

DATA COLLECTION FORMAT FOR SELF-STUDY REPORT (SSR) INSTITUTIONAL

SECTION A

INFORMATION FOR INSTITUTIONAL PROFILE

1. Institutional Information

Name of the Institution:

Central Department of Botany, Tribhuvan University

Place: Kirtipur

P O Box: 26429

District: Kathmandu

2. Information for Communication

a. Office

Name	Telephone with Extension Number	Fax	E-mail
Principal (Head): Prof. Dr. Mohan Siwakoti	977-1-4331322; 01-4333515	977-1-4331964	mohansiwakoti@live.com m.siwakoti@cdbtu.edu.np
Vice-Principal X			
Management Committee Chairperson	X		

b. Residence

Name	Telephone with Extension Number	Fax	E-mail
Principal (Head): Prof. Dr. Mohan Siwakoti	977-9849245299		mohansiwakoti@live.com
Vice-Principal	X		
Management Committee Chairperson	X		

3. Type of Institute (campus)

Constituent Affiliated

4. Provision of Institute (campus):

Public Community Private

5. Financial category of the Institute (campus):

Government funded Self-financing Community

6. a). Date of establishment of the Institution: 29/11/1965 (M.Sc. program)

b). University to which the Institution is affiliated: Tribhuvan University (Constituent campus)

7. Dates of UGC recognition (for foreign universities affiliated Institution): dd/ mm/yyyyX

8. Does the University Rule provide for autonomy?

Yes No If yes, has the Institution applied for autonomy? Yes No

➤ The department has academic and research autonomy as per TU rules.

9. Institution area in Ropanees/ Bighas (Katthas)/Square Meters:

➤ 14,315 Square Meters.

10. Location of the Institution (campus):

Urban Semi-urban Rural

11. Current number of academic programs offered in the Institution under the following categories: (Enclose the list of academic programs offered)

Academic Programs	Number
Certificate course (PCL 2 years)	X
Bachelors	X
Masters	2 (M.Sc. Botany; M.Sc. Biodiversity and Environmental Management-BEM).
M.Phil.	X
Ph.D.	1
Any other (specify)	
Total	3

12. List the Departments in the Institution (campus), faculty-wise:

Institute of Science and Technology	
Departments: Central Department of Botany	
Faculty of Humanities & Social Sciences	NA
Departments:	
Faculty of Management	NA
Departments:	
Faculty of Education	NA
Departments:	
Faculty of Law	NA
Departments:	
Institute of Engineering	NA
Departments:	
Institute of Medicine	NA
Departments:	
Institute of Agriculture	NA
Departments:	
Institute of Forestry	NA
Departments:	
Other Faculties:	
Departments:	

13. Give details of the self-financing courses offered by the institution (for public institutions only).

Programs	Level of Study	Cut off marks for admission at entry level in %	Student Number
Biodiversity and Environmental Management	Master	at least 35% in entrance exam	20

14. State the norms and procedures for recruitment of teaching and non-teaching staff of the Institution. (Enclose the details):

- The Central Department of Botany is under the Tribhuvan University, the Tribhuvan University has constituted Tribhuvan University Service Commission. The TU Service commission follows the criteria for recruitment and promotion of teachers as described in *Shikshhak Karmachari Sewa Sambandhi Niyam - 2073 BS* (for details: **Appendix - A, Annex – 1-I**) and *Sangathan tatha Shaikshik Prasasan Sambandhi Niyam - 2073 BS* (for details: **Appendix - A, Annex – 1-II**).
- Open competition and internal competition and special internal completion procedures are followed for recruitment and promotion of teaching staff.
- TU service commission arranges competitive written examination and interview for eligible candidates who applied for the vacant post of teaching and non-teaching staffs.
- TU service commission published vacancy announcement in its website, notice board and national daily newspaper, mentioning the number of required seats for each post.
- Applicants need to submit the application form after fulfilling all the requirements as mentioned in Application form within 35 days at service commission office after first time publication of vacancy announcement.
- Applicants need to pay examination fee as prescribed during the vacancy announcement.
- The service commission published the list of eligible candidates at least 15 days before the examination.
- Written examination is compulsory for first time entry at University service for the post of Lecturer and lower post. The eligible candidate after successfully completing the written examination also needs to compete at interview for final selection.
- Promotion of teachers is based on the competitive evaluation from interview, year of experience, academic performance from SLC to Ph.D., research publications, supervision and performance appraisal of respective working station.
- TU service commission recommends the successful candidates to Executive Council of Tribhuvan University chaired by Vice Chancellor for appointment to positions of teaching and administration.
- To complete the whole process usually takes six months to one year.
- Research assistants under the projects running in the department are recruited under the policy of specific project and the department (procedure is given in **Appendix – A, Annex – 4**).

15. Number of permanent and temporary teaching staff at present:

Particulars	Disadvantaged Janajatis		Others		Grand Total
	F*	T*	F*	T*	
Permanent teachers (Total)	2	6	2	13	19
No. of teachers with PhD	2	6	2	13	19
No. of teachers with M Phil	0	0	0	0	0
No. of teachers with Masters	0	0	0	1	1*
No. of teachers with Bachelor	0	0	0	0	0
Temporary Teachers (Total)	0	0	0	0	0
No. of teachers with PhD	0	0	0	0	0
No. of teachers with M Phil	0	0	0	0	0
No. of teachers with Masters	0	0	0	0	0
No. of teachers with Bachelor	0	0	0	0	0
Part Time Teachers* (Total)					
Part-time teachers with PhD	0	0	0	0	0

Part-time teachers with MPhil	0	0	0	0	0
Part-time teachers with Masters	0	0	0	0	0
No. of teachers with Bachelors	0	0	0	0	0

- * *F = Female* * *T = Total*
- * *Final stage to submit the Ph.D. thesis*

Give the details of average number of hours/week (class load)

Professors 12

Associate Professors 12

Lecturers 12

Teaching Assistants

Part-time teaching Assistants

Twelve class hours per each teacher is assigned as per TU regulations at Master level class except M. Sc., Ph.D. dissertation work. However, teachers are taking more than 12 class hours/week, similarly the class load of part - time teacher depends on the assigned course.

16. Number of members of the non-teaching staff of the Institution at present:

Particulars	Disadvantaged Janajatis		Others		Grand Total
	F	T	F	T	
Administrative Staff	3	6	3	7	13
Technical Staff	x	1	x	3	4

17. Regional profile of the students enrolled in the institution for the current academic year:

No of Students Enrolment From...	UG		M.Sc.		MPhil		PhD		Diploma/Certificates (2/3 Years)		Self-Financing (BEM)	
	F	T	F	T	F	T	F	T	Female	Total	F	T
Same region where the institution is located			2	2							8	2
Other regions			2	3								
			2	4								
SAARC countries												
Other countries												
Disadvantaged/Janajatis			7	1							1	3
				0								

18. Details of the last two batches of students:

Particulars	Batch 1: Year of entry: 2072/2074			Batch 2: Year of entry: 2073/2075			Batch 2: Year of entry: 2074/2076		
	BEM	M.Sc. Bot.	Total	BEM	M.Sc. Bot.	Total	BEM	M.Sc. Bot.	Total
Admitted to the program	17	35	52	11	35	46	9	35	44
Drop-outs									
a. Within four months of joining									
b. After wards	-		1			2			
Appeared for the final year examinations			51			44			44

Passed in the final examinations							Exam waiting		
Pass % (Total)	100	100	100	100	97.1	97.1			
Pass %, (First class)*	90	90	90	90	67	67			
Pass %, (Second class)*	10	10	10	10	33	33			
Pass %, (Third class)*	-	-	-		-	-			

* For other types of evaluation system such as GPA, provide respective grades and brief explanation about their ranges in percentage.

From 2013, GPA system is followed in Semester system at M.Sc. Botany and M.Sc. BEM. The percentage of marks is converted into following Grading rank (CGPA):

- 90 and above 4 A Distinction
- 80-89.9 3.7 A- Very Good
- 70-79.9 3.3 B+ First Division
- 60-69.9 3.0 B Second Division
- 50-59.9 2.7 B- Pass in individual paper
- Below 50 0 - Fail.

Results based on GPA System of M.Sc. Botany Students appear in the First Semester Final Examination 2072-2074

Pass	Grade	Number of students	Percentage (%)
Pass (%)	A	0	0
	A-	9	27.27
	B+	24	72.73
	B	0	0
	B-	0	0
<i>Total number of students</i>		<i>35</i>	<i>97.1%</i>

19. Give a copy of the last annual budget of the Institution with details of income and expenditure. (Appendix - I, Annex - 1)

20. What is the institution's 'unit cost' of education? [unit cost = total annual expenditure budget (actual) divided by the number of students enrolled]. Also, give unit cost calculated excluding salary component.

- Unit cost=1,60,715/- NRs/Year/Student; Unit cost excluding salary= 21,484/- NRs/Year/Student. The income from overhead of project cost is not calculated, if calculation of overhead of projects in Department is made then the unit cost excluding salary would be more i.e. addition of about 10,000/-NRs/year /student.

21. What is the temporal plan of academic work in the Institution (campus):

Semester System Annual System Any other (specify)

22. Tick the support services available in the Institution (Kirtipur Campus) from the following:

- | | | | | | |
|---------------------|-------------------------------------|---------------------------|-------------------------------------|---------------------------|-------------------------------------|
| Central library | <input checked="" type="checkbox"/> | Computer Centre | <input checked="" type="checkbox"/> | Health center | <input checked="" type="checkbox"/> |
| Sports facilities | <input checked="" type="checkbox"/> | Press | <input checked="" type="checkbox"/> | Workshop | <input type="checkbox"/> |
| Hostels | <input checked="" type="checkbox"/> | Guest house | <input checked="" type="checkbox"/> | Housing | <input type="checkbox"/> |
| Canteen | <input checked="" type="checkbox"/> | Grievance redressal cell | <input type="checkbox"/> | Common room for students' | <input type="checkbox"/> |
| Any other (specify) | | University Botanic Garden | <input checked="" type="checkbox"/> | | |

23. Whether a duly formed Institution Management Committee in place?

Yes No , If yes provide the composition of the committee in separate sheet

- Committees formed for procurement, subject committee, research as specific task, construction and development which are given below:

Procurement Committee for Purchase of Chemicals and Scientific Equipment

- | | |
|------------------------------------|-------------|
| 1. Prof. Dr. Mohan Siwakoti | Coordinator |
| 2. Dr. Bharat Babu Shrestha | Member |
| 3. Dr. Sanjay Kumar Jha | Member |
| 4. Dr. Giri Prasad Joshi | Member |
| 5. Mr. Prakash Krishna Karmacharya | Member |
| 6. Mr. Min Bahadur Khatri | Member |
| 7. Mr. Shailendra Kumar Singh | Member |

Research Committee (Central Department Research Committee - CDRC)

- | | |
|-----------------------------------|----------|
| 1. Prof. Dr. Mohan Siwakoti | Chairman |
| 2. Prof. Dr. Sangeeta Rajbhandary | Member |
| 3. Prof. Dr. Mukesh Kumar Chhetri | Member |
| 4. Prof. Dr. Bijaya Pant | Member |
| 5. Dr. Suresh Kumar Ghimire | Member |

Botany Subject Committee

- | | |
|--|----------|
| 1. Prof. Dr. Mohan Siwakoti (CDB) | Chairman |
| 2. Prof. Dr. Mohan Prasad Panthi (CDB) | Member |
| 3. Prof. Dr. Mukesh Kumar Chhetri (ASCOL) | Member |
| 4. Prof. Dr. Sangeeta Rajbhandary (CDB) | Member |
| 5. Prof. Dr. Dr Ram Kailash Prasad Yadav (CDB) | Member |
| 6. Prof. Dr. Bijaya Pant (CDB) | Member |
| 7. Prof. Dr. Kanta Paudel (ASCOL) | Member |
| 8. Dr. Suresh Kumar Ghimire (CDB) | Member |
| 9. Dr. Chitra Bahadur Baniya (CDB) | Member |
| 10. Head, Botany Department (PG Campus, Biratnagar) | Member. |
| 11. Head, Botany Department (Siddhanath Science Campus, Mahendranagar) | Member. |
| 12. Head, Botany Department (Tri-Chandra Campus, Ghantaghar) | Member. |
| 13. Head, Botany Department (Patan Campus, Patan) | Member. |
| 14. Head, Botany Department (PN Campus, Pokhara) | Member. |
| 15. Head, Botany Department (Butwal Campus, Butwal) | Member. |
| 16. Head, Botany Department (RRMC Campus, Janakpur) | Member |
| 17. Prof. Dr. Siddhibir Karmacharya (Khopa College) | Member |
| 18. Dr. Bishwo Nath Oli (Secretary, Ministry of Forests and Env.) | Member |
| 19. Dr. Maheshwar Dhakal (Joint-Secretary, Ministry of Forests and Env.) | Member |
| 20. Director General (Department of Plant Resources, Thapathali) | Member |

Botany Subject Standing Committee

- | | |
|---------------------------------------|----------|
| 1. Prof. Dr. Mohan Siwakoti | Chairman |
| 2. Prof. Dr. Mohan Prasad Panthi | Member |
| 3. Prof. Dr. Mukesh Kumar Chhetri | Member |
| 4. Prof. Dr. Sangeeta Rajbhandary | Member |
| 5. Prof. Dr. Ram Kailash Prasad Yadav | Member |

Examination Committee

1. Prof. Dr. Mohan Siwakoti
2. Dr. Sanjay Kumar Jha
3. Mr. Mukti Ram Paudel

Student Scholarship Committee

1. Prof. Dr. Mohan Siwakoti
2. Prof. Dr. Mohan Prasad Panthi
3. Prof. Dr. Sangeeta Rajbhandary
4. Mr. Prakash Krishna Karmacharya (Account officer)
5. Mr. Min Bahadur Khatri (Section Officer)
6. Mr. Janak Parajuli (Senior Administrative Assistant)
7. Mr. Benup Raj Adhikari (BOSS President -student representative).

Education Information Management System Committee (EIMS)

1. Prof. Dr. Mohan Siwakoti
2. Dr. Lal Bahadur Thapa
3. Dr. Narayan Ghimire
4. Ms Radha Sharma

Students Carrier Counseling Committee

1. Prof. Dr. Bijaya Pant
2. Prof. Dr. Haridatta Bhattarai
3. Dr. Bharat Babu Shrestha

Department Physical Properties Samparichhyan Committee

1. Prof. Dr. Mohan Siwakoti
2. Prof. Dr. Mohan Panthi
3. Mr. Prakash Krishna Karmacharya (Account officer)
4. Mr. Min Bahadur Khatri (Section Officer)
5. Mr. Janak Parajuli (Administration section)

Internal Quality Assurance Committee

1. Prof. Dr. Mohan Siwakoti (Coordinator)
2. Prof. Dr. Mohan P. Panthi
3. Prof. Dr. Sangeeta Rajbhandary
4. Prof. Dr. Ram Kailash Prasad Yadav
5. Prof. Dr. Bijaya Pant
6. Dr. Suresh Kumar Ghimire.

Project Management Committee

1. Prof. Dr. Mohan Siwakoti (Head of Department) – Chairperson
2. Faculty member related to project (Coordinator) – Member Secretary
3. Faculties (2 members) – there may be different faculties in each project
4. Mr. Prakash Krishna Karmacharya (Account officer) - Member
5. Mr. Min Bahadur Khatri (Section officer/Store officer)- Member

24. Furnish the following details (in figures) for the last three years:

Particulars	Figures
Working days of the college	280 days/Year
Working days of the library	280 days/Year
Teaching days of the college against the standard	180 days/Year
Books in the departmental library	1613 Books
<u>Journals/Periodicals subscribed by the library</u> National: International:	Most of national journals related to botany and some international journals are subscribed by Department library, however, Tribhuvan University Central library has a facility of e-library and lunch a NEPJOL online site for National journals.
Computers in the college	Ca. 25
Research projects completed and their total outlay	5 (ca. 50000000)
Teachers who have received national recognition for teaching/research/consultancy	10
Teachers who have received international recognition for teaching/research/consultancy	9
Teachers who have attended international seminars	16
Teachers who were resource persons at national seminars/workshops	16
No of hours of instruction against the plan	12-14/week/person

25. Give the number of ongoing research projects and their total outlay.

List of ongoing projects at Central Department of Botany has been given as follows:

1. Transiting to green growth in Nepal

Objective: Assess the sustainability of harvest of valuable commercial MAP species

Duration: 2014-2018

Principal Investigator: Dr. Suresh Kumar Ghimire

Project Members: Dr. Chitra Bahadur Baniya, Dr. Bharat Babu Shrestha, Prof. Dr. Mohan Siwakoti and Prof. Dr. Pramod Kumar Jha.

PhD Students: Mukti Ram Paudeyal and Deep Jyoti Chapagain

Grant support: DANIDA Fellowship Centre

Collaborators: Copenhagen University, Denmark, Agriculture and Forestry University, Nepal, Federation of Community Forestry Users, Nepal (FECOFUN) Federation of Community Forestry Users, Nepal (FECOFUN), and Kunming Institute of Botany, China.

2. Assessment of invasive alien species distribution in the Chitwan-Annapurna Landscape (CHAL) region Nepal.

PI and National Project Co-coordinator: Prof. Dr. Pramod Kumar Jha

Project team: Prof. Mohan Siwakoti, Dr. Bharat Babu Shrestha, Dr. Anjana Devkota, Dr. Sanjay Kumar Jha.

Ph. D. students: Dol Raj Luitel, Sreejana Shrestha and Anju Paudel.

M.Sc. students: Sita Gyawali, Shrijana Poudel, Himlal Younzan, Sandeep Dhakal and Abhishek Singh.

Grant support: feed the future USAID IPM Innovation Lab, USA.

Collaborators: Virginia Polytechnic Institute and State University, USA; and Tribhuvan, University (Central Department of Botany).

3. **Jaibik Map: Nepal's Biodiversity and Climate Change Tool for the Future**
Objectives: To conduct a nationwide study of forest change under climate change scenario and establish a visual representation mammalian species in Nepal
Duration: December 2016–November 2018
Principal Investigator: Prof. P. K. Jha
Project Team: Prof. Mohan Siwakoti, Dr. Chitra Bahadur Baniya
Grant Support: National Academy of Sciences/USAID
Collaborators: IUCN Nepal, US Government supported (or GE-designated): National Academy Sciences; Department of National Parks and Wildlife Conservation, Ministry of Forests and Soil Conservation; Kathmandu Living Lab.
4. **Science-based interventions reversing negative impacts of invasive plants in Nepal**
Objective: Restoration of native vegetation replacing invasive alien weeds
Duration: 2016-2019
Project PI: Dr. Mark Watson
Project team from the Department: Prof. Dr. Mohan Siwakoti (CoPI) and Dr. Bharat Babu Shrestha (Key contact)
Student research assistants: Bhawani Nyaupane, Ganesh D Joshi and Rashmi Paudel
Grant support: Darwin Initiative, UK
Collaborators: Royal Botanic Garden Edinburgh (UK), Central Department of Botany TU, Department of Plant Resources, Nepal Academy of Science and Technology (NAST), and Forest Action.
5. **Effects of air pollution on roadside vegetation (shrubs) in Kathmandu Valley**
Duration: 2016-2018
Research Team Members: Anjana Devkota (Principal investigator), Bharat Babu Shrestha (Co-investigator)
Student Research Assistants: Sushila Devi Shrestha and Sumant K Ranjan
Grant support: University Grants Commission, Nepal
6. **Enhancing degradation of *Eichhornia crassipes* (Mart.) Solms. compost with lignocellulolytic fungi and its potential use as commercial mushrooms substrate**
Duration: 2016-2018
Research Team Members: Dr. Sanjay Kumar Jha (Principal Investigator), Dr. Chandra Pokhrel, Antita Kharbuja and Menuka Gotame
Grant support: University Grants Commission, Nepal
7. **Strengthening Capacities for Implementation of the Nagoya Protocol in Nepal.**
Objective: A Collaborating Technical Partner with IUCN Nepal to implement this GEF project activity
Duration: 2017-2018.
Coordinator: Prof. Dr. Mohan Siwakoti
Research Team Members: Prof. Dr. Mohan Prasad Panthi, Prof. Dr. SangeetaRajbhandary, Dr. Suresh Kumar Ghimire
M.Sc. Students: Ashis Prakriti Dhital, Bijay Khadka, Dhurba Khakurel and Sangram Karki

8. **Evaluation of Anticancer Properties of Some Medicinal Orchids of Nepal and Mass Scale Propagation of Identified Species.**

Duration: 2017-2018.

Grant support: University Grants Commission, Nepal

Coordinator: Prof. Dr. Bijaya Pant

Research Team Member: Dr. Krishna Kr. Pant, Dr. Giri Prasad Joshi, Dr. Shreeti Pradhan

M.Sc. Students: 3-4 students working in this project

9. **Antioxidant, Antimicrobial and Antidiabetic Activities of Plant Extract of Selected Species of *Berberis* of Nepal.**

Duration: 2017-2018.

Grant support: Nepal Academy of Science and Technology, Nepal

Coordinator: Dr. Deepak Raj Pant.

10. **Alien Plant Invasion in Nepal: Mechanisms, Impacts and Solutions**

Duration: (2017-2019)

Grant support: University Grants Commission, Nepal

Principal Investigator: Dr. LB Thapa

Co-Investigator: Mr. Gunanand Pant (Lecturer - Kailali Multiple Campus, Dhangadhi, Kailali)

Thesis Students: Mr. Tej Prakash Darji and Seeta Pathak (M.Sc.)

11. **Phytochemical screening of different species of *Swertia* from Nepal Himalaya**

Duration: (2017-2019)

Grant support: University Grants Commission, Nepal

Principal Investigator: Dr. Deepak Raj Pant

Co-Investigator: Mr. S.B. Chaturbedi

12. **Species Colonization pattern along Glacier forelands of Bhimtang Area, Manang, Central Nepal (2017-2019)**

Grant support: University Grants Commission, Nepal

Principal Investigator: Dr. Chitra Bahadur Baniya

Co-Investigator: Mr. Pitamber Pant

13. **Screening of extracts of selected indigenous plant species for anti-diabetic activities *in vitro***

Duration: (2017-2018)

Grant support: Ministry of Science and technology and Environment

Principal Investigator: Dr. Deepak Raj Pant

Co-Investigator: Dr. B. Aryal

The total outlay is ca. Rs. 2, 30,00000.00

26. **Does the Institution have collaborations/ linkages with international institutions?**

Yes No If yes, list the MoU signed and furnish the details of active MoU along with important details of collaborations.

➤ International collaborators and MoU are given in the **Appendix – F, Annex – 1** and also mentioned in the Prospectus (**Appendix – E, Annex - 3**).

Italy: Padova University- Academic exchange and cooperation in research, MoU renew in process

Denmark: University of Copenhagen- Collaboration on scientific research.

USA: University of North Dakota.

USA: Cornell University- Academic exchange and cooperation in education Norway:

University of Bergen, Academic collaboration on education and research (with Tribhuvan University)

Switzerland: Swiss National Science Foundation (SNSF), collaborative research

India: Jawaharlal Nehru University- Cooperation in mutually interested academic area (with Tribhuvan University)

China: Chinese Academy of Sciences (Tribhuvan University), Kunming Institute of Botany (Co-operation in mutually interested academic and research areas.

(Please see the list: Prospectus, 2017, page 31-32, **Appendix – E, Annex - 3**).

27. Does the management run other educational institutions besides the college?

Yes No If yes, give details.

28. Give details of the resources generated by the college last year through the following means:

Source of Funding	Quantum (NRs.)
Fund Raising drives	X
Alumni Association	X
Consultancy	X
Self-financing courses (Student fees)	821250.00 M.Sc. BEM
Fees from regular programs	78000 X 35 = 2730000 Botany
Any others (Overhead from research projects)	400000.00/Year

SECTION B

BENCHMARK-WISE INPUTS FOR INSTITUTIONAL SSR

CRITERION 1: POLICY & PROCEDURES (15 MARKS)

Yes, with justification = 1, Yes without justification = 0.5, and No = 0, otherwise stated

1. Are there clearly defined goals, objectives and standards of the Institution (college) in written?

Yes No If yes, mention the document and attach the material.

Central Department of Botany follows the vision and mission of Tribhuvan University, Institute of Science and Technology, based on it, department adopts the following vision, mission and objectives.

- **Vision:** Vision of Central Department of Botany is to conduct innovative research, teaching and outreach on the patterns and processes of life with a focus on plants and their environment.
- **Mission:** The mission of Central Department of Botany is to foster an environment of excellence by attracting and supporting the outstanding students, faculty and staff needed to sustain our vision. The department focuses on the patterns and processes that enable predictive understanding of plants and their environments at local, regional, and global scales, leading to strengths in the areas of ecology, evolution, and systematic.
- **Objectives:** Main objective of the Department is to
 - a. Conduct innovative researches in the field of botany.
 - b. Make the department as an excellent teaching and learning center of plant sciences.
 - c. Produce highly skilled personnel and experts in the field of Botany
 - d. Explore Nepal's plant wealth and establish intricate relations between plants, people and environment

Central Department of Botany shares the goals, objectives and standards of Tribhuvan University.

- a. **Goal 1:** Create an environment in which students develop intellectually, socially, and personally and inculcate moral values and sense of responsibilities.
- b. **Goal 2:** Increase research activities
- c. **Goal 3:** Increase Departmental publications.
- d. **Goal 4:** Create an environment in which faculty and staff are valued and appropriately rewarded.
- e. **Goal 5:** Engage the campus community in a comprehensive effort to increase administrative efficiency and effective use of resources.
- f. **Goal 6:** Play a key role in national development.
- g. Please, see **Tribhuvan University, Today-2075, Appendix – A, Annex – 2.**

2. Are there clearly defined plans and programs to achieve its specific goals, objectives and standards?

Yes No If yes, mention the document and attach the material.

- The department has developed a strategic plan to fulfill the specific goals, objectives and standards
 - **Goal 1:** Create an environment in which students develop intellectually, socially, and personally and inculcate moral values and sense of responsibilities.

- Strategy 1: Continue to review and strengthen academic programs.
- Strategy 2: Make the program to meet international standard.
- **Goal 2:** Increase research activities
 - Strategy 1: Increase external funding by broadening the base of support through increased funded research activities and sponsored programs through the collaboration with national and international academic and research institutions.
 - Strategy 2: Strengthen PhD program and attract young national and international Ph.D. students and avail the scholarship to the students through national and international collaboration for research funding to work in home and abroad.
 - Strategy 3: Activate the alumni of the Department in order to get some academic and research supports.
- **Goal 3:** Increase Departmental publications.
 - Strategy 1: Strengthen the B.Sc. program of TU through orientation for teachers, writing text and reference books, organise seminars, etc., which will help to have good students for M.Sc. level.
 - Strategy 2: Continue the publication of the journal “Botanica Orientalis” and the newsletter “Vanaspati”.
 - Strategy 3: Encourage faculty members to publish research papers in national and international publication (at present 45 papers per year, should increase by 10% every year).
 - Strategy 4: Students are encouraged to publish their thesis work.
 - Strategy 5: Publication of Abstract book (from M.Sc. and Ph.D. dissertation).
 - Strategy 6: Publication of Practical Manual
- **Goal 4:** Create an environment in which faculty and staff are valued and appropriately rewarded.
 - Strategy 1: Appropriately reward faculty and staff to optimize human resources.
 - Strategy 2: Conduct training, orientation and professional development for faculty and staff in accordance with appropriate needs and interests to optimize human resources, not only for the faculty members of the Department but also teaching staff from other campuses of Tribhuvan University as well.
- **Goal 5:** Engage the campus community in a comprehensive effort to increase administrative efficiency and effective use of resources.
 - Strategy 1: Review existing administrative processes and functions for potential of improving efficiency.
 - Strategy 2: Appropriately reward administrative staff to optimize human resources.
- **Goal 6:** Play a key role in national development.
 - Strategy 1: Contribution in publication of the Flora of Nepal (remaining 9 volumes) in collaboration with national and international partners.
 - Strategy 2: To assist and provide suggestion and recommendation to the government whenever needed for policies and strategies related to plant biodiversity.
 - Strategy 3: To assist the government or other organization in research related to plant biodiversity.

3. Are there duly formed organizational structures where the policies of the Institution are formulated, reviewed and updated?

Yes No If yes, mention the organizational chart and member compositions.

The organization of the Tribhuvan University shall be as follows. These collectively form the structure of the University as follows:

- University Assembly
- Academic Council
- Executive Council
- Service Commission
- Institute
- Faculty
- Departments
- Constituent Campus (Constituent College)
- Affiliated Campus (Affiliated College)
- Research Center and
- Other bodies.

The University shall have the office-bearers as follows:

- Chancellor (Prime Minister of Nepal)
- Pro-chancellor (Education minister)
- Vice-chancellor
- Chairperson, Service Commission
- Rector
- Registrar
- Dean
- Executive Director
- Assistant Dean
- Campus (College) Chief
- Other prescribed office-bearers.

- Tribhuvan University Act 2049/1992 has defined it (for detail Tribhuvan University Act 1992 attached here with **Appendix – A, Annex 3**).

4. Has the Institution adopted any mechanism/process for internal quality monitoring and checks?

Yes No Justify it

The department has Internal Quality Assurance Committee (IQAC) with 6 members as follows:

1. Prof. Dr. Mohan Siwakoti (Coordinator)
2. Prof. Dr. Mohan P. Panthi
3. Prof. Dr. Sangeeta Rajbhandary
4. Prof. Dr. Ram Kailash Prasad Yadav
5. Prof. Dr. Bijaya Pant
6. Dr. Suresh Kumar Ghimire.

The roles and responsibilities of IQAC are as follows:

- Implement the department and university decisions
- Monitoring the departmental activities such as research, teaching, examinations, maintenance etc.
- Coordination with different committees such as Subject committee, Research committee,

- Examination committee, EMIS committee, for the betterment of the department.
- Monitoring and coordination with departmental units (Plant systematics, Biotechnology, Ecology, Plant Pathology), to get the updates of classes and students' performance.
 - Manage activities of faculty and students with coordination to Head of Department, Unit coordinators and Student leaders.

5. Is there any document of the college to specify the job responsibilities of departments, units and individuals?

Yes No If yes, give details.

- Tribhuvan University has definite Act, rules, regulations, and decisions of executive council, Academic council and faculty board in which the responsibility of every component has been clearly mentioned (for detail Tribhuvan University Act 1992, Academic and Administrative Regulation 2073 BS. **Appendix – A, Annex – 1-I, 1-II and 3**).

6. Is there any defined and written scheme to evaluate the pre-defined job responsibilities of departments, units and individuals?

Yes No If yes, produce those schemes and examples of some practices

- The job responsibilities or performance appraisal of teaching and non-teaching staff is evaluated by Department Head and the evaluation score is also incorporated in the examination of TU service commission (internal) for getting promotion.

7. Does the college possess the latest managerial concepts such as strategic planning, teamwork, decision-making, computerization and others?

Yes No If yes, give justifications

- Head of Department develop strategic plans following the guidelines of Tribhuvan University and discuss it with teaching and non-teaching faculties in departmental meetings and decide to implement.
- Department develops class routine in each semester defining the responsibilities of specific teacher to implement the syllabus (Class routine, **Appendix – B, Annex - 1**).

8. Does the college have program(s) to strengthen the regular academic programs through other complementary systems like self-financing programs/courses and others?

Yes No If yes, give details.

- The Central Department of Botany has started Master's program in **Biodiversity and Environmental Management (BEM)** since January 2008. In the beginning 2008-2013 the BEM Program was conducted in collaboration with University of Bergen (UiB), Norway and with regional partners in India (Jawaharlal Nehru University and Kumaon University) and China (Kunming Institute of Botany). With completion of the course by three batches (2008-2013), the support from NOMA and UiB, Norway terminated in December 2013. Since 2014, CDB has been continuing this program with its internal resources and student's fee.
- The Central Department of Botany also organizes short term courses of Research Methodology, GIS and Remote Sensing for M.Sc. and Ph. D. students, and EIA for M.Sc. Biodiversity and Environmental Management students (BEM). It also organizes training programs in different disciplines including research methodology and the Flora of Nepal writing to the botanists of Tribhuvan University and Department of Plant Resources of the Ministry of Forests and Soil Conservation, and Nepal Academy of Science and Technology in collaboration with Department of Plant Resources and NAST. Grass Identification Training for Departmental taxonomy and ecology students, staff of Amrit Campus and Department of Plant Resources. Plant Illustration training for Botany students in Collaboration with Royal Botanic Garden Edinburgh, UK to develop manpower for Flora writing.

9. Are there any written provisions under which the college brings “stakeholders or community feed backs and orientation” in its activities?

Yes No If yes, give details.

Central Department of Botany always appreciates feedbacks from its stakeholders or community. The department has its own face book page (CDB-TU) which is one of the important sources of feedback. Oral and written feed backs are accepted directly through department administration as well as there is a complain box in the department. The department responses each feedback for the betterment of the department. Apart from that students provide the feedback during the interaction meetings, formal and informal department programs and written papers.

10. Were any committees/external agencies appointed during the last three years to improve the organization and management?

Yes No If yes, what were the recommendations?

11. Are the students involved in college management system and quality assurance?

Yes No If yes, give details.

Botanical Students Society (BOSS) is formed every year which involves students in departmental activities. BOSS also gives feedback for quality improvement of Department's academic activities through interactions and meetings with Head of Department, Unit Coordinators and all teachers and staff for quality assurance.

12. Has there been an academic audit by the university?

Yes No Justify it.

Internal and external monitoring and time to time inspection visits made by the authorities especially from Dean's office and Monitoring Division of Tribhuvan University. The department has given responsibility to EMIS committee to analyze the academic results. The department has tried to keep records and analyze the details of passed out students through Tracer Study. Department newsletter (*Vanaspati*) covers all departmental activities of each year, it provides the information as an academic audit (**Appendix - E, Annex - 2**)

13. Is there any specific mechanism to combine teaching and research?

Yes No If yes, give details

- The course is designed in a way to support research through teaching. In the final year, dissertation is compulsory to all students. In addition, every semester field work for 2 weeks designed in the Courses. Students are also involved in the research projects of department. The department also organizes research methodology course for one to two weeks regularly.
- Department has Research Committee (CDRC) Subject Committee and Project Management Committee (Names of members has been given in Section A, Q. No. 23) which have responsibilities to combine teaching and research.

14. Have you observed any positive outcomes of combination of teaching and research?

Yes No If yes, give details.

- Product of the department showed good performance to get scholarships through international and national competitions.
- Faculties and students of the department have accomplished various projects, participated national and international conferences/workshops/seminars, and presented their research papers and published books as well as research papers in national and international journals (List of publications has been given in **Appendix - B, Annex - 2**)

15. Provide institution specific other innovations which have contributed to its growth.

- Central Department of Botany (Tribhuvan University) is one of the collaborators (National: Tribhuvan University, Ministry of Forests and Environment, Nepal Academy of Science and Technology; International: Royal Botanic Garden UK and Tokyo University, Japan) for the publication of Flora of Nepal. In collaboration with other partners the Flora of Nepal Volume 3 and Companion Volume is already published (**Appendix – C, Annex - 1**).
- The department has published 9 books (Books are in **Appendix – C, Annex 1 – 9**).
- Faculties and students have published their research and innovation in various national and international journals (List of publication has been given in **Appendix – B, Annex - 2**).
- Department prepared and submitted a plan for development of Tribhuvan University Botanical Garden (**Appendix – H, Annex - 2**).
- The department has regularly organized National and International conferences, workshops and trainings. In 2011, the Department organized an International Conference on Biodiversity and Sustainable Livelihood, where about 500 delegates participated from 36 countries for 3 days.
- In 2015, the department coordinated to organize Nepal Italy Seminar on Collaborative Research: Past, Present and Future Prospects.
- In 2017, department organized a very prestigious international conference on **Biodiversity, climate change assessment and impacts on livelihood (10-12 January, 2017**, inaugurated by Rt. Honourable President of Nepal (Ms. Bidhya Devi Bhandari). Where about 400 delegates participated from about 2 dozen of countries for 3 days (**Appendix – C, Annex - 8**).
- Another international conference organized on November 30- Dec 2, 2017 as a co-organizer on **Wild Harvests, Governance and Livelihoods in Asia**.
- Students are also actively involved in such activities. Despite the lack of regular fund for extracurricular activities, department has developed an internal system to raise fund (Faculty members deposit 10% of the overhead of budget from their projects to the departmental account). Faculty members are also encouraged to apply for external funding source.

CRITERION 2: CURRICULAR ASPECTS (10 MARKS)

16. Is there consistency in teaching and learning with the goals and objectives of the college?
(0.5)

Yes No If yes, give details.

- The main objective of the department is to produce skilled and qualified human resource in the field of plant science. The performance of the students and their demand in national and international organizations justify that the department has been successfully trying to achieve its goal. At the same time, visits of faculty members for research and training in reputed institutions also effectively support the teaching and learning process.

17. Are programs flexible enough to offer students the following benefits? (0.5 x 3 = 1.5)

- a. Time frame matching student convenience
- b. Horizontal mobility
- c. Elective options

18. Indicate the efforts to promote general/transferable skills among the students such as (0.5 x 5 = 2.5)

- Capacity to learn
- Communication skills

- Numerical skills √
- Use of information technology √
- Work as a part of a team and independently √

19. Are there any specific programs and electives run by the college? (1)

Yes No If yes, give details.

- Four different specializations (Ecology, Plant systematics, Plant biotechnology and Plant pathology) have been given to the students in the 3rd and 4th semesters and the department is planning to introduce one more special paper in near future.

20. Contributions of the college to the curriculum design of the university. Produce examples of last 4-5 years (1)

- Central Department of Botany has the sole responsibility to design, revise and implement the curriculum of Botany in Master and Bachelor levels and Master level in BEM. In the last three years, four meetings of full subject committee and 22 meetings of standing committee were held to finalize the B.Sc., M.Sc. (Botany, BEM) courses, and developed micro-syllabus for these courses. In this year, the department also revised/prepared all courses of M.Sc. (Botany and BEM) to meet the standard for four-year M.Sc. students.
- The Central Department of Botany has formulated a B.Sc. Fourth Year courses by its experts and has been organized orientation programs each year for the teachers of different Campuses (for all subject teachers from TU affiliated, community and private Campuses) in different parts of country. In the year of 2012, the Department organized orientation program at Kathmandu, Biratnagar and Butwal for the botany teachers of B.Sc. First Year, in 2013 organized the orientation program at Kathmandu and Bharatpur Chitwan for the botany teachers of second year B.Sc., in 2014 at Kathmandu and Birjung for the botany teachers of third year and 2015 at Kathmandu and Hetauda for the teachers of fourth year. Each year more 75 teachers were got orientation. The feedback of teachers helped to improve the quality of curriculum and teaching methodology.
- In 2013 and 2014, Faculties of the Department visited the reputed Universities of India (Jawaharlal Nehru University, Delhi University and Institute of Wildlife Management and Forestry of Deharadun) and China (Beijing Institute of Botany, Chinese Academy of Botany, Beijing Normal University, Kunming Institute of Botany, Kunming. The interactions with the Professors and experts helped to design and implement the quality curricula of Botany and BEM.
- In 2016, the department revised the four-year B.Sc. syllabus after completing one cycle of B.Sc. 4-year program.
- In 2017, the department revised or prepared new courses for M.Sc. Botany and M.Sc. Biodiversity and Environmental Management (BEM) to make suitable for the students enrolled after four-years B.Sc.
- In 2017 June, the department organized an orientation program of M.Sc. first semester syllabus for faculties of different M.Sc. Botany running campuses.
- Department publishes Research books, Proceedings which helped to improve the syllabus of M.Sc. Botany and M.Sc. BEM.
- The curriculum designed and implemented by the department has been given in **Appendix – D, Annex – 1 and 2)**

21. Is there any mechanism to obtain feedback from academic peers and employers on teaching programs?

Yes No If yes, give details.

- Through discussion in subject committee chaired by the Head of Central Department of

- Botany, and orientation programs were held in different regions of the country.
- Regular meetings with the Heads of Botany of Tri-Chandra Campus, Amrit Campus, Patan Campus, Padmakanya Campus, and contact with Post Graduate Campus, Biratnagar. Regular advice also taken from retired Professors of Botany.

22. Give details of college-industry-neighborhood networking in course-works, if any? (1)

- EIA, plant biotechnology, environmental biotechnology is part of curriculum gives opportunity to students to interact with industry and neighborhood.
- Introduced some new courses that can promote networking industry and neighborhood.

23. Does the college inculcate civic responsibilities among the students? Give brief explanation in terms of activities. (0.5)

- The students are oriented towards civic responsibilities during orientation class and several other programs. The course has also included some elements of civic responsibilities. Practically, the students are involved in cleaning campaigns, blood donation and science exhibition every year.
- All the departmental activities are published each year in a departmental newsletter *Vanaspati*. Details of activities and photographs are given in the *Vanaspati* (**Appendix – E, Annex - 2**)

24. What are the efforts of the college towards all-round personality development of the learners? Give brief explanation in terms of activities. (0.5)

- Term papers, field visit, seminar, research methodology trainings, workshop, conferences, etc. provide opportunity to develop personal skills and expand knowledge. The students also attend Ph.D. viva voce and lectures of eminent scholars. These activities help to generate research question.

25. What are the practices of the college to impart value-based education? Give examples of some practices. (0.5)

- Ethics is a compulsory component in our Master Level Curriculum. In the orientation to students' ethical values, norms and expectations from students are highlighted every year.
- The department also encourages students for punctuality, discipline and cooperation.
- Research ethics and thesis guidelines to students are incorporated in the research methodology course in third semester (**Appendix – D, Annex 1 and 2**).

CRITERION 3: TEACHING LEARNING AND EVALUATION (10 MARKS)

26. Which of the following methods do you apply in admitting the new graduates? Select as many as apply. (1)

- ✓ Through academic records
- ✓ Through written entrance test (100 % from the entrance test)
- through group discussions
- through interviews
- through combination of above all

27. Is there a provision for assessing students' knowledge and skills for a program (after admission)?

Yes ✓ No If yes, cites examples.

- Orientation classes are organized in each semester before starting formal classes.
- Class performance records, internal assessments, seminars, field reports and extracurricular activities are the keys for assessing student's knowledge and skills.

28. Does the college provide bridge/remedial courses to the educationally disadvantaged students?

Yes No If yes, cite examples (UGC or other supports received in this regard may be indicated).

29. Does the college encourage the teachers to make a teaching-plan?

Yes No If yes, gives details.

- Each teacher makes own teaching plan for their respective topics and practical in addition to guidelines provided by the syllabus.
- Class routines has been given in the **Appendix – B, Annex – 1**.

30. Are syllabi in harmony according to a teaching schedule through the semester/year?

Yes No If yes, give details of implementation in terms of monitoring, coverage, correction, etc.

- There is a general understanding to the Institute of Science and Technology of Tribhuvan University, who gives the direction to all departments through the meeting of Head of Departments and department, follows it. In addition, Department also prepared the academic calendar in consultation with students.

31. How does the college supplement the lecture method of teaching with other teaching methods with specific weightage in terms of hours? (directed studies, assignments, presentations) (0.5)

Produce some examples.

- **Directed studies:** Students are taken to the field once in every semester and teach them practically.
- **Assignments:** Students are assigned topic to prepare a scientific essay, field report that carry 5 marks in every subject/semester.
- **Presentations:** In every semester student, should present paper seminar of 25 marks.
- **Group work:** Students should work in group for conducting assigned projects/topics.
- **Field visits:** Students should participate in field visits organized by the department with faculties, where students are taught practically in the field.
- Students must attend talk program, M. Sc. Thesis defense, and Ph.D. viva voce examination.
- Specific weightage in terms of hours has been given in the curriculum (**Appendix – D, Annex – 1 and 2**).

32. Is there a facility to prepare audio visuals and other teaching aids?

Yes No If yes, give details about the facilities.

Individual teacher prepares audio-visuals on specific topic as teaching materials. Classes are taken using power point presentations. Smart board and internet facilities are provided in the class room.

33. Furnish the following for the last two years. (1.5)

Teaching days per semester or per year against the standard: 90 days / Semester

Working days per week against the standard: 6 days / week

Work load per week (for teachers): at least 12 Hrs.

Ratio of full-time teachers to part-time teachers: All teachers are full-time; sometime visiting faculties are invited to teach some specific topics.

Ratio of teaching staff to non-teaching staff: ca. 1:1 (19:18)

Percentage of classes taught by full-time faculty: ca. 100%

34. Are evaluation methods communicated to students at the beginning of the year?

Yes No If yes, justify them.

- It is an important part, department organizes an orientation program at the beginning of the semester and communicate all necessary things so that students can prepare themselves accordingly.
- In each semester the methods of external and internal evaluations are communicated with students.
- Each teacher communicates with the students how to prepare their presentation of term paper as it helps to evaluate the skill of the students in understanding their creativity in preparing the ppt and understanding the research paper and analyzing them.
- A form is designed with criteria for evaluation of M.Sc. thesis, it will be supplied to students before submitting their thesis for evaluation (**Appendix – D, Annex – 3**).
- Inform about the exam evaluation system (Internal 40%, External 60%)

35. Does the college monitor the overall performance of students at the beginning of the year?

Yes No If yes, give details

Every teacher monitors the overall performance of students during class, practical and field excursion to their academic and social performance, each teacher regularly takes the attendance in each class, also provides feedback for better performance, if feel necessary. Their good performance is evaluated for deciding the selection of student in research or other academic opportunities also reflects it in examination evaluation.

36. In the case of new appointment of the teaching faculty made by the college itself, select among the following actions that are evidential in your institution. (1.5)

Vacancy Category	Operational Mechanism					
	Job Advertise ment	Selection Committee Formation	Examination by Selection Committee	Evaluation of Demo Classes	Interview by Selection Committee	Job Contract Through Formal Appointment Letter
Self-funded (part-time)	√	√	√	x	√	√
Government funded	√	√	√	x	√	√
Any other category						

37. Provide the following information in number about the teaching staff recruited during the last two years. (0.5)

Teaching staff recruited from		
the same region where it operates		the other regions
same institution <input checked="" type="checkbox"/>	other institutions	
Year I: 1	Year I: 1	Year I: X
Year II: 1	Year II: 2	Year II: X

38. Does the college have the freedom and the resources to appoint and pay temporary/ad hoc teaching staff?

Yes No If yes, give details of their salary structure and other benefits.

- Upon permission from University authorities, part time teachers are recruited by department. Salary and benefits are given from internal income of the department as per TU rules and

regulations for the part time teachers.

39. Number of teaching staff who have attended seminars/conferences/workshops as participants/resource persons in the last two years: (0.5)

	Participants	Resource persons
National level	17	17
International level	17	10

List of teaching staff who have attended seminars/conferences/workshops as participants and as resource persons in the last two years has been given in the news letter *Vanaspati* 2016 and 2017 (**Appendix – E, Annex - 2**). Sample of Invitation and letter of participation (**Appendix – G, Annex - 1**)

40. Does the college follow the self-appraisal method to evaluate the performance of the faculty in teaching, research and extension?

Yes No

If yes, how are teachers encouraged to use the feedback? Provide with justifications.

41. Does the college follow any other teacher performance appraisal method?

Yes No

If yes, give details of the same and state how the results of the appraisal are used.

42. Does the college collect student evaluation on campus experience? (One may go through samples of feedback formats given at the end of the manual).

Yes No If yes, what is the significant feedback from students and how has it been used?

During the welcome and farewell program, senior students will share their experiences of department amidst faculties, students, staffs and authorities. Feedback format is not in practiced.

43. Does the college conduct refresher courses/seminars/conferences/symposia/workshops/programs for faculty development?

Yes No If yes, give details.

- The department conducts several activities such as refresher courses/seminars/symposia/and workshops, etc. The subject committee under the Head of department involves preparing courses of botany for Master’s level and bachelor level, including BEM. Recently it has conducted orientation program to the B.Sc. 4th year course teachers of different constituent campuses and campuses affiliated to Tribhuvan University. The Dean office facilitates these activities. On February 27-28, 2015 department organized “Nepal-Italy collaborative research seminar. Department has also organized Flora of Nepal workshops and Orchid seminar. Similarly, in January 10-12, 2017 department organized an International conference on “**Biodiversity, climate change assessment and impacts on livelihood**”

44. Give details on a few faculty development programs and the number of teachers who benefited out of them, during the last two years. (0.5)

Faculty Development Programs	No. of Beneficiaries
Research and training program in foreign institutes and Universities	7
(details in newsletter: <i>Vanaspati</i> (Appendix – E, Annex - 2) attached separately)	
In 20-26 June, 2017 organized a research methodology training program for faculties.	17

45. Furnish information about significant teaching innovations of the college. (0.5):

- Use of multimedia; participation of students in Ph.D. viva-voce, M.Sc. dissertation defense, arranging special talk program, participating in conferences, seminars and workshops, publications of books/papers and conducting research projects are the sources of furnish information about significant teaching innovation of the department.

46. What are the national and international linkages established for teaching and/or research? (0.5)

- Department has linkages with several internationally reputed institutions. For example: Royal Botanic Garden Edinburgh to conduct a research program. BEM and former NOMA program has been in collaboration with Bergen University, Norway, Kunming institute of China, Jawaharlal Neharu University and Kumaun University India.
- The list of collaborating institutions is given in department prospectus (**Appendix – E, Annex – 3**, page 31-32).
- List of MOUs has been given in **Appendix – F, Annex – 1**.

CRITERION 4: RESEARCH, CONSULTANCY AND EXTENSION (10 MARKS)

47. Research budget in % of total recurring budget. (1)

- None so far from TU, but the faculty members fetch fund for research through the national and international funding, e.g. list of projects given (Section A, 25).

48. How does the institution promote research? (1)

- ✓ PG students doing project works (List of students involved in research projects are given in **Appendix – E, Annex – 3**, pl. see prospectus under ongoing projects).
- ✓ Teachers are given study leave for data collection and participate to conferences, seminars, etc. (List of teachers who have gotten study leaves, invitation letters from organizers of international and national conferences are given in the **Appendix – G, Annex – 1**).
- ✓ Research Committee encourages for submitting project proposals
- ✓ Adjustment in teaching schedule
- ✓ Supporting for international collaboration. Sample BIFA Project, IUCN Project (**Appendix – F, Annex - 1**)

49. Is the institution a recognized centre for conducting PhD level programs? (1)

Yes ✓ No If yes, No. of PhD graduates produced per year:

Till date, 44 scholars have been awarded PhD in Botany, and every year about 5 candidates are enrolled in PhD

List of Ph.D. thesis completed from Central Department of Botany

1. **Khwaunju, P.M.** 1982. Cytotaxonomical study of the Polypodiaceous ferns of the Bagmati zone (*Supervisor*: Prof. AR Shakya).
2. **Bhattarai, S.** 1992. Cytological study and breeding behavior in some orchid genera of Nepal (*Supervisor*: Dr. SB Malla).
3. **Sakya, S.R.** 1993. Cytological studies in the genus *Primula* L. and its allies of Nepal Himalayas (*Supervisor*: Dr. KK Joshi).
4. **Rajbhandari, T.K.** 1997. Cytotaxonomical study in the genus *Arisaema* Mart. And its allies of Nepal (*Supervisor*: Dr. KK Joshi).
5. **Shakya, L.R.** 1999. Revision of the genus *Oberonia* Lindl. (Orchidaceae) in the Himalaya (*Supervisor*: Prof. RP Chaudhary).
6. **Shrestha, A.M.** 2002. The study on the diversity of *Trifolium* sp. (clover) and their uses in Nepal (*Supervisor*: Prof. GPS Ghimire).

7. **Jha, S.N.** 2003. Ecological study of some selected grasses and forbs in Morang district, Nepal (*Supervisor*: Prof. PK Jha).
8. **Bajracharya, D.M.** 2005. The genus *Eria* Lindl. (Orchidaceae) in the Himalayas - A taxonomic revision (*Supervisor*: Prof. KK Shrestha).
9. **Poudyal, K.** 2005. Plant water relations of some selected Himalayan tree species at Phulchowki hill, Kathmandu (*Supervisor*: Prof. PK Jha).
10. **Prasad, R.C.** 2005. Screening of some BGA as a source of bio-fertilizer from rice fields of Nepal. (*Supervisor*: Prof. BN Prasad).
11. **Thapa, C.B.** 2005. Ecological study of crop-weed competition with special reference to paddy and various methods of weed control in Pokhara, Nepal (*Supervisor*: Prof. PK Jha).
12. **Singh, B.M.** 2006. Micropropagation and cultivation of some legume trees of Nepal (*Supervisor*: Prof. SD Joshi).
13. **Bala, S.** 2007. Morphotaxonomy of foliicolous Hyphomycetes of horticultural plants and their weeds in Nawalparasi and Chitwan Districts of Nepal (*Supervisor*: Prof. U Budathoki).
14. **Mahato, R.B.** 2007. Diversity, use and conservation of plants in Palpa District, Nepal (*Supervisor*: Prof. RP Chaudhary).
15. **Manandhar, L.** 2007. Cytogenetical studies in the genus *Desmodium* Desv., and its allies of Nepal Himalaya (*Supervisor*: Prof. SR Sakya).
16. **Panthi, M.** 2007. Vegetation composition and resource utilization in Arghakhanchi and Manang districts, west Nepal (*Supervisor*: Prof. RP Chaudhary).
17. **Vaidya, B.L.** 2007. Study of cytogenetic diversity in Ranunculaceae (*Supervisor*: Dr. KK Joshi).
18. **Bajracharya, K.** 2009. Responses of some mosses to toxic heavy metals and their evaluation for biomonitoring (*Supervisors*: Dr. MK Chettri and Dr. T Sawidis).
19. **Shrestha, I.** 2009. Ethnobotany of Tamang community in Langtang National Park and buffer zone, Central Nepal with application of GIS and RS (*Supervisor*: Prof. KP Shrestha).
20. **Bhattarai, S.** 2010. Ethnoecology of medicinal plants in Trans-Himalayan zone in Nepal and antimicrobial activity of some selected plants (*Supervisor*: Prof. RP Chaudhary).
21. **Pandey, N.** 2010. Mushroom diversity in Central Nepal: an ethnomycological approach (*Supervisor*: Prof. U Budathoki).
22. **Pant, D.** 2010. Transformation of Nepalese cultivars of wheat with knotted gene and increase in productivity by delaying senescence of flag leaves (*Supervisors*: Dr. T Bhattarai, and Dr. Sebastian Fettig).
23. **Pradhan, N.** 2010. Bryoflora of Nepal: Tarai and Churiya Hill (*Supervisors*: Prof. SD Joshi and Dr. DG Long).
24. **Sharma, B.** 2010. Response of some vegetable crops to toxic heavy metals (*Supervisor*: Dr. MK Chettri).
25. **Shrestha, B.B.** 2010. Ecology and phytochemistry of *Aconitum naviculare* Stapf. and *Curculigoorchioides* Gaertn. in Central Nepal (*Supervisors*: Prof. PK Jha and Prof. M. Gewali).
26. **Shrestha, G.** 2010. Influence of mycorrhizal fungi in stabilising soils subjected to erosion in Nepal (*Supervisors*: Prof. KP Shrestha and Prof. Dr. Hakan Wallander, Lund University, Sweden).
27. **Rajbhandary, S.** 2010. Systematic revision of the Genus *Begonia* L. (Begoniaceae) in the Himalayas (*Supervisors*: Prof. KK Shrestha and Dr. M Hughes).
28. **Devkota, A.** 2011. Ecophysiological study of *Centella asiatica* (L.) Urban from different land use of Nepal (*Supervisors*: Prof. PK Jha and Prof. G. Innocenti).
29. **Phoboo, S.** 2011. Ecophysiology of some medicinal plants of Bagmati zone (*Supervisor*: Prof. Dr. P.K. Jha and Co-supervisor Prof. Dr. P.C. Bhowmik).
30. **Pant, K.K.** 2012. In vitro Morphogenesis of *Asparagus racemosus* Willd and *Rauwolfiaserpentina* (L.) Benth. ex Kurz (*Supervisor*: Prof. Dr. S.D. Joshi).

31. **Ghimire, N.P.** 2014 Ecological study of surface water bodies in Sagarmatha National Park (Supervisor: Prof. Dr. P.K. Jha).
32. **Singh (Shrestha), S.** 2014. Floristic study and vegetation analysis of Shivapuri National Park, Central Nepal (Supervisor: Prof. Dr. M. Siwakoti).
33. **Joshi, N.** 2015. Utilization pattern and conservation status of plant resources of Makawanpur District, central Nepal (Supervisor: Prof. Dr. M. Siwakoti).
34. **Koirala, U.** 2015. Ecological study of the aquatic macrophytes occurring in Morang District of Nepal (Supervisor: Dr. S.N. Jha).
35. **Vaidya, S.** 2015. Revision of *Anaphalis* D C. (Asteraceae) in the Himalaya (Supervisor: Dr. L.R. Shakya).
36. **Mandal, R.A.** 2015. Carbon stock potential in community management forest in Mahattery Tarai District of central Nepal (Supervisor: Prof. Dr. S.B. Karmacharya).
37. **Aryal, H.P.** 2015. Wild edible mushrooms of Tarai and Siwaliks of Nepal: Diversity, food value and growth (Supervisor: Prof. Dr. U. Budathoki).
38. **Karna, P.** 2015. Cytogenetical studies of some members of the family Asteraceae of Nepal (Supervisor: Dr. L. Manandhar).
39. **Gajurel, J.P.** 2016. Effects of land use and climate change on gene flow of *Taxus wallichiana* Zucc. (Taxaceae) in Nepal. (Supervisors: Prof. Dr. K.K. Shrestha and Prof. Dr. Christoph Scheidegger).
40. **Gautam, T.P.** 2016. Species composition, production and nutrient dynamics in tropical forest (Charkoshe Jungle) of eastern Nepal (Supervisor: Prof. Dr. T.N. Mandal).
41. **Joshi, S.** 2016. Taxonomy, phytochemical and biological activity of *Senecio* L. (Asteraceae) of Nepal (Supervisor: Prof. Dr. D.M. Bajracharya).
42. **Shrestha, L.** 2016. Role of sacred groves in plant species diversity conservation in Kathmandu, Valley, Nepal (Supervisor: Prof. Dr. M.P. Devkota).
43. **Pradhan, S.** 2017. Mass Propagation and *ex-situ* Conservation of *Cymbidium aloifolium* (L.) Sw., a Threatened Medicinal Orchid of Nepal through Artificial Seed Technology (Supervisor: Prof. Dr. Bijaya Pant).
44. **Bhattarai, K.P.** 2018. Decomposition nutrient release in leaf litter and N-mineralization in selected sal forest of eastern Nepal (Supervisor: Prof. Dr. T.N. Mandal).

50. What percentage of teachers is engaged in active research - guiding research scholars, operating projects, publishing regularly, etc.? Give details. (0.5)

- 100% faculties are involved in research. Each faculty member supervises Master's thesis as a part of job. Additionally, 50 % teachers are involved to supervise PhD research and others have their own research projects. Almost they published research papers in national and international reviewed journals.

51. Mention the admission status of the MPhil/PhD graduates % of total research scholars admitted in your institution. (0.5)

Level	Enrollment Status		Total
	Full Time	Part Time	
M Phil			
PhD	27	9 candidates doing research under the supervision of teachers of Post Graduate Campus Biratnagar, Amrit Campus, Patan Campus, etc.	

52. How many PhDs have been awarded during the last five years? (1)

Ph.D. Program at Central Department of Botany is one of the most successful research programs in Tribhuvan University. Most of the Ph.D. scholars received the grants from UGC, NAST and

International collaboration funds (TGGN, USAID), some of from their own fund. About 25 scholars have been awarded by PhD degree during the last 5 years

- **Bhattarai, S.** 2010. Ethnoecology of medicinal plants in Trans-Himalayan zone in Nepal and antimicrobial activity of some selected plants (*Supervisor*: Prof. RP Chaudhary).
- **Pandey, N.** 2010. Mushroom diversity in Central Nepal: an ethnomycological approach (*Supervisor*: Prof. U Budathoki).
- **Pant, D.** 2010. Transformation of Nepalese cultivars of wheat with knotted gene and increase in productivity by delaying senescence of Flag leaves (*Supervisors*: Dr. T Bhattarai, and Dr. Sebastian Fettig).
- **Pradhan, N.** 2010. Bryoflora of Nepal: Tarai and Churiya Hill (*Supervisors*: Prof. SD Joshi and Dr. DG Long).
- **Sharma, B.** 2010. Response of some vegetable crops to toxic heavy metals (*Supervisor*: Dr. MK Chettri).
- **Shrestha, B.B.** 2010. Ecology and phytochemistry of *Aconitum naviculare* Stapf. and *Curculigo orchioides* Gaertn in Central Nepal (*Supervisors*: Prof. PK Jha and Prof. M. Gewali)
- **Shrestha, G.** 2010. Influence of mycorrhizal fungi in stabilising soils subjected to erosion in Nepal (*Supervisors*: Prof. KP Shrestha and Prof. Dr. Hakan Wallander, Lund University, Sweden).
- **Rajbhandary, S.** 2010. Systematic revision of the Genus *Begonia* L. (Begoniaceae) in the Himalayas (*Supervisors*: Prof. KK Shrestha and Dr. M Hughes).
- **Devkota, A.** 2011. Ecophysiological study of *Centella asiatica* (L.) Urban from different landand use of Nepal (*Supervisors*: Prof. PK Jha and Prof. G. Innocenti).
- **Phoboo, S.** 2011. Ecophysiology of some medicinal plants of Bagmati zone (Supervisor: Prof. Dr. P.K. Jha and Co-supervisor Prof. Dr. P.C. Bhowmik).
- **Pant, K.K.** 2012. In vitro Morphogenesis of *Asparagus racemosus* Willd and *Rauwolfiaserpentina* (L.) Benth. exKurz (Supervisor: Prof. Dr. S.D. Joshi).
- **Ghimire, N.P.** 2014 Ecological study of surface water bodies in Sagarmatha National Park (Supervisor: Prof. Dr. P.K. Jha).
- **Singh (Shrestha), S.** 2014. Floristic study and vegetation analysis of Shivapuri National Park, Central Nepal (Supervisor: Prof. Dr. M. Siwakoti).
- **Joshi, N.** 2015.Utilization pattern and conservation status of plant resources of Makawanpur District, central Nepal (Supervisor: Prof. Dr. M. Siwakoti).
- **Koirala, U.** 2015. Ecological study of the aquatic macrophytes occurring in Morang District of Nepal (Supervisor: Dr. S.N. Jha).
- **Vaidya, S.** 2015. Revision of *Anaphalis* D C. (Asteraceae) in the Himalaya (Supervisor: Dr. L.R. Shakya).
- **Mandal, R.A.** 2015. Carbon stock potential in community management forest in MahatteryTarai District of central Nepal (Supervisor: Prof. Dr. S.B. Karmacharya).
- **Aryal, H.P.** 2015. *Termitomyces* R. Heim. (Tricholomataceae in Nepal: Diversity, Nutrient and growth (Supervisor: Prof. Dr. U. Budathoki).
- **Karna, P.** 2015. Cytogenetical studies of some members of the family Asteraceae of Nepal (Supervisor: Dr. L. Manandhar).
- **Gajurel, J.P.** 2016. Effects of land use and climate change on gene flow of *Taxus wallichiana* Zucc. (Taxaceae) in Nepal. (Supervisors: Prof. Dr. K.K. Shrestha and Prof. Dr. Christoph Scheidegger).
- **Gautam, T.P.** 2016.Species composition, production and nutrient dynamics in tropical forest (Charkoshe Jungle) of eastern Nepal (Supervisor: Prof. Dr. T.N. Mandal).
- **Joshi, S.** 2016.Taxonomy, phytochemical and biological activity of *Senecio* L. (Asteraceae) of Nepal (Supervisor: Prof. Dr. D.M. Bajracharya).

- **Shrestha, L.** 2016. Role of sacred groves in plant species diversity conservation in Kathmandu, Valley, Nepal (Supervisor: Prof. Dr. M.P. Devkota).
- **Pradhan, S.** 2017. Mass Propagation and *ex-situ* Conservation of *Cymbidium aloifolium* (L.) Sw., A Threatened Medicinal Orchid of Nepal through Artificial Seed Technology (Supervisor: Prof. Dr. Bijaya Pant).
- **Bhattarai, K.P.** 2018. Decomposition nutrient release in leaf litter and N-mineralization in selected sal forest of eastern Nepal (Supervisor: Prof. Dr. T.N. Mandal).

53. Does the college provide financial support to research students? (0.5)

Yes No If yes, give % of financial support from recurring cost.

- Not all but majority of Ph.D. students get scholarships under the internationally funded project, UGC and NAST also supports for Ph.D. Dabur Nepal has also supported one Ph.D. scholar. University provides the study leave for permanent faculties.
- The department partially supports through purchase of equipment, chemicals, glassware, literature etc.

54. Provide details of the ongoing research projects: (0.5) (25).

- Please see section A – Under institutional information and profile Q.25 as details of all the project is provided there.

Total number of projects	Project Revenues (in NRs.)
13	2,30,00000.00

- Details of the projects are attached herewith (*Vanaspati* Newsletter 2016 and 2017, **Appendix – E, Annex - 2**).

55. Give details of ongoing research projects funded by external agencies. (0.5)

Funding agency	Amount (ca. Rs.)	Duration (Years)	Collaboration, if any
Government of Denmark (DANIDA project)	10000000.00	4	University of Copenhagen, Denmark
UGC collaborative	2000000.00	2	Annapurna Neuro Hospital, Kathmandu.
UGC 3 faculty	900000.00	2	-
Darwin Project	1400000.00	2	Edinburgh Royal Botanic Garden, UK
NAS-USAID	1000000.00	2	IUCN Nepal
BIFA project	1800000.00	1	Department of Plant Resources
USAID	4500000.00	1.5	Virginia Polytechnic Institute and State University, USA
IUCN Nepal	1400000.00	1	Ministry of Forests and Environment

56. Does the institution have a Publication Division? If yes, give details of the authors and the number of titles published in the last two years. (0.5)

The department has the editorial committee for its regular publications such as *Vanaspati* (newsletter, **Appendix – E, Annex - 2**) and *Botanica Orientalis* (Journal, **Appendix – E, Annex - 1**) which published annually. In addition, department decided a publication committee for occasional publications as Souvenir. Following are the recent publications and respective editors:

- **Editors committee for *Vanaspati*:** Prof. Mohan Siwakoti, Prof. Sangeeta Rajbhandary and Dr. Anjana Devkota.
- **Editors for *Botanica Orientalis*:** Dr. Suresh Kumar Ghimire, Dr. Deepak Raj Pant, Dr. Bharat B Shrestha and Dr. Sanjaya Kumar Jha.

- **Taxonomic Tools and Flora Writing** (a joint publication with Department of Plant Resources), Editors: Prof. Mohan Siwakoti and Prof. Sangeeta Rajbhandary (**Appendix – C, Annex – 2**).
- **Frontiers of Botany, Editors:** Prof. Pramod Kumar Jha, Prof. Mohan Siwakoti and Prof. Sangeeta Rajbhandary (**Appendix – C, Annex – 3**).
- **Souvenir (Golden Jubilee Issue, 2065-2015), Editors:** Prof. Mohan Siwakoti, Prof. Sangeeta Rajbhandary, Dr. Giri Prasad Joshi and Dr. Chandra Prasad Pokharel (**Appendix – C, Annex – 4**).
- **Catalogue of Monocot Plants Deposited at Tribhuvan University Central Herbarium. Editors:** Dr. K.R. Rajbhandary, Prof. M. Siwakoti, M., Prof. S. Rajbhandary and Dr. S.K. Ghimire (**Appendix – C, Annex – 5**).
- **Editors committee for Conference Proceedings of 2010:** Prof. Pramod K Jha, Prof. Krishna K Shrestha, Prof. Ram P Chaudhary and Dr. Bharat B Shrestha (**Appendix – C, Annex -6**).
- **A Treasure Trove of Orchids in Central Nepal,** Authors: Bijaya Pant, Mukti Ram Paudel, Mukesh Babu Chand and Sven H Wagner (**Appendix – C, Annex – 9**).

57. Does the institution offer consultancy services? (0.5)

Yes No If yes, give details.

- For management plan of Kailash sacred landscape project.
- Flora writing training for contributors of Flora of Nepal.
- Two weeks long training to foresters of National Biodiversity Centre of Bhutan.
- The activities are mentioned in the *Vanaspati newsletter* - **Appendix – E, Annex – 2**.
- Faculties involved in Training for Trainers (ToT) especially for DFO and scientific officers of Ministry of Forest and Environment and Citizen scientists for local communities of Kaski and Dolakha (Letter from IUCN)

58. Does the institution have a designated person for extension activities? (0.5)

Yes No If yes, indicate the nature of the post

Full-time Part-time Additional charge

The department has designated person for extension activities. Prof. Dr. Mohan Siwakoti is the head of Department and Prof. Dr. Sangeeta Rajbhandari is Coordinator of BEM Program.

59. Indicate the extension activities of the institution and its details: (0.5)

- Community development
- Training in Disaster Management
- Health and hygiene awareness
- Medical camps
- Adult education and literacy
- Blood donation camps
- AIDS awareness
- Environment awareness

M.Sc. students participated the cycle rally for environmental awareness program organized by Ministry of Population and Environment and European Union 2016. Similarly, about 25 students of MSc botany participated in the Mikania (a worst invasive plant) removal program on 29 December 2017 at Baireni, Dhading on the occasion of Biodiversity day. The main objective of the program was to make communities aware of the future consequences of the spread of noxious invasive weed like *Mikania micrantha* (mile-a-minute) (**Appendix J, Annex – 1**).

60. Are there any outreach programs carried out by the institution (for example, Population Education Club, Adult Education, National Literacy Mission, etc.)? (0.5)

Yes No If yes, justify.

- Orchid conservation program: The programs was conducted in Chitlang village of Taha Municipality, Makwanpur, Nepal on 2015.
- Flora writing program of Nepal: The programs was conducted in Godawari of Lalitpur district, Nepal on 2016.
- Plant identification training: The programs was conducted in Godawari of Lalitpur district, Nepal on 2016.

61. How are students and teachers encouraged to participate in extension activities? Any defined approaches? (0.5)

- By participation and interaction program
- By involving in training program
- Assign research work
- Botanical exploration.

62. Does the institution work and plan the extension activities along with NGO's and GO's? Give details of last 3 years. (0.5)

Yes,

- With FECOFUN for Orchid forum, in 2014, the department organized an Orchid Forum in which one CFUG from Palung participated in the Department and field training was arranged to local people.
- FECOFUN is one of the partners for Denmark supported project.
- Awareness programs for local farmers for mushroom identification
- Central Department of Botany has a long-term MoU with Department of Plant Resources (MFSC) for the study and exploration of Plant resources of Nepal.
- Central Department of Botany has been closely working with different Departments and Divisions of Ministry of Forests and Soil Conservation, also to the Ministry of Science and Technology and Environment as well as to Nepal Academy of Science and Technology.
- The department also has been closely working with reputed international conservation institutions (IUCN, WWF, and ICIMOD) and national conservation intuition (NTNC) since a long time.
- Central Department of Botany has initiated a MoU with **Dabur Nepal Pvt. Ltd.**, for joint collaborative research on medicinal plants. Dabur Nepal is supporting for one Ph.D. Scholar (**Appendix – F, Annex - 1**).

CRITERION 5: INFRASTRUCTURE AND LEARNING RESOURCES (20 MARKS)

A. General Physical Infrastructure

63. Enclose the master plan of the institution indicating the existing buildings and the projected expansion in the future. (0.5)

The earthquakes of 2015 damaged the main building of Central Department of Botany. The department has prepared a master plan and project detail for construction of new building. Soil test has been conducted. Planning Directorate of Tribhuvan University submitted the detail construction plan of building of Central Department of Botany at National Renovation Authority on 207.04.13(sample of letter) (The proposed strategic plan, building map and soil test reports are given in the **Appendix – H, Annex - 1**).

64. How does the institution plan to meet the need for augmenting the infrastructure to keep pace with academic growth? Produce plan, if any. (0.5)

- The department has received grants from Second Higher Education Project (SHEP II) called window program. This grant is utilized to develop garden, building renovation, equipment and chemical purchasing, improvement of departmental library, faculty development, e-journal etc. Recently the department has received NRs 10,00000.00/- from TU for construction of Alpine Plant House.
- For temporary management, the Department got the financial support of Rs 51,00000.00 from Tribhuvan University to construct pre-fab structure buildings for immediately run the classes. For the permanent building, a new two storey building is designed/ planned and the University approved it for construction. It is believed that the construction will be started soon by the National Renovation Fund. (As in Q.63, **Appendix – H, Annex – 1**)

65. How does the institution maintain its infrastructure? Provide scheme. (0.5)

- Department looking for the new building. Now the infrastructure is managed through existing one building and new pre-fab building. The maintenance work is done through the overhead of the projects and development fund of Tribhuvan University.

66. How does the institution ensure optimum utilization of its infrastructure facilities? Produce the plan. (0.5)

- Department is facing a space problem after the collapse of main building by earthquake of 2015. The existing infrastructure/facilities of the department is used by students of two M.Sc. programs. The seminar hall of the department was used to conduct seminars, trainings, workshops, presentation of M.Sc., Ph.D., research findings, etc. Details of infrastructure plan are given in Department strategic plan.
- MSc Botany program has been run in the day time and MSc BEM program is running in the morning shift.

67. Does the institution encourage use of the academic facilities by external agencies? (0.5)

Yes No If yes, give clearly defined regulations.

Sometimes the space of seminar hall of the department is provided to others on their request. Department has internationally recognized herbarium, Tribhuvan University Central Herbarium (TUCH), has over 16000 plant specimens. On request this facility can be used by external agencies. The department library has also valuable thesis and reports, it was frequently consulted by outsiders, but after earthquake the service to outsiders is limited.

68. What efforts are made to keep the institution beautiful and pollution free? Give plan (0.5)

- The botanical garden of the department has collection of living specimens from different parts of the country, and well managed. Cemented pathway in the Garden has been completed and educational plants are added to enhance value of the garden. Organic fertilizers are encouraged. Similarly, Tribhuvan University has decided to handover the coronation garden of University to the Central Department of Botany for its management and development as a University Botanic Garden, the department made a garden plan for its development and submitted to University for its implementation.

69. Is there a central computer facility in the institution? (0.5)

Yes No If yes, give the configuration and other hardware and software details.

- GIS and remote sensing related software are used but after earthquake due to space problem it is disturbed for short time.
- There are ca 20 computers functional in administration, account and departmental units.

70. Give the working hours of the computer center and its access on holidays and off hours. (0.5)

The computer center is open on working days (office hours) but now due to space problem as well as lack of specific human resource it does not work as a center, but computer services is frequently used by faculties, students and staffs.

71. How many departments have computers of their own? Give the configuration and other details. (0.5)

There are ca. 40 functional computers at the department including personal (teaching faculty) laptops. The department has hired a technician for maintenance of computers (Agreement letter and TOR with the technician has been given in the **Appendix – G, Annex – 2**).

72. Explain the output of the center in developing computer aided learning packages in various subjects during the last three years? (0.5)

The Department provides learning packages in various subjects of master’s program including Remote Sensing and Global Information System (RS & GIS), Flora project of Nepal, SPSS program in Research Methodology etc. Teaching is mostly through power point projectors.

73. How are computers and their accessories maintained in the computer centre and other locations of the institution? Provide the details of the system. (0.5)

Part time computer technician is hired using internal financial resources. (Agreement letter and TOR with the technician has been given in the **Appendix – G, Annex – 2**).

74. Does the institution make use of the services of inter-university centers? (0.5)

Yes,
With Kathmandu University for aquatic analysis. Different government institutions such as Nepal Academy of Science and Technology (NAST), National Agriculture Research Council (NARC), Department of Plant Resources (DPR), Department of National Parks and Wildlife Conservation (DNPWC), and National Herbarium Centre are frequently consulted for research works and field works.

75. What are the various health services available to the students and teacher staff? Explain. (0.5)

University has its own healthcare facility at Kirtipur campus (ca. 200 m far from the department). The department students, teachers and staffs used this facility for primary health care from the health center.

76. What are the physical and infrastructure facilities available in the sports and physical education centre? Give details. (0.5)

Students of botany department use the common sports facilities of the Tribhuvan University.

77. What are the incentives given to outstanding sports persons? (0.5)

Because of the lack of regular budget under such headings, only sports-wares are supported to the students. Possibly, Tribhuvan University provides the incentives for outstanding sports person.

78. Give details of the student participation during the last year at the university, regional, national and international meets. (1)

	Participation of Students	Outcomes
Regional	Students of MSc 2 nd year	Skill development and capacity enhancement
National	Students of MSc 2 nd Semester	Skill development and capacity enhancement
International	X	

79. What percentage of students has hostel accommodation? (0.5)

- University hostel provides accommodation to 4-5 students annually for our students. Additionally, Cornell Nepal Study Program (CNSP) provides accommodation to 3-4 students every year.

80. Give details of the hostel facilities available in the institution? (0.5)

- The University has boys and girls hostels separately. In addition to that, it also offers accommodation to the international students in an international hostel.

B. Library as a Learning Resource

The Central Department of Botany has own Library, in addition, Tribhuvan University has Central Library with facilities of books, journal including e-library.

81. a. What are the working hours of the library? (0.25)

Library hour: 10:00 am to 5:00 pm

On working days On holidays _____ Prior to examinations _____

b. Does the library provide open-access to students? (0.25) Yes No

82. Mention the total collection of documents. (3.5),

Department Library has following facilities:

- Books (0.2) 1613
- Current Journals
 - Nepalese (0.2) Ca. 50
 - Foreign (0.2) e-journals over hundred.
- Magazines (0.2)
- Reference Books (1.0) Ca. 1000
- Text Books (0.2) Ca. 600
- Peer reviewed journals (0.4) Ca. 50
- Back Volumes of Journals (0.2) Ca. 300
- E- Information Resources (0.4) Department also uses the Tribhuvan University Central Library, where exists
 - CD's/DVD's Almost 12,000 vol. Thesis/Dissertation
 - Databases Subscribe 6 Data base
 - Online Journals Unlimited
 - AV Resources No subscribed
- Special collection (0.5)
 - UNO Depository center - (Partly in Tribhuvan University Central Library)
 - World Bank Repository- (Tribhuvan University Central Library)
 - Materials acquired under special schemes, if any: Exchanging publication
 - Competitive Examinations
 - Book Bank
 - Manuscripts
 - Any other (please specify) Ca. 950 (Master's and PhD Thesis)

83. Give the number of books/journals/periodicals that have been added to the central library during the last two years and their cost. (1)

	The year before last		The year before	
	Number	Total cost	Number	Total cost
i. Text books	2110	37,87,821.24	2110	15,50,560.30
ii. Other books				
iii. Journals/periodicals	165	19,90,410.83	185	32,19,314.92
Any others				
iv.				
v.				

84. Mention (1)

- (i) Total carpet area of the central library (in sq.mts.) [> 2000] (0.25)
(ii) Total number of departmental libraries [1] (0.25)
(iii) Average carpet area for the departmental libraries [> 50 sq.m.] (0.25)
(iv) Seating capacity of the Library 300 [25] (0.25)

85. Give the organizational structure of the library. (0.5)

(i) Total number of staff (0.3)

- a. Professionals (with Qualifications) 7
b. Semi-professionals √ 46
c. Others

(ii) Library advisory committee (0.2), Give details; Library Development Committee, Chaired by Rector TU

- Head of the department with the unit coordinators for department library

86. Staff development programs for library. (0.5)

- (i) Refresher/orientation courses attended √
(ii) Workshops/Seminars/Conferences attended √
(iii) Other special training programs attended

87. Are the library functions automated? (0.5)

Yes No If yes:

Fully automated (0.5) Partially automated (0.25)

Manual practice is used. Name the application software used KOHA

88. What is the percentage of library budget in relation to the total budget of the College? (0.5)

- Not fixed, generally Rs. 20000.00 to 30000.00 every year in Central Department of Botany Library but more budget has to Tribhuvan University Central Library.

89. Does the library provide the following services/facilities? (10 x 0.1 = 1)

The central Library has the following facilities

- Circulation Services √
- Maintenance services √
- Reference/referral service √
- Information display and notification services √
- Photocopying and printing services √
- User Orientation/Information Literacy √

- Internet/ Computer Access ✓
- Inter-Library Loan services ✓
- Networking services ✓
- Power Backup facility ✓

90. Furnish details on the following (1.5; to be equally distributed).

Department library has followings

- Average number of books issued/returned per day. [25]
 - Number of reference enquiries (users) on an average per month [300]
 - Number of services delivered per month []
 - Average no. of users visited / Documents consulted per month [20]
- M.Sc. students, Ph.D. students, faculty members from other campus.
- Please furnish the information on no. of Logins in to the [no facility]
E-Library Services/E- Documents delivered per month.
 - Ratio of Library books to number of students enrolled [20:1]

CRITERION 6: STUDENT SUPPORT AND GUIDANCE (10 MARKS) (2016-017)

91. Furnish the following details: (0.25 x 4 = 1)

- Percentage of students appearing for the exam after the prescribed (minimum) period of study 95 %
- Dropout rate less than 5%
- Progression to further study (UG to PG or PG to Ph.D.) Ph.D. 10 - 20 %
 - Prominent positions held by alumni ✓
- Vice Chancellor of Tribhuvan University, Vice Chancellor of NAST, Member of National Planning Commission, Chairperson of UGC, Dean IOST, Academicians of NAST, Government officials/ secretary, Scientist in National organizations, Members of constituent assembly, Developmental organizations, media etc.

92. How many students have passed the following examinations in the last five years? (0.25 x 4 = 1)

- Nepal Civil Services Examinations Ca. 20
- Other in country examination Ca. 10
- GRE Not known but numerous
- TOEFL Not known but numerous

93. Does the institution publish its updated prospectus annually? (1)

Yes ✓ (1) No (0) If yes, what are the contents of the prospectus?

- Department publishes its prospectus periodically. The content includes introduction of Central Department of Botany, Academic programs, Ph.D. program, and Faculty members, supporting staff, Research projects, Publications, Facilities available, other activities and Collaborating institutions. Annually department publishes the *Vanaspati* (newsletter) (Newsletter is given in **Appendix – E, Annex – 2**).
- Latest department prospectus is published by 2017. (Prospectus is given in **Appendix – E, Annex – 3**).

94. What kind of financial aids are available to students from the government, the institution and others? Give details. (0.5)

- Students can apply for the Tribhuvan University scholarship, Cornell Nepal Study Program scholarship, M.Sc. thesis grant, Ph.D. Scholarship from NAST and UGC. Students can also have support from National and international research projects run by the faculty of the Botany department.

95. Mention the number of students who have received financial aid during the last two years. (0.5)

Financial aid	Year before last	Year before
i. Merit scholarship	4	4
ii. Merit-cum-Means	14	14
Any others		

96. Does the institution have an employment cell and a placement officer who offers career counseling to students? If yes, give details of the cell and its office. (0.25 x 2 = 0.5)

- i. Employment cell: Role:
 ii. Placement officer: Role: X

Career Counseling Committee has given responsibility for career counseling to students. The list of committee members is given in the Section A, Q. No. 23.

97. Do teachers participate in academic and personal counseling? (0.5)

Yes No If yes, give details as to how they are involved.

In Botany Department, students learn the basic things in first two semesters. In the third semester they have to select specialized course and also need to do thesis work. After the introduction of semester system in Tribhuvan University, students are more regular to their classes and any difficulty faced by them can be solved with general discussion among the members of the faculty and provide them appropriate advice. However, in the later semesters when they have to select the specialized course, experts in the department provide them proper counseling.

98. How many students were employed through placement service during the last year? (1)

	UG students	PG students	Research scholars
i. Local firms/companies			
ii. International firms/companies			
iii. Government			
iv. Public (semi-government) sector			
v. Private sector			

TU has not yet placement service system so it is difficult to write how many numbers of students employed in different service sectors. Department is working to trace out the past students' records. There is no any information about their unemployment. All most the students are employed in above mentioned different sectors.

99. Does the employment cell motivate the students to seek self-employment? (1)

Yes No If yes, how many are self-employed (data may be limited to last 5 years)?

100. Does the institution have an Alumni Association? (0.5)

Yes No If yes, indicate the activities of the Alumni Association.

Central Department of Botany has an Alumni Association. The Association was led by Dr. Kamal Krishna Joshi (Student of First batch, Former Vice-Chancellor and Former Chairman of UGC) Formation of new committee for the association is in the process.

101. How the policies and criteria of admission are made clear to prospective students? (0.5)

- Admission policy and criteria has been defined clearly by Dean of Institute of Science and Technology which is implemented through Office of Head of Department, Deputy Administrator and faculty members of the Department.
- The information is disseminated through website of Dean's Office (<https://tribhuvan-university.edu.np/institutes/institute-of-science-and-technology>)

102. State the admission policy of the college with regard to overseas students. (0.5)

- Department encourages overseas students, and follows the Tribhuvan University policy.

103. What are the support services given to overseas students? (0.5)

Overseas student service office <input type="checkbox"/>	Special accommodation <input checked="" type="checkbox"/>	Induction courses <input type="checkbox"/>
Socio-cultural activities <input type="checkbox"/>	Welfare program <input type="checkbox"/>	Policy clearance <input type="checkbox"/>

104. What are the recreational / leisure time facilities available to students? (1)

Indoor games Outdoor games Nature Clubs Debate Clubs
Student Magazines Cultural Programs Audio Video facilities

Any others: Welcome and farewell programs, organizing picnic, educational tour, celebrating departmental day, developing botanical garden, internet facilities, etc.

CRITERION 7: INFORMATION SYSTEM (10 MARKS)

105. Is there any cell in the institution to analyze and record of various academic data? (2)

Yes (2) No (0) If yes, mention how does the cell work along with its compositions?

Various academic data are analyzed by Head of the department with the help of IQAC and examination committee of the department and a four membered EMIS committee prepare and update the academic data.

106. What are the areas on which such analysis is carried out? (1.5)

- To trace students record
- To prepare recommendations to the students, verification of the students records on request if needed by the external agencies (foreign universities).
- Result analysis of students.

107. How these analyzed data are kept in the institution records? (1)

- It is done by the administrator following standard rules and regulation of the University.
- EMIS software installed and the EMIS committee has been working on this direction using software.

108. Are these information opens to the stakeholders? (1)

Yes (1) No (0) If yes, explain how they are disclosed?

- It depends up on the case.

109. Are the methods of study and analysis also open to the stakeholders? (1)

Yes (2) No (0) If anybody needs it.

EMIS data has been prepared, once completed it is plan to post in department website, similarly many information has been published in Newsletter (Vanaspati), information is also shared with students in interaction program, teachers during department meeting, for larger stakeholders it is open during department anniversary.

- 110. Is there any mechanism to receive comments or feedbacks on the published data? (1)**
 Yes (1) No (0) If yes, explain how does it happen?
 ➤ Open to comment through mail, social media, emails, phone, personal contact, etc., are encouraged.
- 111. What are the impacts of such information system on decision making process? (1.5)**
 ➤ Easy access to information helped to design quality courses, sharing syllabus for feedback, better information discussion on subject matter, also easy to develop national and international collaboration,
 ➤ Tribhuvan University has to revise its policies according to the need of the requirement of Nepalese people.
- 112. Give examples of quality improvements initiated due to the use of information system. (1)**
 ➤ Better access to information due to use of internet has helped to improve quality education,
 ➤ Telephone is in operation for communication,
 ➤ Faculties spent more time in Department due to better provision of information system,
 ➤ Semester system operated better by information system.

CRITERION 8: PUBLIC INFORMATION (15 MARKS)

- 113. Is there public information cell within the institution? (2.5)**
 Yes (2.5) No (0)
 Tribhuvan University has the division of information technology to release the overall information of university. However, for departmental information, department has an Administration section which does this job. EMIS committee has also updating the information of department. In addition, Head of department is responsible person for public information.
- 114. What are the areas of information published by the cell? (2)**
 Academic (0.5) Administration (0.5) Financial (1.0) All (2.0)
 The information is published in the *Vanaspati* newsletter and posted in department webpage and notice board.
- 115. Where are these informations published? (2)**
 Newspapers (1.0) Magazines (1.0)
 Institutional special magazine dedicated for this (2.0)
- 116. How often is this information published? (1)**
 Yearly (1) in 4 years (0)
- 117. Mention all such publications of last two years (1)**

Areas	Year 1, place of publication	Year 2, place of publication
<i>Vansapati</i> (newsletter) (Appendix – E, Annex – 2)	Kathmandu, Nepal	Kathmandu, Nepal
<i>Botanica Orientalis</i> (Journal) (Appendix – E, Annex – 1)	Kathmandu, Nepal	Kathmandu, Nepal
Proceedings of Conference and Seminars and Abstract (Appendix – C, Annex-6, 7 and 8)	Kathmandu, Nepal	Kathmandu, Nepal
Catalogue of Monocot Plants Deposited at Tribhuvan University Central Herbarium. (Appendix – C, Annex – 5)		Kathmandu, Nepal

In last one and half year (2017 -2018) department faculties published more than 50 publications in different national and international peer reviewed journals.

Research publications of the faculties

A. Publications list

1. **Shrestha BB**, PB Budha, S Pagad and LJ Wong. 2017. *Global Register of Introduced and Invasive Species– Nepal*. Invasive Species Specialist Group ISSG. Checklist Dataset <https://doi.org/10.15468/4r0kkr> accessed via GBIF.org (also available on: <http://griis.org/>).
2. Chacón J., **M Siwakoti**, HH Hilger and M Weigend. 2017. Dwarves on the roof of the world: A taxonomic revision of the Himalayan Lasiocaryeae Weigend (Boraginaceae). *Phytotaxa*, 297(1): 001-014. <https://doi.org/10.11646/phytotaxa.297.1.1.>
3. Luitel DR, **M Siwakoti**, **PK Jha**, AK Jha, and N Krakauer. 2017. An overview: distribution, production, and diversity of local landraces of buckwheat in Nepal. In: *Advances in Agriculture*, Vol. 2017, Article ID 2738045, <https://doi.org/10.1155/2017/2738045>.
4. Luitel DR, **M Siwakoti**, **PK Jha**, AK Jha and N Krakauer. 2017. Climate, distribution and cropping pattern of finger millet in Nepal: A review. *International Journal of Agriculture and Environmental Research*, 03(05):3854-3868.
5. Bhattacharjee A, JD Anadón, DJ Lohman, T Doleck, T Lakhankar, **BB Shrestha**, P Thapa, D Devkota, S Tiwari, A Jha, **M Siwakoti**, NR Devkota, **PK Jha** and NY Krakauer. 2017. The impact of climate change on biodiversity in Nepal: Current knowledge, lacunae, and opportunities. *Climate*, 5(4), 80. doi:10.3390/cli5040080.
6. Tiwari RM, **BB Shrestha** and TS Kohyama. 2017. Topographic and anthropogenic factors shaping subalpine *Abies spectabilis* forest in Langtang National Park, Eastern Himalaya. *Eurasian Journal of Forest Research*, 20:1-9.
7. **Shrestha BB**, JD Ranjit and **M Siwakoti**. 2017. Status of invasive alien plants in Nepal. In: Joshi BK, KC HB, Acharya AK (eds.) *Proceedings of Second National Workshop on Conservation and Utilization of Agriculture Plant Genetic Resources in Nepal*, Dhulikhel, 22-23 May 2017. National Agriculture Genetic Resources Center (NAGRC), Fruit Development Directorate (FDD), Department of Agriculture (DoA) and Ministry of Agriculture Development (MoAD), Kathmandu, p 446-452.
8. **Shrestha BB**, S Joshi-Rijal, N Bisht, S Yi, R Kotru, RP Chaudhary and N Wu. 2018. Inventory and impact assessment of invasive alien plant species in Kailash Sacred Landscape. ICIMOD Working Paper 2018/2. Kathmandu: ICIMOD.
9. Thapa S, V Chitale, SJ Rijal, N Bisht and **BB Shrestha**. 2018. Understanding the dynamics in distribution of invasive alien plant species under predicted climate change in Western Himalaya. *PLoS ONE*, 13 (4): e0195752. <https://doi.org/10.1371/journal.pone.0195752>.
10. Everard, M., Gupta, N., Chapagain, P. S., **Shrestha, B. B.**, Preston, G. and Tiwari, P. 2018. Can control of invasive vegetation improve water and rural livelihood security in Nepal? *Ecosystem Services* 32 (2018) 125–133. doi.org/10.1016/j.ecoser.2018.07.004.
11. Smith-Hall C, M Pouliot, D Pyakurel, N Fold, A Chapagain, **S Ghimire**, H Meilby, L Kmoch, **DJ Chapagain**, A Das, H Jun, K Nepal, **MR Poudyal**, G Kafle and HO Larsen. 2018. *Data Collection Instruments and Procedures for Investigating National-Level Trade in Medicinal and Aromatic Plants: The Case of Nepal*. Department of Food and Resource Economics, University of Copenhagen, IFRO Documentation, No. 2018/2. https://curis.ku.dk/ws/files/196408842/IFRO_Documentation_2018_2.pdf.
12. Rana HK, H Sun, A Paudel and **SK Ghimire**. 2018. *Saussurearamchaudharyi* (Asteraceae), a new species from Nepal. *Phytotaxa*, 340 (3): 271–276.
13. **Ghimire SK**. 2017. Monitoring responses of alpine vegetation to climate change using the GLORIA methodology in the Nepal Himalaya. In: *Regional Orientation on Long Term Environmental and Socio-ecological Monitoring, 14–18 November 2016, Pokhara, Nepal*

- (ICIMOD), pp. 29-31. ICIMOD Workshop Report. ICIMOD, Kathmandu, Nepal.
14. Chapagain A, RP Chaudhary and **SK Ghimire**. 2017. Variation in leaf biomass and fruit output of *Juniperus indica* Bertol., along an elevation gradient in north-central Nepal. *Banko Jankari*, 27(1): 3-10.
 15. Rana SK, HK Rana, **SK Ghimire**, KK Shrestha and S Ranjitkar 2017. Predicting the impact of climate change on the distribution of two threatened Himalayan medicinal plants of Liliaceae in Nepal. *Journal of Mountain Science*, 14(3): 558-570.
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 17. Rana N. and **SK Ghimire**.2017. Variation in adaptive traits of an endemic *Meconopsis napaulensis* DC. along an elevation gradient in alpine Himalaya, Central Nepal. *Open Science Journal*, 2(1).
 18. Kafle G., I Bhattarai-Sharma,,**M Siwakoti** and AK Shrestha. 2018. Demand, end-uses, and conservation of alpine medicinal plant *Neopicrorhiza scrophulariiflora* (Pennell) D. Y. Hong in Central Himalaya. *Hindawi Evidence-Based Complementary and Alternative Medicine*, Vol.2018, Article ID 6024263, <https://doi.org/10.1155/2018/6024263>.
 19. **Shrestha BB**, UB Shrestha, KP Sharma, R Thapa-Parajuli, **A Devkota** and **M Siwakoti**. 2018. Community perception and prioritization of invasive alien plants in Chitwan-Annapurna Landscape, Nepal. *Journal of Environmental Management*. DOI: 10.1016/j.jenvman.2018.06.034.
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 21. Adhikari HS and **SK Jha**. 2017. Postharvest microbial contamination in oyster mushroom and their management using plant essential oils. *Bio Bulletin*, 3(1):104-108.
 22. Balami, S, **LB Thapa** and **SK Jha**.2017. Sterilization effect of *Ageratina adenophora* invaded and un-invaded soils on seedling growth and development of native *Schima wallichii* in Nepal. *Physiological Ecology & Environmental Science*, 8(1&2):23-30.
 23. Balami, S, **LB Thapa** and **SK Jha**. 2017. Effect of invasive *Ageratina adenophora* on species richness and composition of saprotrophic and pathogenic soil fungi. *Biotropia*, 24(3): 212–219. DOI: 10.11598/btb.2017.24.3.702
 24. Regmi S and **SK Jha**. 2018. Antifungal activity of plant essential oils against *Fusarium oxysporum* Schlecht. And *Aspergillus niger* rVan Tiegh. From papaya. *International Journal of Current Trends in Science and Technology*,8(1):20196-20204. DOI: 10.15520/ctst.v8i01.233.
 25. **Jha SK** and **LB Thapa**. 2018. Microfungi isolated from water hyacinth (*Eichhornia crassipes*) compost. *Bio Bulletin*, 4(1): 43-47.
 26. **Aryal HP** and U Budhathoki. 2017. New report of Termitophilic fungi from Nepal. *Journal of Basic and Applied Plant Sciences*. 1(1): 104. <http://elynsigroup.com>.
 27. **Aryal HP**. 2017a. Some pteridophytes of medicinal importance from Dang District of west Nepal. *Gantayabya*, 1(7): 33-38.
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 29. Moonlight PW, WH Ardi, LA Padilla, **S. Rajbhandary**, et.al. 2018. Dividing and Conquering the Fastest Growing Genus: Towards a Natural Sectional Classification of the mega diverse genus *Begonia* (Begoniaceae). *Taxon*, 67(2): 267–323.
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41. Tamrakar P, SK Shakya and **CB Baniya**. 2017. Physico-chemical and bacteriological composition in a metropolitan drinking water distribution system in Kathmandu. *Journal of Institute of Science and Technology*, 22(1): 159-164.
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43. Pandey B. and **A Devkota**.2017. Evaluation of bacteriological parameters and heavy metal contents on water of TinauRiver, Butwal, Rupandehi, Nepal. *Our Nature*, 15(1-2): 1-6. DOI: 10.3126/on.v15i1-2.18787.
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45. **Pant KK** and SD Joshi.2018. In vitro bud induction from the nodes of *Asparagus racemosus* Willd. and their germination behaviors. *International Journal of Technical Research and Science*. 3(II): 47-50.
46. **Pant KK**. 2018. Neglected vegetables of Nepal: Status and need for further research and utilization. *Indian journal of plant sciences*, 7(1): 18-21.
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52. Pant, B., Shah, S., Shrestha, R., Pandey S., Joshi, P.R. 2017. An Overview on Orchid Endophyte, In: Mycorrhiza (eds. Varma A, Prasad R and Tuteja N) Springer International Publishing AG (Pages 503-524)
53. Kafle, G., Bhattarai, I., Shrestha, AK & Siwakoti, M. 2018. Consumers Caring Health with End Products (Ayurvedic Medicines) Containing *Neopicrorhiza scrophulariiflora* in Nepal. *International Journal of Ayurvedic Medicine*, 2018, 9(2), 123-132.
54. Kafle, G., Bhattarai (Sharma), I., Siwakoti, M. and Shrestha, A. K. 2018. In the search of end products of commercially important medicinal plants: A case study of yarsagumba (*Ophiocordyceps sinensis*) and bish (*Aconitum spicatum*). *Journal of Agriculture and Forestry University* 2: 231- 239.

Books published by the department colleague (2010-2017)

- Journal "**Botanica Orientalis**" published by Central Department of Botany, Tribhuvan University (volume 1 to 11) (**Appendix – E, Annex – 1**).
- Newsletter "**Vanaspati**" published by Central Department of Botany, Tribhuvan University (No.1 1993; No.2, 1995; No. 3, 1998; No.4, 2003, No. 5, 2004; No.6, 2006; No. 7, 2007; No.8, 2008; No. 10, 2011; No. 11, 2012; No. 12, 2013; No. 13 2014, 14 2015. 15 2016, 16 2017) (**Appendix – E, Annex – 2**).
- **Flora of Nepal: Magnoliaceae to Rosaceae** (2011), volume 3. Watson, M., S. Akiyama, H. Ikeda, C. Pendry, K.R. Rajbhandari and K.K. Shrestha (Eds.), (**Appendix – C, Annex – 1**).
- **Taxonomic Tools and Flora Writing** (2015). Siwakoti, M. and S. Rajbhandary (Eds.) (**Appendix – C, Annex – 2**)
- **Frontiers of Botany (2016)** Editors: Prof. Pramod Kumar Jha, Prof. Mohan Siwakoti and Prof. Sangeeta Rajbhandary (**Appendix – C, Annex – 3**).
- **Souvenir** (Golden Jubilee Issues, 2065-2015). Editors: Prof. Mohan Siwakoti, Prof. Sangeeta Rajbhaandary, Dr. Giri Prasad Joshi and Dr. Chandra Prasad Pokhrel (**Appendix – C, Annex – 4**).
- **Catalogue of Monocot Plants Deposited at Tribhuvan University Central Herbarium (2016)**. Rajbhandary, K.R., Siwakoti, M., S. Rajbhandary & S.K. Ghimire (**Appendix – C, Annex – 5**).
- **Abstract of international Conference on Biodiversity, Livelihood and Climate Change in the Himalayas.** (2015). Jha, P.K., K.K. Shrestha, R.P. Chaudhary, B.B. Shrestha (Eds.) (**Appendix – C, Annex – 6**).
- **Proceedings of International Conference on Biodiversity, Livelihood and Climate Change in the Himalaya** (2015). Jha, P.K., Shrestha, KK, Chaudhary RP, Shrestha BB. (**Appendix – C, Annex – 7**).
- **Abstract of International Conference on Biodiversity, climate change Assessment and Impacts on Livelihood** (**Appendix – C, Annex – 8**).
- **A Treasure Trove of Orchids in Central Nepal (2016)**. Pant, B., Paudel, M.R., Chand, M.B. and Wagner, S.H. (**Appendix – C, Annex – 9**).
- **Abstracts, MSc and PhD Dissertations in Botany (2006)**. Compiled by Pant B and Ghimire SK, Central Department of Botany, TU (**Appendix – C, Annex 10**).

118. Does the cell also collect responses, if any, on the published information? (2)

Yes (2) No (0) If yes, give details

- Individual corresponding author/s correspond to the publisher of the journal. Publication committee also suggests the authors to improve the paper. Publications are improved based on responses.
- The EMIS cell has been working to update the data, it collects responses from article citations, journal rankings and feedbacks are received from students and teachers.

119. Is there any system to evaluate the impact of public information on quality improvements? (2)

(2)

Yes (2) No (0) If yes, how these impacts are measured?

- Within the Department evaluation is done through different committees (Subject committees, EMIS, IQSC, Faculty Board, etc.)
- Policy of the TU changes according to the need of Nepalese people and their requirement.
- In 2018, TU has been ranked among top 800 to 1,000 universities in the world by the United Kingdom-based Times Higher Education-World University Rankings (THE-WUR). The department publication added the values for increasing TU academic rankings).
- TU VC Prof. Tirth Raj Khaniya had participated in the world university ranking programme organised by THE-WUR in Singapore from September 25 to 27. This is the first time TU applied for the ranking. Khaniya said, “The criteria for selection are so tough that many universities don’t even get through the selection process. We met the criteria. This is an achievement for us.” (Related news appeared in print in The Himalayan Times on October 08, 2018).
- Most of department faculties published their research in a high SCImago impact factors journals, the articles of department journal (*Botanica orientalis*) are in Nepjol website.

120. Mention some positive impacts made by the public information practice. (2.5)

- Data exchange/received
- International collaboration
- Department profile
- Support in research
- Evaluation and research work
- Conference invitation
- Website update
- International admission and Scholarship for PhD
- Promotion of TU faculties through Service Commission

PART TWO

Section I: Preamble

The Central Department of Botany under Tribhuvan University is a pioneer institution in Nepal for promoting plant science related research and academic courses to produce the high-level human resource through quality education. If we see the history of development of botany subject (plant science) in the country as an academic/ professional subject at higher level, we need to go back in 1947, when biological science at intermediate level was introduced at Tri-Chandra College and it was upgraded to Bachelor level in 1950 and Post graduate in 1965 at the same college. The Botany Department was moved to Kirtipur from Tri-Chandra College in November 1967 (Mangsir 13, 2024 B.S.) for Post Graduate level teaching. The Botany Department was upgraded to Central Department of Botany in 1987 for M.Sc. and Ph.D. Level studies and to strengthen research in plant science. The Department produces every year about 35 post graduate plant scientists with specialization in Plant Systematics and Biodiversity, Ecology and Resource Management, Plant Pathology and Applied Mycology, Plant Biotechnology and Biochemistry.

Till now, the department has produced over 2800 botanists having M.Sc. degree. A total of 44 Ph.D. have been awarded from this department with specialization in ecology, plant systematics, pathology, cytology and genetics, about half a dozen scholars have submitted their thesis for final evaluation and more than one dozen scholars are actively working for their Ph.D. research covering wide range of topics on plant science. The department has also been publishing a journal (*Botanica Orientalis*) and a newsletter (*Vanaspati*) annually to disseminate scientific findings and departmental activities. The Department has been collaborating with different national and international institutions for different research and Ph.D. program in plant science. The department is one of the key partners for the publication of Flora of Nepal. Every year, departmental colleagues publish over three dozens of research papers in different peer-reviewed journals.

Similarly, aiming to understand biodiversity conservation and development theory, to develop an advanced knowledge on biodiversity, development policy and management of biological resources, the Central Department of Botany (CDB) has started a master level program on Biodiversity and Environmental Management (BEM) since 2008. At beginning (up to 2013), M. Sc. BEM program was supported by University of Bergen, Norway. Beyond 2013, the BEM has been continued in the department by its own internal resources by incorporating several applied and professional courses related to biodiversity and environmental management (**Appendix – E, Annex - 3, Prospectus**).

ACADEMIC PROGRAMS

1. M. Sc. in Botany

The M.Sc. program is of four semesters, each of six months duration with final examination at the end of each semester. The Department enrolls 35 students in the first semester. Students with B.Sc. Botany or equivalent degrees from recognized universities can apply for admission, which is based on entrance examination (100%). The Department has already produced about 2500 M.Sc. botany graduates. The two-year M.Sc. course encompasses both coursework and research. Every student has to write dissertation in the fourth semester (**Appendix – D, Annex – 1**).

M.Sc. BOTANY COURSE STRUCTURE (2074/2017)

SEMESTER I: Theory + practical (lab/field work)

Credit: 17; Full marks: 425

Course No	Title	Credit	FM
BOT 501	Diversity and Evolution of Virus, Bacteria, Fungi and Lichen (theory)	3	75
BOT 502	Diversity and Evolution of Virus, Bacteria, Fungi and Lichen (practical)	1	25
BOT 503	Diversity and Evolution of Non-Vascular Plants: Algae and Bryophytes (theory)	3	75
BOT 504	Diversity and Evolution of Non-Vascular Plants: Algae and Bryophytes (practical)	1	25
BOT 505	Diversity and Evolution of Vascular Plants I: Pteridophytes and Gymnosperms (theory)	3	75
BOT 506	Diversity and Evolution of Vascular Plants I: Pteridophytes and Gymnosperms (practical)	1	25
BOT 507	Diversity and Evolution of Vascular Plants II: Angiosperms (theory)	2	50
BOT 508	Diversity and Evolution of Vascular Plants II: Angiosperms (practical)	1	25
BOT 509	Field work (techniques of specimen collection, preservation and curation – 2 times each of 7 days) and seminar	2	50
Total		17	425

SEMESTER II: Theory + Practical (Lab/Fieldwork)

Credit: 18; Full mark: 450

Course No	Title	Credit	FM
BOT 551	Ecology (theory)	3	75
BOT 552	Ecology (practical)	1	25
BOT 553	Cytology and Genetics (theory)	3	75
BOT 554	Cytology and Genetics (practical)	1	25
BOT 555	Plant Physiology (theory)	3	75
BOT 556	Plant Physiology (practical)	1	25
BOT 557	Plant Systematics (theory)	3	75
BOT 558	Plant Systematics (practical)	1	25
BOT 559	Field work (techniques of ecological sampling, vegetation and floristic study – 1 time of at least 15 days duration) and seminar	2	50
Total		18	450

SEMESTER III: Theory + practical (Lab/field work)**Credits: 18; Full marks: 450****1. Compulsory Paper – 6credits**

Course No	Title	Credit	FM
BOT 601	Research Design and Biological Data Analysis (theory)	3	75
BOT 602	Research Design and Biological Data Analysis (practical)	2	50
BOT603	Dissertation Proposal and Seminar	1	25
Total		3+3	150

2. Special Paper [any one group* 8 credits

Course No	Title	Credit	FM
	Group A		
BOT 611	Functional Plant Ecology (theory)	3	75
BOT 612	Functional Plant Ecology (practical)	1	25
BOT 613	Landscape and Global Change Ecology (theory)	3	75
BOT 614	Landscape and Global Change Ecology (practical)	1	25
	Group B		
BOT 615	Applied Systematics (theory)	3	75
BOT 616	Applied Systematics (practical)	1	25
BOT 617	Biodiversity and Biogeography (theory)	3	75
BOT 618	Biodiversity and Biogeography (practical)	1	25
	Group C		
BOT 619	Plant Biotechnology (theory)	3	75
BOT 620	Plant Biotechnology (practical)	1	25
BOT 621	Genetic Engineering (practical)	3	75
BOT 622	Genetic Engineering (theory)	1	25
	Group D		
BOT 623	Applied Mycology (theory)	3	75
BOT 624	Applied Mycology (practical)	1	25
BOT 625	Advanced Plant Pathology (theory)	3	75
BOT 626	Advanced Plant Pathology (practical)	1	25
Total		6 + 2	200

3. Applied Paper [any one of the following* 4 credits

Course No	Title	Credit	FM
BOT 631	Natural Resources Management (theory)	3	75
BOT 632	Natural Resources Management (practical)	1	25
BOT 633	Plant Conservation Biology (theory)	3	75
BOT 634	Plant Conservation Biology (practical)	1	25
BOT 635	Molecular Biology (theory)	3	75
BOT 636	Molecular Biology (practical)	1	25
BOT 637	Food Security and Food Safety (theory)	3	75
BOT 638	Food Security and Food Safety (practical)	1	25
Total		3+1	100

** Department will run all or any of the given special and applied paper based on the availability of resources.*

SEMESTER IV: Compulsory Paper (Dissertation)

Credits: 8

Course No.	Title	Credit	Full marks
BOT 651	Dissertation	8	200

Excursion

There shall be at least one botanical excursion for I and II semesters. It pertains to different botanical regions of the country. Botanical excursion is highly essential for studying the vegetation in its natural state and flora. The students submit their excursion reports during the annual practical examination.

2. M.Sc. in Biodiversity and Environmental Management

The M. Sc. program in Biodiversity and Environmental Management (BEM) was started in 2008 with financial support from Norway (NOMA program) and academic support from Kunming Institute of Botany (China), Kumaun University, and Jawaharlal Nehru University (India) as a regional degree program. The program ended in 2013. Since 2014, the CDB has continued this program after necessary changes in its course structure with internal financial resources. This is a four semesters program; the first semester covers basic conceptual courses while the second and third semesters cover advanced courses. The final semester covers elective courses and the dissertation work. The basic criterion for admission is Bachelor's degree in biological sciences such as botany, zoology, microbiology, biotechnology, environmental science, forestry, agriculture, natural resource management etc. The M. Sc. program consists of a dynamic combination of course work, research training and dissertation writing (**Appendix – D, Annex – 2**). The course is applied and management oriented. Expert from other department, government officers and INGOs are involved in teaching and research.

M.Sc. Biodiversity and Environmental Management (BEM)

COURSE STRUCTURE

Course no.	Course name	Credits
Semester 1: Core courses (total credits: 17)		
BEM 511	Population, community and ecosystem ecology (Theory)	3
BEM 512	Population, community and ecosystem ecology (Practical)	1
BEM 513	Biodiversity and biogeography (Theory)	3
BEM 514	Biodiversity and biogeography (Practical)	1
BEM 515	Mountain ecology (Theory)	3
BEM 516	Mountain ecology (Practical)	1
BEM 517	Environmental issues (Theory)	3
BEM 518	Environmental issues (Practical)	1
BEM 519	Term paper I	1
Semester 2: Core courses (total credits: 16)		
BEM 551	Biodiversity conservation (Theory)	3
BEM 552	Biodiversity conservation (Practical)	1
BEM 553	Environment and natural resource management (Theory)	3
BEM 554	Environment and natural resource management (Practical)	1
BEM 555	Remote sensing and GIS(Theory)	3
BEM 556	Remote sensing and GIS(Practical)	1

BEM 557	Ethnoecology (Theory)	2
BEM 558	Ethnoecology (Practical)	1
BEM 559	Term paper II	1
Semester 3: includes core and optional courses (total credits: 15)		
BEM 611	Agro-ecology (Theory)	2
BEM 612	Agro-ecology (Practical)	1
BEM 613	Biological invasion (Theory)	2
BEM 614	Biological invasion (Practical)	1
BEM 615	Environmental biotechnology (Theory)	2
BEM 616	Environmental biotechnology (Practical)	1
BEM 617	Research design and biological data analysis (Theory)	2
BEM 618	Research design and biological data analysis (Practical)	2
BEM 619	Dissertation planning (proposal writing)	1
BEM 620	Seminar and term paper III	1
Semester 4: Compulsory (total credits: 11)		
BEM 651	Philosophy of Science and Research Ethics	1
BEM 652	Dissertation	8
Semester 4: Elective– anyone from the following (total credits: 11)		
BEM 653	Palaeoecology and Dendrochronology (Theory)	2
BEM 654	Palaeoecology and Dendrochronology (Practical)	1
BEM 655	Genetics and Molecular Ecology (Theory)	2
BEM 656	Genetics and Molecular Ecology (Practical)	1
BEM 657	Microbes and Human Resources (Theory)	2
BEM 658	Microbes and Human Resources (Practical)	1

Excursion

There shall be at least one field excursion for I and II semesters. It pertains to different ecological regions of the country. Field excursion is highly essential for learning field research methods and studying the environmental status and conservation efforts in its natural state and management regimes. The students submit their excursion reports during the annual practical examination.

Ph. D. Program

The Central Department of Botany is actively engaged in the Ph.D. research besides its regular teaching and research programs for the Master Degree in Botany and BEM. Ph.D. at the department covers a range of topics such as classical taxonomy through evolutionary developmental genetics, phylogenetics, floristics, vegetation ecology, microbial ecology, invasion ecology, agroforestry, ecophysiology, ethnobotany, ethnoecology, resource conservation, tissue culture, cytogenetics, mycology, phytochemistry, etc. A total of 44 Ph.D. awards have been conferred since Ph.D. program started in this department with specialization in ecology, plant systematics, pathology, cytology and genetics. Currently, 28 students are actively carrying their research. The Ph.D. awarded students have returned to lectureships or research positions in their own institutions and fresher's have joined new jobs in different institutions. Ph.D. scholars have visited and conducted their research in world's reputed research laboratories and herbaria overseas. Previously a Ph.D. research laboratory was established and funded by University Grant Commission (UGC), Nepal. Application for Ph. D. enrollment is called every year in July by Dean Office IOST.

Quality Assurance and Accreditation (QAA)

The Central Department of Botany is leading towards autonomy and the center for Excellency by enhancing the quality of teaching and research in plant science. Accreditation is a step towards accessing one's quality and promising to make necessary improvement in needed areas. Self-study report preparation was opportunity to assess our strength and weaknesses. Through this process, we assessed our performance and challenges. It inspires the institution and professionals to achieve institutional environment for better quality of teaching-learning and research.

IQAC name list

IQAC of following members has been formed for the implementation of departmental and TU decisions as well as reviewing progress update.

1. Prof. Dr. Mohan Siwakoti
2. Prof. Dr. Mohan Prasad Panthi
3. Prof. Dr. Sangeeta Rajbhandary
4. Prof. Dr. Ram Kailash P Yadav
5. Prof. Dr. Bijaya Pant
6. Dr. Suresh Kumar Ghimire.

Self-Study Report Process

Acknowledging the importance of QAA, initially, the Central Department of Botany gave a responsibility to the following 4 members to complete the SSR document.

1. Prof. Dr. Pramod Kumar Jha
2. Prof. Dr. Mohan Siwakoti
3. Prof. Dr. Sangeeta Rajbhandary
4. Dr. Giri Prasad Joshi.

In 2074, SSR was updated as per the suggestion of Pre-visit team by involving all the faculties of Central Department of Botany; however, major responsibility was taken by following members.

1. Prof. Dr. Mohan Siwakoti, Head
2. Prof. Dr. Sangeeta Rajbhandary
3. Dr. Bharat Babu Shrestha
4. Dr. Giri Prasad Joshi
5. Dr. Lal Bahadur Thapa
6. Dr. Hari Prasad Aryal.

Section II

II: Criteria Wise Narrative

Criteria 1: Policy and Procedures

Objectives/Targets

The objectives and targets are:

- to develop clear vision, mission, goals and objectives of the institute.
- to develop and effectively implement academic calendar of the institute
- to attract talented students
- to develop effective evaluation system for impartially examine the talent of students
- to produce high quality human resources to compete at national and international markets
- to promote the skill and capacity of non-teaching staffs.

Current Status

- The Central Department of Botany has own vision, mission, goals and objectives and follows the Tribhuvan University policy as
- The department follows the academic calendar of Tribhuvan University (Institute of Science and Technology), there is also an internal academic calendar and monitoring system for effective implementation of calendar and academic courses.
- The department selects the talented students through the entrance examination process (where 100% weighted is given to entrance examination marks).
- There is a practice of regular attendance (at least 80%), internal assessments for each semester, class presentations, seminars, internal examiners and external examiners from outside department and final examination from Dean Office. Academic courses are regularly updated every one or two year.
- Department encourages the non-teaching staffs to participate in skill and capacity promotion trainings organized by different institutions of Tribhuvan University and others.
- Department organizes national and international conferences, seminars, workshops, etc., for national and international exposures, disseminate research findings and promote interactions with international scientists and experts.

Fulfillment analysis

- The Department developed own academic calendar, external environment should be in place for strict implementation of calendar.
- Feedback system for policy improvement should be developed from stakeholders and students.
- Department should be autonomous to improve the internal management and research policy.
- Department should be developed and implementation of academic audit and performance appraisal/ review system to improve the quality performance of faculties.
- Department needs to develop annual effective research plan.
- Department needs to promote the supporting staffs by skilled and IT friendly trainings.
- Department should be capable to conduct the all kinds of examinations.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
Central Department of Botany has own vision, mission, goals and objectives	Lengthy and slow process of decision making	Central Department of Botany has a good reputation in Tribhuvan University and has a strong mechanism to implement.	Political influences in decision making.

Criteria 2: **Curricular Aspect**

Objectives/ targets

- The Central Department of Botany intends
- to develop a professional and dynamic academic program as per the vision and mission of institution.
- to design a curriculum with academic flexibility and diversity to attract the interest of students to enhance their competence, livelihood skills and job oriented subjects.
- to increase academic networking to national and international reputed institutions.
- to encourage extra-curriculum activities for all round development of students.

Current status

- Department has designed a curriculum in accordance to vision, mission, goals and objectives of Tribhuvan University.
- Department has developed and updated basic and applied courses based on research cum practical based teaching approach through involving the students in seminar, workshop, field excursion, report preparation and presentation in addition to regular theory and practical classes.
- In addition to B.Sc. and M.Sc. Botany subject courses, the department also engages for developing and implementing a new and separate M.Sc. for more applied management related courses in Biodiversity and Environmental Management (BEM).
- Experts are involved to develop curricula through series of interaction and feedback with subject experts and stakeholders.
- Curricula of international reputed Universities are also consulted to understand the international practices and make ready our students to compete at international markets.
- Subject standing committee reviews the curricula and full subject committee endorses/ recommends the courses for approval to Faculty board. Faculty board forward it to Academic council for approval.
- Courses are timely updated as per the feedback of subject experts and students as well as national and international demands
- Students are encouraged to participate in extra-curricular activities such as science exhibition, seminar, workshop, talk program, excursion, games and social activities.

Attachment of M. Sc. Courses of Botany and BEM (Appendix – D, Annex – 1 and 2)

Fulfillment analysis

- Department revises the courses time to time and introduces the skill and job-oriented subjects. Faculties visit and attend the academic seminars, conferences and interaction to national and international forum.
- Department organizes excursion to students to motivate in research and practically to understand the nature of courses.
- Department need to effectively implement the courses by developing a mechanism to motivate faculties, staffs and students.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
Developed curriculum in accordance to vision, mission, goals and objectives of Tribhuvan University	Faculties are not equally competent to the specialized subject.	Head of Department is a chair of subject committee and convener of examination.	Unexpected holiday and Nepal Band.

Criteria 3: Teaching-Learning and Evaluation

Objectives/ targets

Department intends/ encourages

- to follow the interactive cum research-based teaching-learning methodology and transparent evaluation system. The department adopts to systematic and practical teaching approach through course plan following academic calendar.
- to update faculties teaching capacity intends to organize orientation program, exposure visit, participation in national and international workshop/seminar, conference and publication.
- to enroll talented students through screening process (entrance examination) who are capable to understand the course contents properly.
- to attract high quality teachers and part time teachers by encouraging in research activities and publications.
- to adopt transparent system for evaluation of teachers, staffs and students.

Current status

- The Department follows academic calendar of Tribhuvan University to complete the courses in time and follows norms of University service commission to recruit the teachers and staffs.
- Students enroll on competitive basis by evaluating academic records and entrance examination. Transparent student admission system is properly followed.
- Almost all faculties are Ph. D., one new faculty is also doing Ph. D. research.
- Class lectures using modern technology (smart board, power point teaching and presentation), sometimes guest lectures by renowned experts, and interaction with students for improving teaching and learning processes.
- Faculties are motivated/ encouraged for post Doctorate researches as well as participate in conference/ seminar and publication of papers.
- Internal assessments, class presentation, regularity, term papers are the basis of internal evaluation of students.
- Memorandum of Understanding (MoU) with national and international research institutions/ universities is in place to exchange knowledge and technology between the institutions.
- Department annually publish a journal (*Botanica Orientalis*) to disseminate the research activities of department and newsletter (*Vanaspati*) to disseminate the overall academic activities of faculties and students.
- Department encourages to participate National and International Conferences, seminars to learn the national and international practices in research and disseminate research outputs.

Fulfillment analysis

- Internal evaluation system is properly followed, however, timely examination and result publication yet to be followed as per the academic calendar, may be due to external influences in academic environment of University. Further, the Main building of Botany department is collapsed due to the earthquake of Baishak 12, 13 and 29, 2072 B.S. (Gorkha earthquake, 2015) which disturbs the academic calendar as well as research activities of department for a while.
- Department updates courses regularly, but for effectively implementation requires teaching materials, equipment, exposure and sufficient spaces. Refresher program needs to be designed to upgrade the knowledge of teachers. Self-performance evaluation of teachers, staffs and students motivates their working capacity.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
Regular examinations, Well skilled manpower, Coordination and Student support	Traditional methods of examinations and evaluation process	All faculties are Ph.D. and strong international collaboration and exposure	Building construction not in time.

Criteria 4: Research, Consultancy and Extension

Objectives/ targets

The Department intends

- to promote the culture of research, consultancy and extension services
- to promote the Ph.D. research program
- to encourage faculties in research projects and publication
- to enhance knowledge of students by providing research exposure & extension services.
- to establish a student career counseling cell for overall development of students capacity.

Current status

- Department adopts a culture of research based teaching, most of the teachers are involved in research project individually or institutionally and some of students are also involved in teacher research work.
- Department follows the research guidelines of Tribhuvan University. Department has research committee (CDRC) to implement the research policy of university, mainly regarding to Ph.D. research. It also guided by the Ph. D. Research Guidelines of Dean office of Institute of Science and Technology.
- Ph.D. program of Central Department of Botany is a successful research program in Tribhuvan University. The Department has already awarded 43 Ph. D. and about 2 dozens scholars are involved in Ph.D. research work.
- Some of the Ph.D. scholars received full scholarship from the research projects awarded to department and some scholars received full or partial grants from University Grants Commission and Nepal Academy of Science and Technology. Faculties get study leave for Ph.D. from TU and other respective institutions.
- Department establishes a GIS and molecular laboratories for research and teaching purposes but there is a problem smoothly run this laboratory due to collapse of building.
- Department publishes a journal (*Botanica Orientalis*) annually to disseminate research findings of the department, in addition, many faculties and students published their findings in peer reviewed national and international journals.
- Bilateral agreement (MoU) has been made between renowned national and international research institutions/ universities to promote research activities.
- Department faculties are involved in a roster of experts prepared by related ministries and Departments (Forests and Soil Conservation, Environment, conservation related offices).
- Students are involved in extension services such as cleaning campaign, exhibition, excursion, and social works.
- Department conducts an orientation program in every year for the new entry students to familiarize with the faculties and staffs as well as departmental code, norms and activities
- Department organizes the training programs to provide exposure to students for promoting their capacity to compete different kinds of examinations related to jobs or research careers.

Fulfillment analysis

- Department needs autonomous research policy to manage fund or seed money to initiate the research proposal and to participate the faculties in international conferences/seminars as well as to support student research.
- Department needs encourage to publish the research articles by providing a suitable environment for the promotion the faculties designation. The University service commission evaluates the publications (research reports, research supervision, articles, and books) as a basis for promotion of faculty's designation.
- Limited number of students got the opportunity of grants from the research projects of faculties for their M.Sc. thesis. It should be accessible to all students.
- Department needs to establish a fully functional students career counseling cell.
- Department needs to offer a consultancy and extension services by making a roster of experts. Laboratory facilities need to be improved and refresher courses need to be given for technical staffs for better performance.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
Expertise of teaching faculties on their specific fields, national and international research projects	Laboratories and infrastructures with limited facilities for conducting various applied researches	Qualified faculties, international research exposures and research culture of department.	Laboratory space and fund for research.

Criteria 5: Infrastructure and Learning Resources

Objectives/ targets

The department intends:

- to develop sufficient infrastructure and learning resources for maintain high quality of education and research culture.
- to improve the quality of education and research through the utilization of available facilities.
- to develop the department autonomous institute as a Centre for excellency in botany teaching and research by improving infrastructure and learning resources.

Current Status

- Department develops a master plan for improving and proper utilizing the infrastructure and learning resources.
- Department has two buildings (one pre feb) for teaching and learning to master level students, they get opportunity for specialization in plant systematics, ecology, plant biotechnology and plant pathology.
- The separate laboratory for Ph. D. scholars is damaged by earthquake, however, they are working in the laboratories for Master Level. BEM Program has been conducting in morning session.
- In addition, department has a seminar Hall and Tribhuvan University Centre Herbarium, library, faculties room and administrative spaces despite the loss of main building by the earthquake of 2015.
- Department manages a power backup system (solar and inverter) in load shedding period to run the classes, research and official works regularly.

- Department has open internet facility and establishes a good library with relevant books, journals and reports. Students and faculties of department also use resources of the Tribhuvan University Central Library.
- Tribhuvan University Central Herbarium is established as a reference center for identification of plant specimens. A Memorandum of Understanding (MoU) is signed between the Department of Plant Resources and Central Department of Botany to use the resources of National Herbarium Godavari and for promote the collaborative research on the plant resource of Nepal.
- The botanical garden in the premises of department has been used as a learning center to students. Tribhuvan University has given the responsibility of management of Tribhuvan University Botanical Garden (old coronation garden) to Central Department of Botany. The department has developed a master plan for Tribhuvan University Botanical Garden and submitted to University.
- The earthquake of 2015 damaged main building including chemicals, glass wares and equipment of department, now department is facing space problem to run its regular program.
- Department has Library facility, students and faculties also utilized the facilities of Central Library and sport hall and Cricket stadium of University.
- Department planned a small departmental canteen in a new building, presently faculties and staffs utilized the departmental space for canteen, students utilized the food stall of nearby its gate, department also contacts with nearby hotel/ restaurant of Kirtipur city for guests. Tribhuvan University also planning for a good canteen and guest house at Kirtipur premises. A Kavard Hall in an area of 74 ropanees 5 annas with a capacity of 5000 viewers will be planned at TU premises which can be used for department.

Photo of Central Department of Botany Building design (attached)



Fulfillment analysis

- Department prepared a five year long master plan to develop infrastructure and learning resources facilities, need to be implemented.
- A permanent building is planned, Tribhuvan University approved the building design, and construction work will be started soon with the support of National Renovation Fund.

- Department establishes a library and Herbarium but due to lack of skill human resources these centers are not well operated hence students and faculties are not well benefitted properly.
- Department needs to employ a Librarian to start e-library, and a Herbarium curator for effectively operate the library and Herbarium.
- Department needs to explore a fund to develop a Tribhuvan University Botanical Garden as a conservation, learning and recreational center for visitors and students.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
Buildings, Computer and Internet facilities	Budget for construction, updating and maintenance	Quality in teaching and learning activities	Reconstruction, Regular maintenance, Financial problems

Criteria 6: Student Support and Guidance

Objectives/ targets

Department intends

- to overall development of students through curricular and extra-curricular activities,
- to involve students' participation in overall development of department
- to provide assistance in term of scholarship and research fund for the needy and meritorious students.

Current status

- Department organizes orientation program for fresh students to give information to highlights department activities and its rules and regulations of semester system.
- Department encourages students to participate in conferences, seminars and workshops.
- Department has introduced some soft skill oriented and need based syllabus such as field work, seminar, research methodology, proposal writing, Geographical Information System and Remote Sensing including organizing of short-term job oriented skill training program.
- Department provides applied and professional courses that makes easy to get employment in various government and non-government sectors including international scholarship.
- Students of Central Department of Botany are organized in a Botanical Society of Students (BOSS) which is formed in patron ship of department. BOSS actives in students' welfare and promotes academic environment of department. BOSS supports to organize seminar, workshop, botanical exhibition, excursion, talk program, games, and picnic including various social and cultural functions.
- Department provides the scholarship to needy and meritorious students as per university rules.
- Department involves the students in the research projects of department, thesis is compulsory for all students.
- Department intakes 35 students annually, drop rate is minimal only 1 or 2 in first year, 80% class attendance is compulsory and pass rate is 97-100%.
- Attendance for Ph.D. scholars is also compulsory, they are encouraged for participation/ paper presentation in national and international conferences and paper publication in peer reviewed journal.
- Head of Department regularly interacts with students to monitor about the progress of syllabus completion and recommends to examination section of Dean Office (IOST) for announcing the routine to examination.
- Formation of Alumni association of department is in process.

Fulfillment analysis

- Department maintains a close relation with students and gives orientation to all newly admitted students about the department policy, admission process, evaluation system, nature of syllabus, and code of conduct.
- Department provides financial support as per university's criteria and personal counseling to needy and meritorious students, however, the financial support is very minimal.
- Only few students got opportunity to involve in a research project, the department needs to explore the fund to adjust maximum number of students in research activities
- Department needs to explore the possibility of internships in relevant government and non-government institutions.
- Department needs to enhance its student support service, also encourage the involvement of students in various academic development works of the department.
- BOSS activities need to encourage for the development of department. Students profile needs to be developed/ updated to promote the work of Alumni association.
- Facilities for student counseling is not sufficient. Department plans to create a student career counseling cell.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
Teaching faculties, Revised curriculums and Student Association (BOSS)	Lacking of fund for students' support.	Try to get funding through international collaboration and nation institutes like UGC, NAST	Competition during the application for funding

Criteria 7: Information system

Objectives/targets

The objectives include:

- to have a proper database of students, teachers and staffs.
- to establish a well-equipped and active information unit for receiving needed information quickly and in accurate manner.
- to utilize data for decision making by establishing an effective feedback mechanism on relevant issues.

Current status

- The Administrative section of department maintains database of students, teachers and staffs including personal details, previous academic records, etc.
- Database of individual teacher and staff is available in filing system.
- Department doing work to develop an electronic version of database in additional manual filing system. Department has developed a specific unit of EMIS and identify the persons who are responsible to keep the database of internal assessment, practical examination, thesis examination and progress information of students, which makes easy to maintain the academic calendar of university.
- Examination database is maintained at Examination section of Dean Office of Institute of Science and Technology. Internal Assessments (Semester system), practical examination, thesis examination is conducted by Department.
- Notice for students, teachers and staffs are published and posted in department notice boards. Annual activities of faculties and students are published in a Newsletter (*Vanaspati*).

- Department (Head) collects the feedback/ information from teachers, staffs and students (even from higher authorities of university), also reviews the decisions/ regulations of department, for decision making and improvement.

Fulfillment analysis

- Database of students, faculties is properly maintained by Administrative section of Department. But database is kept in filing system and not in user friendly manner.
- A proper system for collection and use of the information in department is yet to be devised.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
EMIS software	Lacking a full-time administrative manpower	Due to the software departmental records are now well organized in datasheet.	Data has to be fully backup as electronic equipments may sometimes be a problem.

Criteria 8: Public Information

Objectives/ targets

Department intends

- to disseminate the information system of department for concerned stakeholders,
- to publish refined, impartial, quantitative and qualitative information regularly.
- to circulate information through a well-maintained website.

Current status

- Department publishes a newsletter (*Vanaspati*) to disseminate departmental activities and a journal (*Botanica Orientalis*) to disseminate research findings. It also publishes prospectus, manual, report and proceedings of seminar/ conference and workshop.
- Department has maintained a website for displaying events, course details, school activities, student's activities, admission procedure, faculty details, and vacancy announcement).
- Department manages 24 hours free Internet system for students, teachers and staffs.
- Interested and needy people can directly contact at Administrative section through phone, email or website or visiting the department to get necessary information.

Fulfillment analysis

- Department manages website and fast speed internet, to be worked properly requires regular updating. Department needs to keep the database for Information System Management System by updating/ improving the condition of computers, website, internet facilities.

SWOT Analysis

Strength (S)	Weakness (W)	Opportunity (O)	Threats (T)
Department has publications like <i>Vanaspati</i> , <i>Botanica Orientalis</i> , several books and well updated website	On timely publication due to constraint between teaching and research	Sharing of research information and activities of the department, which helps to disseminate departmental information for public Nationally and Internationally which helps to enhance National and International Collaboration.	Financial support for publications

Section III: Summary

Summary:

Self -study report was a great learning and self-assessment process for the Central Department of Botany. During the process of preparation of SSR, department came to realize its strengths and weakness.

Strength

- Well defined vision, mission, goals, and objectives of Tribuvan University.
- Department runs with a clear policy and procedures of University.
- Established brand name (recognized in national and international level).
- Practical based competitive and applied courses offered meeting both national and international standard.
- Department also conducts a separate applied program in M.Sc. Biodiversity and Environmental Management (BEM).
- Group of qualified and well exposure professional as faculty members.
- Students selected through systematic selection process by entrance examination.
- Adequate infrastructure and learning resources (new building is planned)
- Decision making through departmental meetings and following university rules and regulations.
- Students actively involved in academic progress of department.
- Departmental programs and activities guided by University Act.
- Transparency in management and operations.
- Graduates working in national and international organizations.
- Different research project funding by external agencies (national and international).
- Focus on research and Ph.D. works. Highest number of Ph.D. in science awarded from the department.
- Maintained website, internet, library, garden and Herbarium.
- Research based teaching approach which gives a competitive advantage to our graduates.
- National and international exposure to faculty members for all round development.
- Strong linkage with various national and international organizations for academic collaboration.
- Good harmony among and between faculties, students and staffs.

Weakness/challenges

- Faculties are over loaded
- University provides no fund for research and field excursion for faculties and students.
- Insufficient infrastructure and learning resources to run two M.Sc. (Botany and BEM) and Ph.D. programs.
- No formal mechanism to take students and stakeholders feedback.
- No human resource retention plan for outstanding students.
- No e-database recording system.
- Old fashioned/ non-updated administrative staffs.