Functional Requirements Documentation for the development of a web portal for the implementation of the online portal to facilitate internship and similar activities for learners in Kerala State Electricity Board Limited (KSEBL).

Kerala State Electricity Board Limited

Office of the Chief Engineer (IT,CR & CAPs)

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Overview:

Kerala State Electricity Board Limited (KSEBL) is the primary entity responsible for generating, transmitting, and distributing electricity in the state of Kerala, India. Established in 1957 under the Electricity (Supply) Act, 1948, KSEBL has played a vital role in electrifying the state and supporting its economic growth. In 2013, it was restructured into a public sector company under the Companies Act, 1956.

Key Divisions:

1.Generation:

KSEBL operates a range of power generation facilities, including hydro-power plants, thermal power plants, and renewable energy sources like solar and wind power.

2.Transmission:

The transmission network of KSEBL spans the entire state, ensuring the delivery of electricity from generation plants to distribution substations. The transmission system operates at various voltage levels and plays a crucial role in maintaining grid stability and efficiency.

3.Distribution:

KSEBL's distribution wing serves millions of domestic, commercial, industrial, and agricultural consumers across Kerala. It ensures the reliable delivery of electricity to end-users through an extensive network of substations, transformers, and distribution lines.

E-Governance and Technological Initiatives:

KSEBL has undertaken several e-governance projects to enhance operational efficiency and customer services.

Objective:

The objective of this Functional Requirement Specification (FRS) document is to define the functional and technical requirements for the development of a web-based Internship Portal for the Kerala State Electricity Board Limited (KSEBL)**.** The portal aims to provide a secure, user-friendly, and efficient platform for students to apply for internships/training programs, submit required documents, and make payments, while enabling multi-level approvals (Level 1 and Level 2) by KSEBL authorities.

The system will ensure transparency in application tracking, automate payment reconciliation, and streamline communication between students, training centers, and administrators. Additionally, it will facilitate certificate generation**,** real-time reporting, and centralized management of courses, centers, and user access, thereby enhancing operational efficiency and compliance with KSEBL's training policies.

1. Web portal and Software Requirements:

1.1 Functional Requirements

1.1.1 User Roles & Access Control		
Admin	Full system access, user management	
Authority	Configuration access (Add center categories, Add Centers, Map Center Names, Add course, Add Branch, Set/Revise Fee Rate, Course and Eligibility, Center Configuration, Confirmation letter-Signing Authority, Add/Change Colleges, Test Facility-Email and SMS, Block/Unblock User, Set Page Access Roles, Add Days)	
Basic User (Approval Level 1)	Review & approve/reject applications (First Level)	
Supervisor (Approval Level 2)	Final approval before Confirmation Letter & certificate generation	
Student	Register with Mobile Number + OTP and Email Id+ OTP, Can apply for Industrial Training internship/project work/On Job Training/Research work/LMS video, upload documents, make payment, track status	Registration details include Student Name, Age, Gender, Mobile number, email id, Address,

		Institution Name etc
1.1.2 Tracking & Reports		
Tracking	Center Booking Status, Application Tracking, Payment Tracking, User Tracking, Configuration Changes Tracking	
Reports	Reports of Daily Cash Collection, Consolidated reports, General Reports All types of reports like Application id, Transaction id, external agency id ,Reports in Period wise & Monthly	
1.1.3 Additional Functional Requirements		
Payment Facility	Net Banking/Gpay/Debit/Credit Cards/Cash payment at VB, TVPM	
Dash Board Facility	Provide a dashboard for monitoring key metrics	
Upload Documents	Students can upload the documents in Pdf, Word format	
Print Facility	Print the confirmation letter and Certificates etc	
SMS/Email Messages	Facility for sms/email messages for successful registration. Facility for sms/email messages for all intimations	
Eligibility for Registration	Students of ITI/VHSE/Diploma/B.Tech/M.Tech/BE/ME/ Engineering Graduates/BSc/MBA/Law students Etc. can register	

1.2. Security Requirements

Requirement	Implementation Details
Role-Based Access Control	5 distinct roles (Admin, Authority, L1/L2 Approvers, Student)
OTP Authentication	SMS/email OTP for student registration/login

	Rate limiting (3 attempts/hour) to prevent brute force
Encrypted Payments	Compliance with security standards for Online banking & payment gateways
Data Protection	A secure encryption methods shall be used. It ensures that all communication is encrypted, preventing hackers from intercepting sensitive information like passwords, credit card details, or personal data.

1.3. Performance Requirements

Concurrent Users	Handle 1,000+ concurrent users features like Auto-scaling to automatically adjust the number of running containers based on real-time demand.
Response Time	The response time to load the page shall be few seconds
Throuhput	Process 50+ applications/minute
Browser Support	Chrome, Firefox, Edge, Safari
Portal	Portal should be Operating System, browser independent.

1.4. Data Backup & Recovery

Requirement	**Implementation Details**
Automated Daily Backups	Ensure safety of Backup of files
Integrity Checks	Verify file integrity. Alert on backup failures

2. Non Functional Requirements & Conditions

2.1 Assumptions and Constraints:

The factors that could affect the requirements stated in the requirement specifications document. These factors are not design constraints on the software, but are rather, any changes to them may affect the overall requirements. Following are the major assumptions and dependencies;

It is assumed that the system architecture with respect to hardware, software, connectivity and other infrastructure would be available as envisaged for the proper functioning of the application.

Interfaces to KSEBL applications will be provided as web services based on the formats devised by KSEBL IT Team.

The external interfaces would be dependent on services provided by other government agencies or service providers.

All the legal/regulatory/administrative approvals/changes, if any, would be undertaken by the KSEBL to enable the functionality covered in this document.

The section identifies non-functional requirements to be supported by the portal. It also includes the non-functional requirements for the support & management service, Design, development and testing of the service.

2.2 Conditions:

Application Requirement description Technology Platform should be Portal should be platform independent of Operating System, browser etc. The Application shall be developed in PHP/JAVA and DB in Open source platform. The application shall be mobile responsive.

1. **Scalability Requirement description**

   The application must be scalable in design and implementation. The application can efficiently handle increased demand and adapt to changing requirements to accommodate future feature addition.

2. **Change requirement Management**

During the support period, any enhancements or customizations that fall within the 7 person-days limit are to be provided without incurring any additional charges to KSEBL.

3. **User Manual**

The firm should prepare detailed video-based user manuals covering “step-by-step” and “how to use” concepts for the portal.

4. **Training**

End-User Training:

Needs training to the Trainers of KSEBL for arranging training sessions for individuals or groups who will be using the software. This includes guidance on how to navigate the interface, perform specific tasks, and make the most of the software's features.

5. **Application knowledge Transfer:**

This training (Knowledge Transfer) shall be provided to the KSEBL’s Core IT Team members (minimum 10 employees) at Thiruvananthapuram, Kerala. It includes Software Architecture, Design Pattern, Documentation, Deployment Process, Configuration Management, Data Model and Database Schema, API & Integration's, Security Considerations, De-Bugging and error handling etc.

6. **Training Materials**

The firm shall be responsible for preparation of the training materials, handouts covering “step-by-step” and “how to use” concepts for the portal.

7. **Project Inception**

The firm should prepare a detailed Project Plan detailing all tasks including the person in charge, allocated resources, and timelines for each activity,

Milestones, and deliverables

8. **Requirement study**

The firm should review and finalize proposed SRS in discussion with KSEBL and submit a detailed SRS to KSEBL.

9. **System Design**

Based on the SRS the firm should perform detailed system design. As part of this phase the firm should submit design documents. The portal shall be integrated with KSEBL internal applications,, SSO, SMS gateway, Payment Gateway etc. and capable to send communications through email & other modes.

10. **User Acceptance Tests (UAT)**

The firm should conduct User Acceptance Tests (UATs) to ascertain whether the application and its sub-system is capable of meeting the functional requirement as per the requirement. Conducting such tests will be responsibility of the vendor. KSEBL will provide full co-operation to the vendor in conduct of the tests.

11. **Source code ,Documentation & Product Support**

The source code of the application along with full documentation is to be handed over to IT wing of Kerala State Electricity Board (KSEB). The development firm shall provide comprehensive technical documentation that covers the architecture, design decisions, and the internal workings of the application. The intellectual property rights of the application with KSEBL only. The entire source code should be transferred to KSEBL. A detailed documentation explaining the structure of code should be submitted along with source code

12. **Security**

Ensure the design of the web-portal shall follows the NCIIPC National Critical Information Infrastructure Protection Centre, CERT-In guidelines and security auditing of the portal is also included in the scope of the work. Vendor also must obtain Certificate from CERT-In empaneled agency.

13. **Version Control System**

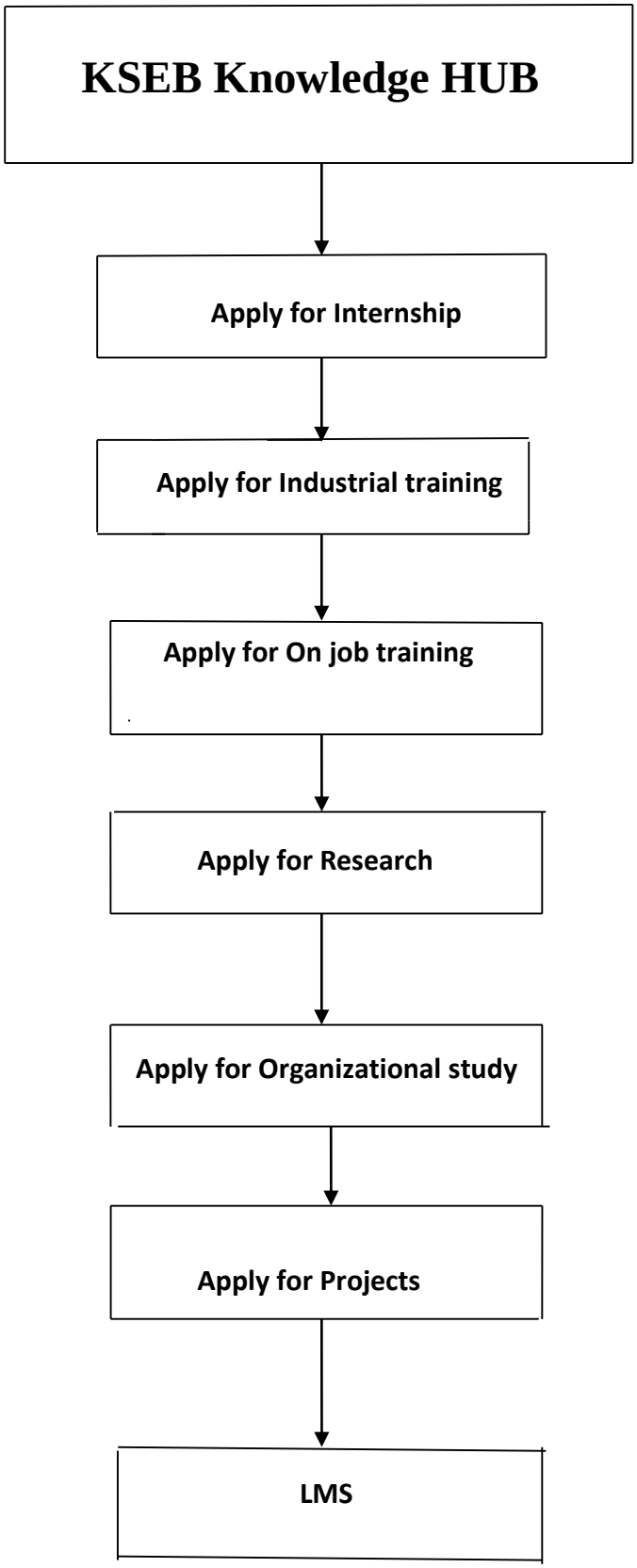
The application development shall follow version control system

14. **Time line**

The selected firm shall complete the development and commissioning of the application within 6 months from the date of issue of Letter of Award.

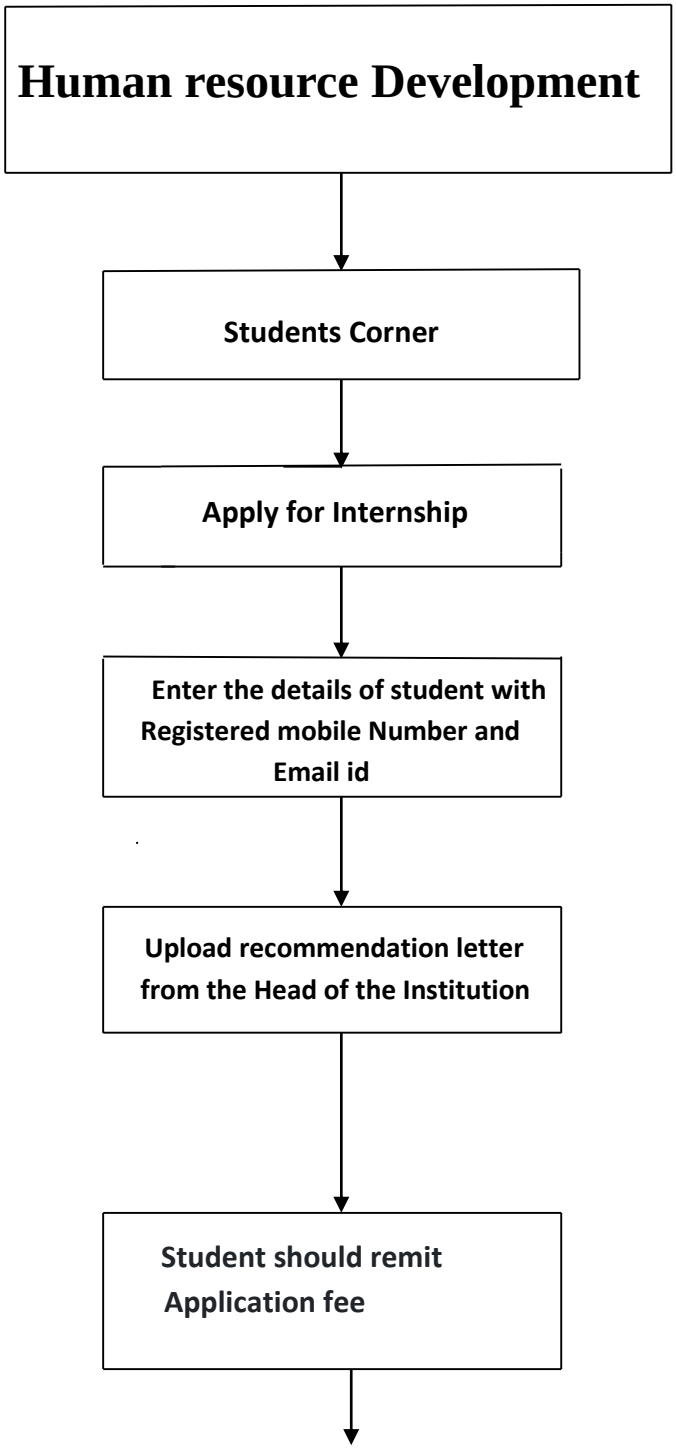
15. The firm shall have successfully completed two government/Public Sector projects for consideration in the pre-qualification process.

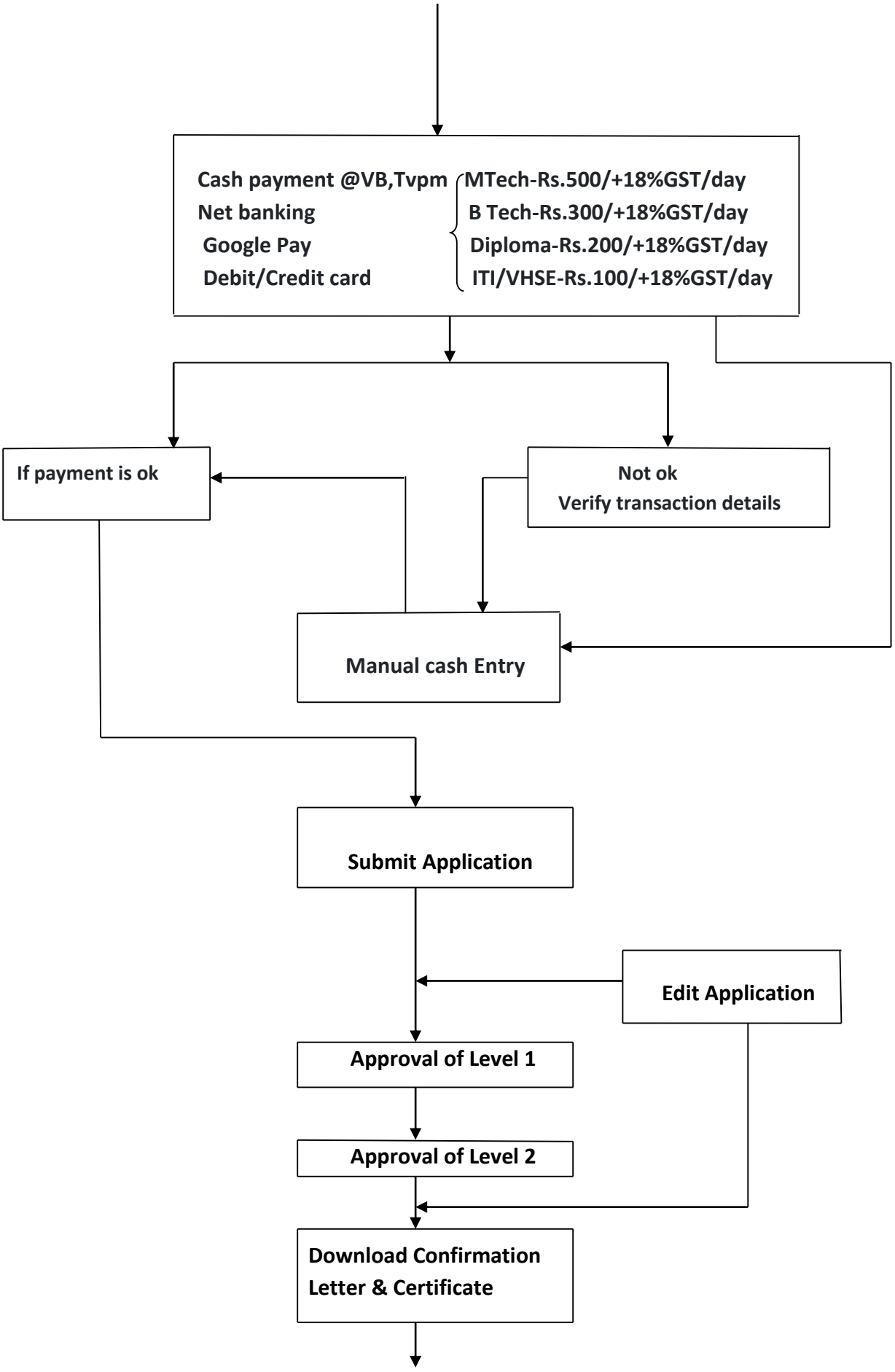
Data Flow diagram are attached as Annexure.

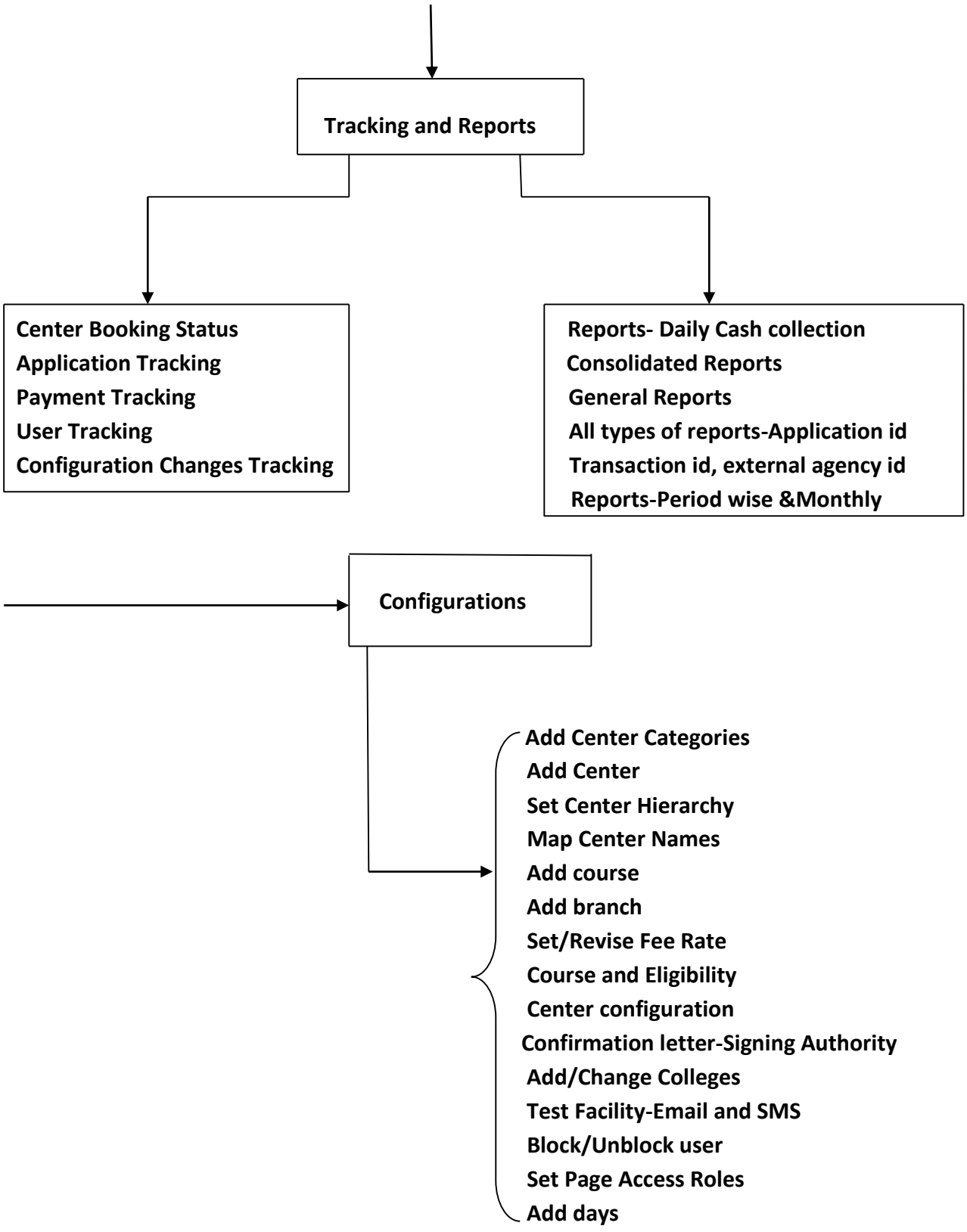

KSEB Knowledge HUB
Apply for Internship
Apply for Industrial training
Apply for On job training
Apply for Research
Apply for Organizational study
Apply for Projects
LMS

1. INDUSTRIAL TRAINING/INTERNSHIP AT KSEBL

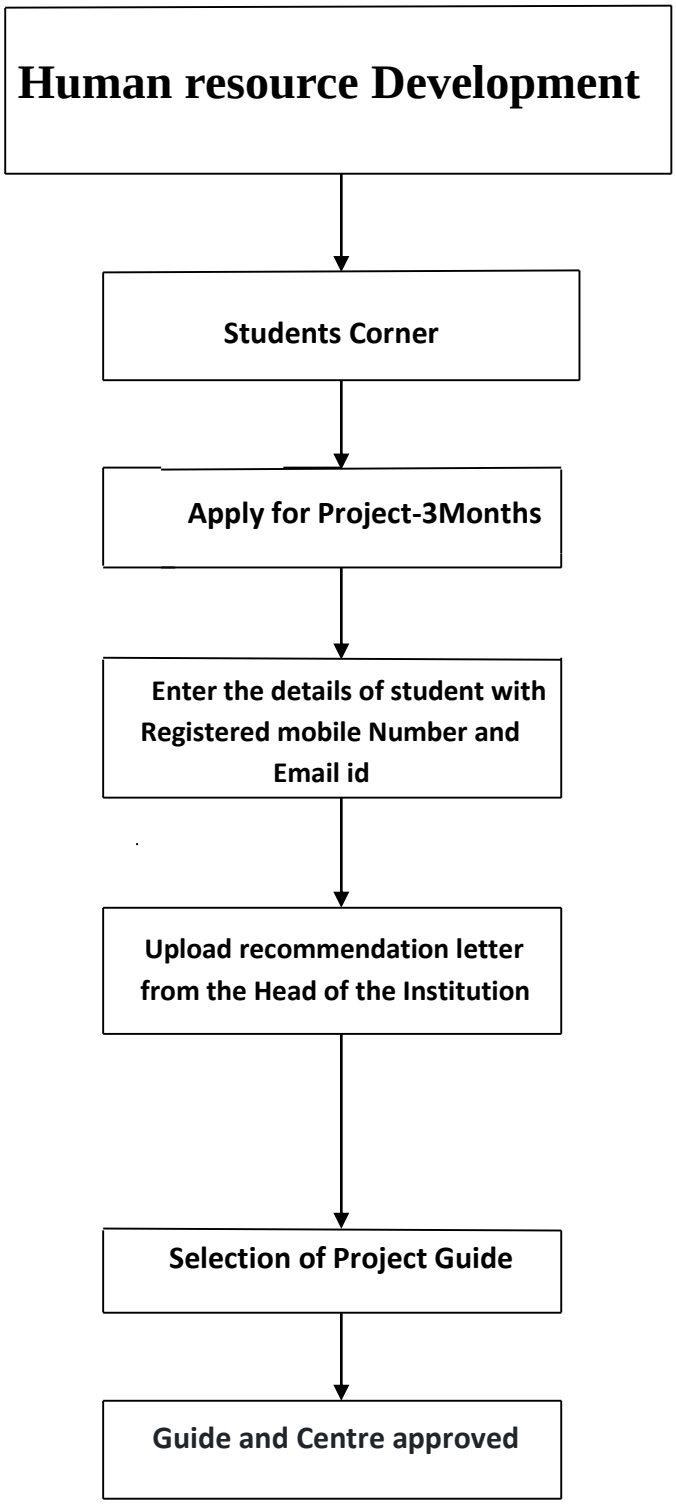
Internship is given to various course including ITI/ VHSE/ Diploma/M.Tech/Graduate Engineering/B. Sc/MBA/Law students etc. Maximum number of students permitted per batch varies with centres. Permission will be granted for a minimum of 5 working days.

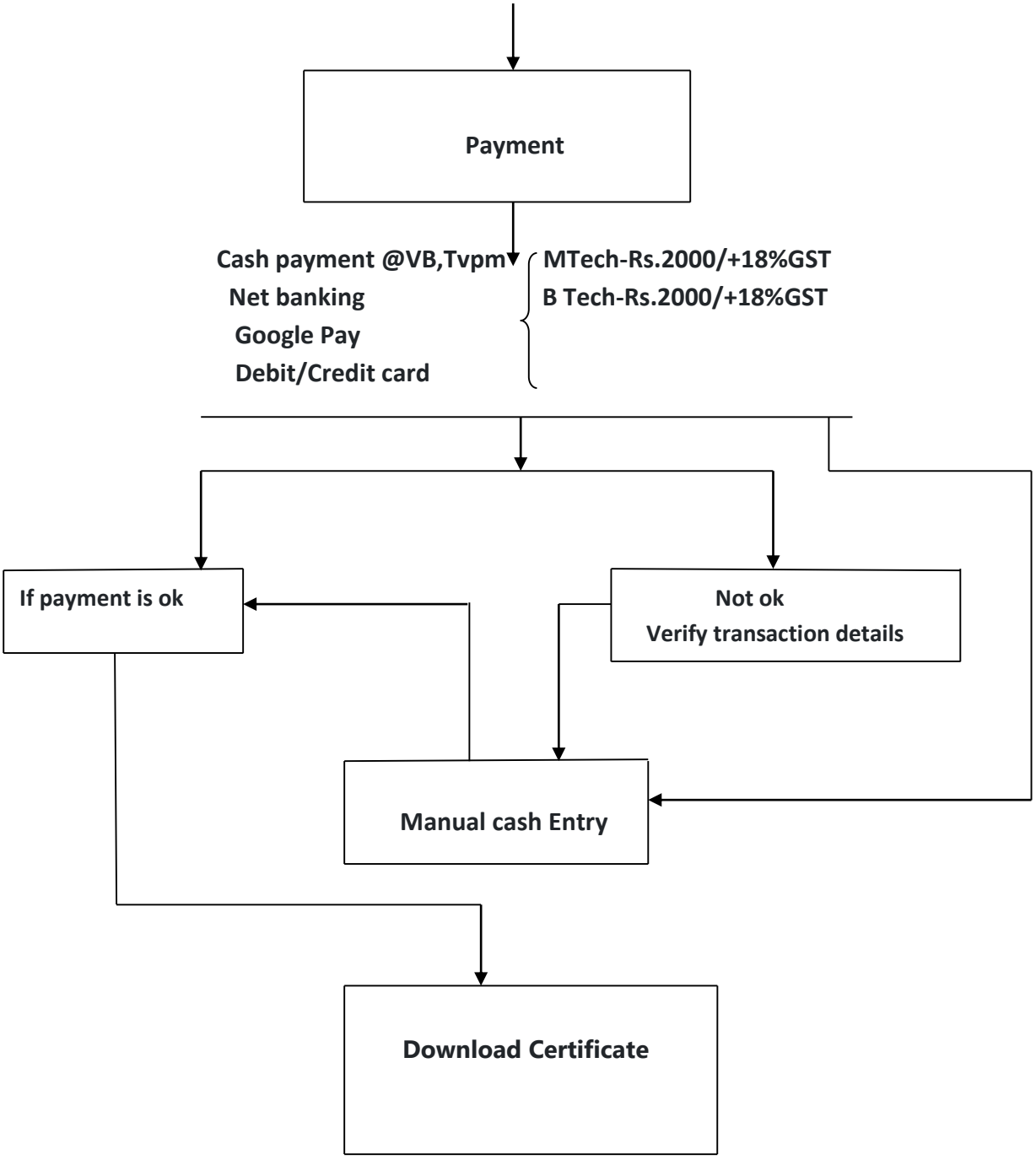



Cash payment @VB,Tvpm
Net banking
Google Pay
Debit/Credit card
MTech-Rs.500/+18%GST/day
B Tech-Rs.300/+18%GST/day
Diploma-Rs.200/+18%GST/day
ITI/VHSE-Rs.100/+18%GST/day
If payment is ok
Not ok
Verify transaction details
Manual cash Entry
Submit Application
Edit Application
Approval of Level 1
Approval of Level 2
Download Confirmation
Letter & Certificate


Tracking and Reports
Center Booking Status
Application Tracking
Payment Tracking
User Tracking
Configuration Changes Tracking
Reports- Daily Cash collection
Consolidated Reports
General Reports
All types of reports-Application id
Transaction id, external agency id
Reports-Period wise &Monthly
Configurations
Add Center Categories
Add Center
Set Center Hierarchy
Map Center Names
Add course
Add branch
Set/Revise Fee Rate
Course and Eligibility
Center configuration
Confirmation letter-Signing Authority
Add/Change Colleges
Test Facility-Email and SMS
Block/Unblock user
Set Page Access Roles
Add days

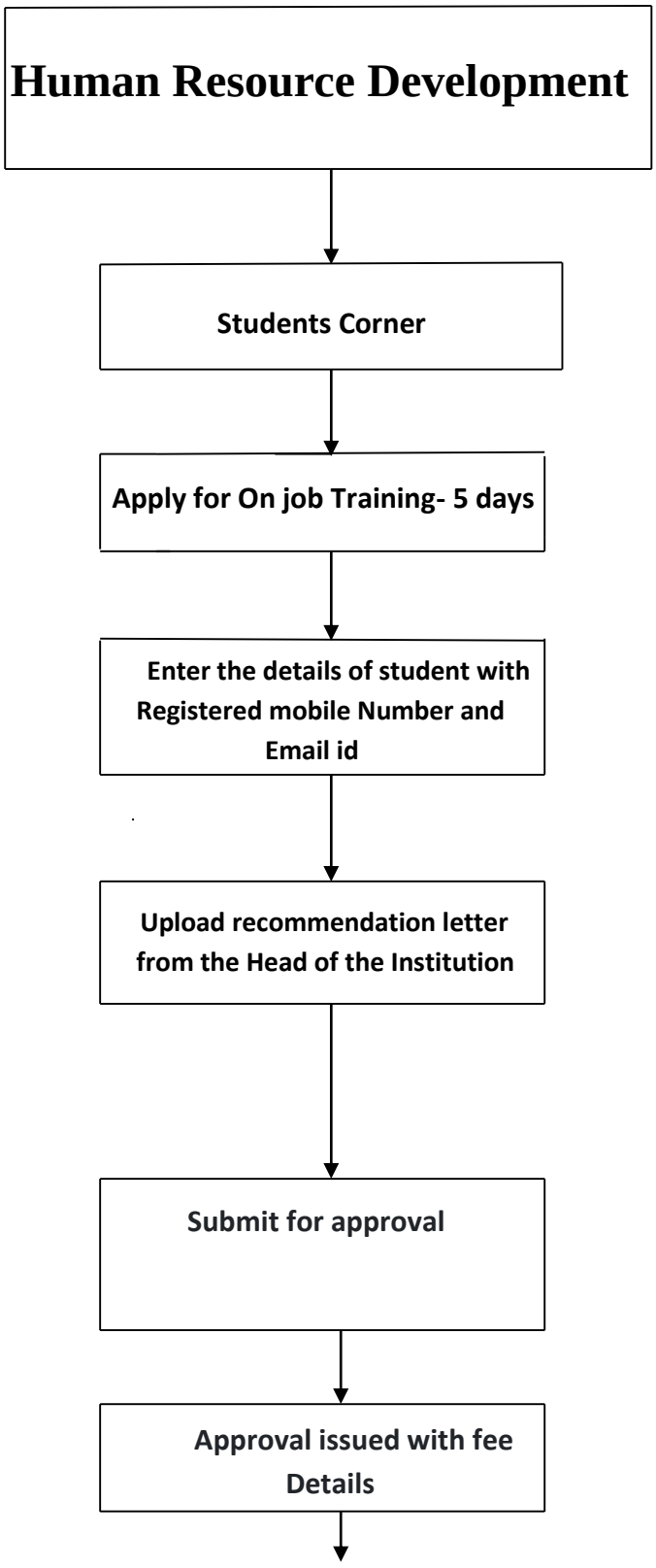
2. Project Work at KSEBL

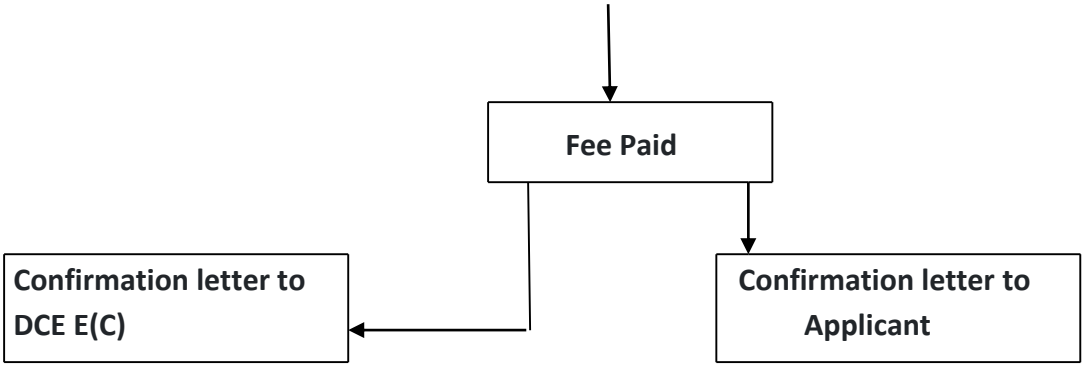



Payment
Cash payment @VB,Tvpm
Net banking
Google Pay
Debit/Credit card
MTech-Rs.2000/+18%GST
B Tech-Rs.2000/+18%GST
If payment is ok
Not ok
Verify transaction details
Manual cash Entry
Download Certificate

3. On Job Training at KSEBL

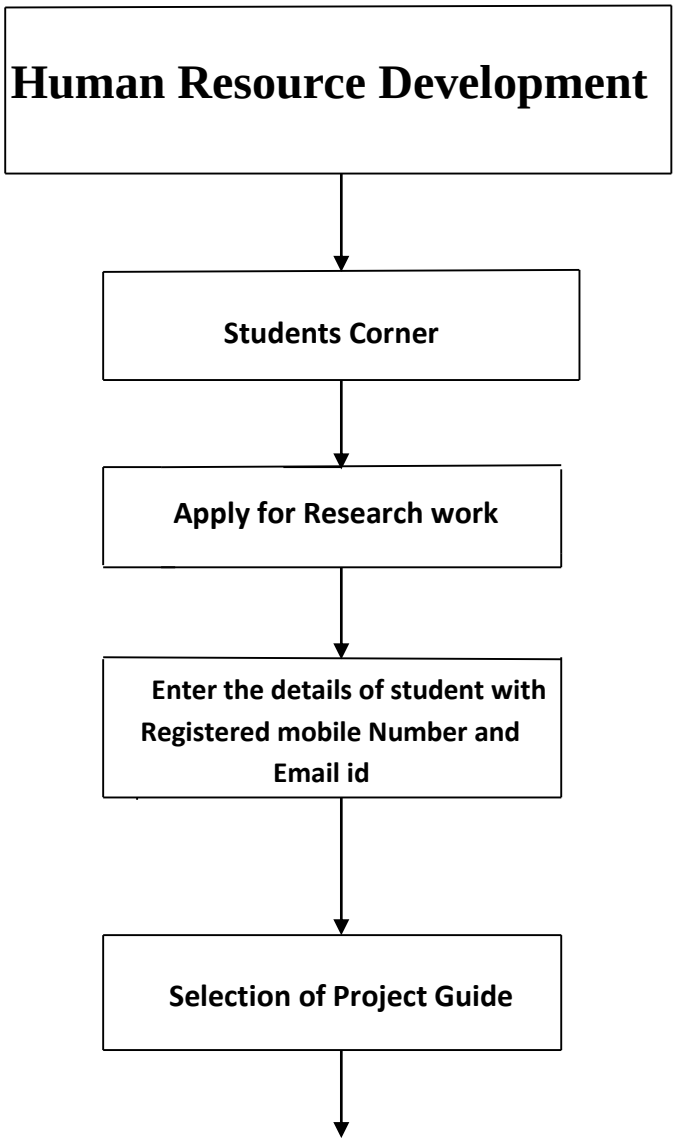
Course fee- Rs. Editable /+18% GST- 5days (ITI/VHSE)

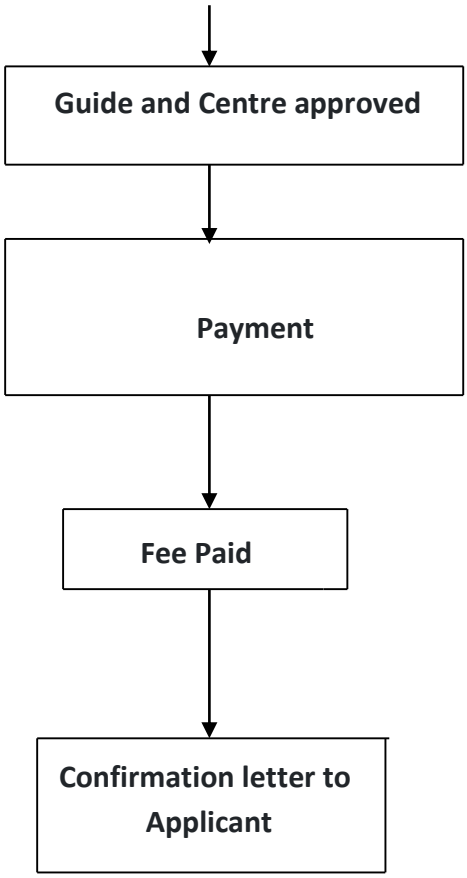




4. Research work at KSEBL

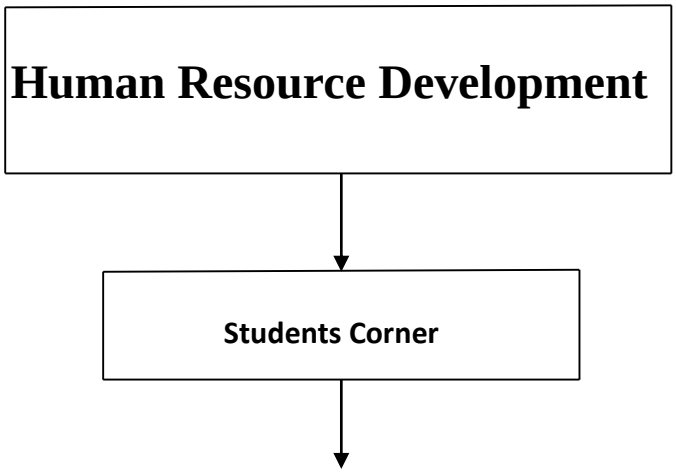
Course fee-Rs. /+18% GST- 1 Year

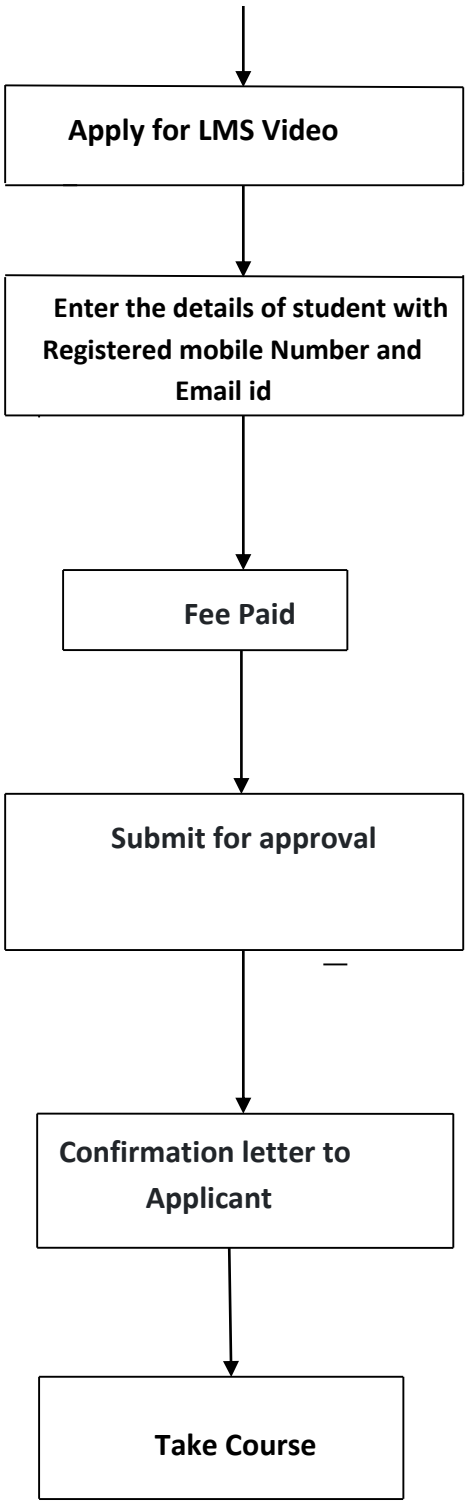




5. LMS Video

Course fee-Rs./+18% GST- Subscription for one video




Apply for LMS Video
Enter the details of student with Registered mobile Number and Email id
Fee Paid
Submit for approval
Confirmation letter to Applicant
Take Course

6. Internship at KSEBL for Engineering college faculty-Rs.600+GST

7. Internship at KSEBL for Polytechnic college faculty-Rs.500+GST

Login Required

1. **Admin Login**
2. **Authority Login- Access to Configuration**
3. **Basic User- Approval Level 1**
4. **Supervisor- Approval Level 2**