judgments and appeals etc.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on the unique case reference number.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

17. RTI Module

- This module shall serve the purpose of managing RTI requests for recording and tracking responses.
- It shall enable user to create a record for every such request and generate a reference number.
- It shall enable user to assign the request to appropriate individuals / department through the workflow.
- It shall enable user to set reminders / alerts for receiving responses from the individuals / departments.
- It shall store responses in date wise history for interactions with individuals / departments on RTI requests. It shall enable user to view complete history of RTI requests,
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on the unique reference number.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

18. Director's / Deputy Director's / Registrar's Office Module

18.1. Minutes of Meeting (MoM) Module

- This module shall serve the purpose of recording and releasing minutes of meetings.
- It shall enable user to record minutes of the meetings by creating dynamic headers along with already created static headers such as Meeting Title, Date & Time of Meeting, Venue, Attendees, Agenda and Items.
- It shall enable user to record items under each agenda.
- It shall generate a meeting reference number for every MoM.
- It shall generate a printable format of MOM in the user defined format.
- It shall enable user to create the list of signatories on the printable format of MoM.

- It shall enable user to upload the scanned copy of signed MoM with the meeting reference number.
- It shall enable user to create a list of recipients for a particular meeting reference number and auto-generate email to all of them with MoM content in the body of the mail and scanned copy of signed MoM as attachment.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on meeting reference no., meeting title, meeting date etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

18.2. Office Order Module

- This module shall serve the purpose of creating and releasing office orders.
- It shall enable user to create office order in the defined template with dynamic and static headers.
- It shall generate an office order number in the user defined format.
- It shall generate a printable format of office order in the user defined format.
- It shall enable user to create the list of signatories on the printable format of office order.
- It shall enable user to upload the scanned copy of signed office order against the unique office order number.
- It shall enable user to create a list of recipients for circulating an office order. This module shall enable user to define a group of recipients which may be common for every office order and add individual recipients to the group, if required.
- It shall auto-trigger email to all recipients with office order content in the body of the mail.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on office order number, office order date etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

18.3. Address Book Module

- This module shall serve the purpose of creating address book of contacts for the office.
- It shall enable user to create a database of contacts with information such as category of

contact, name of contact, designation of contact, address of contact, telephone/fax number of contact, email id of contact etc.

- It shall enable user to create categories and sub-categories of contacts such as subcategory “MHRD” within the category “Ministries under Govt. of India”.
- It shall enable user to sort and align contacts based on categories and sub-categories. It shall enable user to share contacts with other users and departments, if required.
- It shall enable user to access the contacts on intranet and internet interface.
- It shall enable user to import and export list of contacts under categories and sub-categories.
- It shall enable user to upload scanned images of visiting cards or other documents such as photographs for a contact.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on contact category, sub-category, contact name etc.

18.4. Document Archival Module

- This module shall serve the purpose of managing archival of scanned images of documents received at the office.
- It shall enable user to create categories and sub-categories for maintaining records of scanned images such as year wise (category) ministry wise (sub-category).
- It shall enable user to capture basic details of the scanned document and generate a reference number for the document.
- It shall enable user to upload scanned image of the document against this reference number.
- It shall create sub-directory for documents uploaded under other modules such as MoM, Office Order and Address Book by providing a hyperlink to access these as well.
- It shall enable user, based on role level access & authentication, to search, view, download and print the document from the archival database over internet and intranet interface.

19. Health Centre Module

19.1. Patient Registration Module

- This module shall serve the purpose of registering eligible patients for consultation with doctors of institute's hospital. The patients who are eligible to receive treatment are Students, Employees, Faculties, their dependents, individuals who they request treatment for (Non-entitled cases) & First aid cases.
- It shall enable user to scan the barcoded health booklet of the patient and reflect the information coded on it in the screen.
- It shall enable user to register the patient manually as well i.e. without the health booklet or when barcode can't be read.
- It shall communicate with different departments database to retrieve specified patients information.
- It shall enable user to make registrations for first aid cases (one who are not eligible patients), all patient related data shall be captured for such cases.
- It shall enable user to select doctors and shifts for consultation.
- It shall generate a unique registration number for every consultation request.
- It shall generate prescription for doctor consultation in the specified format.
- It shall push data to the queue in the display board outside the concerned doctor's consultation chamber.
- It shall enable user to provide preferences to specific individuals in the display board queue within the user defined time period.
- It shall enable eligible patients to register online and print the prescription in the specified format.
- It shall enable doctors to call for patients by pressing "next" button. This shall automatically display the name of the next patient in the queue on the display board.
- It shall enable doctors to skip patient by pressing "skip" button, if the patient has not reported to the consultation chamber on his/her turn. This shall allow the patient's queue no. to be displayed after 2 patients in the queue. If the patient does not report the consultation chamber for a second consecutive time, the queue no. shall be displayed after 4 patients in the queue. If the patient is not available the third time, the queue no. shall reflect at the bottom of the queue. If the patient does not report at all, then the registration shall be considered as void. In this case, the patient shall need to make a fresh appointment with the doctor for consultation. It shall enable user to capture prescription details after patient consults doctor against the registration number.
- It shall generate various sub-slips of the prescription slip based on entries against the registration number such as prescription for medicines available in-house, prescription for medicines not available in-house, prescription for reference to other doctor, prescription for tests and prescription for in-admit etc.

- It shall create patients treatment history by collating all prescription slips against his health booklet number or Employee ID. or Roll No.
- It shall push the history on the user's interface and doctor's interface. Doctor who has prescribed the treat shall only have the rights to view patient treatment records.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on any of the following - registration no., Health Centre no., Booklet no. and PF/Roll no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

19.2. Internal Indents within Health Centre Module

- This module shall serve the purpose of managing internal indents in health center i.e. various units raising requirements to themselves e.g. from one pharmacist to other pharmacist or one pharmacist to health center store.
- It shall enable requester to fill the online form for raising an indent.
- It shall allow suggestive search (drop down of predictive texts / matching strings) option for any searches being made.
- It shall allow requester to select items by name & mention quantity of items.
- It shall communicate with the stock register and reflect existing quantity while placing the indent.
- It shall enable requester to run a stock query. This query shall generate list of items that are nearing re-order levels and/or past expiry dates and facilitate requester to place indent for all such items in addition to any new items required by him/her.
- It shall generate a unique reference number (indent id) for the indent.
- It shall automatically adjust stock register after fulfilling the indent, once the requester has confirmed the physical transfer of indent items.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on any of the following - registration no., Health Centre no., Booklet no. and PF/Roll no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

19.3. Patient Treatment Record Module

- This module shall enable various units within Health Centre in recording information of patient's treatment & tests.
- It shall enable users to upload reports and scans against the registration number of prescription slip.
- It shall enable users to update fields as required for various treatments and tests like X-ray person may require to update scan body part and film type while testing laboratory may like to update quantity of blood taken for running the test.
- It shall create follow-up tasks for users to complete the treatment and tests e.g. x-ray person's task shall get completed when he/she handover the scan to the patient etc.
- It shall create patients treatment history by collating all prescription slips against his health booklet number or Employee ID. or Roll No.
- It shall push the history on the user's interface and doctor's interface. Doctor who has prescribed the treat shall only have the rights to view patient treatment records. He/she can also share the patient's details with any other doctor, if required.
- It shall allow Doctors and Inpatient department to access the information of the patient upon entering registration no.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on any of the following - registration no., Health Centre no., Booklet no. and PF/Roll no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

19.4. Pharmacist Module

- This module shall serve the purpose of managing pharmacy in the Health Centre.
- It shall enable user to dispense medicines to the patient by searching the registration number for the prescription slip.
- It shall enable user to capture quantity of medicines dispensed to the patient v/s actual number of medicines prescribed by the doctor basis integration with stock register.
- It shall generate a bill (in duplicate) with the unique reference number on successfully dispensing of medicine to the patient. Single registration number may have multiple bills.
- It shall communicate with the inventory management module attached with the pharmacist to create stock register.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on any of the following - registration no., Health Centre no., Booklet no. and PF/Roll no.

- It shall trigger intimations in form of email and/or sms as applicable in the process.

19.5. Inpatient Module

- This module shall serve the purpose of admitting patients to Health Centre for treatment.
- It shall enable user to retrieve the patient information based on the registration no. of prescription slip.
- It shall enable user to allot bed and ward to the patient and generate case sheet for the admission with unique reference number.
- It shall enable user to update information on the reports and treatments provided to the patient under the case sheet.
- It shall enable user to create notes in the case sheet to capture diagnostics or treatment given by the doctor during the admission period of the patient.
- It shall communicate with all units within Health Centre to consolidate all prescription slips for medicines, tests, references etc. under the case sheet to create discharge summary (in the specified format) at the time of patient's discharge.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on any of the following – Case Sheet no. Registration no., Health Centre no., Booklet no. and PF/Roll no.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

19.6. Medical Reimbursement Module

- This module shall serve the purpose of managing medical reimbursements of employees and students.
- It shall enable the patient to submit reimbursement claims online against the registration number of the prescription slip.
- It shall communicate with registration module to auto-fill designated fields in the online form.
- It shall generate a unique reference no. upon successful submission of the online reimbursement form.
- It shall enable user to manually enter details if patient is not able to submit the online

form and push the request in the workflow after generating unique reference no.

- It shall enable entire approval process to flow online through the workflow.
- It shall push the approved requests to F&A module for disbursement.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on PF/Roll no. and the unique reference number.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

20. Student Placement Module

20.1. Company Registration Module

- This module shall serve the purpose of managing companies participating in student placements.
- It shall enable companies to register online on an internet based interface.
- It shall generate a unique identification number and profile page of the company on the interface.
- It shall enable registered companies to post placements offers on the interface.
- It shall enable also student placement office to create profile of the company and post offers, if required.
- It shall generate a unique reference number for offers posted by companies and categories them into core or non-core jobs, company profiles, sector or any other parameters as required by the user.
- It shall enable student placement office to approve/reject/hold/blacklist registration of a company, as applicable.
- It shall push data into student's interface for registering applying allow the user to link the Job posting number with the respective company using the unique company identification number.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on any of the following – company identification number, offer reference number, etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

20.2. Placement Scheduling Module

- This module shall serve the purpose of managing companies participating in student placements.
- This module shall user in preparing schedule – dates and slots for company visits in the institute for placement.
- It shall integrate with company registration module and retrieve details like company identification number, company profile etc.
- It shall enable user to share finalized schedule with concern authorities including students and companies.
- It shall provide an interface to the user where, he/she can visually identify a slot for either swapping companies or filling vacant slots by dragging and dropping elements in the cross tabulated grid.
- It shall enable user to schedule one or many companies in a particular slot.
- It shall enable user to make department wise and common schedule for placements.
- It shall generate a unique reference number for the slot.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on company identification number, schedule reference number, etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

20.3. Student Application Module

- This module shall serve the purpose of managing student application process for placements.
- It shall enable students to register for placements by filling an online form through their user interface.
- It shall communicate with Dean Academics and Student Affairs database to auto-fill designated fields in the form.
- It shall generate a unique reference number on successful submission of form.
- It shall aggregate all such registration by a due date, at the student placement office level and create a repository of participating students.
- It shall communicate with company registration and placement scheduling module to

reflect details of offers, eligibility and schedule of companies.

- It shall enable students to apply for offers and companies on this interface and show the eligibility criteria at the time of submitting application.
- It shall enable user to either accept all application with eligibility exception report or only allow eligible students to apply for offers.
- It shall enable user to aggregate all applications company wise, offer wise, department wise and other parameters, as required.
- It shall enable user to update stages of placement exercise e.g. number of applications, number of rounds, number of students appeared and selected in rounds, number of finally selected students.
- It shall enable user to update result at the end of each round and share with the student on their user interface.
- It shall track student's placement information and do not allow student to apply for offers and companies, if he/she has been selected for one offer/company. This is a dynamic condition hence user shall be allowed to set rules for student acceptance of offer and number of offers that a student can apply for, once selected.
- It shall enable student to either accept or deny the offer.
- It shall also enable user to update student's acceptance or rejection, if required.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on based on roll number, offer reference number, company identification number, etc.
- It shall trigger intimations in the form of email and/or sms as applicable in the process.

21. Counseling Services Module

21.1. Interaction & Session Log Module

- This module shall serve the purpose of tracking student's interactions with counseling service. Students can approach counseling service through various modes like email, web registration, walk-in, telephone, recommended by another student or faculty or member of the institute, proactive interaction by counseling service, etc.
- For modes like web registration and recommendation by another member, it shall enable student/recommender to log-in that request through an online form. Anonymity, if desired shall be available for recommender.
- For other modes, it shall enable counseling office to create an interaction id at every source and channel of contact with the student.

- It shall enable user to capture student details, source & channel through which a request has arrived.
- It shall reflect the interaction id in user interface of Head – counseling service and enable him/her to assign the interaction id to a counselor.
- It shall enable counselor to view interactions assigned to him/her only.
- It shall communicate with Dean Academics / Student affairs database to retrieve specified information about the student.
- It shall link interaction ids with roll number of the student and aggregate all interactions of student, for head – counseling service to view.
- It shall allow counselor to schedule sessions for interaction ids assigned to him/her.
- It shall generate unique session id for each interaction id. One interaction id may have multiple session ids as well.
- It shall enable counselor to update case notes of the intervention sessions & upload documents which may include audio files, scanned images, etc.
- It shall enable head – counseling service to view session information of each counselor.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on interaction id, session id, roll number, student name, counselor name, etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

21.2. Academic Mentoring Program Module

- This module shall serve the purpose of managing Academic Mentoring Program run by counseling service. Under this program, counselling service assign mentors to help student who are academically weak.
- It shall enable user to upload list of such students from various sources viz. AP List, Warning List, Grade scores of “E” and “F”, nominations by faculty members, etc.
- It shall enable user to maintain database of such students in every semester of academic year.
- It shall enable user to manually add students, apart from abovementioned sources as well.
- It shall enable user to maintain a database of mentor, who shall guide such students.

- It shall enable user to assign one or multiple mentors to such students. A mentor may have multiple students under him/her, as well.
- It shall have a forum for mentors to interact with their mentees either on one-on-one level or in public space. One-on-one interactions shall be restricted to mentor and mentee whereas interactions on public space shall be visible to all.
- Access to this forum shall be given only to students enrolled in academic mentoring program, assigned mentors and head – counselling service.
- This forum shall enable student and mentors to interact via text, audio-video graphics and live sessions.
- At the end of semester, it shall disable rights of mentors and students to access the forum, till a new list is updated by the user.
- It shall enable user to carry-forward students from previous list, if the student is not appearing in the new list but wishes to join the program.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on roll number, student name, mentor name, semester, etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

22. Library Module

22.1. Budgeting Module

- This module shall help library to internally allocate budgets to different departments of the institute which shall be used for purchases via library throughout the year.
- It shall enable user to capture year wise, department wise budgeted amount.
- It shall enable user to carry-forward Non-Committed funds of previous F.Y. to current F.Y. by marking the flag as “Yes” and show it in the current F.Y. budgetary details as Opening Balance.
- It shall enable user to either carry forward the entire amount or in-part.
- It shall enable departments to spend the money committed in the previous F.Y. in current F.Y. i.e. essentially carry forward the committed but un-spent funds from previous F.Y. to current F.Y.
- It shall communicate with all databases in library module to retrieve details of expenses made by the department.

- At any given point in time, it shall show committed expense, balance, actual expense, previous committed amount and previous actual amount to user in library and it user interfaces of HOD & DLC.
 - Committed Expense: For any expense, a sanction is given by committing that much amount under the specified budget code. This amount remains blocked for the stated purpose and cannot be used for anything else until released. Balance: It is the actual amount left in the budget code basis actual expense.
 - Actual Expense: It is the actual amount spent by the department under the budget code. It may or may not be equal to Committed Expense.
 - Previous Committed Amount: It is the amount which was committed in the previous F.Y. but not spent.
 - Previous Actual Amount: It is the amount which was actually spent by the department in previous F.Y. against the committed amount in that year.
- It shall push budgetary details entered and posted by the user to the user interfaces of respective HOD(s) & DLC and enable them to enter remarks for changes in the budget, if any.
- It shall enable alterations to be approved on the workflow by Librarian.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on departments, F.Y. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

22.2. Acquisition Module - Indent for Books & Series

- This module shall serve the purpose of managing indents placed by faculty members for books and series.
- It shall enable faculty members to fill an online form for placing indent for books/series through their user interface.
- It shall communicate with Faculty database to auto-fill designated fields in the online form.
- It shall verify the book/series title entered by the faculty member in the online form with the Online Public Access Catalogue (OPAC) database and intimate faculty member about availability of the book/series title in library circulation along with details like call number, accession number.
- It shall verify the book/series title entered by the faculty member in the online form with the purchase standing instructions (maintained by library) and intimate faculty member about details of standing instructions like date of execution of standing instructions, number of copies ordered under purchase instructions etc.

- It shall communicate with Dean Academics database to verify the course id entered by the faculty member with the approved course module in Dean Academics and retrieve number of students registered in the course in current semester.
- It shall not allow faculty member to input any course id which is not available in approved course module in Dean Academics.
- It shall enable faculty member to put an indent for as many books as 10:1 ratio between students registered and books required i.e. 1 books can be indented for 10 students.
- If the book or standing instruction already exists, and faculty member is placing an indent then this module shall calculate 10:1 ratio by taking into account number of books already available in circulation in library and number of books placed under standing instructions.
- It shall generate unique reference number on successful submission of the indent form.
- It shall enable entire approval process of the indent to flow online through the workflow.
- It shall communicate with the budgeting module and enable HOD & DLC to view the balance available in the department budget allocated by library as against the amount of the indent.
- It shall not allow HOD & DLC to approve any indent with amount greater than the balance available in the department budget allocated by library.
- It shall allow a Library staff to check the availability of the book on the OPAC system.
- It shall allow a second Library staff (apart from the initial Library staff) to cross verify the availability of the book on the OPAC system.
- It shall show relevant remarks to the Librarian, if the book/series indented is already present or placed under standing instructions along with details like call number, accession number, number of copies in standing instructions etc.
- It shall commit the indent amount in the department budget allocated by the library as soon as HOD/DLC approves the indent. This money shall remain blocked for any other usage until the request is cancelled.
- Commitment of funds shall be temporary and virtual. As soon as the bill is processed by the acquisition cell of library, system shall over-write the commitment of funds with the debit entries in the account equivalent to the bill amount.
- Upon processing of bills, if bill amount is lesser than committed amount then it shall release the remaining committed amount basis the indent reference number.
- In case of multiple payments from the committed amount i.e. payment in parts, it shall show reducing balance out of committed amount every time a bill is processed against

the same indent reference number.

- It shall generate a PO with a unique reference number to be generated. This shall be available in a printable format, for quick print / import and dispatch for the processing.
- Upon processing of bills, if bill amount is higher than the committed balance, it shall show pop-up box to user for special approval and auto-raise special approval request to Head – Library with unique reference number in the workflow.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on indent reference number, department, name and PF number of the indenter.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

22.3. Technical Module

- This module shall serve the purpose of managing technical section of the library.
- It shall communicate with the acquisition database and generate a list of all purchases.
- It shall enable user to update receipt of purchases from acquisition section in the list.
- It shall enable user to allocate books for inspection to various team members and other team in-charges by assigning books against their user ids in this module.
- It shall allow books to be processed (classified & catalogued) and release a weekly list of new additions for public display.

22.4. Periodicals Module - Indent for Periodicals

- This module shall serve the purpose of managing periodical requests by departments of the institute.
- It shall retrieve periodicals budget allocated to departments in the budgeting module. Periodical budgeting is
- It shall enable user to push list of department periodicals of previous year to respective HOD/DLC user's interface.
- It shall enable HOD/DLC to also view periodicals purchased by other departments in form a hyperlink.
- It shall enable HOD/DLC to share the list with faculty members of the department through the workflow.

- It shall enable faculty members of the department to provide their preference for purchasing periodicals from the given list and add/delete any new periodicals, if required.
- It shall aggregate preferences given by the faculty members of the department in the user interface of HOD/DLC and enable HOD/DLC to recommend the aggregate list as-it-is or after modification.
- It shall enable HOD/DLC to add other departments as fellow indenters to one or many periodicals and define % contribution for each department, thus making it a combined order. It shall be the responsibility of periodical cell to verify and take consent on combined orders.
- It shall generate a unique reference number for the recommended request of each department.
- The activity is time-bound and this module shall enable periodical cell to define timelines within which HOD/DLC has to provide the list. It shall enable periodical cell to define frequencies for auto-generating reminders to HOD/DLC for pending lists, till the response is not received. Librarian shall have the power to extend the timelines for a department on a case-on-case basis, if required.
- It shall push the approved list to periodical cell in the library and aggregate lists of all the departments to display total periodicals requested by all departments including the common ones between two or more departments.
- It shall communicate with budgeting module and enable periodical cell to view the available balance in the department budget while forwarding the aggregated request to Librarian.
- It shall enable Librarian to simultaneously view, approve or reject or modify one or multiple department's request through the workflow.
- It shall push the list approved by Librarian in the user interface of HOD/DLC.
- It shall enable Librarian to view the balance available in the department budget and not allow him/her to approve any request with amount greater than the balance in department budget.
- It shall commit the indent amount in the department budget allocated by the library as soon as Librarian approves the request. This money shall remain blocked for any other usage until the request is cancelled.
- Commitment of funds shall be temporary and virtual. As soon as the bill is processed by the acquisition cell of library, system shall over-write the commitment of funds with the debit entries in the account equivalent to the bill amount.

- Upon processing of bills, if bill amount is lesser than committed amount then it shall release the remaining committed amount basis the indent reference number.
- In case of multiple payments from the committed amount i.e. payment in parts, it shall show reducing balance out of committed amount every time a bill is processed against the same indent reference number.
- Upon processing of bills, if bill amount is higher than the committed balance, it shall show pop-up box to user for special approval and auto-raise special approval request to Librarian with unique reference number in the workflow.
- It shall enable periodical cell to maintain database of periodicals with date and frequency of arrival of periodical once, the order is placed to the publisher.
- It shall enable user to maintain track of receipt of periodicals.
- It shall release a list of periodicals received to all, on weekly basis.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on periodical reference number, department, F.Y. etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

22.5. Circulation Module

- This module shall serve the purpose of managing various requests received at library viz. book issuance, book return, library membership, book not found, book lost, etc.
- It shall enable requester to fill an online form for aforementioned request through his/her user interface.
- It shall communicate with variations database to retrieve information about the requester and auto-fill designated fields in the online form.
- It shall generate a unique reference number on successful submission of the online form.
- It shall enable entire approval process of the request to flow online through the workflow.
- It shall push status of the request to the user interface of the requester and enable him/her to track the status of the request on his/her user interface.
- It shall allow the Librarian to approve of the membership request of retired institute members, once they have submitted a duly filled library membership application form along with the receipt of a refundable fee (presently Rs.2000/-) paid in cash at the cash

branch.

- For book lost, it shall retrieve the book cost from the acquisition database and show the same to requester.
- It shall calculate the cost to be recovered on the basis of the following prevalent rules. Enable user to modify these rules, as required.
 - o Publisher price, plus
 - o 20% handling charges in case of foreign books or 5% handling charges in case of domestic books, plus
 - o Dues pending as per delay of returning of books.
- For book lost, it shall integrate with the electronic payment gateway module to pay the required amount.
- For book not found, it shall enable circulation cell to update status of book as “Found” as and when the required book is located in the library.
- It shall enable user to renew books online within constraints as defined by Librarian.
- It shall enable user to reserve books online within constraints as defined by Librarian and intimate the requester whenever the book becomes available.
- It shall enable user to issue “reserved section” books to requester. Such books can only be issued for maximum 2 hours after which the requester has to “renew” the book or pay fine @ Rs.2 per hour. This module shall enable user to track such issuance and fine.
- It shall enable users, based on role level access & authentication, to access this database for reference or reporting or updation purposes with a search option on request reference number, name of requester etc.
- It shall trigger intimations in form of email and/or sms as applicable in the process.

23. Human Interactions

- The number of clients will depend on the number of end users which may vary from application and also with time of the year.
- The number of simultaneous users again could vary from 50 to 500 for given applications. At the time of online application submission from applicants in academic module the number of concurrent users may reach more than 1000 on the last date of submission. Similarly at registration time, electronic payment gateway module should be able to handle peak load.

- Volume and type of information will vary from application to application.
- Interface with mobile/tablet devices to capture and deliver information
- Automatic alerts and SMS
- Barcode/RFID features to enable tracking
- Smart card interface
- Digital signature
- Easy user interface
- Browser independent
- Platform independent, portability
- All reports in pdf, excel and csv format
- XML interface for data portability