



Tribhuvan University  
Institute of Engineering  
**Entrance Examination Board**

# Information Brochure

Entrance Examination and Admission Procedure for M.Sc. Programs

**IOE Entrance Examination Board-2080 B.S.**

2024 A.D.  
(2080 B.S.)



**Tribhuvan University  
Institute of Engineering  
Entrance Examination Board**

**Detailed Schedule for Entrance Examination of Masters Programs – 2080**

**Time and Date for Online Application:**

From 10 AM, 6<sup>th</sup> Falgun 2080 (18th February 2024)

To 3 PM, 20<sup>th</sup> Falgun 2080 (3rd March 2024)

**Admit card can be downloaded from:** 24<sup>th</sup> Falgun 2080 (29<sup>th</sup> February 2024)

From website: <https://entrance.ioe.edu.np>

Entrance Examination will be held at ICTC, IOE, Pulchowk, Lalitpur and Paschimanchal Campus, Pokhara:

From 29<sup>th</sup> Falgun 2080 (12<sup>th</sup> March 2024)

**Publication of Result:** 2<sup>nd</sup> Chaitra 2080 (15<sup>th</sup> March 2024)

Admission Notice for the successful candidates shall be published by the Admission Committees of Constituent Campuses of IOE.

त्रि वि इन्जिनियरिङ्ग अध्ययन संस्थानद्वारा शैक्षिक वर्ष २०८०।०८१ मा संचालन गरिने स्नातकोत्तर तहको प्रवेश परीक्षा उत्तीर्ण गर्ने परिक्षार्थीहरू नेपाल सरकार, शिक्षा मन्त्रालयको छात्रवृत्ति सम्वन्धी नियमावली अनुसार तोकिएको कानुनी मापदण्ड पुरा गरेमा सो मन्त्रालयद्वारा २०८०।०८१ मा प्रदान गरिने स्नातकोत्तर तहका उच्च शिक्षाका छात्रवृत्तीहरूका लागि समेत उम्मेदवार हुन योग्य हुनेछन ।

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# 1 INTRODUCTION

## 1.1 History of IOE

History of Engineering education in Nepal can be traced since 1942 A.D., when Technical Training School was established. Engineering section of the school offered only trades and civil sub-overseer's programs. In 1959 A.D., Nepal Engineering Institute, with the assistance of the government of India, started offering civil overseer courses leading to Diploma in Civil Engineering. The Technical Training Institute established in 1965 A.D., with the assistance from the Government of Federal Republic of Germany, offered technician courses in General Mechanics, Auto Mechanics, Electrical Engineering and Mechanical Drafting.

In 1972 A.D., the Nepal Engineering Institute at Pulchowk and the Technical Training Institute at Thapathali were brought together under the umbrella of the Tribhuvan University to constitute the Institute of Engineering and the Nepal Engineering Institute and the Technical Training Institute were renamed as Pulchowk Campus and Thapathali Campus respectively.

Since then, the Institute of Engineering has expanded considerably. The technician programs in Electrical, Electronics, Refrigeration/Air-conditioning Engineering were started in the Pulchowk Campus, with the assistance from UNDP/ILO in 1972 A.D. The Architecture Technician program was started by the IOE in its own effort in 1973 A.D. As first Bachelor's Degree level course in Engineering in Nepal, B. E. Civil Engineering was started in 1984 A.D. in its own effort. In 1994 A.D., with the assistance of the World Bank, the Swiss Government, and the Canadian Government, Bachelor Degree level courses in Engineering were extended to Electronics & Communication and Electrical engineering and, in 1995 A.D. Mechanical engineering and Architecture were started in the Pulchowk Campus. From the academic year 1998/99 A.D. Bachelor's Degree program in Computer Engineering and from 2001 A.D., Bachelor's Program in Agriculture Engineering were started at Purwanchal Campus, Dharan. In 2006 A.D., Bachelor's Program in Industrial Engineering, and in 2015 A.D., Bachelor's Program in Automobile Engineering were started at Thapathali Campus. Similarly, Bachelor's Program in Aerospace Engineering and Chemical Engineering were started in 2018 A.D. and 2019 A.D. respectively at Pulchowk Campus.

From the year 2014 A.D., all the diploma programs were phased out and the IOE concentrated its programs spanning from Bachelor through Master to Ph.D. levels.

### 1.1. Initiation of (Post Graduate) Master Programs in (IOE) Constituent Campuses

In 1996 A.D. Pulchowk Campus, with support from the Norwegian Government, started M.Sc. Courses in Urban Planning, Structural Engineering, Environmental Engineering and Water Resources Engineering. Pulchowk Campus also started M.Sc. courses in Renewable Energy Engineering, Geotechnical Engineering, Information and Communication and Power System Engineering effective from December, 2001 A.D. Currently, there are in total 22 different M.Sc programs in Pulchowk Campus. Pulchowk Campus also started regular Ph.D. admission from academic session 2010/11 A.D. in all departments. IOE has expanded Master's program in other constituent campuses since 2014 A.D. (2071 BS). Currently, there are three, five and two M.Sc programs in Thapathali Campus, Paschimanchal Campus and Purwanchal Campus respectively. A

category-wise detail of thirty-two different Master Programs and their intake capacities are given in Section 1.4 in Table I and Table II.

## 1.2. Online Application

The candidate willing to appear in the entrance examination to get enrollment into the M.Sc. program should fill and submit the Application Form online within the deadline prescribed by the Entrance Examination Board. Application forms will be available in the websites: <https://entrance.ioe.edu.np> from 6<sup>th</sup> Falgun 2080 (18<sup>th</sup> February 2024). The application procedures are as follows:

1. The candidate should deposit an amount of Rs 2,000 as an application fee for entrance Examination in any branch of Siddhartha Bank Limited by submitting a specially prepared voucher. The candidate should fill applicant's name and date of birth in this voucher. The Candidate can also deposit an amount of Rs.2000/- using Siddhartha BankSmart, e-Sewa, connectIPS and Khalti using the specified procedure given in the website: <https://entrance.ioe.edu.np>. Extra cost will be charged by e-Sewa, connectIPS and Khalti for using their services. On 20<sup>th</sup> Falgun 2080 (3rd March 2024), the applicant should deposit the prescribed application fee amount before 3:00 P.M. and should submit the filled up online form before 5:00 P.M. The Voucher No. / Transaction ID No. needs to be specified in the online application form. This application fee is non-refundable and will not be refunded in any case.
2. The candidate must select the appropriate entrance examination centre and entrance examination stream.
3. The candidate should fill up the other required fields in the form without skipping any steps.
4. The candidate also needs to upload his/her color photograph of prescribed specification and one of the following identification documents.
  - Citizenship certificate
  - Passport

If any change has to be made in the submitted application form, the applicant should follow the instructions provided for corrections in the website: <https://entrance.ioe.edu.np>

## 1.3. Provision of Admit Cards

Admit card can be downloaded from 24<sup>th</sup> Falgun 2080 (29<sup>th</sup> February 2024) onwards from the website: <https://entrance.ioe.edu.np>. **Applicants should bring the color printed admit card and the mentioned original identification document with him/her during the entrance examination.** Without original ID document and color printed admit card, applicant will not be allowed to appear in the entrance examination.

## 1.4. Intake Capacities

The quota distribution for all M.Sc. Programs on current intake capacities is listed in Table-I while the programs and offering department of constituent campuses are depicted in Table-II. The list of programs that will be offering Research Assistant/ Teaching Assistant (RA/TA) positions is given in Table-III.

**Table-I: Seats/Quota Distribution for All M.Sc. Programs**

Masters Programs	Regular Merit	IOE Reserved	Full Fee	Sponsored	Total Intake
Programs	5	1	6	8	20
Programs with RA/TA	5	1	6	12	24

1. One seat in regular category and One seat in full fee category are reserved for female candidates in each program
2. One seat is reserved for IOE faculty/staff in each program as IOE reserve Quota. For IOE Reserved Quota, the priority will be as follows:
  - First Priority: Permanent IOE faculty/staff on the basis of Entrance Examination rank.
  - Second Priority: IOE working faculty/staff who have completed minimum three years as a contract faculty.

If there is no applicant in IOE reserve quota, it is added to Full Fee Seat.

3. According to the Decision No. 1 of the Faculty Board Meeting 351 dated 2078/07/15, two seats are reserved for permanent TU and TU IOE teachers/staffs and their children. The priority for this reserved quota will be as follows:
  - First Priority: TU and TU IOE Faculties/Staffs on the basis of Entrance Examination rank.
  - Second Priority: TU and TU IOE Faculties/Staffs children on the basis of Entrance Examination rank.

If there is no applicant in this quota, it is added to Full Fee Seat.

4. 1/4<sup>th</sup> of the sponsored quota is reserved for the foreign students in each program.
5. Priority for the sponsored quota will be as follows:
  - First Priority: Candidates from government offices & Government Owned Organizations or Companies
  - Second Priority: Other Organizations
6. If applications are not received in sponsored/foreign category, then the vacant sponsored/foreign category seat will be transferred and fulfilled as Full Fee category.
7. In any program, if 60% of the full fee and sponsored seats are not fulfilled within first phase (first, second and third admission list) of the admission, that program must be suspended for that academic year by the concerned campuses and the amount paid by the candidate in the admission process must be refunded.

**Table -II M.Sc. Program and Offering Departments**

<b>Campus</b>	<b>Master Programs and Started Date</b>	<b>Department</b>
Pulchowk Campus, Pulchowk, Lalitpur	1. Information & Communication Engineering (2001)	Electronics & Computer Engineering
	2. Computer System and Knowledge Engineering (2012)	
	3. Computer Engineering Specialization in Data Science and Analytics (2020)	
	4. Computer Engineering Specialization in Networks and Cyber Security (2024)	
	5. Power System Engineering (2001)	Electrical Engineering
	6. Power Electronics and Drives Engineering (2023)	
	7. Structural Engineering (1996)	Civil Engineering
	8. Water Resources Engineering (1996)	
	9. Environmental Engineering (1996)	
	10. Geotechnical Engineering (2001)	
	11. Transportation Engineering (2011)	
	12. Disaster Risk Management (2011)	
	13. Construction Management (2013)	
	14. Hydropower Engineering (2018)	
	15. Renewable Energy Engineering (2001)	Mechanical Engineering
	16. Energy Systems Planning and Management (2012)	
	17. Mechanical Systems Design and Engineering (2016)	
	18. Material Science& Engineering (2014)	Applied Sciences and Chemical Engineering
	19. Climate Change and Development (2013)	
	20. Urban Planning (1996)	Architecture
	21. Energy Efficient Buildings (2016)	
	22. Architecture (2020)	
Thapathali Campus, Kathmandu	23. Earthquake Engineering (2014)	Civil Engineering
	24. Mechanical Engineering Design and Manufacturing (2016)	Mechanical & Automobile Engineering
	25. Informatics and Intelligent Systems Engineering (2020)	Electronics and Computer Engineering
Paschimnchal Campus, Pokhara	26. Communications and Knowledge Engineering (2014)	Electronics and Computer Engineering
	27. Distributed Generation Engineering (2014)	Electrical Engineering
	28. Infrastructure Engineering and Management (2014)	Department of Civil Engineering
	29. Rock and Tunnel Engineering (2020)	
	30. Geospatial Engineering (2020)	Geomatics Engineering
Purwanchal	31. Land and Water Engineering (2018)	Civil and Agriculture Engineering



Campus, Dharan	32. Sanitation Engineering/Science (2021)	Civil and Agriculture Engineering
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Following Programs of Pulchowk Campus will be offering RA/TA Positions for 2080 batch intake:

**Table -III List of Pulchowk Campus Programs offering RA/TA Positions**

	Program	RA/TA	Work Assignment Unit
1	Structural Engineering	TA - 1	Department of Civil Engineering (DoCE)
2	Water Resources Engineering	TA - 1	
3	Geotechnical Engineering	TA - 1	
4	Transportation Engineering	TA - 1	
5	Construction Management	TA - 1	
6	Hydropower Engineering	TA - 1	
7	Computer Engineering Specialization in Data Science & Analytics	TA - 1	Department of Electronics and Computer Engineering
		RA - 1	Quality Improvement Program
8	Power System Engineering	TA - 1	Department of Electrical Engineering
9	Mechanical Systems Design and Engineering	TA - 1	Department of Mechanical Engineering
10	Urban Planning	TA - 1	Department of Architecture

1. Application for RA/TA will be called by the Pulchowk Campus along with the call of admission of each batch.
2. Eligibility Provisions for RA/TA Applicants
  - I. To be an eligible candidate for a RA/TA position, student should have secured First Division or equivalent in his/her Bachelors level degree transcript.
  - II. RA/TA for each program will be selected on the merit basis of Entrance Ranking from the eligible applicants.
3. All activities related to RA/TA selection and enrollment are managed by corresponding Pulchowk Campus admission committee.
4. Monthly Scholarships/Stipend to RA/TA candidate and other terms of reference will be as per the RA/TA Guidelines of Pulchowk Campus.
5. Work station and associated work-load for these RA/TA positions are fixed as per the Campus assignment.

### 1.5. Provision for the Foreign Students

1/4<sup>th</sup> of sponsored quota in each program is reserved for foreign candidates interested to earn master's degree under IOE. They are eligible only for sponsored (self-sponsored) category and should be admitted as foreign students.

Following are the requirements for foreign candidates to study at IOE.

1. Candidates with foreign citizenship are recognized as foreign candidates and should have passed bachelor degree (four years) in engineering in relevant subjects at least with second division or equivalent. (See Section 2 for entry requirements of relevant streams in Bachelor to be enrolled in corresponding Master's Degree program).
2. Foreign candidates who have completed bachelor or equivalent degree from Colleges/Universities within Nepal should appear in the entrance examination by the normal entrance procedure. To enroll for the academic year 2024-2025, the applicant in this category should submit the followings:
  - a) Online Application Form.
  - b) Transcripts and Degree Certificates of Bachelor of Engineering Degree in required stream.
  - c) Scanned copy of the passport.

All these documents must be submitted via email at [entrance@ioe.edu.np](mailto:entrance@ioe.edu.np) on or before 20<sup>th</sup> Falgun 2080 (3rd March 2024).

3. Foreign candidates who completed bachelor or equivalent degree from Foreign Colleges/Universities outside Nepal must appear for test as prescribed by the Entrance Examination Board. To enroll for the academic year 2024-2025, the applicant in this category should submit the followings:
  - a) Online Application Form.
  - b) One recommendation letter from the past University subject instructor/supervisor or mentor.
  - c) Transcripts and Degree Certificates of Bachelor of Engineering Degree in required stream. The degree should be accredited by the concerned body of TU for admission.
  - d) One-page motivation letter not exceeding 500 words mentioning candidate's interest to study masters at IOE, TU, Nepal.
  - e) Scanned copy of the passport.

All these documents must be submitted via email at [entrance@ioe.edu.np](mailto:entrance@ioe.edu.np) on or before 20<sup>th</sup> Falgun 2080 (3rd March 2024). Candidate will be informed for test via telephone or email.

4. He / She is required to follow the enrollment process, procedure and schedule as notified by the campuses.

## 2 ENTRY REQUIREMENTS AND ADMISSION PROCEDURE

### 2.1 Eligibility Criteria

To be eligible for the admission to the Master Program, the candidate must fulfill the program entry requirements listed in Table-III.

**Table-III: Prerequisite Degree Requirements for M.Sc. Programs**

SN	Programs	Eligibility Requirements	
		Entrance stream	Pre requisite degree
1.	Urban Planning	PA/CA	B.Arch./B.E. (Civil) M.A.(Geography) or equivalent
2.	Information & Communication Engineering	EC	B.E. (Electronics/Computer) or Equivalent
3.	Structural Engineering	CA	B.E. (Civil) or equivalent
4.	Power System Engineering	EE	B.E. (Electrical) or equivalent
5.	Renewable Energy Engineering	MI	B.E.(Mechanical/Automobile/Industrial/Aerospace) or Equivalent
6.	Water Resources Engineering	CA	B.E. (Civil or Agriculture) or equivalent
7.	Geo-Technical Engineering	CA	B.E. (Civil) or equivalent.
8.	Transportation Engineering	CA	B.E. (Civil) or Equivalent
9.	Disaster Risk Management	CA/EE/EC/MI/PA/GE/AS	B.E. in any field/B.Arch. / M.Sc. Science
10.	Energy Systems Planning and Management	MI	B.E.(Mechanical/Automobile/Industrial/Aerospace) or Equivalent
11.	Computer System and Knowledge Engineering	EC	B.E. (Electronics/Computer/Software, Information Technology) or Equivalent
12.	Environmental Engineering	CA	B.E. (Civil or Agriculture) or equivalent
13.	Construction Management	CA/PA	B.E. (Civil or Agriculture) or B.Arch. or equivalent
14.	Climate Change and Development	CA/EE/EC/MI/PA/GE/AS	B.E in any field/B.Arch. /B.Sc. Agriculture/B.Sc. Forestry/B.Sc. (4 years) or equivalent
15.	Material Science and Engineering	CA/EE/EC/MI/PA/GE/AS	B. E. in any field/B.Arch. / B.Sc. Agriculture / M. Sc. for 3-year Bachelor degree, B.Sc. (4 years) or equivalent
16.	Earthquake Engineering	CA	B.E. (Civil) or equivalent
17.	Infrastructure Engineering and Management	CA	B.E. (Civil) or equivalent
18.	Communication and Knowledge Engineering	EC	B.E. (Electronics & Communication, Electrical & Electronics/Computer) or Equivalent
19.	Electrical Engineering in Distributed Generation	EE	B.E. Electrical or Equivalent
20.	Mechanical Engineering Design and Manufacturing	MI	B.E. Mechanical/ Automobile/ Industrial or Equivalent
21.	Mechanical Systems Design and Engineering	MI	B.E. Mechanical/Industrial/Automobile or Equivalent
22.	Energy Efficient Buildings	PA/CA	B.E. Civil/B.Arch. or Equivalent

23.	Hydropower Engineering	CA	B.E. Civil or equivalent
24.	Land and water Engineering	CA	B.E. Agriculture/Civil or equivalent
25.	Rock and Tunnel Engineering	CA	B.E. (Civil) or equivalent
26.	Informatics and Intelligent Systems Engineering	EC	B.E. (Electronics/Computer/Software/Information Technology) or Equivalent
27.	Geospatial Engineering	GE	B.E. Geomatics or equivalent
28.	Architecture	PA	B.Arch. or equivalent
29.	Computer Engineering Specialization in Data Science and Analytics	EC	B.E. (Electronics/Computer/Software/Information Technology) or Equivalent
30.	Sanitation Engineering/Science	CA/AS/GE	B.E. Agriculture/ Civil/ Environmental/ Geomatics/ Rural and Infrastructure Engineering or equivalent B.Sc. (4 years) / M.Sc. (for 3 years B.Sc.) in (Environmental Science/ Chemistry/ Microbiology/ Public Health)
31.	Power Electronics and Drives Engineering	EE	B.E. Electrical or Equivalent
32.	Computer Engineering Specialization in Networks and Cyber Security	EC	B.E. (Electronics/Computer/Software/Information Technology) or Equivalent

**Note:** Equivalent means the same kind of degree obtained from Universities other than TU and recognized by TU as the equivalent to the degree provided by TU in the same discipline.

- Should have undergraduate grades not less than prescribed by the Faculty Board of IOE, and should secure minimum score, as prescribed by the Faculty Board of IOE, in the entrance test conducted by the Entrance Exam Board of IOE.
- In the case of AMIE applicants, the applicants must produce the certificate of completion of pre-requisite courses for B.E. equivalence as prescribed by IOE.
- Equivalent certificate must be submitted at the time of admission.

## 2.2 Mode of Entrance Examination

The candidate should appear in one of the streams (listed in Table-IV) of entrance examination and qualify for admission in relevant Master Program at IOE.

**Table-IV: Entrance Streams and Code**

S. No.	Entrance Stream	Entrance Code
1	Planning and Architecture	PA
2	Civil & Agriculture Engineering	CA
3	Electrical Engineering	EE
4	Electronics & Computer Engineering	EC
5	Mechanical and Industrial Engineering	MI
6	Applied Science	AS
7	Geomatics Engineering	GE

- Entrance examination will be of Computer Based Multiple Choice Type of 2 hours duration consisting of two sections. **Section- A** consists of 45 questions for 50 marks. While **Section-B** consists of stream specialized course with 50 numbers of questions of 1 mark each.

- The Candidates have to secure minimum marks as prescribed by the Faculty Board of IOE.
- All questions will be in English.
- There will be 10% negative marking for wrong answer.
- Non programmable calculators are permitted. Exchange of calculators is strictly prohibited. Candidates have to bring their own calculators in the exam hall.

## 2.3 Result Publication

The Entrance Examination Board of IOE will publish the list of the successful candidates in the entrance examination notice board as well as in the website: <https://entrance.ioe.edu.np/> on 2<sup>nd</sup> Chaitra 2080 (15<sup>th</sup> March 2024). After publication of the result the Admission Committee of Constituent campuses will take care of admission procedure. So, all the successful candidates are requested to contact respective Constituent Campuses for Admission procedure.

## 2.4 Selection Process for Admission

- ❖ The successful candidate in entrance exam who has passed the relevant bachelor degree should submit the admission form of corresponding campuses
- ❖ From the list of applicants for any M. Sc. Program the applicant will be selected for the admission on the basis of score of the Entrance examination and his/her preferred M. Sc. Program.
- ❖ Admission committees of respective Campuses will publish the list of admission as per its schedule. The candidates should contact the respective Campus Admission Committee. All the selected candidates should follow the schedule published by the committee. Vacant seats due to the failure of any candidate to enroll in the prescribed time will be filled by other applying candidates from the subsequent lists.
- ❖ Sponsored candidates are processed in the first phase (first, second and third admission list) of the admission list only.

## 2.5 Admission

- ❖ The candidate who is listed on admission list of campuses should pay required fee and complete the procedures within the time prescribed by the Admission Committee of the Campuses. Candidates failing to do so will lose the opportunity to get the admission. The following documents should be presented at the time of admission:
  - Original and attested copies of transcripts of all academic records from SLC onwards to the latest approved degree (bachelor/masters).
  - Original copies of migration certificate, if applicable.
  - Original copy of Nepali citizenship certificate, passport for foreign students
  - Copy of Score Card of entrance examination.
- ❖ In case of discrepancy on verification of the original certificates, or in case of inclusion of the candidate's name in the admission list by mistake of any kind, admission of such a candidate will be cancelled even after his /her formal admission.
- ❖ **To be eligible for master's entrance application, the candidate must have passed bachelor degree at least in second division in relevant subjects.**

**Note:**

In any program, if 60% of the full fee and sponsored seats are not fulfilled within first phase (first, second and third admission list) of the admission, that program must be suspended for that academic year by the concerned campuses and the amount paid by the candidate in the admission process must be refunded.

## 2.6 Fee Structure

**Fees arrangement for Master's Program will be as follows:**

	Regular	Full fee	Sponsored	Foreign Student
<b>Tuition fee (Per Semester)</b>	13,032/-	58,850/-	1,58,895/-	US \$ 2,118/-
<b>Exam Fee (Per Semester)</b>	2,500/-	2,500/-	2,500/-	US \$ 25/-
<b>Application Processing Fee (Per Semester)</b>	100/-	100/-	100/-	US \$ 1/-
<b>Exam Centre Fee (Per Semester)</b>	150/-	150/-	150/-	US \$ 2/-
<b>Deposit (Refundable)</b>				
<b>Campus Deposit</b>	1,000/-	1,000/-		US \$ 10/-
<b>Lab Deposit</b>	1,000/-	1,000/-		US \$ 10/-
<b>Library Deposit</b>	1,000/-	1,000/-		US \$ 10/-
<b>Deposit (Nonrefundable)</b>				
<b>Campus development Fund</b>	3,000/-	3,000/-		US \$ 200
<b>Maintenance Fund</b>	2,000/-	2,000/-		
<b>ID Card Fee</b>	200/-	200/-	200/-	US \$ 20/-
<b>At the time of Admission</b>	23,982/-	69,800/-	646,780/-	US \$ 2,396/-
<ol style="list-style-type: none"> <li>Students admitted to Hydropower Engineering and Land &amp; Water Engineering have to pay additional Rs. 50,000.00 for field visit and Practical Works.</li> <li>Students admitted to Rock and Tunnel Engineering have to pay additional Rs. 14,800/- per semester for Lab Expenses and Rs. 20,650 per semester for Field Expenses.</li> <li>Students admitted to Geospatial Engineering have to pay additional Rs. 14,800/- per semester for Lab Expenses.</li> <li>Students admitted to Power Electronics and Drives Engineering have to pay additional Rs. 25,000/- per semester for Lab Expenses.</li> <li>TU Registration fee Rs. 500.00 (Rs. 1000.00 for the students passing B.E./ B.Arch. or equivalent from abroad) and Graduate Conference fee of Rs. 5000/- for all students.</li> <li>The candidate under sponsored category should pay the fee for full course duration (two years) at the time of admission. Also, payment of fees by the candidate under sponsored category shall be received only by cheque of the sponsoring agency. The cash transaction will not be entertained.</li> </ol>				

The candidates should pay extra charge for Internet access separately during admission as per the college rule and any extra service as per specified by TU. The given fee structure is for completing the minimum specified courses within two years of academic sessions. Candidates willing to secure extra credit courses or failing to complete the courses within the specified time frame should pay extra fee accordingly as per campus regulations.

In case, the admitted student needs to cancel his/her admission following rules are applicable in reimbursement of fees:

- a. 25% deduction from tuition fees prior to the start of class.
- b. 50% deduction from tuition fees till 7th day after the start of class.
- c. No refund of tuition fees and nonrefundable deposits following the 7th day from the commencement of the class.

## **2.7 Student Hostel**

Hostel facilities are available for few selected students according to campus rules and regulations. The charges for the hostel shall be as per the decision of the campus administration.

## **2.8 Refund Policy of Campus Deposit**

The Students who have completed their M.Sc. degree should claim the refundable deposit amounts within one year of the completion of their study, otherwise Campuses will not be responsible. The deposit amounts of those students, who have dropped out from the study of M.Sc. program without completion, won't be refunded.

### 3 CURRICULUM FOR M.Sc. ENTRANCE EXAMINATION

The M.Sc. Entrance examination will be “**Computer Based Examination**” of two hours duration, consisting of two sections. **Section- A** consists of 45 questions for 50 marks. While **Section-B** consists of stream specialized course with 50 questions of 1 mark each. Each question will be of objective type with multiple choice answers and negative marking for each wrong answer is 10%.

#### 3.1 SECTION-A

The depth of subject matter in this section shall be similar to Bachelor Level.

##### 3.1.1 Communication English

[10]

##### 1. Critical Reasoning

[6]

Critical reasoning section aims to test the candidate's comprehension of the interpretative abilities in English as a language of business and communication. Critical reasoning questions measure your ability to read with understanding, insight and discrimination. These questions explore your ability to analyze a written passage from several perspectives, including your ability to recognize explicitly stated elements as well as underlying statements and their implications. This section measures reading comprehension and critical reasoning skills in multiple-choice format.

The critical reasoning section measures your ability to

- (a) Analyze and evaluate a written text and synthesize information obtained from it.
- (b) Analyze relationships among component parts of sentences.

- Text Completion/Sentence equivalence:

[2x1=2]

- Reading Passages:

[2x2=4]

##### 2. Error Analysis

[2x1=2]

This section measures your ability to

- Write sentences without any error
- Write proposals, reports, seminars, research article, dissertations, etc. by using most suitable words and technical terms efficiently.

##### 3. Analogies

[2x1=2]

This section measures your ability to explain the relation between two words.

##### 3.1.2 Mathematics

[40x1]

The format of the multiple-choice questions varies. The solution may require simple computations, manipulations or multi-step problem-solving. These sections aim to test the candidate's understanding of

##### Mathematics – A (B-Arch)

##### 1. Basic Mathematics

[4]

- Sets and Functions,
- Two dimensional and three-dimensional Coordinate Geometry,



## **2. Algebra [10]**

- Polynomials
- Complex numbers
- Sequence and series
- Permutation and combination
- Equations and inequalities
- Matrices and Determinants
- Linear Programming

## **3. Vector Analysis [6]**

- Vector Algebra: Vectors and Scalars, product of two, three and four vectors, reciprocal system
- Vector Calculus: Gradient, Curl and Divergence

## **4. Calculus [13]**

- Limits and Continuity, Ordinary and Partial Differentiation
- Indefinite and definite Integration
- Application of Derivatives and Anti-derivatives
- Ordinary Differential Equations.

## **5. Elementary Statistics and Probability [3]**

## **6. Elementary Trigonometry, Logarithm [4]**

### **Mathematics – B (For all except B-arch)**

#### **1. Basic Mathematics [3]**

- Sets and Functions,
- Two dimensional and three-dimensional Coordinate Geometry,

#### **2. Algebra [8]**

- Polynomials
- Complex numbers
- Sequence and series
- Permutation and combination
- Equations and inequalities
- Matrices and Determinants
- Eigen values and Eigen vectors, Diagonalization of matrix
- Linear Programming

#### **3. Vector Analysis [6]**

- Vector Algebra: Vectors and Scalars, product of two, three and four vectors, reciprocal system
- Vector Calculus: Gradient, Curl and Divergence, line integral, surface integral and volume integral.

<b>4. Calculus</b>	<b>[12]</b>
<ul style="list-style-type: none"> <li>Limits and Continuity, Ordinary and Partial Differentiation</li> <li>Indefinite and definite Integration</li> <li>Application of Derivatives and Anti-derivatives</li> <li>Ordinary Differential Equations.</li> </ul>	
<b>5. Elementary Statistics and Probability</b>	<b>[3]</b>
<b>6. Elementary Trigonometry, Logarithm</b>	<b>[4]</b>
<b>7. Transforms: Laplace transform, Fourier series</b>	<b>[4]</b>

## 3.2 SECTION-B

The depth of subject matter in each subject of stream specialized course shall be that of B.E./B.Arch. level relevant courses offered by T.U.

### 3.2.1 Applied Science (AS) [50x1]

<b>1. Mechanical Waves &amp; Oscillations</b>	<b>[5]</b>
<ul style="list-style-type: none"> <li>Wave motion: Mechanical wave, Velocity of wave, energy, power &amp; Intensity; stationary wave</li> <li>Acoustic phenomena: Echo &amp; reverberation, beats, modes of vibration in string and pipes</li> <li>Ultrasound: production, applications</li> </ul>	
<b>2. Heat &amp; Thermodynamics</b>	<b>[4]</b>
<ul style="list-style-type: none"> <li>Fundamentals of heat: Calorimetry, Change of state</li> <li>Transfer of heat: Conduction, convection and radiation</li> <li>Thermodynamics: Gas laws, kinetic theory of gas, first law of thermodynamics, second law of thermodynamics,</li> <li>Applications: Entropy, heat engines, refrigerators</li> </ul>	
<b>3. Electromagnetic Waves &amp; Oscillations</b>	<b>[8]</b>
<ul style="list-style-type: none"> <li>Electric and Magnetic fields: Intensity, potential, potential gradient, capacitors</li> <li>DC and AC Circuit: LR, LC, RC, LR, LCR circuits</li> <li>Maxwell's Equations: Gauss law, Faradays law of electromagnetic induction, Ampere's law &amp; its modification</li> <li>Wave optics: Interference, diffraction, polarization, optical fibers</li> </ul>	
<b>4. Modern Physics</b>	<b>[8]</b>
<ul style="list-style-type: none"> <li>Electrons: <math>e</math>, <math>e/m</math>, motion of electron in electric and magnetic fields</li> <li>Photoelectric Effect: Einstein's equation, solar cell, Photovoltaic cell</li> <li>Advanced Materials: Semiconductor, dielectric materials, magnetic materials, superconductor, Nano-technology &amp; materials</li> <li>Quantization of energy: Bohr's theory, energy level, wave-particle duality, uncertainty principle, Laser.</li> <li>Radioactivity: radioactive disintegration, fission, fusion</li> <li>Energy and Environment: Renewable and non-renewable energy resources, ultraviolet radiation, green-house effect, climate change.</li> </ul>	

## **5. Chemistry in Daily Life [3+2]**

- Carbohydrates, proteins, enzymes, nucleic acids, drugs and their classifications- antacids, antihistamines, neurologically active drugs- tranquilizers, analgesics, antimicrobials antibiotics, anti-septic's and disinfectants, soaps and detergents.
- Organic and Inorganic polymers, biodegradable and non-bio degradable, conducting polymers

## **6. Environmental Chemistry [4]**

- Water Pollution: Surface and ground water pollution, water pollutants-visible and invisible, chemical and microbiological, their adverse impacts and remedies.
- Air Pollution: Air pollutants, gases SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, O<sub>3</sub>, hydrocarbons, particulate-dusts, smokes and fly ash.

## **7. Water [3]**

- Soft and hard, degree of hardness, alkalinity, specification for domestic and industrial purposes, boiler feed water, sludge and scale, water treatment.

## **8. Catalysts [1]**

- Action of catalysts, characteristics and mechanism of catalysis.

## **9. Electrochemistry [3]**

- Electrode potential and its measurements, standard electrode potential, electrochemical cells, electrolytic cells, Nernst equation, EMF of cells, buffer, pH, corrosion, electrochemical series,

## **10. Applied Chemistry [2+2]**

- Fuel and Combustion: classification calorific values, coal, petroleum, kerosene, gasoline, biogas.
- Explosives: classification, preparation and applications.

## **11. 3d Transition Elements [2]**

- Electronic configuration, oxidation states, complex formation, alloy formation and magnetic properties.

## **12. Isomerism [1]**

- Stereoisomerism- geometric isomerism, optical isomerism.

## **13. Instrumental Technique in Chemical Analysis [2]**

- Visible and ultraviolet spectroscopy, nuclear magnetic resonance (NMR), atomic absorption spectroscopy (AAS)

## **3.2.2 Architecture and Planning (AP) [50×1]**

### **1. Architecture [35]**

#### **1.1 History of Architecture [5]**

1.1.1 History of Nepalese Architecture

1.1.2 History of Easter Architecture

1.1.3 History of Western Architecture

1.1.4 History of Contemporary Architecture

#### **1.2 Building Material and Technology [5]**

1.2.1	Building Material-Brick, Timber, Cement, Stone, Aluminum, Mud etc.	
1.2.2	Building Technology - Load Bearing, Frame Structure, different wall, roof, floor, etc.	
1.3	Building Science	[5]
1.3.1	Climatology	
1.3.2	Thermal Aspects	
1.3.3	Architectural Lighting	
1.3.4	Architectural Acoustics	
1.4	Green Building Design	[5]
1.4.1	Green Building Design Concept	
1.4.2	Green Building Rating System–LEED, GRIHA, CASBEE, etc.	
1.4.3	Passive and active Solar Architecture	
1.4.4	Examples of Green Building and Planning	
1.5	Architecture and conservation	[5]
1.5.1	Historical monument and building of Nepal and World	
1.5.2	Architectural Conservation of Nepal	
1.6	Contemporary Architecture of Nepal	[5]
1.6.1	Contemporary Architectural practices of Nepal	
1.6.2	Problem and way out for future in Nepal	
1.7	Building Services	[5]
1.7.1	Electrical Service – Artificial lighting system, Solar Lighting	
1.7.2	Mechanical Service – HVAC, Lift, Escalator, Solar water heating, etc.	
1.7.3	Water Supply and Sanitation	
<b>2.</b>	<b>Planning</b>	<b>[15]</b>
2.1	History of Planning – Ancient Town and Settlement	[5]
2.2	Urban problems in towns of Nepal	[5]
2.3	Urban Environment and Urbanization in Nepal	[5]
<b>3.2.3</b>	<b>Civil &amp; Agricultural Engineering (CA)</b>	<b>[50 × 1]</b>
<b>1.</b>	<b>Structural Engineering</b>	<b>[10]</b>
	Stresses and strains, Bending and deflection and its equations, Statically determinate structure: displacements by energy principles; static and kinematic indeterminacies; analysis of indeterminate structures; slope-deflection and moment-distribution methods; influence lines for determinate and indeterminate structures; trusses; two and three hinged arches; analysis of trusses and frames; concepts of plastic analysis of beams and frames.	
<b>2.</b>	<b>Geo-technical Engineering</b>	<b>[10]</b>
	Phase relationship, soil classification, clay mineralogy, soil compaction, permeability, principal of effective stress, seepage analysis, stress distribution, consolidation, shear strength of soil, stability of slopes, soil exploration, earth pressure theories, rigid and flexible retaining structures, bearing capacity and settlement of shallow foundations, analysis of deep foundation (pile, pier, well), foundation soil improvement.	
<b>3.</b>	<b>Water Resources Engineering</b>	<b>[10]</b>

Physical properties of Fluid, Fluid pressure, Equilibrium stability of floating bodies, Fluid kinematics, Classification of fluid flow, Dynamics of flows, Euler's equation, Bernoulli's equation, Navier stokes equation Boundary layer theory, Momentum equation, Open channel flow, Uniform and Non uniform flow, Energy & momentum principle for open channel flow, Flow in mobile boundary channel, Flow over notches & weirs, Gradually varied flow, Hydraulic Jump and its analysis, Similitude and physical modeling, Physical hydrology, Surface runoff, Rainfall-runoff correlation, Hydrograph Analysis, Unit hydrographs, Peak flow estimation and statistical hydrology, Flood routing.

**4. Transportation Engineering [10]**

Road transportation in Nepalese context, Highway alignment, Geometric design, Highway drainage system, Highway materials, Traffic Studies, traffic control devices and measures, Road intersection and design, Road pavement, Construction and maintenance of road pavements, Bridge type, site selection, components and protection structures, Tunnel components, requirements and methods of tunneling.

**5. Water Supply & Sanitary Engineering [10]**

Introduction of Water Supply Engineering, Sources of water, Quantity of Water, WHO guidelines, Nepal Drinking water quality standards, Quality of Water, Intake Works, Water Treatments- natural, artificial, Sedimentation, Filtration, Disinfection, Reservoirs and Distribution System, Conveyance of water, Valves and Fittings. Introduction of sanitary engineering, Quantity of Waste Water, Characteristics and Examination of Sewage, Design and Construction of Sewers, Sewer Appurtenances, Sewage Disposal, sewage Treatment, Sludge Treatment and Disposal, Disposal of Sewage from Isolated Buildings, Solid Waste management, WASH and Ecosan.

**3.2.4 Electrical Engineering (EE) [50x1]**

**1. Basic Electrical Circuits [10]**

- Network Theorems: Thevenin's, Norton's, Maximum power & Reciprocity Theorems
- AC circuits: Concept of complex impedance phasor diagram, Active, Reactive & Apparent power, Resonance in AC circuits
- Three phase circuits: Phase & line quantities in three phase system, 3-phase power
- Transient response: Transient response analysis for R-L, R-C & R-L-C circuit. Pole zero plots
- Two port Networks: Z-parameters, Y-parameters & ABCD –parameters

**2. Electrical Machines [10]**

- Electromagnets: Magnetic circuits, Fleming's Right hand & Left-hand rules, Faraday's Law of electromagnetic induction, electromechanical energy conversion principle
- Transformers: Equivalent circuits, Phasor diagrams, Losses & efficiency, Voltage regulations, Instrument transformers, three phase transformer connections, parallel operation of 1-1 & 3-1 Transformers
- Synchronous machine: Operating principle. Effect of Excitation, Power angle characteristics, Phasor diagrams, Losses & efficiency, Voltage regulations, parallel operation of alternator,

- Induction machine Operating principle, T-S Characteristics, Losses and efficiency, Testing, Starting methods, Speed Control
- DC generator: Construction, Operating principle and characteristics of different types dc generator
- DC motor: Operating principle, Characteristics of different types dc motor, Speed control and starter

### **3. Power Systems [20]**

- Transmission line: Line parameters, per unit system representation, single line diagrams, sort, medium & long lines, efficiency & regulations.
- Transmission line design: selection of voltage, conductor, sag calculation, stringing chart, line insulators and string efficiency
- Distribution system: Radial and loop distribution, Rural and Urban Distribution system
- Economics of Generation: Load curve, Load duration curve, Diversity factor. Load factor, loss of load factor, tariff schemes,
- Load flow: Bus classification, Y-bus formation G-S & N-R load flow methods
- Stability studies: Swing equations, equal area criterion, Stability enhancement techniques
- Series & shunt compensations
- Fault calculations: Symmetrical & unsymmetrical faults in power systems, grounded & undergrounded systems, over Voltages in transmission lines, surge arrestors
- Over voltage in transmission line: Temperature over voltage, switching over voltages and lightning overvoltage
- Relays and circuit breakers: Instantaneous & IDMT relays, ABC, VCB & gas circuit Surge arresters brasses, differential & distance protection schemes
- Power control: Load-frequency control, VAR-Volt control
- Safety Engineering: Electric shocks, Equipment Earthing Mat earthing of power stations, measurement of earth resistivity and earth resistances

### **4. Power Electronics [10]**

- Power electronics devices: Diode, IGBT, BJT, MOSFET
- Operational amplifier: Thyristors, GTO, TRAIC
- Rectifiers: Single Phase & three phase rectifiers, uncontrolled and controlled rectifiers
- Inverters: single phase & three phase invertors
- Choppers: Step up and step-down choppers, chopper Classifications.

### **3.2.5 Electronics and Computer Engineering (EC) [50x1]**

#### **1. Electrical Circuit and System [5]**

- Ohms law, Kirchhoff's laws
- Thevenin's Norton's and maximum power transform theorem
- Active, reactive and apparent power (single & three-phase) and resonance
- Transient and steady state analysis, pole zero plots. two-port parameters.

#### **2. Electronics Circuit and System [10]**

- Integrated circuit technology and device models
- Operational Amplifier circuits
- Operational Amplifier characterization

- Power supplies and voltage regulators
- Untuned and tuned amplifiers
- Oscillator circuits
- Digital-to-Analog (DAC) and Analog-to-Digital (ADC) conversion
- Instrumentation and isolation amplifiers
- Operational amplifier-bipolar transistor logarithmic amplifiers
- Log-antilog circuit application
- Communication circuits
- Switched power supplies
- Introduction to power electronics

### **3. Computer Architecture [10]**

- Fundamentals of Computer Architecture & Organization
- Number System
- Boolean Algebra
- Logic Gates
- Combination and Sequential Logic
- A/D and D/A Conversion
- Memory
- Instruction Set
- Operating System and Application Program Concepts
- Computer Applications

### **4. Computer Networks [5]**

### **5. Communication System [4]**

- Analog and Digital Communication Theory and System

### **6. Object Oriented Programming Language [8]**

- Object oriented programming concepts
- Introduction to C++
- Operator Overloading
- Encapsulation
- Polymorphism
- Inheritance
- Templates and file handling

### **7. Discrete Structure [8]**

- Propositional logic and predicate logic
- Methods of proof and formal reasoning
- Binary relations
- Finite state automata
- Recurrence Relation
- Graph theory and graph algorithms

## **3.2.6 Mechanical & Industrial Engineering (MI) [50x1]**

### **1. Thermodynamics and Heat Transfer [12]**

- Equality of Temperature and Zeroth Law of Thermodynamics, Heat Transfer and Work
- Transfer
- Control Mass and Control Volume Formulation of First Law, Steady State Applications
- Entropy, Second Law of Thermodynamics for an Isolated System, Control Mass and
- Control Volume Formulation of second law
- Second Law, Entropy Relations and Isentropic Process, Heat Engine, Heat Pump and
- Refrigerator
- Carnot Cycle, Brayton Cycle, Rankin Cycle, Otto Cycle, Diesel Cycle, Vapour
- Compression Cycle
- One dimensional steady state heat Conduction through a plane wall, Radial steady state heat conduction through a hollow cylinder, Heat flow through composite structures, Electrical Analogy for thermal resistance, Convection Fundamentals and Radiation Heat
- Transfer Fundamentals
- IC Engines

## **2. Fluid Mechanics and Fluid Machine**

**[10]**

- Basic concepts and Fluid and flow
- Flow measurement
- Continuity equation, Momentum equation, Bernoulli's equation and their applications
- Viscous flow, flow inside closed conduits and head losses
- Water turbines
- Turbo machines
- Water Pumps

## **3. Mechanics and Strength of Materials**

**[12]**

- Concept of particles and rigid bodies
- Effect of forces on particles and rigid body
- Applications of equilibrium equations for solving problems of particles and rigid bodies (in 2- Dimensions and 3-Dimensions.)
- Types of structures, statically determinate and indeterminate
- Moments and couples
- Distributed forces, C.G., Centroid, area and Mass moment of inertia,
- Kinematics of particles and rigid bodies
- Equations of motion
- Dynamic equilibrium
- Kinetics of particles and rigid bodies
- Applications of Newton's Second Law
- Application of Principle of Work and Energy
- Principle of Impulse and Momentum
- Conservation of Energy
- Concept of Stress and Strain
- Types of loads and Beams
- Materials Properties and Material Testing
- Shear Force, Bending Moment diagram



- Mechanical Design

#### **4. Energy [8]**

- Sources of conventional energy, fossil fuels, calorific values
- Renewable energy sources and their nature
- Basic concepts of: Solar thermal energy, Solar photo-voltaic energy, wind energy, Biomass, Geothermal energy and Hydraulic energy
- Consumption and environmental aspects of energy

#### **5. Industrial Engineering and Management [8]**

- Classification of manufacturing processes.
- Materials selection criteria
- Elements of cost
- Role of production, operation management and system concepts
- Production planning and control
- Plant location and plant layout design
- Forecasting techniques
- Inventory Control
- Decision making process
- Quality Assurance and Quality Control

### **3.2.7 MSc in Geospatial Engineering (GE) (50x1)**

#### **1. Traditional Surveying, Survey Networks and Modern Techniques of Surveying [12]**

- Fundamentals of surveying; triangulation and trilateration; bathymetric survey for determination of depth of waterbodies and profile and cross-sections including discharge measurements; setting out of building, road, bridges and other structures; national trig points, reference level surface (orthometric, ellipsoid, geoid) and gravity measurement; principles of photogrammetry and remote sensing, application of photogrammetry and remote sensing; flight planning; photogrammetric products; different systems of remote sensing; distortions in satellite imageries; image processing and interpretation.

#### **2. Spatial Data and Spatial Information System [10]**

- Map projections and projected coordinate systems; vector and raster data format; topology; spatial data acquisition and analysis (buffer analysis, network analysis, spatial overlay, watershed analysis, terrain analysis, etc.); presentation of outcomes of spatial analysis; importance of GIS and web GIS, different fields of application of GIS and web GIS; E-R model; relational data model; spatial database management system (SDBMS); standard query language (SQL) for spatial databases

#### **3. Geodesy, GNSS and Adjustment of Observations [12]**

- Reference systems: astronomical, geocentric, geodetic and plane coordinate systems; ICRF, ITRF, ECEF, WGS84, Everest 1830; transformation between different reference systems; time systems; measurement of gravity potential; terrestrial, astronomical and satellite positioning; GNSS observables and mathematical models for positioning; satellite orbits; GNSS system biases and mitigation measures; satellite geometry and

dilution of precision (DoP); GNSS survey techniques; field survey specifications; integration of INS in GNSS; augmentation systems; redundant observations, error eclipse and confidence level; linear and non-linear adjustment models; least square adjustment method; statistical testing (univariate and multivariate).

#### **4. Cartography and spatial visualization [6]**

- Elements of map; types of map; principles and planning of map design; map design procedure; map layout; color scheme; typographic guidelines; map production and dissemination techniques; application of GIS in map design; static, dynamic, animated, interactive and collaborative web mapping and OGC standards.

#### **5. Cadastre, and Land Administration and Management [10]**

- Concept and types of cadastre; importance of cadastral system; analog vs digital cadastral system; different components of cadastre and technical requirements for cadastral survey in Nepalese context; different methods of cadastral survey including workflow; land registration process, updating and archiving of cadastral documents in Nepal; legal framework for cadastral system; international practices in cadastre; different components and advantages of LIS; stakeholders and their role in LIS; maintenance of cadastre and LIS in Nepal; national land policy; land market, taxation, reform and land use planning; land tenure and tenure security; issues of land management; land conflict and its resolution; modernization of land administration and management in Nepal.

## 4 ACADEMIC RULES AND REGULATIONS

### 4.1 Duration of the Course and Barrier System

The normal duration of the course for the fulfillment of the degree is two academic years. The Maximum period within which a student is allowed to complete the course is four academic years. Only those students who are able to secure minimum 50% of the total credit of any semester will be allowed to be admitted in the next semester. Unsuccessful students have to repeat the courses in which they failed and should pay course registration fee for those courses. (Rs 2,000/- per credit)

Student must submit the examination form in each semester with necessary examination fee before completion of his/her Master's Degree. If any student is not able to submit the examination fee for any semester, he/she will not be allowed to enroll for next semester.

### 4.2 Course Structure

The course consists primarily of two types of courses: Core and Elective courses. Core courses are mandatory whereas elective courses can be selected by the students. A student should take 24 credits of core courses, 16 credits of elective and/ or open elective courses, 4 credits of project and 16 credits of thesis. A student is allowed to take up to 20 credits of courses per semester.

#### 4.2.1 Credit System

The curriculum is organized in the framework of credit system. Each course has a certain number of credits which indicates the weight. The number of credits depends on the contact hours for the course. Normally a course of 4 credits is designed for 4 contact hours of lecture classes plus tutorial, laboratory and assignment works per week, for 15 weeks of one semester. The tutorial on each course may include laboratory, simulation works, assignment and seminar works as prescribed by the department. Table-VI show the course structure for the Master Programs.

**Table-VI: Course Structure and Credit System of M.Sc. Programs**

Year/Part	Core Courses	Elective Courses	Project	Thesis	Total Credits
I/I	16 Credits	0-4 Credits			16-20
I/II	8 Credits	4-12 Credits			12-20
II/I		0-8 Credits	4 Credits		4-12
II/II				16 Credits	
<b>Total</b>	<b>24 Credits</b>	<b>16 Credits</b>	<b>4 Credits</b>	<b>16 Credits</b>	<b>60 Credits</b>

#### 4.2.2 Provision for Open Elective

Any student can take a maximum of 8 credits of open elective courses offered by the other master programs of the same department or other departments.

### 4.2.3 Instruction Methods

The courses comprise Lectures, Tutorials, Laboratory works and seminars, short projects as applicable. The assignments would be given by the concerned faculty. Reference materials including international publications, journals, handbooks, web sites, related software etc. will be used as per necessity. The course contents are designed in such a way that considerable self-learning efforts should be applied by the students. Innovative approaches and ideas are also encouraged.

The evaluation is based on the internal evaluation (40%) and the final examination (60%). The students have to pass separately in the internal evaluation as well as in the final examination. The minimum pass marks for the internal and final evaluation is 50%.

The internal evaluation is based on the continuous assessment by the course teacher. It is carried out by internal assessments, assignments, seminar works and other such activities.

The final evaluation is conducted at the end of semester by Examination Control Division, Institute of Engineering, Tribhuvan University.

The final percentage of marks is calculated by the following formula:

$$\text{Total percentage} = \frac{\sum(\text{credit} * \text{marks obtained})}{\sum \text{Credits}}$$

The marks percentage and division awarded will be as:

Percentage	Division
75 % or Above	Distinction
65% or Above and Less than 75%	First
50% or Above and Less than 65%	Second

To qualify for the M.Sc. Degree, a student must satisfactorily complete all required coursework of at least 60 credits including an individual thesis work. **M.Sc Degree will be awarded to the students in the same name of the program under which the student has enrolled during admission. For example, if the student is enrolled in Renewable Energy Engineering program and later graduates in the same program, she/he will be awarded the degree as M.Sc. in Renewable Energy Engineering.**

### 4.3 Elective Registration

Students should register themselves in the elective courses offered by the programs in that semester before the beginning of the class. For the open electives students of each program should apply to their respective program coordinator and he/she will proceed it to the related program/department. Elective registration should be finalized by the program coordinator within first week from the beginning of the semester. Minimum number of students for each elective course should not be less than 6.

### 4.4 Thesis Registration

Students should pass all the core courses for registration of thesis but have to pass all the courses including elective courses before thesis defense.

Students should submit thesis proposals to the respective Program Coordinator. They can consult available faculties for the preparation of thesis proposal. Different activities associated with thesis (Supervisor appointment, Proposal Defense, Midterm Defense, Final Defense) will be carried out by the Program supervisory committee. Minimum gap between the midterm thesis defense and the final thesis defense should not be less than 4 weeks. It is the responsibility of the students to manage the resources for their thesis work.

Normally, a student is expected to complete the course including final thesis defense within two academic years from the date of registration. If a student is not able to complete within two years he/she has to register for additional semester for completion of thesis. She/he may apply for the extension to the maximum of one semester with the approval of supervisor without getting admission. At any condition if all coursework including thesis defense is not completed within two and half academic years from the date of registration the corresponding student should register for each additional semester by paying the registration fee of Rs 20,000/- per semester.

After successful registration of thesis, a student must submit the examination form in each semester with necessary examination fee before completion of his/her thesis.

**द्रष्टव्य :** प्रतिलिपि प्रमाणित गर्ने ब्यबस्था क्याम्पसले गर्ने छैन । आधिकारिक ब्यक्तिबाट प्रमाणित गराउने जिम्मेवारी आवेदक स्वयमको हुनेछ ।

**यस पुस्तिकामा उल्लेखित ब्यबस्था सम्बन्धित अख्तियारवालाले परिवर्तन गर्न सक्नेछ ।  
यस प्रकार भएको परिवर्तन गर्नका लागि यस पुस्तिकामा छापिएको कुरा बन्देजको रुपमा  
मानिने छैन । यस पुस्तिकामा प्रकाशित भएको कुनै ब्यबस्था नियमसँग बाझिन गएमा  
बाझिएको हदसम्म यो ब्यबस्था लागु हुने छैन ।**

यस पुस्तिकामा उल्लेखित भएका कुनैपनि प्रावधानको अन्तिम ब्याख्या गर्ने सम्पूर्ण अधिकार  
इ. अ. सं. मा निहित हुनेछ ।