**Stream:- Education;**

**Faculty: Information and Communication Technology Education;**

**Semester: First Semester;**

**Course Title: B Ed ICTE;**

**Course Description**

**# Fundamentals of Education:**

This course is designed to orient the students to theoretical and fundamental characteristics of education. It also deals with philosophical and sociological approaches to education. Similarly, it covers educational thought of prominent educationists including recent trends of educational development in Nepal. The course intends to develop an insight into the students in relation to bases of education focusing on interactive participation of both the students and teachers.

**# साधारण नेपाली**

यस पाठ्यांशले नेपाली भाषामा विशिष्ट बोध, अभिव्यक्ति र रचना कौशलको विकास गर्ने लक्ष्य राखेको छ। यस पाठ्यांशमा नेपाली भाषाको परिचय, यसका मानक कथ्य र लेख्य रूपको स्वरूप र प्रकार्य क्षेत्र, शब्दभण्डार, वाक्यतत्त्वपरक रचना, नेपाली वाङ्मयका विविध क्षेत्रका गद्यांशको पठनबोध, बुँदाटिपोट र संक्षेपीकरणको अभ्यास, व्यावहारिक लेखन तथा सूचना तथ्यको रूपान्तरका साथै निर्धारित साहित्यिक कृतिहरूको पठन, आस्वादन र अभिव्यक्ति क्षमताको विकास गर्ने पाठ्यवस्तु राखिएका छन्।

**# General English I:**

This is a general English course designed to develop students’ proficiency in grammar, academic vocabulary, reading and writing. The grammar component includes elements ranging from tenses to transformation. Vocabulary component covers words from different academic fields. The reading component deals with a wide variety of carefully selected materials that include informative passages on contemporary and critical issues. The writing component includes materials required for effective communication on matters of general and academic interests.

**# Introduction to Information Technology**

This course aims to provide the students with the foundation knowledge of contemporary Information Technology areas, software, applications and job skills required to enter the IT market. It covers a broad range of introduction of Information Technology concepts, operating system, and office automation tools such as word processor, spreadsheet, database and presentation. It also covers the telecommunication and computer network, internet, email, web and ethical issues in information technology.

**# Programming Concept with C**

The aim of the course is to impart knowledge of the basic concepts of procedural programming and to help the students build skills for solving problems using procedural programme. It provides the students with the basic features of the language such as data types, operators, control structure, array, functions, structure, pointer and file handling which are the common features of any programming languages. Students are more engaged in laboratory work to exaction of programming experiments rather than theoretical concept.

**# Fundamentals of Mathematics (minor)**

This is an integrated course of various branches of mathematics for beginner students at the undergraduate level. This course also provides mathematical foundation for the students who want to major other subjects from natural and social science areas. This course starts with the set & logic and develops through drawing of functions, solving equations & inequalities and reaches to complex number system to lay firm foundation of higher mathematics.

Course Title**: Fundamentals of Education**

Course No. : Ed. Nature of Course: Theoretical

Level: B.Ed. Credit Hours: 3

Semester: First Teaching hours: 48

1. **Course Description**

This course is designed to orient the students to theoretical and fundamental characteristics of education. It also deals with philosophical and sociological approaches to education. Similarly, it covers educational thought of prominent educationists including recent trends of educational development in Nepal.The course intends to develop an insight into the students in relation to bases of education focusing on interactive participation of both the students and teachers.

1. **General Objectives**

The course is designed with the following general objectives:

* To develop broader understanding on bases of education
* To familiarize the students with the approaches to education
* To assist the students to analyze the philosophical base of education within different schools of philosophy.
* To develop students' knowledge on the sociological basis of education and identify its possible use in education.
* To acquaint the students with basic educational thought of prominent educationists.
* To make the students competent in reviewing the trends of educational development in Nepal.
1. **Specific Objectives and Contents**

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| --- | --- |
| **Specific Objectives** | **Contents** |
| * Clarify the concept of education as a discipline
* Describe the characteristics of discipline
* Elaborate the meaning of education
* Define education
* Explain the forms/types of education
* State the nature of education
 | **Unit I**: Education as a Discipline (8)* 1. Meaning of education as a discipline
	2. Characteristics of discipline
	3. Meaning of education
		1. Etymological
		2. Narrow
		3. Broader
	4. Definitions of education
	5. Major forms/types of education
		1. Informal
		2. Formal
		3. Non-formal
	6. Nature of education
		1. Direct and indirect
		2. Individual and collective
		3. General and specific
 |
| 1. Explain the concept of approaches to education
2. Clarify concept of open and distance education and continuing education
3. State the process of open and distance learning
4. Elaborate needs of continuing education and skill-based and competency-based approaches to education
5. Draw implications of skill-based and competency-based approaches to education
 | **Unit: II** **Approaches to education (5)*** 1. Open and distance learning

2.2.1 Concept2.2.2 Process 2.2.3 Learning materials* 1. Continuing education
		1. Concept
		2. Needs
	2. Skill-based and competency-based approaches to education
		1. Concept
		2. Needs
		3. Classroom implication
 |
| * Clarify concept, branches and functions of philosophy
* Relate philosophy with education
* Compare schools of philosophy in terms of its premises, objectives, curriculum , educative process, curriculum, role of teacher and student
* Derive implications of philosophy of education for to-day's classroom teachers
 | **Unit III: Philosophical perspectives on Education(14)*** 1. Concept, branches and functions of philosophy
	2. Relation between philosophy and education
	3. Schools of philosophy: Philosophical premises, objectives of education, educative process, curriculum, role of teacher and student in:
		1. Idealism
		2. Naturalism
		3. Realism
		4. Pragmatism

3.4 Implications of schools of philosophy for classroom teachers  |

|  |  |
| --- | --- |
| * Relate sociology with education
* Describe concept and modes of socialization as a base of education
* Illustrate the agencies of socialization
* Explain concept and importance of social interaction as a base of education
* Explain the patterns of social interaction as a base of education
* Classify social interaction
* Derive implications of sociological base of education for schools
 | **Unit IV: Sociological Perspectives on Education (8)**4.1 Relation between sociology and education4.2 Socialization as a base4.2.1 Concept 4.2.2 Modes * 1. Agencies of socialization
		1. Active agencies
		2. Passive agencies
	2. Social interaction: Concept and importance

4.6 Implications of sociological bases of education for school |
| * Explain eastern and western educational thought in relation to aims, curriculum and educative process
 | **Unit V: Educational thought: Concept and Educational Implications** (4)* 1. Eastern thought
	2. Western thought
 |
| * Overview the trends of educational development in Nepal to identify the modern bases of education
 | **Unit VI: Shaping and Reshaping Educational Development in Nepal (9)*** 1. Nepal National Education Planning Commission (NNEPC) 2011 B.S
	2. National Education System Plan (NESP) 2028 B.S
	3. National Education Commission (NEC) 2049 B.S
	4. School Sector Reform Plan (SSRP) to Post-SSRP (From access to quality)

6.5 Integrated approach to education (Special Needs Education, technical education) |

Note: The figures in the parentheses indicate approximate teaching hours for respective units.

1. **Instructional Techniques**

The following modes of delivery can be used by the teacher as instructional strategies in the classroom.

* 1. **General instructional strategies**
* Lecture with the use of multimedia projector
* Discussion
* Question answer
* Brainstorming
	1. **Specific Instructional Techniques**

The following techniques will be used for active participation of students in learning process:

|  |  |
| --- | --- |
| **Unit** | **Activity and Instructional Techniques** |
| II | * Groups of students will visit educational institutions with open and distance learning (ODL) programme to identify their implementation procedures.

The groups will prepare and present a brief report on implementation procedures of ODL programme in the class followed by discussion, and teachers' comments and suggestions.* Groups of students will prepare and present a comparative report on differences between skill-based and competency-based approaches to education, followed by discussion and suggestions
 |
| VI | Groups of students will study different reports ranging from NNEPC to post-SSRP to identify their milestones. Each of the groups will share the milestones (characteristic features) of these reports in the class. |

1. **Evaluation**
	1. **Internal Evaluation 40%**

Internal evaluation will be conducted by subject teacher based on following activities:

1. Attendance 5
2. Class participation 5
3. First assignment 10
4. Second assignment 10
5. Third assignment 10

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| --- |
|  Total 40  |

**5.2 Final/Semester Evaluation 60%**

 Examination Division, office of the Dean, Faculty of Education will conduct final examination at the end of semester.

1. Objective type question (Multiple choice 10 x 1ponts) 10
2. Short answer questions (6 questions x 5 points) 30
3. Long answer questions (2 questions x 10 points) 20

 Total 60

1. **Recommended Books and Materials**

Brubacher, J.S. (2007). *Modern philosophies of education*. New Delhi: Surjeet Publication (Unit III)

Crow, L.D & Alice Crow (1976). *Modern philosophies of education.* New Delhi: Eurasia Publishing House

 (Unit III)

Das, B.N. (1995). *Foundation of education: Thought and practice.* Calcutta: Kalyani Publication

 (Unit I, II & III)

Giddens, A. (2006). *Sociology* (5th ed.). Delhi: AITBS Publishers and Distributers (Unit IV)

Morris, I. (1972). *Sociology: An introduction.* London: George Allen & Unwin Publisher. (Unit IV)

Ornstein, A. C. & Levine, D.U. (1989). *Foundations of education* (4th ed.). USA: Houghton Mifflin Company.

 (Unit III)

Sen, P. (1996). *Axiomatic philosophy*. New Delhi: New Age International Publishers. (Unit III)

Ministry of Education (1971*). National education system plan (from 1971 to 1976)*. Kathmandu: Ministry of education (Unit VI)

NEC (1972). Report of national education commission. Kathmandu: Author (Unit VI)

NNEPC (1956). Education in Nepal: Report of NNEPC. Kathmandu: College of Education (Unit VI)

Ministry of Education (2009). School sector reform plan. Kathmandu: Ministry of Education (Unit VI)

References

MoES (2003). Education in Nepal. Kathmandu : Planning Division, Statistics Section (Unit VI)

Nepal Sarkar (2072 B.S). Saikshaik suchana. Kathmandu: Ministry of Education (Unit VI)

**kf7\of+z zLif{s M ;fwf/0f g]kfnL –!**

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* lgwf{l/t uBf+zaf6 ljlzi6 af]w k|Zgsf] pQ/ n]vg, aF'bfl6kf]6 / ;+If]kLs/0fsf] cEof;df bIf agfpg],
* lgwf{l/t jfSosf]l6df cfwfl/t eO{ :jtGq / lgb{]lzt /rgf n]Vg ;Ifd t'Nofpg],
* Jofjxfl/s n]vgsf] l;k ljsf;df bIf agfpg],
* tflnsf, lrqfs[lt, /]vflrq / cf/]vsf ;"rgfnfO{ cg'R5]bdf ¿kfGt/0f ug{ ;Sg] agfpg],
* lglb{i6 ;flxlTos ljwf ;/;/tL k7g, cf:jfbg / k|ltlqmof n]vgsf] cEof; u/fpg] .

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 | **PsfO Ps M g]kfnL efiffsf] kl/ro, k|of]u / zAbe08f/ -\*\_**!=! sYo / n]Vo g]kfnL efiff!=@ g]kfnL efiffsf] k|of]uIf]q!=# klxnf] efiffsf ¿kdf g]kfnL efiffsf] k|of]u!=$ bf];|f] efiffsf ¿kdf g]kfnL efiffsf] k|of]u!=% g]kfnL efiffsf ljlzi6 k|sfo{x¿!=%=! lzIff!=%=@ ;flxTo!=%=# sfg'g!=%=$ ;~rf/!=%=% k|zf;g!=%=^ 1fglj1fg!=^ g]kfnL zAbe08f/!=^=! zAb ;|f]t * + tT;d
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* ljleGg ljifoIf]q;Fu ;DalGwt a'Fbfl6kf]6 / ;+If]kLs/0fsf] k|of]u / cEof; ug{,
* jfSosf]l6cg'¿k j0f{gfTds k|s[ltsf :jtGq cg'R5]b /rgf ug{,
* lgb]{lzt jfSosf]l6nfO{ jfSofGt/0f ug{ .
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| * ;"rgf / tYonfO{ cg'R5]bdf ¿kfGt/ ug{,
 | **PsfO rf/ M ;"rgf / tYosf] ¿kfGt/0f -^\_**$=! tflnsf tyf lrqfs[lt -j[Qfsf/ tyf :tDefs[lt\_ df k|:t't ;"rgf / tYonfO{ cg'R5]bdf ¿kfGt/$=@ /]vflrq tyf cf/]vdf k|:t't tYo / ;"rgfnfO{ cg'R5]bdf ¿kfGt/  |
| * lgwf{l/t ;flxlTos s[ltsf] ;/;tL{ cWoog u/L k|ltlqmofTds pQ/ n]Vg .
 | **PsfO kfFr M ;flxlTos s[ltsf] k7g, cf:jfbg / k|ltls|ofTds n]vg -!@\_****%=! sYff** %=!=! ljZj]Zj/k|;fb sf]O/fnf **M Ps /ft**%=!=@ efuL/yL >]i7 M **dft[Tjsf] lrTsf/**%=!=# /fh]Gb| ljdn M **r/f af]N5****%=@ sljtf** %=@=! nIdLk|;fb b]jsf]6f **M ofqL**%=@=@ dfwjk|;fb l3ld/]**M Ps} / d'7L w/tLsf] w"nf]**%=@=# cd/ lu/L M **r/fsf uLtx¿****%=# lgaGw M** %=#=! zª\s/ nfld5fg] M **hLjg M Ps k|fWofks** %=#=@ e}/j cof{n M **dxfk'?ifsf] ;ª\ut****%=$ Psfª\sL** %=$=! x[borGb|l;+x k|wfg M **d?e"ldsf n]vs** |

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k|To]s PsfOdf cfjZostfcg';f/ lzIfsn] ;DalGwt ljifoj:t'sf] k|:t'lt, JofVofg, 5nkmn, k|Zgf]Q/ u/fO{ ljBfyL{x¿nfO{ tT;DaGwL cEof; ug{ nufOg] 5 .

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| **b'O{**a'Fbf l6kf]6 / ;+If]kLs/0f tyf jfSotTTjk/s /rgf  | * a'Fbfl6kf]6 / ;+If]kLs/0fsf] k|of]u / k|:t'ltdf JolStut / ;fd"lxs cEof; u/fpg]
* lnª\u, jrg, k'?if / cfb/sf cfwf/df :jtGq / lgb{]lzt /rgf n]Vg] cEof; u/fpg] / sIffdf k|:t't ug{ nufpg]
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| **rf/**;"rgf / tYosf] ¿kfGt/ | ;fd"lxs lqmofsnfksf ?kdf tflnsf, lrqfs[lt, /]vflrq tyf cf/]vdf k|:t't tYo / ;"rgfnfO{ cg'R5]bdf ¿kfGt/ ug{ nufO{ sIffdf k|:t't u/fpg] / lzIfsn] cfjZoStfcg';f/ k[i7kf]if0f lbg], |
| **kfFr**;flxlTos s[ltsf] k7g, cf:jfbg / k|ltls|ofTds n]vg | lgwf{l/t ;flxlTos s[ltsf] k7g, cf:jfbg / k|ltls|ofTds n]vgsf nflu JolStut jf ;fd"lxs cEof; ug{ nufpg] . |

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ljdn, /fh]Gb| -@)^!\_, *cfFvfsf ;dox¿,*sf7df8f}+ M ;fª\lu|nf k|sfzg .

Course Title: **General English I**

Course No. : Eng. Ed ……… Nature of the course: Theoretical

Level: B. Ed Credit hours: 3

Semester: First Teaching hours: 48

1. **Course Description**

This is a general English course designed to develop students’ proficiency in grammar, academic vocabulary, reading and writing. The grammar component includes elements ranging from tenses to transformation. Vocabulary component covers words from different academic fields. The reading component deals with a wide variety of carefully selected materials that include informative passages on contemporary and critical issues. The writing component includes materials required for effective communication on matters of general and academic interests.

1. **General Objectives**

The general objectives of this course are as follows:

* To help students uses grammatically correct English.
* To expand students’ repertoire of general and academic vocabulary.
* To develop students’ ability to comprehend and interpret different kinds of written texts.
* To enable them to compose different kinds of writings for effective communication on matters of general and academic interests.
1. **Specific Objectives and Contents**

|  |  |
| --- | --- |
| **Specific Objectives** | **Contents**  |
| * Make sentences using appropriate tenses
* Use modals and verbs correctly
* Supply correct prepositions, adjectives and adverbs
* Apply conditionals in the given contexts
* Form words and sentences
 | **Unit I. Grammar ( 10)*** 1. Tenses
	2. Modals
	3. Questions, multi-words, verbs and verb structures
	4. Determiners and prepositions
	5. Adjectives, adverbs,
	6. Passive and conditionals
	7. Word formation and sentences
 |
| * Identify and use academic vocabulary in a given discourse.
* Apply appropriate ways to enrich their academic vocabulary.
 | **Unit II: Vocabulary (8)**2.1 Working with academic vocabulary2.2 Word combinations2.3 Vocabulary at academic institutions2.4 Ways of talking about 2.5 Opinions and ideas2.6 Functions2.7 Reading and vocabulary 2.8 Reference  |
| * Extract general idea from texts.
* Find specific information in the text.
* Answer questions for the details in the given text.
* Read and make notes of the important points.
* Draw inferences from varieties of reading texts.
* Give opinions and express attitudes.
* Interpret different types of texts.
* Solve problems and puzzles
 | **Unit III: Reading (15)**3.1 Determining co-references 3.2 Matching things 3.3 Understanding instructions 3.4 Unscrambling texts and anagrams3.5 Scanning: locating and extracting information 3.6 Skimming: finding out main point and the central idea 3.7 Drawing inferences and implications 3.8 Assessing opinions and attitudes 3.9 Solving problems and puzzles |
| * Rewrite given texts in different forms.
* Compose short and long texts in the given topics.
* Maintain coherence and cohesion in writing.
* Write letters, resumes, summaries, reports, news and essays.
 | **Unit IV: Writing (15)**4.1 Rewriting: rephrasing, paraphrasing4.2 Parallel writing4.3 Completing a text4.4 Organizing a text: sequencing instructions, ordering information, connecting ideas4.5 Writing summaries4.6 Writing letters: personal, official, business, job application4.7 Writing curriculum vitae (resume)4.8 Writing reports: events and news4.9 Writing essays: descriptive, expository, narrative, argumentative |

*Note: The figures in the parentheses indicate the approximate teaching hours.*

1. **Instructional Techniques**

The instructional techniques for this course are divided into two groups. First group consists of general instructional techniques applicable to most of the units. The second group consists of specific instructional techniques applicable to specific units.

* 1. **General Instructional Techniques**

Following general techniques are suggested for the overall delivery of the course.

* Lecture
* Discussion
* Explanation
* Illustration
* Demonstration
* Quizzes
* Presentation

It is expected that students are fully engaged in the lesson and sessions are interactive while presenting the lesson.

* 1. **Specific Instructional Techniques**

Some specific techniques are suggested to ensure the active engagement of the students.

|  |  |
| --- | --- |
| Unit I | Small group discussion for the various grammar elements, pair work to find out the rules of language, mini-projects to research the various grammar elements in the texts.Groups will present their work followed by teacher’s feedback. |
| Unit II | Individual practice, small group discussion and pair work.  |
| Unit III | Individual study, pair work for reading tasks and presentation. |
| Unit IV | Individual assignment on various writing tasks, small group discussion and presentation.  |

In addition to the techniques mentioned above, observation of an English language class where children with different abilities are studying followed by presentation is also encouraged in all the units.

1. **Evaluation**

**5.1 Internal Evaluation 40%**

Internal evaluation will be conducted by course teacher based on following activities:

1. Attendance 4 Points
2. Participation in learning activities 6 points
3. First assignment/midterm exam 10 points
4. Second assignment/assessment (1 or 2) 10 points
5. Third assignment/assessment 10 points

**Total 40 points**

**5.2 External Evaluation (Final Examination) 60%**

Examination Division, Office of the Dean, Faculty of Education will conduct final examination at the end of the semester. Type of questions and the marks allocated for them are as follows:

1. Objective type question (Multiple choice 10 × 1) = 10 points
2. Short answer questions (6 questions × 5 ) = 30 points
3. Long answer questions (2 questions × 10) = 20 points

**Total 60 points**

1. **Recommended Books and Reference Materials**

**Recommended Books**

Awasthi, J. R. ,Bhattarai, G. R. & Khaniya, T. R. (eds.) (2008). *New Generation English.* Kathmandu: Vidyarthi Publication. **(For units III to IV) (Lessons from 1 – 26: page 1 - 138)**

McCarthy, M. & O’Dell, F. (2009). *Academic Vocabulary in Use*. Delhi: Cambridge University Press*.* **(For unit II)**

Lloyd, M. and Day, J. (2011). *Active Grammar, Level 2.* Cambridge. Cambridge University Press. ***(Unit I)***

**Reference Materials**

Hornby. A.S. (2010). Oxford Advanced Learner’s Dictionary (8th Edition). Oxford: Oxford University Press.

**Course Title: Introduction to Information Technology**

Course No. : ICT Ed 411 Nature of Course: Theoretical+Practical

Level: B.Ed. Credit Hours: 3 (2T+1P)

Semester: First Teaching Hours: 80 (32T+48P)

1. **Course Description**

This course aims to provide the students with the foundation knowledge of contemporary Information Technology areas, software, applications and job skills required to enter the IT market. It covers a broad range of introduction of Information Technology concepts, operating system, and office automation tools such as word processor, spreadsheet, database and presentation. It also covers the telecommunication and computer network, internet, email, web and ethical issues in information technology.

1. **Course Objectives**

Following are the general objective of this course:

* To familiarize the students with computer and its applications in the relevant fields
* To enhance the skill of students in Information Communication and Technology (ICT) uses and operating system
* To make the students competent in office automation system application.
* To enable the students to use Internet and www
* To make the students knowledgeable about telecommunication industries.
* To make the students able to use computer system in a safe and secure way
1. **Specific Objectives and Contents**

|  |  |
| --- | --- |
| **Specific Objectives** | **Contents** |
| * State scope and importance of IT
* Differentiate a system from computer system in terms of characteristics, capabilities and limitations
* Identify the types of computers and memory devices used in different generation
* Illustrate configurations and specifications of PCs
* State computer system architecture
* Identify basic components of a computer system
* Distinguish between primary and secondary memories along the dimension of speed, cost and capacity.
 | **Unit 1 : Fundamentals of Computer (12)*** 1. Scope of IT and its importance
	2. Computer system concepts, characteristics, capabilities and limitations
	3. Generations of computers
	4. Types of computers
	5. Personal computer (PCs)
		1. Configurations of PCs
		2. PCs specifications.
	6. Computer system architecture
	7. Basic components of a computer system
		1. Input devices
		2. Output devices
		3. CPU and its components
		4. Memory: RAM, ROM, EPROM, PROM
		5. Secondary storage device

**Lab Work*** Demonstration of PC components
* Prepared specification of PC system
 |
| * Explain concept of software along with its need
* Differentiate main categories of computer software.
* Explore the importance of programming languages in software development.
* Analyze the trends of new software and mobile computing.
* List all the major operating system
* Illustrate file allocation table
* Describe window operating system
* Perform the window based operating system
 | **Unit 2 : Computer Software and Classification (8)*** 1. Software and its need
	2. Types of software
		1. System Software
* System, Utility Program
* Programming languages
* Assemblers
* Compilers
* Interpreter
	+ 1. Application Software
	1. Programming languages machine, assembly, high Level, 4GL
	2. Trends in software
	3. Introduction to Disk Operating System: internal and external commands
	4. File Allocation Table (FAT & FAT 32)
	5. Introduction to Window Operating System
		1. GUI environments
		2. Working with Files & Folders
		3. Working with windows application programs
		4. Customizing the taskbar and desktops
		5. Customizing windows
		6. Use of accessories.
		7. Working with control panel
	6. Mobile Computing

**Lab work** * Performing 2.7 activities using window based operating system
* Demonstration of the mobile operating system
 |
| * Execute word processor by identifying basic word processing tools
* Identify special features commonly found in modern word processor such as editing, formatting, mail merging etc.
* Execute some financial tools such as spreadsheet.
* Differentiate the terms worksheet and spreadsheet.
* List the types of data analysis tools commonly found in spreadsheet and describe their uses.
* Execute presentation program.
* Create and format slides.
* Design and animate the slide
 | **Unit 3: Office Automation Software (20)*** 1. **Word processor**
		1. Characteristics of word processor
		2. Creating and formatting documents
		3. Managing page numbers, header and footer
		4. Proofing a document
		5. Inserting citation in APA and table of contents
		6. Inserting objects from other applications
		7. Mail merge
		8. Printing documents
	2. **Spreadsheet Application**
		1. Characteristics of Spreadsheet
		2. Creating, formatting and printing worksheets.
		3. Financial and statistical Functions in Excel
		4. Creating, formatting and printing graphs
	3. **Presentation** **Application**
		1. Characteristics of presentation
		2. Creating and save presentations
		3. Applying template
		4. Design slides.
		5. Animation on slide
		6. Inserting hyperlink, slide number, date and time
		7. Slide Transactions
		8. Master Slides
		9. Slides printing

**Lab Work*** Performing the word processing activities using office automation software like MS Word
* Performing the spread sheet activities using Office automation software like MS Excel
* Performing the presentation activities using Office automation software like MS Power Point
 |
| * Clarify number system in computing.
* Give examples to illustrate number system and conversion
* Calculate in binary
 | **Unit 4: Number System and Their Conversion (4)** * 1. Introduction of Number System
	2. Decimal, Binary, Octal, Hexadecimal Number System and Conversion

4.2 Calculation in Binary – addition, subtraction |
| * Describe computer network and its types
* Identify topologies commonly used in networks.
* Describe communication channels and types of network connections
* Illustrate different network components.
* Explain the importance of telecommunication systems in Nepal
* State internet services and convergence of technologies.
 | **UNIT 5: Telecommunication and Computer Network (8)*** 1. Introduction of computer network
	2. Types of network - LAN, WAN, MAN
	3. Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies
	4. Communication Channels - Twisted, Coaxial, and Fiber Optic
	5. Components of LAN - Media, NIC, Bridges, HUB, Routers, Repeater and Gateways.
	6. Introduction to telecommunication.
	7. Telecommunication systems in Nepal.
	8. Internet services and convergence of technologies.
 |
| * Explain database and its types
* Illustrate database management system and its applications
* List out the DBMS software
* Create a data base with table, relationships, queries, form, report and macro.
 | **UNIT 6 : Database Management System (14)*** 1. Introduction to database
	2. Types of database
	3. Database Management System (DBMS)
	4. Application of DBMS

**Lab Work** * Creating database using DBMS software like MS Access
* Creating tables with its properties
* Creating relation between two or more tables
* Creating form
* Creating queries
* Creating reports
* Creating macro
 |
| * Explain evolution of internet and world wide web
* Distinguish between internet, intranet and extranet
* Demonstrate the use of web technology
* Describe social media and e-mail services
* Explain cloud, green and virtual computing
* State different e-Services
* Surf web sites, use search engine, create e-mail and use social media
 | **Unit 7 : Internet Web and Emerging Technology (10)*** 1. Internet and Its Evolution
	2. World Wide Web
	3. Internet, Intranets and Extranet
	4. Search Engine and Web Browser
	5. Social Media
	6. e-Mail Services
	7. Web 2.0
	8. Cloud Computing
	9. Green Computing
	10. Virtual Computing
	11. e-Services
		1. e-Commerce
		2. e-learning
		3. e-Health
		4. e-Government
		5. e-Library

**Lab work** * Surfing web sites
* Using Search engine
* Creating Email
* Using social media
 |
| * Define computer virus and threats
* Explain the ways of protecting computer virus
* Identify the security and ethical issues in IT.
* State computer crime
* Define privacy and intellectual property
* Install antivirus and scan computer system
 | **UNIT 8 : Security and Ethical Challenges (4)*** 1. Computer Virus and threats
	2. Protection from computer virus
	3. Security and Ethical issues in Information Technology
	4. Computer crime
	5. Piracy issues and intellectual property

**Lab Work** * Installing antivirus and scan computer system
 |

*Note: The figures in the parentheses indicate the approximate teaching hours for the respective units.*

1. **Instructional Techniques**

The instructional techniques for this course are divided into two groups. First group consists of general instructional techniques applicable to most of the units. The second group consists of specific instructional techniques applicable to particular units.

* 1. **General Instructional Techniques**

Reading materials will be provided to students in each unit. Lecture preferably with the use of multi-media projector, demonstration, practical classes, discussion, and brain storming are used in all units.

**4.2 Specific Instructional Techniques**

Demonstration is an essential instructional technique for all units in this course during teaching-learning process. Specifically, demonstration with practical works will be specific instructional technique in this course. The details of suggested instructional techniques are presented below:

|  |  |
| --- | --- |
| Units | Activities |
| Unit 2:For Window Operating System | * Demonstration by the teacher on different types of operation system (Working with files & folders, working with windows application programs, customizing the taskbar and desktops, customizing windows, use of accessories and working with control panel)
* Individual lab work of those operation system by each student
* Monitoring of students' work by reaching each student and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |
| Unit 3: For Word Processing | * Demonstration by the teacher on word processing
* Formatting text
* editing document
* tab setting,
* paragraph alignment
* inserting table and objects
* managing table of contents, page setup, proof reading the document
* Lab work in pairs in a task assigned by the teacher using word processing
* Monitoring of students' work by reaching each pair and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |
| Unit 3: For Spread Sheet | **Spread Sheet*** Demonstration by the teacher on spread sheet
* Naming cell and cell range, use of formula and different types of functions
* Inserting chart and objects
* Renaming worksheet and workbook
* Handling cell formatting such as alignment, numbers, currency, font colour, merger and centre
* Applying autofill features to customise tasks
* Design a bill of supermarket, mark sheet of school and college,

mark ledger book, line graph, column chart, pie chart, 3D view chart using title, Axis, Gridlines, Legend, Data level and data table* Develop different types of tables
* Use different types of functions, Formulas and subtotals.
* Use colours, Font, Currency, Subtotal, Sort, Auto filter, etc.
* Lab work in pairs in different tasks assigned by the teacher
* Monitoring of students' work by reaching each pair and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |
| **Unit 3: For Presentation Package** | * Demonstration by the teacher on presentation package
* Create different types of presentation slides
* Apply a design temples
* Use formatting, Alignments, Bullet, Insert picture, Organization charts, Word Art, Diagram Gallery display box, 3-D style, Rotating objected. Create/types of charts and Data sheet. Chart with title, Axis, Gridlines, Legend, Data labels and data table
* Insert the different types of custom animation and movie.
* Create different type of slides to use in the teaching and learning process
* Individual lab work of those operation system by each student
* Monitoring of students' work by reaching each student and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |
| **Unit 6: For Data Management System** | * Demonstration by the teacher about creating and maintaining the database using MS-Access.
* Pair works to design a database using DDL and DML commands for creating Students and staffs profile, Telephone Directory Etc.
* Monitoring of students' work by reaching each pair and assist them to complete the assignment
* Presentation by students followed by peers' comments and teacher's feedback
 |
| **Unit 7: For E-Mail** | * Demonstration by the teacher on
* creating a mailing list for communicating students or teachers
* using e-mail to search to download and to send; to receive, to attach file and to send copies of e-mail documents.
* Individual lab work of those operation system by each student
* Monitoring of students' work by reaching each student and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |
| **Unit 7: For Internet** | * Demonstration by the teacher on searching the web site, downloading the file, uploading the files, and creating a block
* Individual lab work of those operation system by each student
* Monitoring of students' work by reaching each student and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |

1. **Evaluation**

Evaluation of students' performance is divided into parts: Internal assessment and internal and external practical examination and theoretical examinations. The distribution of points is given below:

|  |  |  |  |
| --- | --- | --- | --- |
| Internal Assessment | External Practical Exam/Viva | Semester Examination(Theoretical exam) | Total Points |
| 40 Points | 20 Points | 40 Points | 100 Points |

***Note****: Students must pass separately in internal assessment, external practical exam and semester examination.*

* 1. **Internal Assessment (40 Points)**

Internal assessment will be conducted by subject teacher based on following criteria:

1. Class Attendance 5 points
2. Learning activities and class performance 5 points
3. First assignment ( written assignment) 10 points
4. Second assignment (Case Study/project work with presentation ) 10 points
5. Terminal Examination 10 Points

|  |
| --- |
|  Total 40 points |

* 1. **Semester Examination (40 Points)**

|  |
| --- |
| Examination Division, Dean office will conduct final examination at the end of semester. Objective question (Multiple choice questions 10 x 1 point) 10 PointsShort answer questions (6 questions x 5 marks) 30 Points |
| Total 40 points  |

* 1. **Practical Exam/Viva (20 Points)**

Examination Division, Dean Office will conduct final practical examination at the end of semester. Practical record book, practical written test, demonstration of practical activities and viva are assessment indicators.

1. **Recommended Books and References materials (including relevant published articles in national and international journals)**

**Recommended Books:**

[Alexis Leon](http://www.vikaspublishing.com/author-details/alexis-leon/3111) & [Mathews Leon](http://www.vikaspublishing.com/author-details/mathews-leon/3234) (2009). Fundamentals of Information Technology, 2/e. New Delhi. Vikas Publishing House (unit 1-5)

Turban, R. R. (2014). *Introduction To Infromation Technology.* John Wiley and Sons (Asia) Pvt. Ltd. (For unit 6 to unit 8)

 **References materials:**

Sinha, P. K., & Sinha, P. (2007). Computer fundamentals: concepts, systems & applications. New Delhi: BPB Publications.

Norton, P. (2006). Peter Norton's computing fundamentals. Boston, Mass: McGraw-Hill Technology Education.

Morley, D. &. (2013). *Understanding Computers Today and Tomorrow.* Cangage Learning.

V. Rajaraman, Neeharika Adabala (2014).Fundamentals of Computers 6th Edition. New Delhi: PHI

Cox, J., Lambert, J., & Frye, C. (2011). *Microsoft Office Professional 2010 step by step*. Redmond, Wash: Microsoft.

Melton, B. (Ed.). (2013). *Microsoft Office Professional 2013*. Sebastopol, Calif: O’Reilly Media.

Melton, Beth, Dodge, Mark,(2013),Microsoft Office Home and Student 2013 Step By Step, PHI India.

Patrice-Anne Rutledge(2014),Office 2013 All-In-One Absolute Beginner's Guide ISBN:9789332539372 , Pearson India

Course Title:Programming Concept with C

Course No. : ICT. Ed. 412 Nature of course: Theoretical + Practical

Level: B.Ed. Credit hours: 3 (2T+1P)

Semester: First Teaching hours: 80 (32T+48P)

1. **Course Description**

The aim of the course is to impart knowledge of the basic concepts of procedural programming and to help the students build skills forsolving problems using procedural programme. It provides thestudents with the basicfeatures of the language such as data types, operators,control structure, array, functions, structure, pointer and file handling which are the common features of any programming languages.Students are more engaged in laboratorywork to exaction of programing experiments rather than theoretical concept.

1. **General Objectives of the Course**

Following are the general objective of this course:

* To make the student knowledgeable about the procedural programming concept.
* To enable the student in implement the essential programming concepts and methods in practices.
* To explore the programming execution procedure compiler, memory and library.
* To provide the students with the skills of application to solve the real world problems.
1. **Specific Objectives and Contents**

|  |  |
| --- | --- |
| **Specific Objectives** | **Contents** |
| * Give an introduction of programming language
* Describe assembler, compiler and interpreter
* State syntax and semantics
* Explain programming design tools
* Indentify the features of good programme
* Design algorithm and draw diagram of flow chart of sequence, decision making and repetition concept of programming
 | **Unit 1: Introduction to Programming Concept (6)*** 1. Introduction of Programming Language
	2. Assembler, Compiler and Interpreter
	3. Syntax and Semantics
	4. Programming Design Tools
		1. Algorithm
		2. Flow chart
		3. Pseudo codes
	5. Features of good programme

**Lab Works*** Designing algorithm and draw flow chart for sequence, decision making and repetition concept of general programming.
 |
| * Outline historical development of C programming language.
* Describe basic structure of C programme, character set, token and comments, variables and constants.
* Apply data types and conversion in programme.
* Outline input and output in relation to C
* Apply operators and operands in programme.
 | **Unit 2: Introduction to C (10)*** 1. History of C Programme
	2. Basic Structure of C Programme
	3. Character set, Token and Comments
	4. Variables and Constants
	5. Data Types
	6. Type Conversion
	7. Input and Output
	8. Operators
		1. Arithmetic
		2. Relational
		3. Logical
		4. Increment/Decrement
		5. Assignment
		6. Bitwise

**Lab Works*** Developing basic structure of C programme.
* Declaring and assigning variables and constants.
* Applying input and output build in function
* Using arithmetic operators
* Giving demo of type conversion
 |
| * Create different selective structure programme.
* Apply loop concept in programme.
* Describe the interrupt concept in programme.
 | **Unit 3: Control Structure (14)*** 1. Selective Structure
		1. If statement
		2. If-else statement
		3. Nested if-else statement
		4. Switch statement
		5. Conditional operator (:?)
	2. Looping structure:
		1. While Loop
		2. Do-while loop,
		3. For loop
		4. Nested Loops
		5. Loop interrupts

**Practical Works*** User if, if-else and switch statement
* Use while, do-while, for and nested loop concept.
 |
| * Clarify the concept of functions.
* Create function with different parameter passing methods.
* Apply recursion in programme.
 | **Unit 4: Function (10)*** 1. Function Concept
	2. Function prototype, call and definition
	3. Different ways of using function
	4. Call by value, call by reference
	5. Recursion

**Practical Works*** Prototype, call and define function
* Pass the different parameter methods
* Use call by reference methods using function.
* Create a recursion function.
 |
| * Generate the programme with use of array.
* Demonstrate pointer and address references.
* Use string function to write program.
* Apply pointer in array and string function.
 | **Unit 5: Array, Pointer and String (10)*** 1. Concept of array
	2. Array declare, access and initialization.
	3. Multi-dimensional array
	4. Concept of Pointer
	5. Pointer address, dereference, declaration, assignment, initialization
	6. Pointer Arithmetic
	7. Array and Pointer
	8. String
	9. String functions in C
	10. Pointer and String

**Practical Works*** Array declares, define, initialize.
* Creating a single or multi-dimensional array.
* Using pointer and demo for arithmetic function.
* Using different string function in program.
 |
| * Create a programme to heterogeneous data types using array.
* Apply the pointer in address referencing mode.
 | **Unit 6: Structure and Union (8)*** 1. Concept of Structure
	2. Initializing, accessing member of structure
	3. Array of structure
	4. Pointer to structure
	5. Union
	6. Different between union and structure

**Practical Works*** Creating structure data types with application of loop.
* Creating union data types.
 |
| * Define the concept the file handling in C.
* To apply file access methods.
* Apply to input and out formatting structures.
* Apply error handling methods.
 | **Unit 7: Input output and File Handling (12)*** 1. Concept of File handling
	2. File Access methods
	3. Functions of file handling: fopen(), fclose(), fflush(), freopen()
	4. Formatted input out
	5. Character input output
	6. Direct input output
	7. Random file access
	8. Error handling
	9. File operation

**Practical Works*** Creating file handling application for open, read, write and appends.
* Handling the random access files.
* Applying the text formatting function.
 |
| * Create application to using input, output and storage concept using C
 | **Unit 8: Project** (10) Preparation of simple application using C with the feature of input, process, output and store in external file.  |

*Note: The figures in parenthesis indicate approximate teaching hours allotted to respective units.*

* 1. **General Instructional Techniques**

Lecture preferably with the use of multi-media projector, demonstration, practical classes, discussion, and brain storming are used in all units.

**4.2 Specific Instructional Techniques**

Demonstration is an essential instructional technique for all units in this course during teaching-learning process. Specifically, demonstration with practical works will be specific instructional technique in this course. The details of suggested instructional techniques are presented below:

|  |  |
| --- | --- |
| Units | Activities |
| Unit 1:Fordrawing different types of algorithm, flowchart and pseudo codes. | * Demonstration by the teacher on drawing different types of algorithm, flowchart and pseudo codes
* Individual lab work by each student
* Monitoring of students' work by reaching each student and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |
| Unit 2 to 7:  | * Demonstration by the teacher on project works mentioned in each unit
* Lab work individually or in pairs in tasks assigned by the teacher
* Monitoring of students' work by reaching each individual or pair and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's feedback
 |
| Unit 8: | * Demonstration by the teacher on simple application with input process and store in notepad using C
* Lab work individually or in pairs in tasks assigned by the teacher
* Monitoring of students' work by reaching each individual or pair and providing feedback for improvement
* Presentation by students followed by peers' comments and teacher's
 |

1. **Evaluation**

Evaluation of students' performance is divided into parts: Internal assessment and internal and external practical examination and theoretical examinations. The distribution of points is given below:

|  |  |  |  |
| --- | --- | --- | --- |
| Internal Assessment | External Practical Exam/Viva | Semester Examination(Theoretical exam) | Total Points |
| 40 Points | 20 Points | 40 Points | 100 Points |

***Note****: Students must pass separately in internal assessment, external practical exam and semester examination.*

* 1. **Internal Assessment (40 Points)**

Internal assessment will be conducted by subject teacher based on following criteria:

1. Class Attendance 5 points
2. Learning activities and class performance 5 points
3. First assignment ( written assignment) 10 points
4. Second assignment (Case Study/project work with presentation ) 10 points
5. Terminal Examination 10 Points

|  |
| --- |
|  Total 40 points |

* 1. **Semester Examination (40 Points)**

|  |
| --- |
| Examination Division, Dean office will conduct final examination at the end of semester. Objective question (Multiple choice questions 10 x 1 point) 10 PointsShort answer questions (6 questions x 5 marks) 30 Points |
| Total 40 points  |

* 1. **Practical Exam/Viva (20 Points)**

Examination Division, Dean Office will conduct final practical examination at the end of semester.Practical record book, practical written test, demonstration of practical activities and viva are assessment indicators.

1. **Recommended Books and References materials (including relevant published articles in national and international journals)**

Kanetkar, Y. P. (2008). *Let us C*8th Ed, New Delhi, BPB Publication (Unit 1 -8)

Baral, D.S., Baral, D. &Ghimire S. K, The secretes of C programming language. Kathmandu, BhundiPuranaPrakasan. (Unit 1-8)

Balagurusamy, E. (2007). Programming in ANSI C. New Delhi, India: Tata McGraw-Hill.

**References materials:**

Raman, R. (1984). Computer programming in C, New Delhi, PHI. India (unit 1-8)

B.S. Gottfried(2001), Schaum’s Outline Series for Programming with C, Second Edition, Tata McGraw Hill Publishing Company, New Delhi

David Griffiths (2012). Head First C. Shroff

Course Title: Fundamentals of Mathematics Nature of Course: Theory

Course No.: Math Ed. 418 Credit Hours: 3

Level: B. Ed (Minor Math) Teaching Hours: 48

Semester: First

# **Course Description**

This is an integrated course of various branches of mathematics for beginner students at the undergraduate level. This course also provides mathematical foundation for the students who want to major other subjects from natural and social science areas. This course starts with the set & logic and develops through drawing of functions, solving equations & inequalities and reaches to complex number system to lay firm foundation of higher mathematics.

# **2. The general objectives**

The general objectives of this course are as follows:

* To familiarizes students with the basic concepts and operations of set theory.
* To enhance the knowledge of the logic to test validity of the arguments.
* To inculcate the skills of drawing graphs of function and inequalities.
* To let the students optimize linear programming problems by graphical method.
* To make the students understand the relation between roots of a quadratic equation and to develop skill of solving higher order polynomial equations
* .To familiarize the students with logarithm and its properties
* To make the students understand the concept of complex number and apply this concept to derive roots of complex numbers.

# **3. Specific Objectives and Contents**

|  |  |
| --- | --- |
| * Define set with examples.
* Perform basic set operations.
* Represent sets and operations in Venn-diagram.
* Define statements and identify connectives.
* Construct truth or falsity of a simple and the compound statements.
* Construct validity of the arguments.
 | Unit I: Sets and Logic. (8)* Sets and their types
* Relation of sets and representation
* Operations on sets with their properties
* Statements with Connectives, Negation, Conditional and bi-conditional statements
* Truth tables of simple and compound statements
* Arguments and the test of their validity
 |
| * Define relation and function.
* Analyze properties of functions.
* Draw graphs of the functions of different forms: linear, quadratic, simultaneous equations.
 | Unit II: Functions and Graphs (6)* Locating points in plane
* Order pair, Cartesian product of two sets, relations and functions.
* Types of function(1-1 onto, into, Inverse, linear, quadratic and other degree functions, Increasing and decreasing functions)
* Functions and their graphs
	+ General form of Quadratic equations and its graph
	+ Graph of function y=$√x$
* System of homogeneous equations and their graph
 |
| * Differentiate with examples the equation and inequality
* Solve for roots of quadratic equations
* Solve equations reducible to linear and quadratic forms
* Solve system of linear equations in two variables
* Solve inequalities of single variable
* Draw graph of inequalities of two variables
* Solve linear programming problems by graph
 | Unit III: Equations and Inequalities (8)* Introduction to equation and inequalities
* Linear and quadratic equations
* Roots of linear and quadratic equations
* Equations reducible to linear and quadratic equations
* System of first degree two variables equation and their solution
* Inequalities, their properties
* Roots of linear and quadratic inequalities of one variable
* Graph of inequalities of one and two variables and their solution set
* Solution of linear programming problems by graphical method
 |
| * Define polynomial equations
* State properties of polynomial equations
* Form polynomial equations when roots are given
* Solve polynomial equations under certain given conditions
 | Unit IV: Theory of Equations (6)* Polynomials
* Polynomial equations (linear, quadratic, cubic, biquadratic etc.)
* General properties of polynomial equations
* Forming polynomial equations
* Solving polynomial equations with given conditions
 |
| * Define logarithm
* Sketch the graph of logarithm.
* Prove properties of logarithm.
* Use logarithm concept in complex calculation.
 | Unit V: Logarithm (6)* Definition and graph of logarithm
* Properties of logarithm
* Change of base
* Computation with logarithm
 |
| * To define complex numbers
* To prove properties of absolute value of complex numbers
* To find square root of a complex number
* To derive properties of cube roots of unity
* To find product and quotient of a complex numbers in trigonometric form.
* To derive roots of a complex number using De-Moivre's theorem.
 | Unit VI: Complex Numbers (14)* Complex number and Argand diagram
* Modules and argument of a complex number
* Algebraic properties of complex numbers
* conjugate and absolute value of complex number
* Properties of absolute values of complex numbers
* Square root of complex numbers
* Cube roots of unity
* Properties of cube roots of unity
* Trigonometric form of complex numbers
* Product and quotient of complex numbers in trigonometric form
* De-Moivre's theorem (Integral powers only)
* Roots of complex numbers
 |

#  **4. Instructional Techniques**

4.1 **General Instructional Techniques**

There are various techniques of teaching and learning so as to grasp the knowledge of mathematics. Although the methods of teaching and learning may differ, the techniques to be used are lecture, discussion, problem solving, inquiry, question answer, collaborative teaching approach and problem solving method.

**4.2 Specific Instructional Techniques**

The specific teaching and learning techniques chapter wise are listed below:

|  |  |  |
| --- | --- | --- |
| Unit | Activity and Instructional Techniques | Teaching Hours ( 48 ) |
| 1 | Discussion and sharing experiences. | 08 |
| 2 | Project work in group | 06 |
| 3 | Problem based learning in group | 08 |
| 4 | Question answer and discussion in group | 06 |
| 5 | Assignment and discussion  | 04 |
| 6 | Collaborative problem solving in given problems | 16 |

# **5 Evaluation**

 5.1 **Internal Evaluation** 40%

Internal evaluation will be conducted by subject teacher based on the following aspects:

Attendance 4 marks

Participation in learning activities 6 marks

First assignment 10 marks

Second assignment 10 marks

Third assignment 10 marks

 Total 40 marks

5.2 **External Evaluation** (60%)

The examination section Dean Office , Faculty of Education will conduct final examination at the end of the first semester .The type of questions and marks allocated for each question will be as follows :

Objective type questions (multiple choice ) 10 x 1 mark = 10 marks

 Short answer questions 6 x 5 marks = 30 marks

 Long answer questions 2 x 10 marks = 20 marks

 Total = 60 marks

**6. Recommended Book**

 **Compendium will be developed by Dean’s Office of Faculty of Education**

**Reference Books**

Bajracharya P. M, Basnet G. B., & Phulara, K. R.(2012) *Fundamentals of mathematics*. Kathmandu: Buddha Academic Publishers & Distributors Pvt Ltd.

Baranov I, Bogatyrev G & Bokovner O.(1985). *Mathematics for pre-college students*, Moscow: Mir Publishers

Das, B.C. & Mukherjee B.N.(1984). *Higher trigonometry*. Calcutta: UN Dhur and Sons.

Ganguli, S.M &Mukh:erjee, B.N.(1993). *Intermediate algebra*. Calcutta: UN Dhur and Sons Pvt Ltd.

Pandit, R. P(2004) *Modern mathematics*. Kathmandu: Mrs Indira PanditShantinagar.

Sarkar, S.K.(2013). A Textbook of *Descrete mathematics*. New Delhi: S Chand & Company Ltd Ramnagar.

Shrestha, R.M.&Bajracharya, S.(2062 B.S.). *Elementary modern linear algebra*. Kathmandu: SukundaPustakBhawan.