Strengthening Web-based EMIS Guidelines:

Total Allocated Grants: 3 Lakh

Major Required Activities:

a. Campus Web Based HEMIS established and online feeding and report generation in UGC suggested format.
b. Integration of campus HEMIS with University HEMIS and UGC HEMIS system with provision of online data reporting.
c. Regular updating of academic data in the campus HEMIS system and generating executive reports.

Verification Protocols:

- Establishment of web-based HEMIS URL with login access to UGC for demo.
- Campus HEMIS report publication as UGC format (50%).
- Integration of campus HEMIS to university HEMIS to UGC HEMIS (Next 50%).

Note:

1. Campuses should have a fully functional dynamic website and maintain link of HEMIS and other software as necessary, it should be kept on the official website.
2. Respective campuses should prepare and publish recent academic data in digital HEMIS report in PDF format based on the HEMIS data. The HEMIS report needs to be uploaded in the campus official website and share the report link as well as submit a digital copy to UGC.
3. The campus should complete and report both:
   a) Campus HEMIS integrating the system of online data feeding & reporting with the affiliating University as well as UGC HEMIS
   b) Digital HEMIS report publication along with the progress report to claim UGC support grant amount.
4. The campus should provide campus HEMIS software login access to UGC technical staff via email (including the provision of with data views and report generation access).
5. The Campus needs to submit to UGC attested documents regarding successful completion of Campus HEMIS integration and provision of online data feeding & reporting to University and UGC HEMIS.

❖ Campus Integrated Higher Education Management Information System (HEMIS) Structure:

Developing and establishing HEMIS on campus

The system should digitalize all the academic processes including student enrollment to pass out, capturing each of the activity stages through the campus HEMIS

The campus HEMIS should have at least the following modules☹the campus can add other necessary modules as needed)

a. Campus Registration Module:

Necessary Fields:

Information about Campus	• Name • Address (Province, District, Local Level) • Geographic location (Latitude, Longitude) • Affiliating University • Level of Study • Faculty and their offered Program details • Contact (Landline Phone, Mobile no, email) • Campus Chief Name, Contact info, email • Campus IT/EMIS focal person Detail information.
Academic program offering records	• Level • Faculty • Program offering from respective University

b. Student Management (SM) Module:

Necessary Fields:

Student Enrollment/Registration	Personal Information	• Name of Student (Nepali, English, First Name, Middle, Last Name) • Contact Number(Mobile) • Date of Birth • Gender • Caste ethnicity (Dalit, Janajati, Madhesi, Muslim, Tharu, Brahmin, Chhetri others) • EDJ • Disability Status • Citizenship • National ID • Photo • Citizenship PIC etc.
	Address Information	• Permanent Address: Province, District, Local Level, Ward no, Tole, House No • Temporary Address: Permanent Address: Province, District, Local Level, Ward no, Tole, House No

	Guardian Information	Father, Mother Name with contact no, email, occupation
	Student enrollment Academic Information (Academic Study Registration)	• Level of Study • Faculty • Program • Admission Year (Batch) • Date of Admission Academic Program Duration as set /affiliating with respective university etc.
	Student previous Academic information	• Name of Level of Study • Board/University/College • Registration • Name of institution • Attachment of Previous Studies records document etc.
Student Upgrade Module: This module will enable students to upgrade from 1 semester/year to 2nd to 3rd ……..		

c. Student Graduated Module:

Information about the number of graduate students in each year	• Gender • Cast ethnicity • Level • Faculty • Program • Commutative total based on the university board examination.

d. Add Level, Faculty and Program setup Module. Campus can add their Level, Faculty and Program affiliated from respective university.

e. Campus Physical Infrastructure Module:
Land, Infrastructure (Buildings), Vehicles, Equipment, Classrooms, Furniture etc.

f. Teachers and Staff Personal Information Management Module:

Personal Information	• Nepali, English, First Name, Middle, Last Name • Mobile Number • Date of Birth • Gender • Caste Ethnicity (Dalit, Janajati, Madhesi, Muslim, Tharu, Brahmin, Chhetri others) • EDJ • Disability Status • Citizenship • National ID • Spouse Information(Dependent) • Photo • Citizenship PIC etc.
Address Information	• Permanent Address: Province, District, Local Level, Ward no, Tole, House No

	• Current Information: Province, District, Local Level, Ward no, Tole, House No
Academic Information	• Name of Level of Study • Board/University/College • Registration • Name of institution • Attachment of Previous Studies records document etc.
Job information	• Position • Level • Job Type(Temporary, Permanent, Contract, Daily Basis) • Technical and non-technical category(i.e. for Staff) • Appointment detail with necessary document attachments.
Research and Publication	• Research and paper publication list with details

g. Student Financial Module:

- Tuition Fees
- Scholarships and Grants
- Payment History
- Payment Receipt

h. User Management and Access Control Module

Role-Based Access Control (RBAC):	• Functionality: Manages user roles and permissions across the system.
Authentication and Security	• Functionality: Ensures secure access to the system. • Features: Password management, encryption.

i. HEMIS Reporting

Analytics Module and Dashboard	Data Analytics	Provides insights and analytics based on the collected data such as Student enrollment, Graduated etc.
	Dashboard	The Infographic Dashboard should provide a graphical and tabular variety of summary and yearly trend analysis Information related to Student Enrollment, Graduated Students, and recent active academic year Level, Faculty-student enrollment, and status of Teachers and Staff information.
Type of Report	Standard Reports	Generates predefined reports for various stakeholders e.g. Student detail Reports by F.Y, Level, Faculty, Program Gender, Caste ethnicity, etc. with export report option (PDF/Excel).
	Custom Reports	Allows users to create custom reports based on specific criteria such as Student enrollment statistics by F.Y, Level, Faculty, Program etc. with data filters export report option (PDF/Excel).

j. Detail HEMIS Report Structure:

The campus HEMIS should have at least following indicator-based report format identified and suggested by UGC and the reported data should match with the data reported to the HEMIS at the University and UGC level. Finally, campus needs to prepare and publish their HEMIS report including following indicator-based summary table explanation.

HEMIS Report Structure	• Student Enrollment/Registration Detail Report By F.Y/Batch: Name (Full), Roll No, District, Local Level, ethnicity, Gender, Age, Batch Year, Faculty, Level, and Program etc. • Total no of students by Faculty and gender • Total no of students by Faculty and ethnicity • Total no of students by level and Gender • Total no of students by Program and Gender • Total no of students by Program, ethnicity and gender • Total no of students by District, ethnicity and gender • Total no of students by Province, ethnicity and gender • Total no of students by Faculty, level, Program and Local Level/Municipality • Total no of graduated Students by Faculty, program, gender and Caste Ethnicity • Student Pass Rates (%) by level, Faculty and Gender • Teachers and Staff Detail information by Name, position, Qualification, Job Type, and Appointment details. • Total no of Teachers and Staff by ethnicity and gender • Total no of Teachers and Staff by position, Job Type and gender • Campus enrollment summary report by Level, Faculty, Program, Gender and caste ethnicity • Total no of Dropout students by gender, program.

Finally, the campus should ensure their HEMIS login credential (Superadmin, Normal user name, password etc.) and should report campus data entry to respective university HEMIS and UGC HEMIS automatically in real time through online mode.

❖ Campus EMIS Report Publication Format:

(For reference you can take UGC EMIS Report 2080/81 from website)

Major Required Sections:

- **Cover Page :**(Title EDUCATION MANAGEMENT INFORMATION SYSTEM
  Report of Higher Education 2080/81 B.S (2024/025 A.D.)
- **FOREWORD** :(Message from Campus Chief and Chairman)
- **ACKNOWLEDGEMENTS**
- **ABBREVIATIONS AND ACRONYMS:**

Table of Content:

❖ Campus HEMIS Technology Standards:

I. Campus HEMIS should be centralized, integrated and modular structure with Integration, Scalability and Interoperability features, Third-party Software Integration: APIs for integrating with learning management systems (LMS), library systems, and other tools.

II. The campus HEMIS system compatibility, data synchronization, data management, reporting (campus to university to UGC) and entire software structure and process logic should at least compatible and comply with UGC newly established HEMIS.

III. UGC will verify and validate Campus HEMIS integration and online successful complete data reporting to University and UGC HEMIS and then will provide attested document to each campus about successful campus HEMIS integration and data reporting.

System Architecture	**Presentation Layer**	• Responsible, intuitive, user-driven for the user interface (UI) and user experience (UX). • Technologies: Suggest Recommended Open Source based HTML5, CSS3, bootstrap, JavaScript frameworks (React, Angular, or Vue.js).
	Application Layer	• Contains the business logic and handles requests from the presentation layer • Technologies: Backend frameworks like .NET Core, Node.js, Django, Spring Boot etc
	Data Layer	• Manages the data storage, retrieval, and management. • Technologies: Relational databases like PostgreSQL or MySQL; NoSQL databases like MongoDB for unstructured data.
API Gateway		• Manages API requests between different services and the client. • Technologies: API management tools like NGINX, or API Gateway. • RESTful APIs: For communication between client and server.
Integration of API		• **Third-Party Integration**: Functionality: Allows integration with external systems and services (e.g., government databases, payment gateways Ensure compatibility and data sharing with software like learning management systems (LMS), and financial tools if any.).
Data Migration and Synchronization		• Develop a data migration plan to transition existing data into the HEMIS database, ensuring data integrity and consistency. • Data entered in the HEMIS should automatically synchronize to the University HEMIS and UGC HEMIS in real time. UGC HEMIS does not allow to push of bulk data to the campus for reporting. It should be reported in real time when the data is entered into campus HEMIS.
Disaster Recovery and Backup		• Regular Backups: Provide backups to protect against data loss. • Disaster Recovery Plan: Develop and test a recovery plan to ensure quick restoration of services in case of system failure.

❖ **Things to consider when designing, developing and establishing a centralized, integrated web-based HEMIS on the campus.**

The Higher Education Management Information System (HEMIS) should be designed with a focus on modern, scalable, and efficient technologies to ensure robustness, flexibility, and long-term maintainability. Based on the requirements, here are some points to consider for the implementing system:

1. The HEMIS should be developed in cross-platform, open-source technology (e.g. .NET Core, Node.JS, Django, Laravel MVC supported framework for backend and PostgreSQL, MySQL, MongoDB as a database)
2. The system should be designed under JavaScript-based web designing technologies such as Anjular JS or Vue.JS, or React which are heavily used technologies nowadays.
3. The HEMIS should be integrated with the newly developed University HEMIS, and UGC HEMIS to share data in real-time via University to UGC as per UGC's reporting requirements stated above in the **detail reporting** section.
4. The campuses should share the URL (link) of HEMIS (e.g. **hemis.campusdomain.edu.np**) as a sub-domain of the campus domain which should be hosted in the government data center. UGC will facilitate the coordination and support for the domain and sub-domain.
5. The campuses should share the HEMIS link also called URL and username and password (in the given email) so that the UGC key person can review and validate the functional and non-functional requirements.
6. The system's User Interface should be attractive, mobile-first, and fully responsive.
7. Intuitive, user-driven, standardized workflow to be adopted in the system.
8. Fully used RESTful API to share data within the system and other third-party systems for instance LMS.

❖ **In the case of using the existing system if any:**

The following points should be considered and ensured by the campus chief for the continuous implementation of the existing EMIS to be integrated with UGC HEMIS (Newly developed HEMIS)

1) The respective campus should provide the system URL and its login and password to UGC. Then UGC will review, verify and validate the possibilities of integration, security level, functional and non-functional requirements, data backup, deployment environment, data storage, sustainability, compatibility, and completeness of the existing system.
2) Ensure that the existing system is fully functional, well-functioning, completely developed, scalable, and user-friendly which will be verified by UGC.
3) Ensure that the existing system is hosted under the official website domain of campus (in sub-domain) and the system should be deployed in the government database provided by the Department of Information Technology (DoIT) of the Integrated Data Management Center (IDMC) Singh durbar.
4) Ensure that the past data being reported to the UGC in the UGC's format are there in the existing system.
5) Ensure the existing system has an intuitive, standardized, and user-driven workflow.
6) Ensure the UGC Nepal provide API compatibility
7) Ensure the report generation is dynamic
8) Ensure about data backup, user log maintain with admin/super admin IP