



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

BTEUP Electrical Engineering Syllabus 2026-27

Complete Syllabus — All Years, All Semesters, in One File

Diploma in Electrical Engineering • NEP-2020 • All Semesters Approved 16.07.2026

What is inside: the complete 1st year (11 subjects, common curriculum for all 41 engineering branches), the full 3rd semester (600 marks, 20 credits) and the full 4th semester (650 marks, 20 credits), the full 5th semester (650 marks, 20 credits) and the full 6th semester (650 marks, 20 credits, normal pathway; an Industrial Pathway is also offered — see the 6th-semester scheme). Each subject keeps its own pages, tables and reference books.

Please read — three honest notes: (1) **1st year:** the full 1st-year examination scheme is from the official 1st-year curriculum (folder2627), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026, effective from 2026-27 — 1st semester 18 credits / 900 marks, 2nd semester 22 credits / 1050 marks. The official curriculum gives no paper codes — subjects are numbered 1.1-1.6 and 2.1-2.7 only. (2) **2nd year (3rd & 4th semester) — cover year vs approval:** BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page (95 times). It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme. (3) The official curriculum gives no detailed syllabus section for the In-House Project (6.3) — no units, practicals or books are listed — so that PDF contains only the scheme figures. The 6th-semester Industrial Pathway per-row internal/external split for Entrepreneurship (6.1) and Seminar (6.4) is reproduced as read from the curriculum; please confirm it with your institute.

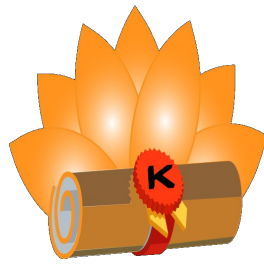
Contents

Subject	Page
1st Year (Common Curriculum for All Branches)	
Mathematics	5
Physics	9
Chemistry	13
English Communication	17
Engineering Graphics	21
Workshop Practice	25
IT Systems	29
Electrical & Electronics Fundamentals	33
Engineering Mechanics	37
Environmental Science	41
Sports & Yoga	45
2nd Year — 3rd & 4th Semester (Electrical Engineering)	
3rd Semester — Complete Examination Scheme	49
Basics of Power Generation Systems	51
Electric Machine-1	55
Electrical Circuits	59
Electrical and Electronic Measurements	63
Electric Machine-1 (Lab)	67
Engineering Economics & Accountancy (Open Elective-1, Option 1)	69
Disaster Management (Open Elective-1, Option 2)	72
Summer Internship-I & Student Centred Activities	76
4th Semester — Complete Examination Scheme	78
Electric Power Transmission and Distribution	81
Electric Machine-2	85

Fundamentals of Power Electronics	88
Industrial Automation and Control (Program Elective-1, Option 1)	92
Industrial Instrumentation and Condition Monitoring (Program Elective-1, Option 2)	96
Renewable Energy Power Plants (Program Elective-2, Option 1)	100
Biomass and Micro-Hydro Power Plants (Program Elective-2, Option 2)	103
Electric Machine-2 (Lab)	106
Economic Policies in India (Open Elective-2, Option 1)	108
Mechatronics (Open Elective-2, Option 2)	111
Essence of Indian Knowledge and Tradition (Audit Course)	114
3rd Year — 5th Semester (Electrical Engineering)	
5th Semester — Complete Examination Scheme	117
Switch Gear and Protection	119
Solar Power Technologies (Program Elective-3, Option 1)	122
Electric Traction (Program Elective-3, Option 2)	125
Energy Conservation and Audit	128
Electrical Testing and Commissioning (Program Elective-4, Option 1)	132
Illumination Practices (Program Elective-4, Option 2)	136
Indian Constitution (Audit Course)	139
Electrical Estimation and Contracting	142
Summer Internship-II & Student Centred Activities	146
3rd Year — 6th Semester (Electrical Engineering)	
6th Semester — Complete Examination Scheme (Normal Pathway)	148
Building Electrification	151
Entrepreneurship and Start-Ups	155
In-House Project	158
Project Management (Open Elective-3, Option 1)	159
Internet of Things (Open Elective-3, Option 2)	162

Source: BTEUP 1st-year common curriculum (folder2627), 2nd Year Electrical Engineering curriculum (folder2627) and 3rd Year Electrical Engineering curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabi; short explanations are the author's own plain-English summaries, not syllabus text.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Mathematics — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To build the mathematical foundation every engineer needs — the algebra, calculus and matrices that later subjects (C programming logic, networks, data structures) all stand on.

Unit-Wise Complete Topic List

Algebra & Trigonometry

Topics: Algebraic expressions and equations; trigonometric ratios, identities and heights and distances.

In simple words: The everyday maths of engineering: solving equations and working with angles and triangles.

Calculus

Topics: Limits, differentiation and its applications; integration and its applications; definite integrals.

In simple words: How things change and accumulate — the maths behind rates, slopes, areas and volumes.

Matrices & Determinants

Topics: Types of matrices; operations on matrices; determinants; solving systems of linear equations.

In simple words: Organising numbers in tables and solving several equations at once — the same idea behind computer graphics and data handling.

Differential Equations

Topics: First-order differential equations and their simple applications.

In simple words: Equations that describe how things change over time — used everywhere from circuits to mechanics.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200

1.5	Engineering Graphics OR Engineering Workshop Practice	0-0- 4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0- 2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0- 10	—	Pr 50	—	50
1st Semester Total			18	—	—	900

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T- P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1- 0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0- 4 / 3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0- 4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0- 0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0- 4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

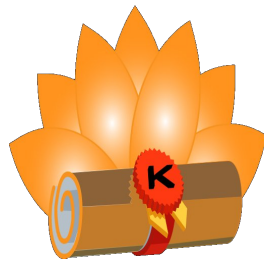
How This Helps You Later

If your maths is weak, building logic in C programming becomes difficult. Strong first-year maths makes 2nd-year subjects noticeably easier.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Physics — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To build a working understanding of the physical world — motion, force, energy, light, sound and electricity — through concepts and simple experiments.

Unit-Wise Complete Topic List

Mechanics

Topics: Laws of motion; force, work, energy and power; friction; circular motion.

In simple words: Why things move the way they do — the foundation of machines and structures.

Electricity & Magnetism

Topics: Electric charge, current and voltage; Ohm's law; magnetic effects of current.

In simple words: The physics behind every circuit you will meet in electronics and networks.

Optics & Waves

Topics: Reflection and refraction; lenses; wave motion and sound.

In simple words: How light and sound behave — used in instruments, communication and displays.

Modern Physics

Topics: Atomic structure; semiconductors in brief; lasers and their uses.

In simple words: A first look at the physics inside chips and modern devices.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50

1st Semester Total	18	—	—	900
---------------------------	-----------	----------	----------	------------

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

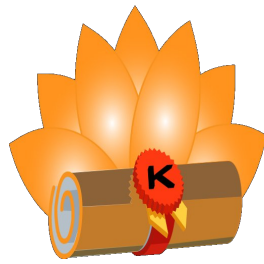
How This Helps You Later

Physics and electronics form the base of Computer Networks and IoT. Weak physics in the first year makes networks harder in the 2nd year.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Chemistry — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To give a practical understanding of the chemistry that engineers meet — materials, water, fuels and corrosion — and safe laboratory practice.

Unit-Wise Complete Topic List

Atomic Structure & Bonding

Topics: Atoms, molecules and ions; chemical bonds; the periodic table in brief.

In simple words: What materials are made of and why they behave the way they do.

Water Technology

Topics: Hardness of water; water treatment methods; boiler feed water.

In simple words: Why water must be treated before it is used in boilers and industry.

Fuels & Combustion

Topics: Types of fuels; calorific value; combustion and its control.

In simple words: How fuels release energy and how that energy is used efficiently.

Corrosion & Its Prevention

Topics: What corrosion is; types of corrosion; methods of prevention.

In simple words: Why metals rust and wear out, and how engineers protect them.

Examination Scheme – 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50
1st Semester Total			18	—	—	900

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

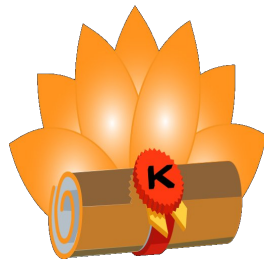
How This Helps You Later

Chemistry teaches you how materials behave — useful whenever you work with hardware, batteries and electronic components.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

English Communication — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To build the English communication skills a diploma engineer needs — reading technical material, writing clearly, and speaking confidently in interviews and at work.

Unit-Wise Complete Topic List

Reading & Comprehension

Topics: Reading technical passages; understanding instructions and manuals; vocabulary building.

In simple words: Reading a manual or a question paper and understanding exactly what it asks.

Writing Skills

Topics: Letters, emails, reports and notices; paragraph and essay writing; grammar in use.

In simple words: Writing clearly and correctly — the skill behind every report, email and job application.

Speaking & Listening

Topics: Introducing yourself; group discussion; presentation skills; listening comprehension.

In simple words: Speaking with confidence in class, in viva and in placement interviews.

Workplace Communication

Topics: Resume writing; interview skills; telephone and email etiquette.

In simple words: The communication that gets you placed and keeps you professional at work.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200

1.5	Engineering Graphics OR Engineering Workshop Practice	0-0- 4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0- 2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0- 10	—	Pr 50	—	50
1st Semester Total			18	—	—	900

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T- P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1- 0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0- 4 / 3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0- 4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0- 0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0- 4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

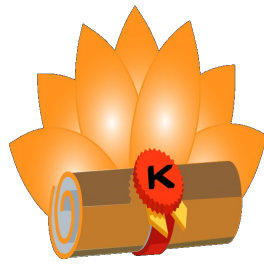
How This Helps You Later

Communication skill decides how far technical skill takes you — in viva, in interviews and in every job after the diploma.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Engineering Graphics — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To teach the language engineers draw in — lines, projections and sections — so you can read a drawing and make one, by hand and on computer.

Unit-Wise Complete Topic List

Drawing Basics

Topics: Drawing instruments; lines and lettering; dimensioning; scales.

In simple words: The alphabet of engineering drawing: line types, letters and measurements.

Projections

Topics: Orthographic projections; first-angle and third-angle projection; isometric views.

In simple words: How a 3D object is shown correctly on a flat sheet of paper.

Sections & Development

Topics: Sectional views; development of surfaces.

In simple words: Seeing inside an object on paper, and unfolding a 3D shape into a flat pattern.

Computer-Aided Drawing

Topics: Introduction to CAD tools for engineering drawing.

In simple words: The same drawing work done on a computer — the skill used in every design office today.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50

1st Semester Total	18	—	—	900
---------------------------	-----------	----------	----------	------------

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

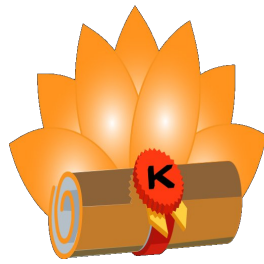
How This Helps You Later

Graphics trains your eye for shape and size — useful in every branch, and the base of design and modelling work.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Workshop Practice — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To give hands-on workshop experience — measuring, cutting, fitting, joining and finishing — with real tools, safely and correctly.

Unit-Wise Complete Topic List

Fitting Shop

Topics: Measuring instruments; marking; filing; sawing; drilling; tapping.

In simple words: Making a metal piece to exact size by hand — the core workshop skill.

Carpentry & Joinery

Topics: Woodworking tools; joints; simple wooden jobs.

In simple words: Working with wood: cutting, shaping and joining it cleanly.

Welding & Sheet Metal

Topics: Arc and gas welding in brief; sheet-metal cutting, bending and joining.

In simple words: Joining metals and shaping thin sheets — used in fabrication everywhere.

Safety & Housekeeping

Topics: Workshop safety rules; personal protective equipment; tool care.

In simple words: The habits that keep you and others safe in any workshop or lab.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50

1st Semester Total	18	—	—	900
---------------------------	-----------	----------	----------	------------

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

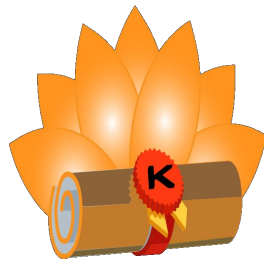
How This Helps You Later

Workshop is where you stop being only a theory student and become a practical engineer. Many students take it lightly — do not.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

IT Systems — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To build a solid base in computers — hardware, software, operating systems, the internet and everyday office tools — before branch subjects begin.

Unit-Wise Complete Topic List

Computer Fundamentals

Topics: Parts of a computer; input and output devices; memory and storage; types of software.

In simple words: What is inside a computer and how its parts work together.

Operating Systems

Topics: What an operating system does; files and folders; basic commands.

In simple words: Managing your own computer properly — the first step before the Operating Systems subject in the 3rd semester.

Internet & Email

Topics: Browsers and search; email; safe internet use; online services.

In simple words: Using the internet for study and work, and staying safe while doing it.

Office Tools

Topics: Word processing; spreadsheets; presentations.

In simple words: Documents, tables and slides — the tools behind every report, assignment and seminar.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50

1st Semester Total	18	—	—	900
---------------------------	-----------	----------	----------	------------

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

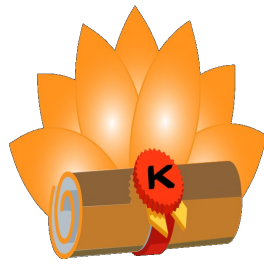
How This Helps You Later

This subject is your first step into computing — it makes the 3rd-semester subjects (Operating Systems, Web Technologies, C) much easier to pick up.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electrical & Electronics Fundamentals — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026-27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To explain electricity and basic electronics from the ground up — current, voltage, circuits and components — with simple experiments.

Unit-Wise Complete Topic List

Basic Electrical Concepts

Topics: Charge, current, voltage, resistance and power; Ohm's law; series and parallel circuits.

In simple words: The four quantities behind every electrical circuit, and how they relate.

AC & DC

Topics: Direct current and alternating current; single-phase AC in brief; transformers in brief.

In simple words: The two kinds of electric supply, and how voltage is changed for transmission and use.

Electronic Components

Topics: Resistors, capacitors, inductors; diodes and transistors in brief.

In simple words: The small parts that make electronic circuits work.

Measuring Instruments

Topics: Multimeter; ammeter and voltmeter; measuring voltage, current and resistance.

In simple words: Measuring a real circuit and checking whether it behaves as expected.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5		0-0-4	2	Graphics: Pr 40 /	Graphics: Th 60 /	100

	Engineering Graphics OR Engineering Workshop Practice			Workshop: Pr 60	Workshop: Pr 40	
1.6	Sports & Yoga	0-0- 2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0- 10	—	Pr 50	—	50
1st Semester Total			18	—	—	900

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T- P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1- 0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0- 4 / 3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1- 2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0- 4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0- 0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0- 4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔

2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

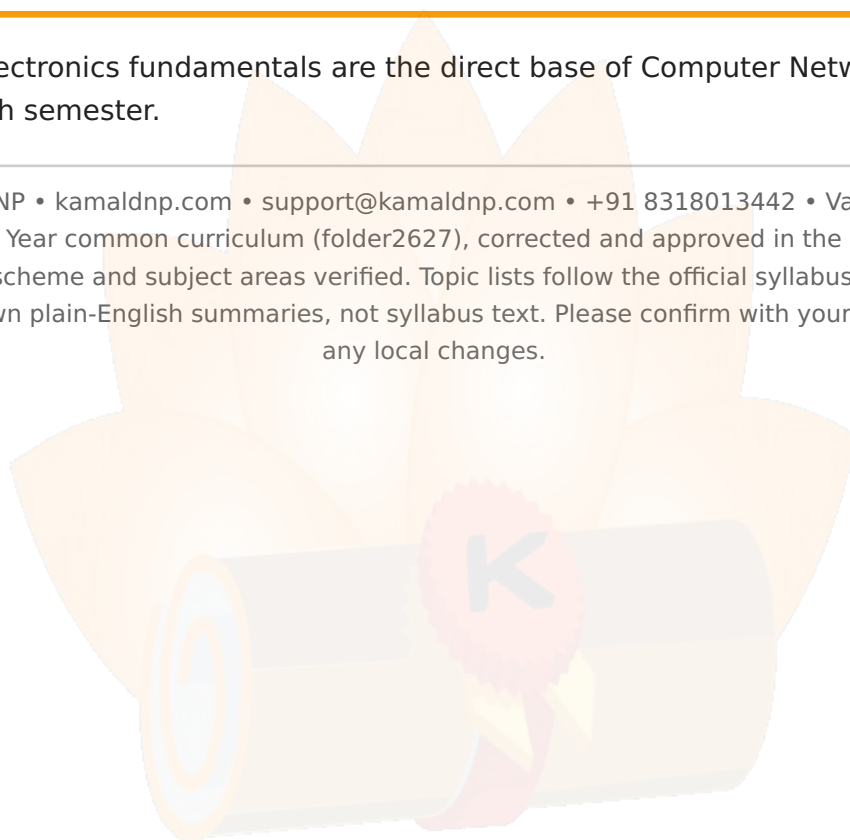
Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

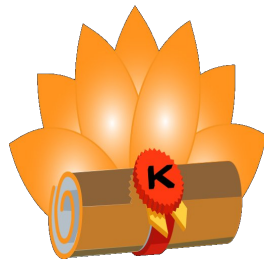
How This Helps You Later

Electrical and electronics fundamentals are the direct base of Computer Networks and the IoT subject in the 5th semester.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Engineering Mechanics — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To explain how forces act on bodies — at rest and in motion — so you can analyse simple machines and structures.

Unit-Wise Complete Topic List

Forces & Equilibrium

Topics: Types of forces; resultant and equilibrant; conditions of equilibrium.

In simple words: When things stay still and when they move — the first question of mechanics.

Friction

Topics: Laws of friction; angle of friction; friction in simple machines.

In simple words: Why things grip or slip, and how friction is used or reduced.

Laws of Motion & Simple Machines

Topics: Newton's laws; levers, pulleys and inclined planes.

In simple words: The classic machines that multiply force — still the base of mechanical design.

Centre of Gravity & Moment of Inertia

Topics: Centre of gravity of simple shapes; moment of inertia in brief.

In simple words: Where a body's weight acts, and how hard it is to turn it.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50

1st Semester Total	18	—	—	900
---------------------------	-----------	----------	----------	------------

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

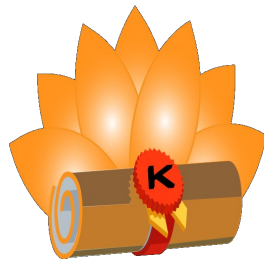
How This Helps You Later

Mechanics trains structured problem-solving — the same step-by-step thinking used in programming and in Data Structures.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Environmental Science — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To build awareness of the environment engineers work in — pollution, resources and sustainability — and the engineer's responsibility towards them.

Unit-Wise Complete Topic List

Environment & Ecosystems

Topics: What an ecosystem is; biodiversity in brief; natural resources.

In simple words: The natural systems that engineering draws on and affects.

Pollution

Topics: Air, water, soil and noise pollution; their causes and effects; control measures.

In simple words: What pollution is, where it comes from, and how it is controlled.

Sustainability & Green Energy

Topics: Sustainable development; renewable energy sources — solar, wind, hydro.

In simple words: Meeting today's needs without taking away tomorrow's — and the clean energy that makes it possible.

Environmental Laws & Responsibility

Topics: Key environmental laws in brief; the engineer's role.

In simple words: The rules that protect the environment, and what they ask of an engineer.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50

1st Semester Total	18	—	—	900
---------------------------	-----------	----------	----------	------------

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

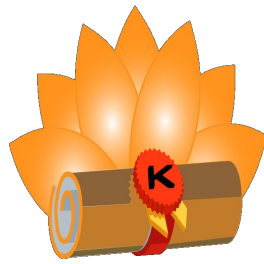
How This Helps You Later

Every project today is judged on its environmental impact too — this subject teaches you to think that way from the start.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Sports & Yoga — First Year

BTEUP Diploma • 1st Semester (First Year — Common Curriculum) • Session 2026–27
Common Curriculum • 1st Semester • All 41 Engineering Branches

About this document: The first year of a BTEUP diploma runs on one common curriculum for 41 engineering branches, so this subject is the same whether you are in Computer Science, Mechanical, Civil or Electrical. The examination scheme below is from the official 1st-year curriculum (folder2627, NEP-2020), corrected and approved by the Board of Technical Education, U.P. Lucknow in the C.D.C. meeting held on 16.07.2026.

What This Subject Aims To Do

To build physical fitness, discipline and focus through sports and yoga, alongside academic study.

Unit-Wise Complete Topic List

Physical Fitness

Topics: Warm-up and exercise; games and sports activities.

In simple words: Staying fit and active — the base of steady study and work.

Yoga

Topics: Asanas, pranayama and meditation in brief; benefits for concentration and health.

In simple words: Simple practices that improve focus, calm and stamina.

Teamwork & Discipline

Topics: Playing in a team; following rules; sportsmanship.

In simple words: The discipline and teamwork that employers value as much as marks.

Health Awareness

Topics: Balanced diet; sleep; avoiding harmful habits.

In simple words: Looking after the body that has to carry you through the diploma and beyond.

Examination Scheme — 1st & 2nd Semester (Official, Verified 2026-27)

1st Semester — 18 Credits, 900 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
1.1	Mathematics-I	2-1-0	3	Th 40	Th 60	100
1.2	Applied Physics-I	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.3	Applied Chemistry OR Introduction to IT and AI	3-0-2 / 2-0-4	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.4	Communication Skills in English OR Fundamentals of Electrical & Electronics Engineering	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
1.5	Engineering Graphics OR Engineering Workshop Practice	0-0-4	2	Graphics: Pr 40 / Workshop: Pr 60	Graphics: Th 60 / Workshop: Pr 40	100
1.6	Sports & Yoga	0-0-2	1	Pr 50	—	50
—	Student Centred Activities (SCA)	0-0-10	—	Pr 50	—	50

1st Semester Total	18	—	—	900
---------------------------	-----------	----------	----------	------------

2nd Semester — 22 Credits, 1050 Marks

Sr. No.	Subject	L-T-P	Credits	Internal	External	Total
2.1	Mathematics-II	3-1-0	4	Th 40	Th 60	100
2.2	Applied Physics-II	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.3	Introduction to IT and AI OR Applied Chemistry	2-0-4 / 3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.4	Fundamentals of Electrical & Electronics Engineering OR Communication Skills in English	3-0-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.5	Engineering Mechanics	2-1-2	4	Th 40 + Pr 60	Th 60 + Pr 40	200
2.6	Engineering Workshop Practice OR Engineering Graphics	0-0-4	2	Workshop: Pr 60 / Graphics: Pr 40	Workshop: Pr 40 / Graphics: Th 60	100
2.7	(Q) Environmental Sciences	3-0-0	— (Audit)	—	Th 60*	—
—	Student Centred Activities (SCA)	0-0-4	—	Pr 50	—	50
2nd Semester Total			22	—	—	1050

About the OR choices: at Sr. No. 1.3, 1.4 and 1.5 the institute chooses which alternative runs in the 1st semester; the other alternative then runs in the 2nd semester (1.3 ↔ 2.3, 1.4 ↔ 2.4, 1.5 ↔ 2.6). An alternative once selected in the 1st semester is not selected again in the 2nd semester.

No paper codes: the official 1st-year curriculum gives no paper codes — subjects are numbered 1.1–1.6 in the 1st semester and 2.1–2.7 in the 2nd semester only.

Qualifying subject: Environmental Sciences (2.7, Q) is an audit subject — you must appear and pass, but its 60 external marks are not counted for percentage or division.

Each period is 60 minutes; each session is 16 weeks, with at least 14 effective teaching weeks. A 4-week summer internship (Internship-I) is organised after the 2nd-semester examination and is evaluated in the 3rd semester.

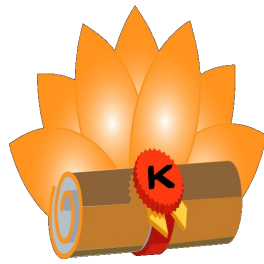
How This Helps You Later

A diploma is a marathon, not a sprint — fitness and focus decide how well you finish it.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 1st Year common curriculum (folder2627), corrected and approved in the C.D.C. meeting held on 16.07.2026 — scheme and subject areas verified. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

3rd Semester — Complete Examination Scheme

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27
Semester total 600 Marks • 20 Credits • (Q) = qualifying only, marks not counted for percentage/division

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: The full 3rd-semester study and evaluation scheme as printed in the curriculum. (Q) subjects are compulsory to appear and pass, but their marks are not included for percentage and division. Open Elective-1 (3.6) also has a certification-course option alongside the theory options.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.1	Basics of Power Generation Systems	Theory	3 - 0	3	40	60 (3 hrs)	100
3.2	Electric Machine- 1	Theory	4 - 0	4	40	60 (3 hrs)	100
3.3	Electrical Circuits	Practicum	1 - 4	3	60	40 (3 hrs)	100

3.4	Electrical and Electronic Measurements	Practicum	2 – 4	4	60	40 (3 hrs)	100
3.5	Electric Machine- 1 (Lab)	Practical	0 – 4	2	60	40 (3 hrs)	100
3.6	Advance Skill Development (Open Elective-1) (Q)	Theory	2 – 0	2	50	—	NA
3.7	Summer Internship (4 Weeks)	Internship	—	2	50	—	50
#	Student Centred Activities (SCA)	Activity	0 – 12	—	50	—	50
3rd Semester Total				20	360	240	600

Open Elective-1 (3.6) — Options

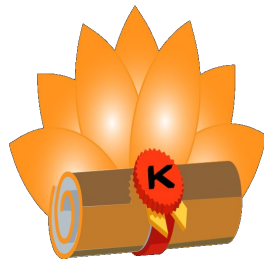
Theory courses (choose one): (1) Engineering Economics & Accountancy; (2) Disaster Management. **Certification courses (choose one, not less than 20 hrs, offline/online, from agencies of repute):** courses conducted by Centre of Excellence (e.g. Tata Technologies — see Annexure 1), Infosys Springboard, TCS iON, other relevant government / international / national organisations or platforms of repute, AICTE-ELIS and Centrally Funded Technical Institutes, C-DAC, NIELIT.

Student Centred Activities (SCA) — 50 Marks

Co-curricular activities like extension lectures, games, hobby clubs (e.g. photography), seminars, declamation contests, educational field visits, N.C.C., NSS, library, cultural activities and self-study. Marks distribution: 15 marks general behaviour and discipline; 10 marks attendance (75–80% = 6, 80–85% = 8, above 85% = 10); 25 marks maximum for Sports/NCC/ Cultural/Co-curricular/NSS activities (25 = State/National level participation, 20 = participation in two of the above activities, 15 = Inter-Polytechnic level participation).

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Basics of Power Generation Systems — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27

Subject 3.1 (Theory) • Total 100 Marks • 3 Credits • L 3 - P 0

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.1	Basics of Power Generation Systems	Theory	3 - 0	3	40	60 (3 hrs)	100
Basics of Power Generation Systems Total				3	40	60	100

What This Subject Aims To Do

To help students maintain the efficient operation of various electric power generating plants — thermal, hydro, solar, wind, biomass and others — and to select the adequate mix of power generation based on economic operation.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Power Plants: Coal, Gas, Diesel and Nuclear-based	08	24%
II	Large Hydro Power Plants and MHD	08	19%
III	Solar and Wind Power Plants	08	19%
IV	Other Generating Stations	08	19%
V	Economics of Power Generation and Interconnected Power System	10	19%

Unit - I: Power Plants: Coal, Gas, Diesel and Nuclear-based (08 Periods, 24%)

Topics: Schematic arrangement of power plant (coal-based, gas-based, diesel-based, nuclear-based); Functions of the various types of power plants and their major auxiliaries; Safe working Practices of various power plants: coal-based, gas-based, diesel-based, nuclear-based.

Unit - II: Large Hydro Power Plants and MHD (08 Periods, 19%)

Topics: Hydrology, stream flow, hydrograph, flow duration curves; Types of hydroelectric plants and their fields of use, capacity calculations for hydropower, Dams, head water control, penstocks, water turbines, specific speeds, turbine governors; Hydro plant auxiliaries, plant layout; Concepts and principles of Magneto Hydro Dynamic (MHD) generation.

Unit - III: Solar and Wind Power Plants (08 Periods, 19%)

Topics: Solar Power Technology: (a) Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors; (b) Solar Photovoltaic (PV) power plant: layout, construction, working; Wind power density in watts per square meter, Horizontal and vertical axis large wind power plant, Geared wind power plant, Direct-drive wind power plant.

Unit - IV: Other Generating Stations (08 Periods, 19%)

Topics: Biomass: Biomass conversion technologies, methods for obtaining energy from biomass; Geothermal and Tidal Energy: Geothermal sources and its significance, geothermal power plant – dry steam, flash steam, and binary cycle, Tidal energy and its significance, Different types of tidal power plants: single basin, double basin; Fuel Cells: Concept, types and principles of fuel cells.

Unit - V: Economics of Power Generation and Interconnected Power System (10 Periods, 19%)

Topics: Related terms: connected load, firm power, cold reserve, hot reserve, spinning reserve; Base load and peak load plants; Load curve, load duration curve, integrated duration curve; Cost of generation: Average demand, maximum demand, demand factor, plant capacity factor, plant use factor, diversity factor, load factor and plant load factor; Choice of size and number of generator units, combined operation of power station; Smart Grid.

Reference Books (as listed in the syllabus)

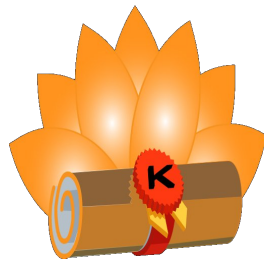
- Nag. P. K. Power Plant Engineering, McGraw Hill, New Delhi, ISBN: 978-9339204044
- Tanmoy Deb, Electrical Power Generation, Khanna Publishing House, Delhi (Ed. 2018)
- Gupta, B.R., Generation of Electrical Energy, S. Chand & Co. New Delhi
- Ashish Sahu, Pooja Yadav Power Plant Engineering, Asian Publishers, Muzaffarnagar ISBN no. 978-93-5502-025-3
- Rachel, Sthuthi; Earnest, Joshua – Wind Power Technologies, PHI Learning, New Delhi, ISBN: 978-93-88028-49-3; E-book 978-93-88028-50-9
- Solanki, Chetan Singh, – Solar Photovoltaics: Fundamentals, Technologies and Applications, PHI Learning, New Delhi, ISBN: 9788120351110
- Hau, Erich, Wind Turbines, Springer-Verlag, Berlin Heidelberg, Germany, ISBN: 978-3-642-27150-2
- Gipe, Paul, Wind Energy Basics, Chelsea Green Publishing Co; ISBN: 978-1603580304
- Wizelius, Tore; Earnest, Joshua – Wind Power Plants and Project Development, PHI
- Gupta, J.B. A Course in Electrical Power – S. K Kataria and Sons, New Delhi. 2014
- Soni, Gupta, Bhatnagar, A Course in Electrical Power. – Dhanpat rai and Sons
- System, S.Chand & Co. New Delhi, 2005, ISBN: 9788121924962

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the

official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electric Machine- 1 — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27

Subject 3.2 (Theory) • Total 100 Marks • 4 Credits • L 4 – P 0

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: This is the theory paper 3.2. Its practical work is the separate lab subject 3.5 (Electric Machine- 1 (Lab)).

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.2	Electric Machine- 1	Theory	4 - 0	4	40	60 (3 hrs)	100
Electric Machine- 1 (Theory) Total				4	40	60	100

What This Subject Aims To Do

To help students maintain electric motors and transformers — DC generators and motors, single-phase and three-phase transformers, and special-purpose transformers.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	DC Generators	10	20%
II	D.C. Motors	10	20%
III	Single Phase Transformers	12	23%
IV	Three Phase Transformers & Special Purpose transformers	12	20%
V	Maintenance of DC Machines and Transformers	12	17%

Unit - I: DC Generators (10 Periods, 20%)

Topics: Classification of insulating materials according to temperature, Insulating materials used in DC machines and transformers (Emery paper, mica, varnish, sleeves, cotton tape, paper and oil); DC generator: construction, parts, materials and their functions; Principle of operation of DC generator: Fleming's right-hand rule, schematic diagrams, e.m.f. equation of generator, armature reaction, commutation; Applications of DC generators; Importance of DC generators in various industries.

Unit - II: D.C. Motors (10 Periods, 20%)

Topics: DC motor: Types of DC motors; Fleming's left-hand rule, Principle of operation of Back e.m.f. and its significance, Voltage equation of DC motor; Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency; DC motor starters: Two Point, Three-point and Four Point starters; Speed control of DC shunt and series motor: Flux and Armature control; Brushless DC Motor: Construction and working.

Unit - III: Single Phase Transformers (12 Periods, 23%)

Topics: Types of transformers: Shell type and core type; Construction: Parts and functions; Transformer: Principle of operation, EMF equation of transformer: Derivation, Voltage transformation ratio, Significance of transformer ratings; Transformer No-load and on-load phasor diagram, Leakage reactance; Equivalent circuit of transformer: Equivalent resistance and reactance; Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency; Polarity tests on single phase transformers.

Unit - IV: Three Phase Transformers & Special Purpose transformers (12 Periods, 20%)

Topics: Three Phase Transformers: Construction, cooling, three-phase transformers connections, three-phase to two phase conversion (Scott Connection), parallel operation of three phase transformer; Comparison between Bank of three single phase transformers & Single unit of three phase transformer; Transformer accessories: Conservator, Breather, Explosion vent, Buchholz relay – ON load and OFF load tap changer; Distribution and Power transformers; Auto Transformer and its applications.

Unit - V: Maintenance of DC Machines and Transformers (12 Periods, 17%)

Topics: Importance of Maintenance: Preventive and Breakdown Maintenance; Causes of Sparking in Commutator, Defects in Commutator and Remedies, Resurfacing of Commutator and Brushes, Defects in DC Armature winding; Maintenance of Transformer Oil, Transformer oil tester, Acidity test, BDV test; Earthing: Measurement of earth resistance.

Reference Books (as listed in the syllabus)

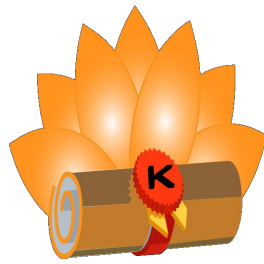
- G.C. Garg & P.S. Bimbhra, Electrical Machines, Vol-I, II, Khanna Book Publishing House (ISBN: 978-9386173-447, 978-93-86173-607), New Delhi
- Dr. T.D.Bisht, Pooja Yadav, Ashish Sahoo Electrical Machine-I, Asian Publishers, Muzaffarnagar ISBN no. 978-93-91541-30-9
- Mittle, V.N. and Mittle, Arvind., Basic Electrical Engineering, McGraw Hill Education, New Delhi, ISBN: 9780070593572
- Kothari, D. P. and Nagrath, I. J., Electrical Machines, McGraw Hill Education. New Delhi, ISBN: 9780070699670
- Bhattacharya, S. K., Electrical Machines, McGraw Hill Education, New Delhi, ISBN: 9789332902855
- Mehta, V. K. and Mehta, Rohit, Principles of Electrical Machines, S. Chand and Co. Ltd., New Delhi, ISBN: 9788121930888
- Theraja, B.L., Electrical Technology Vol-II (AC and DC machines), S. Chand and Co. Ltd., New Delhi, ISBN: 9788121924375
- Bandyopadhyay, M. N., Electrical Machines Theory and Practice, PHI Learning Pvt. Ltd., New Delhi, ISBN: 9788120329973
- Murugesh Kumar, K., DC Machines and Transformers, ISBN: 9788125916055

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON

16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electrical Circuits — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27

Subject 3.3 (Practicum) • Total 100 Marks • 3 Credits • L 1 - P 4

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.3	Electrical Circuits	Practicum	1 - 4	3	60	40 (3 hrs)	100
Electrical Circuits Total				3	60	40	100

What This Subject Aims To Do

To help students maintain electrical systems by applying AC and DC circuit fundamentals — single-phase and three-phase circuits, network analysis and network theorems.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Single Phase A.C Series Circuits	03	23%

II	Single Phase A.C Parallel Circuits	03	20%
III	Three Phase Circuits	03	20%
IV	Network Reduction and Principles of Circuit Analysis	03	17%
V	Network Theorems	02	20%

Unit - I: Single Phase A.C Series Circuits (03 Periods, 23%)

Topics: Sinusoidal quantities: Instantaneous, peak, average and effective values, Form Factor, Peak factor; R, L, C circuit elements its voltage and current response; R-L, R-C, R-L-C combination of A.C series circuit, impedance, reactance, impedance triangle, active power, reactive power, apparent power, power triangle and phasor diagram, Power factor; Resonance, Bandwidth, Quality factor and voltage magnification in series R-L, R-C, R-L-C circuit.

Unit - II: Single Phase A.C Parallel Circuits (03 Periods, 20%)

Topics: R-L, R-C and R-L-C parallel combination of A.C. circuits; Impedance, reactance, phasor diagram, impedance triangle, active power, apparent power, reactive power, power triangle and phasor diagram, power factor; Resonance Bandwidth, Quality factor and voltage magnification in parallel R-L, R-C, R-L-C circuit.

Unit - III: Three Phase Circuits (03 Periods, 20%)

Topics: Concept of generation of 3-phase alternating voltage, Advantage of 3-phase system over single-phase system, Phasor representation of three phase supply, Phase sequence and polarity; Types of three-phase connections, Relation between phase and line quantities in three phase star and delta system; Balanced and unbalanced load, three phase power, active, reactive and apparent power in star and delta system.

Unit - IV: Network Reduction and Principles of Circuit Analysis (03 Periods, 17%)

Topics: Concept of voltage and current sources; symbol and graphical representation, characteristics of practical and ideal sources, Source transformation; Star/delta and delta/star transformation; Mesh Analysis; Nodal Analysis.

Unit - V: Network Theorems (02 Periods, 20%)

Topics: Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem.

Practical Work

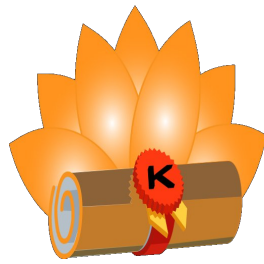
- Unit I — Use dual trace oscilloscope to determine A.C voltage and current response in given R, L, C circuit.
- Unit I — Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumed in given R-L series circuit. Draw phasor diagram.
- Unit I — Use voltmeter, ammeter to determine active, reactive and apparent power consumed in given R-C series circuit. Draw phasor diagram.
- Unit I — Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumed in given R-L-C series circuit. Draw phasor diagram.
- Unit I — Use variable frequency supply to create resonance in given series R-L-C circuit or by using variable inductor or variable capacitor.
- Unit II — Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumed in given R-L Parallel circuit. Draw phasor diagram.
- Unit II — Use voltmeter, ammeter to determine active, reactive and apparent power consumed in given R-C Parallel circuit. Draw phasor diagram.
- Unit II — Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumed in given R-L-C Parallel circuit. Draw phasor diagram.
- Unit II — Use variable frequency supply to create resonance in given series R-L-C Parallel or by using variable inductor or variable capacitor.
- Unit III — Use voltmeter, ammeter, wattmeter, p.f meter to determine line and phase quantities of voltage and current for balanced three phase star connected load and calculate active, reactive, and apparent power. Draw phasor diagram.
- Unit III — Use voltmeter, ammeter, wattmeter, p.f meter to determine line and phase quantities of voltage and current for balanced three phase delta connected load and calculate active, reactive, and apparent power. Draw phasor diagram.
- Unit IV — Use voltmeter, ammeter to determine current through the given branch of an electric network by applying nodal analysis.
- Unit IV — Use voltmeter, ammeter to determine current through the given branch of an electric network by applying mesh analysis.
- Unit V — Use voltmeter, ammeter to determine current through the given branch and voltage across the given element of circuit by applying superposition theorem.
- Unit V — Use voltmeter, ammeter to determine equivalent circuit parameter in a given circuit by applying Thevenin's theorem.
- Unit V — Use voltmeter, ammeter to determine equivalent circuit parameter in a given circuit by applying Norton's theorem.
- Unit V — Use voltmeter, ammeter to determine load resistance for maximum power transfer for a given circuit by applying maximum power transfer theorem.

Reference Books (as listed in the syllabus)

- Ashfaq Husain, Networks & Systems, Khanna Book Publishing, New Delhi
- Gupta, B. R; Singhal, Vandana; Fundamentals of Electrical Network, S. Chand and Co., New Delhi, ISBN: 978-81-219-2318-7
- Saxena, S.B Lal; Dasgupta, K; Fundamentals of Electrical Engineering, Cambridge University Press Pvt. Ltd., New Delhi, ISBN: 978-11-0746-435-3
- Theraja, B. L.: Theraja, A. K, A Text Book of Electrical Technology Vol-I, S. Chand & Co. Ramnagar, New Delhi, ISBN: 9788121924405
- Sudhakar, A.; Shyammohan, S. Palli; Circuit and network, McGraw Hill Education, New Delhi, ISBN: 978-93-3921-960-4
- Bell, David A., Electric Circuits, Oxford University Press New Delhi, ISBN: 978-01-954-25246
- Boylested, R.L., Introductory circuit Analysis, Wheeler, New Delhi, ISBN: 978-00-231-3161-5
- Mittle, V.N.; Mittle, Arvind; Basic Electrical Engineering, McGraw Hill Education, Noida, ISBN: 978-00-705-9357-2
- Sivanandam, S.N, Electric Circuit Analysis, Vikas Publishing House Pvt. Ltd, Noida, ISBN: 978-81259-1364-1
- Salivahanan, S.; Pravinkumar, S; Circuit theory, Vikas Publishing House Pvt. Ltd, Noida; ISBN: 978-93259-7418-0
- Rahul Wadhwa Basic of Electrical Engineering, Asian Publishers, Muzaffarnagar ISBN no. 978-93-5502-068-0

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electrical and Electronic Measurements — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27
Subject 3.4 (Practicum) • Total 100 Marks • 4 Credits • L 2 - P 4

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.4	Electrical and Electronic Measurements	Practicum	2 - 4	4	60	40 (3 hrs)	100
Electrical and Electronic Measurements Total				4	60	40	100

What This Subject Aims To Do

To help students use the relevant measuring instrument in different electrical applications — voltage, current, power, energy and circuit parameters.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Fundamentals of Measurements	06	10%
II	Measurement of voltage and current	06	23%
III	Measurement of Electric Power	06	22%
IV	Measurement of Electric Energy	04	15%
V	Circuit Parameter Measurement through CRO and Other Meters	06	30%

Unit - I: Fundamentals of Measurements (06 Periods, 10%)

Topics: Measurement: Significance, units, fundamental quantities and standards; Classification of Instrument Systems, Classifications of Analog Instruments (Indicating, Recording and Integrating); Essential requirements of an indicating instruments: deflecting, controlling, damping torque; Static and dynamic characteristics, types of errors; Calibration: need and procedure.

Unit - II: Measurement of voltage and current (06 Periods, 23%)

Topics: Concept and working principles of moving iron (MI) and moving coil (MC) instruments; DC Ammeter: Basic, Multi range, Universal shunt; DC Voltmeter: Basic, Multi-range, concept of loading effect and sensitivity; AC voltmeter: Rectifier type (half wave and full wave); CT and PT: working principle and applications; Clamp-on meter.

Unit - III: Measurement of Electric Power (06 Periods, 22%)

Topics: Analog meters: Permanent magnet moving coil (PMMC) and Permanent magnet moving iron (PMMI) meter, their construction, working, salient features, merits and demerits; Dynamometer type wattmeter: Construction, working, merits and demerits; Range extension: Multiplying factor and extension of range using CT and PT; Errors and compensations; Active and reactive power measurement: One, two and three wattmeter method; Effect of Power factor on wattmeter reading in two wattmeter method; Maximum Demand indicator: construction and working principle; Digital wattmeter.

Unit - IV: Measurement of Electric Energy (04 Periods, 15%)

Topics: Single and three phase electronic energy meter: Constructional features and working principle; Errors and their compensations; Calibration of single-phase electronic energy meter using direct loading; Digital energy meter.

Unit - V: Circuit Parameter Measurement through CRO and Other Meters (06 Periods, 30%)

Topics: Measurement of resistance: (a) Low resistance: Kelvin's double bridge, (b) Medium Resistance: Voltmeter and ammeter method, and (c) High resistance: Megger and Ohm meter: Series and shunt; Measurement of inductance using Anderson bridge (no derivation and phasor diagram); Measurement of capacitance using Schering bridge (no derivation and phasor diagram); Measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, through CRO; Other meters: Earth tester, Digital Multimeter; L-C-R meter, Frequency meter (ferromagnetic and Weston type), Phase sequence indicator, power factor meter (single phase and three phase dynamometer type), Synchro scope, Tri-vector meter.

Practical Work

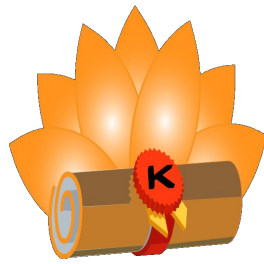
- Unit I — Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale.
- Unit II — Measure AC and DC quantities in a working circuit.
- Unit II — Use Voltmeter, Ammeter and Wattmeter for different loads to conduct an experiment to measure voltage, current and power respectively in single phase a.c circuit.
- Unit II — Use Clamp-On Meter to conduct an experiment to measure current in a.c circuit.
- Unit III — Use single wattmeter for measurement of active power and power factor of single-phase circuit.
- Unit III — Use two wattmeters for measuring active power of three-phase balanced load.
- Unit III — Extend range of ammeter and voltmeter by using (i) shunt and multiplier (ii) CT and PT.
- Unit IV — Calibrate single phase energy meter by direct loading.
- Unit V — Use digital multi-meter for measurement of AC/DC current, AC/DC voltage.
- Unit V — Use Kelvin's double bridge for measurement of low resistance.
- Unit V — Use voltmeter and ammeter method for measurement of medium resistance.
- Unit V — Use Megger for insulation resistance measurements.
- Unit V — Use earth tester for measurement of earth resistance.
- Unit V — Use CRO for the Measurement of supply frequency in single-phase circuit.
- Unit V — Use Tri-vector meter for measuring kW, kVA and kVAr of a power line.

Reference Books (as listed in the syllabus)

- Theraja B. L., Theraja A. K., A Text Book of Electrical Technology Vol-I (Basic Electrical Engg.), S.Chand and Co. New Delhi, ISBN: 9788121924405
- Dr. T.D. Bisht, Ashish Sahu, Pooja Yadav, Electrical Instrumentation & Measurement, Asian Publishers, Muzaffarnagar. ISBN: 978-93-91541-29-3
- Mittle V. N., Basic Electrical Engineering, McGraw-Hill New Delhi, ISBN: 978-0-07-0088572-5
- Edward Hughes, Electrical Technology, Pearson Education, New Delhi, ISBN-13: 978-0582405196
- Rajput R.K., Electrical and Electronic Measurement and Instrumentation, S.Chand and Co. New Delhi, ISBN: 9789385676017
- Sawhney A.K., Electrical and Electronics Measurements and Instrumentation., Dhanpai Rai and Sons, New Delhi, ISBN: 9780000279744
- Suryanarayana N.V., Electrical Measurements and Measuring Instruments, S.Chand and Co. New Delhi, ISBN: 8121920116

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electric Machine- 1 (Lab) — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27
Subject 3.5 (Practical) • Total 100 Marks • 2 Credits • L 0 - P 4 • Perform any 10 of 15 practicals

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: This is the lab for the theory paper 3.2 (Electric Machine- 1). The PDF lists 15 practicals and says to perform any ten.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.5	Electric Machine- 1 (Lab)	Practical	0 - 4	2	60	40 (3 hrs)	100
Electric Machine- 1 (Lab) Total				2	60	40	100

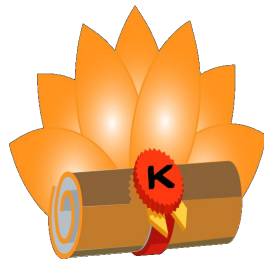
Practical Work

- Reverse the direction of rotation of the DC shunt motor.
- Perform brake test on DC shunt motor.
- Control the speed of DC shunt motor by different methods.
- Control the speed of DC series motor by different methods.

- Perform the brake test of DC series motor.
- No load and Full Load Characteristics of Self Excited DC Shunt Generator.
- Load Characteristics of Self Excited DC Series Generator.
- Determine regulation and efficiency of single-phase transformer by direct loading.
- Perform open circuit and short circuit test on single phase transformer to determine voltage regulation and efficiency.
- Finding the Equivalent Circuit Constants of Single-Phase Transformer by conducting O.C and S.C Tests.
- Perform parallel operation of two single phase transformers to determine the load current sharing, apparent and real power load sharing.
- Perform parallel operation of two single phase transformers and determine the apparent and real power load sharing.
- Perform polarity test on a single-phase transformer whose polarity markings are masked.
- Connect the autotransformer in step-up and step-down modes noting the input/output readings.
- Breakdown Test to determine the Dielectric Strength of Transformer Oil.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Engineering Economics & Accountancy — Complete Syllabus (Open Elective-1, Option 1)

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27
Subject 3.6 (Open Elective-1, Theory) (Q) • 50 Marks internal • 2 Credits • L 2 – P 0 •
Choose this OR Disaster Management • Qualifying only

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: Open Elective-1 (3.6) is a (Q) qualifying subject — compulsory to appear and pass, but marks are not included for percentage and division. Choose either this theory course or Disaster Management, or a certification course (not less than 20 hrs) from the approved providers.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.6	Engineering Economics & Accountancy (Open Elective-1)	Theory (Q)	2 – 0	2	50	—	NA
Open Elective-1 Total				2	50	—	NA

What This Subject Aims To Do

To acquire knowledge of basic economics to facilitate the process of economic decision making, to acquire knowledge on basic financial management aspects, and to develop the basic skills to analyze financial statements.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Introduction	04	17%
II	Demand & Supply Analysis	05	20%
III	Production and Cost Analysis	06	20%
IV	Pricing	05	20%
V	Financial Accounting (Elementary Treatment)	08	23%

Unit - I: Introduction (04 Periods, 17%)

Topics: Managerial Economics; Relationship with other disciplines; Firms: Types, objectives and goals; Managerial decisions; Decision analysis.

Unit - II: Demand & Supply Analysis (05 Periods, 20%)

Topics: Demand; Types of demand; Determinants of demand; Demand function; Demand elasticity; Demand forecasting; Supply; Determinants of supply; Supply function; Supply elasticity.

Unit - III: Production and Cost Analysis (06 Periods, 20%)

Topics: Production function; Returns to scale; Production optimization; Least cost input; Isoquants; Managerial uses of production function; Cost Concepts; Cost function; Types of Cost; Determinants of cost; Short run and Long run cost curves; Cost Output Decision; Estimation of Cost.

Unit - IV: Pricing (05 Periods, 20%)

Topics: Determinants of Price; Pricing under different objectives and different market structures; Price discrimination; Pricing methods in practice; Role of Government in pricing control.

Unit - V: Financial Accounting (Elementary Treatment) (08 Periods, 23%)

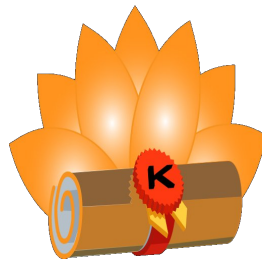
Topics: Balance sheet and related concepts; Profit & Loss Statement and related concepts; Financial Ratio Analysis; Cash flow analysis; Funds flow analysis; Comparative financial statements; Analysis & Interpretation of financial statements; Investments; Risks and return evaluation of investment decision; Average rate of return; Payback Period; Net Present Value; Internal rate of return.

Reference Books (as listed in the syllabus)

- Premvir Kapoor, Sociology & Economics for Engineers, Khanna Publishing House, New Delhi, 2018
- McGuigan, Moyer and Harris, 'Managerial Economics; Applications, Strategy and Tactics', Thomson Southwestern, 10th Edition, 2005
- Prasanna Chandra. 'Fundamentals of Financial Management', Tata Mcgraw Hill Publishing Ltd., 4th edition, 2005
- Samuelson. Paul A and Nordhaus W.D., 'Economics', Tata Mcgraw Hill Publishing Company Limited, New Delhi, 2004
- Paresh Shah, 'Basic Financial Accounting for Management', Oxford University Press, New Delhi, 2007

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Disaster Management — Complete Syllabus (Open Elective-1, Option 2)

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27
Subject 3.6 (Open Elective-1, Theory) (Q) • 50 Marks internal • 2 Credits • L 2 – P 0 •
Choose this OR Engineering Economics & Accountancy • Qualifying only

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: Open Elective-1 (3.6) is a (Q) qualifying subject — compulsory to appear and pass, but marks are not included for percentage and division. Choose either this theory course or Engineering Economics & Accountancy, or a certification course (not less than 20 hrs) from the approved providers.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.6	Disaster Management (Open Elective-1)	Theory (Q)	2 - 0	2	50	—	NA
Open Elective-1 Total				2	50	—	NA

What This Subject Aims To Do

To learn about various types of natural and man-made disasters, pre- and post-disaster management, the organisations involved in disaster management in India, and the technological tools used in disaster management.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Understanding Disaster	02	10%
II	Types, Trends, Causes, Consequences and Control of Disasters	05	19%
III	Disaster Management Cycle and Framework	08	28%
IV	Disaster Management in India	05	19%
V	Applications of Science and Technology for Disaster Management	08	24%

Unit - I: Understanding Disaster (02 Periods, 10%)

Topics: Understanding the Concepts and definitions of Disaster, Hazard, Vulnerability, Risk, Capacity – Disaster and Development, and disaster management.

Unit - II: Types, Trends, Causes, Consequences and Control of Disasters (05 Periods, 19%)

Topics: Geological Disasters (earthquakes, landslides, tsunami, mining); Hydro-Meteorological Disasters (floods, cyclones, lightning, thunder-storms, hail storms, avalanches, droughts, cold and heat waves); Biological Disasters (epidemics, pest attacks, forest fire); Technological Disasters (chemical, industrial, radiological, nuclear) and Manmade Disasters (building collapse, rural and urban fire, road and rail accidents, nuclear, radiological, chemicals and biological disasters); Global Disaster Trends – Emerging Risks of Disasters – Climate Change and Urban Disasters.

Unit - III: Disaster Management Cycle and Framework (08 Periods, 28%)

Topics: Disaster Management Cycle – Paradigm Shift in Disaster Management; Pre-Disaster – Risk Assessment and Analysis, Risk Mapping, zonation and Microzonation, Prevention and Mitigation of Disasters, Early Warning System; Preparedness, Capacity Development; Awareness; During Disaster – Evacuation – Disaster Communication – Search and Rescue – Emergency Operation Centre – Incident Command System – Relief and Rehabilitation – Post-disaster – Damage and Needs Assessment, Restoration of Critical Infrastructure – Early Recovery – Reconstruction and Redevelopment; IDNDR, Yokohama Strategy, Hyogo Framework of Action.

Unit - IV: Disaster Management in India (05 Periods, 19%)

Topics: Disaster Profile of India – Mega Disasters of India and Lessons Learnt; Disaster Management Act 2005 – Institutional and Financial Mechanism, National Policy on Disaster Management, National Guidelines and Plans on Disaster Management; Role of Government (local, state and national), Non-Government and Inter Governmental Agencies.

Unit - V: Applications of Science and Technology for Disaster Management (08 Periods, 24%)

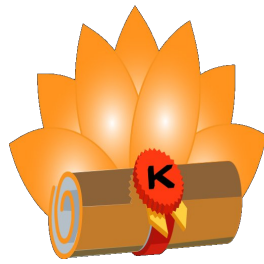
Topics: Geo-informatics in Disaster Management (RS, GIS, GPS and RS); Disaster Communication System (Early Warning and Its Dissemination); Land Use Planning and Development Regulations, Disaster Safe Designs and Constructions, Structural and Non-Structural Mitigation of Disasters; S&T Institutions for Disaster Management in India.

Reference Books (as listed in the syllabus)

- Publications of National Disaster Management Authority (NDMA) on Various Templates and Guidelines for Disaster Management
- Bhandani, R. K., An overview on natural & man-made disasters and their reduction, CSIR, New Delhi
- Srivastava, H. N., and Gupta G. D., Management of Natural Disasters in developing countries, Daya Publishers, Delhi
- Alexander, David, Natural Disasters, Kluwer Academic London
- Ghosh, G. K., Disaster Management, A P H Publishing Corporation
- Murthy, D. B. N., Disaster Management: Text & Case Studies, Deep & Deep Pvt. Ltd.

'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Summer Internship-I & Student Centred Activities — 3rd Semester

BTEUP Diploma in Electrical Engineering • 3rd Semester • Session 2026-27
Subject 3.7 (Internship) 50 Marks • SCA 50 Marks • Total 100 Marks • 2 Credits

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: Summer Internship-I is the 4-week industrial training done after the 2nd-semester examinations, during the summer vacation. It is evaluated in the 3rd semester.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
3.7	Summer Internship (4 Weeks)	Internship	—	2	50	—	50
#	Student Centred Activities (SCA)	Activity	0 - 12	—	50	—	50
Internship-I + SCA Total				2	100	—	100

Summer Internship-I — What It Is

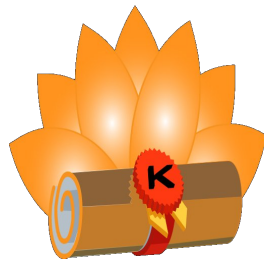
Four weeks of industrial training, mandatory after the II semester during the summer vacation (total marks allotted to industrial training after II and IV semesters are respectively 50 & 100). The curriculum's salient features state that industrial training/internship of four and six weeks is made mandatory after the II and IV semesters during the summer vacation.

Student Centred Activities (SCA) — 50 Marks

A provision for overall personality development, including co-curricular activities such as extension lectures, games, hobby clubs (e.g. photography, painting and singing), seminars, declamation contests, educational field visits, NCC, NSS, library work, cultural activities and self-study. Marks distribution: 15 marks general behaviour and discipline; 10 marks attendance (75–80% = 6, 80–85% = 8, above 85% = 10); 25 marks maximum for Sports/NCC/Cultural/Co-curricular/NSS activities (25 = State/National level participation, 20 = participation in two of the above activities, 15 = Inter-Polytechnic level participation).

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

4th Semester — Complete Examination Scheme

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27
Semester total 650 Marks • 20 Credits • (Q) = qualifying only, marks not counted for percentage/division

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: The full 4th-semester study and evaluation scheme as printed in the curriculum. (Q) subjects are compulsory to appear and pass, but their marks are not included for percentage and division.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.1	Electric Power Transmission and Distribution	Theory	3 - 0	3	40	60 (3 hrs)	100
4.2	Electric Machine- II	Theory	3 - 0	3	40	60 (3 hrs)	100

4.3	Fundamentals of Power Electronics	Practicum	2 – 4	4	60	40 (3 hrs)	100
4.4	Program Elective -1	Practicum	1 – 4	3	60	40 (3 hrs)	100
4.5	Program Elective -2	Theory	3 – 0	3	40	60 (3 hrs)	100
4.6	Electric Machine- II (Lab)	Practical	0 – 4	2	60	40 (3 hrs)	100
4.7	Advance Skill Development (Open Elective-2) (Q)	Theory	2 – 0	2	50	—	NA
4.8	Essence of Indian Knowledge and Tradition (Q)	Audit Course	2 – 0	—	50	—	NA
#	Student Centred Activities (SCA)	Activity	0 – 8	—	50	—	50
4th Semester Total				20	350	300	650

Program Elective-1 (4.4) — Options

(1) Industrial Automation and Control; (2) Industrial Instrumentation and Condition Monitoring.

Program Elective-2 (4.5) — Options

(1) Renewable Energy Power Plants; (2) Biomass and Micro-Hydro Power Plants.

Open Elective-2 (4.7) — Options

Theory courses (choose one): (1) Economic Policies in India; (2) Mechatronics.

Certification courses (choose one, not less than 20 hrs, offline/online, from agencies of repute): courses conducted by Centre of Excellence (e.g. Tata Technologies — see Annexure 1), Infosys Springboard, TCS iON, other relevant government / international / national organisations or platforms of repute, AICTE-ELIS and Centrally Funded Technical Institutes, C-DAC, NIELIT.

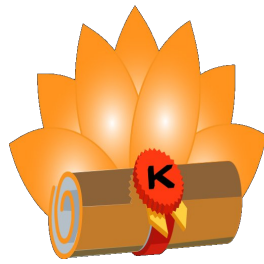
Student Centred Activities (SCA) — 50 Marks

Co-curricular activities like extension lectures, games, hobby clubs (e.g. photography), seminars, declamation contests, educational field visits, N.C.C., NSS, library, cultural activities and self-study. Marks distribution: 15 marks general behaviour and discipline; 10 marks attendance (75–80% = 6, 80–85% = 8, above 85% = 10); 25 marks maximum for Sports/NCC/Cultural/Co-curricular/NSS activities (25 = State/National level participation, 20 = participation in two of the above activities, 15 = Inter-Polytechnic level participation).

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electric Power Transmission and Distribution — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27

Subject 4.1 (Theory) • Total 100 Marks • 3 Credits • L 3 - P 0

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.1	Electric Power Transmission and Distribution	Theory	3 - 0	3	40	60 (3 hrs)	100
Electric Power Transmission and Distribution Total				3	40	60	100

What This Subject Aims To Do

To help students maintain the proper functioning of the electrical transmission and distribution systems.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Basics of Transmission and Distribution	06	10%
II	AC Transmission	10	25%
III	Hvdc Transmission & Facts	08	20%
IV	Line Insulators and Underground Cables	10	25%
V	Sub-Stations & Distribution Systems	08	20%

Unit - I: Basics of Transmission and Distribution (06 Periods, 10%)

Topics: Single line diagrams of the electric supply transmission and distribution systems; Standard voltage level used in India; Classification of Transmission lines; Characteristics of high voltage for both AC and DC power transmission.

Unit - II: AC Transmission (10 Periods, 25%)

Topics: Typical Layout of A.C. Power supply scheme - Elements of a Transmission Line Over Head Line, Conductor materials and their properties, Line supports and their properties - Types of supports and their applications, Sag in overhead lines, Calculation of Sag - When the supports are at equal and unequal levels - Simple Numerical Problems; Constants of a Transmission line, Transposition of Transmission lines, Skin Effect, Ferranti Effect, Corona Formation, Factors affecting Corona, Classification of O.H. Transmission lines - Voltage regulation and Transmission Efficiency (No Numerical Problems); Concept of power factor, effects of low power factor, methods of improving low power factor: static capacitor, synchronous condenser, SVC.

Unit - III: Hvdc Transmission & Facts (08 Periods, 20%)

Topics: H.V.D.C Transmission: Layout Scheme, D.C Link configurations - Mono polar, Bipolar and Homo polar links; HVDC Converter Station (Schematic diagram only) - Integration of HVDC & Renewable energy into existing AC grids; HVDC Locations in India; FACTS: Definition, Need for FACTS controllers, Types of FACTS controllers, SVS, STATCOM, UPFC (Block diagram explanation only).

Unit - IV: Line Insulators and Underground Cables (10 Periods, 25%)

Topics: Natural insulating materials, properties and their applications-mica, asbestos, ceramic materials, glass, cotton, silk, jute, paper (dry and impregnated), rubber, bitumen, gaseous materials (air, hydrogen, nitrogen, SF₆); Line Insulators: Properties of Insulators, Materials, Types, Causes of failure of Insulators, Testing of Insulators; Potential Distribution over suspension Insulator string, String Efficiency - Methods of improving string Efficiency - Simple Problems; Underground Cables: Construction of a three core cable, Classification of cables, Cables for three phase service, Construction of Belted cable, Screened cable, Pressure cables, Laying of underground cables and cable jointing, Faults in cables, fault localization using Blavier and Loop tests.

Unit - V: Sub-Stations & Distribution Systems (08 Periods, 20%)

Topics: Sub-Stations: Classification, advantages, disadvantages and applications; Single Line diagram (layout) of 33/11KV and 11KV/400V sub-station, functions of various auxiliaries and equipments associated with it; Gas Insulated Substation (GIS); Distribution system - Requirements and parts of Distribution system, Classification; Comparison of different distribution systems (A.C and D.C, Overhead & Underground); A.C Distribution - Types - Connection schemes of AC Distribution system.

Reference Books (as listed in the syllabus)

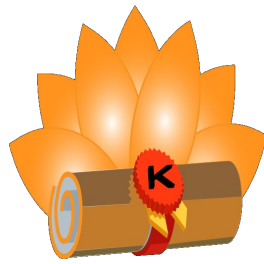
- G.C. Garg, Utilization of Electric Power & Electric Traction, Khanna Book Publishing Co., New Delhi (ISBN: 978-93-86173-355)
- Mehta, V.K., Principles of Power System, S. Chand and Co. New Delhi, ISBN: 9788121924962
- Soni; Gupta; Bhatnagar, A Course in Electrical Power, Dhanpat Rai and Sons New Delhi, ISBN: 9788177000207
- Gupta, J.B., A Course in Power Systems, S.K. Kataria and sons, New Delhi, ISBN: 9788188458523
- Theraja, B.L.; Theraja, A.K., A Textbook of Electrical Technology Vol. III, S. Chand and Co. New Delhi, ISBN: 9788121924900
- Uppal, S.L., A Course in Electrical Power, S.K. Khanna Publisher New Delhi, ISBN: 9788174092380
- Ashish Sahu, Pooja Yadav, Transmission & Distribution of Electrical Power, Asian Publishers, Muzaffarnagar. ISBN: 978-93-5502-044-4
- Sivanagaraju S.; Satyanarayana S., Electrical Power Transmission and Distribution, Pearson Education, New Delhi, ISBN: 9788131707913
- Ned Mohan, Electrical Power System: A First Course, Wiley India Pvt. Ltd. New Delhi, ISBN: 9788126541959

- Gupta, B.R., Power System Analysis and Design, S. Chand and Co. New Delhi, ISBN: 9788121922388
- Kamraju, V., Electrical Power Distribution System, Tata McGraw-Hill, New Delhi, ISBN: 9780070151413

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electric Machine- II — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27

Subject 4.2 (Theory) • Total 100 Marks • 3 Credits • L 3 – P 0

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: This is the theory paper 4.2. Its practical work is the separate lab subject 4.6 (Electric Machine- II (Practical)).

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.2	Electric Machine- II	Theory	3 - 0	3	40	60 (3 hrs)	100
Electric Machine- II (Theory) Total				3	40	60	100

What This Subject Aims To Do

To help students maintain induction, synchronous and special electric machines (SEM) used in different applications.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Three Phase Induction Motor	10	25%
II	Single phase induction motors	08	18%
III	Three phase Alternators	10	25%
IV	Synchronous Motors	08	18%
V	Special Electric Machines	06	14%

Unit - I: Three Phase Induction Motor (10 Periods, 25%)

Topics: Working principle: production of rotating magnetic field, Synchronous speed, rotor speed and slip; Locking of rotor and stator fields; Constructional details of 3 phase induction motors: Squirrel cage induction motor and Slip ring induction motor; Rotor quantities: frequency, induced emf, power factor at starting and running condition; Characteristics of torque versus slip (speed), Torques: starting, full load and maximum with relations among them; Relationship between rotor copper losses, slip and rotor input power (Power flow diagram); Starters: need and types; stator resistance, auto transformer, star delta, rotor resistance and soft starters; Speed control methods: stator voltage, pole changing, rotor resistance and VVVF; Motor selection for different applications as per the load torque-speed requirements; Cogging and Crawling.

Unit - II: Single phase induction motors (08 Periods, 18%)

Topics: Double field revolving theory, principle of making these motors self-start; Construction, working and Torque-speed characteristics: Resistance start induction run, capacitor start induction run, capacitor start capacitor run, shaded pole, repulsion type, series motor, universal motor, hysteresis motor; Motor selection for different applications as per the load torque-speed requirements.

Unit - III: Three phase Alternators (10 Periods, 25%)

Topics: Principle of working, moving and stationary armatures; Constructional details: parts and their functions, Windings: Single and Double layer; Equivalent circuit diagram, E.M.F. equation of an Alternator with numerical by considering short pitch factor and distribution factor; Necessary conditions of parallel operation of alternators; Armature reaction at various power factors and synchronous impedance; Voltage regulation: direct loading and synchronous impedance methods; Operation of synchronous machine as a motor.

Unit - IV: Synchronous Motors (08 Periods, 18%)

Topics: Principle of working, Torques: starting torque, running torque, pull in torque, pull out torque; Synchronous motor on load with constant excitation (numerical), effect of excitation at constant load (numerical); Concept of synchronous condenser; V-Curves and Inverted V-Curves; Hunting and Phase swinging; Methods of Starting of Synchronous Motor; Losses in synchronous motors and efficiency (no numerical); Applications areas.

Unit - V: Special Electric Machines (06 Periods, 14%)

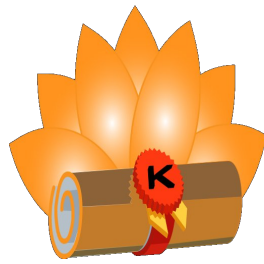
Topics: Construction, working and applications: Linear Induction Motor, Synchronous Reluctance Motor, Switched Reluctance Motor, Permanent Magnet Synchronous Motors, stepper motors, AC and DC servomotors, Submersible motor.

Reference Books (as listed in the syllabus)

- P.S. Bimbhra, Electric Machines, Khanna Book Publishing Co., New Delhi (ISBN: 978-93-86173-294)
- Mittle, V.N. and Mittle, Arvind., Basic Electrical Engineering, McGraw Hill Education New Delhi, ISBN: 9780070593572
- Kothari, D. P. and Nagrath, I. J., Electrical Machines, McGraw Hill Education. New Delhi, ISBN: 9780070699670
- Bhattacharya, S. K., Electrical Machines, McGraw Hill Education, New Delhi, ISBN: 9789332902855
- Dr. T.D. Bisht, Pooja Yadav, Electrical Machine-II, Asian Publishers, Muzaffarnagar ISBN: 978-93-91541-98-9
- Theraja, B.L., Electrical Technology Vol-II (AC and DC machines), S.Chand and Co. Ltd., New Delhi, ISBN: 9788121924375
- Sen, S. K., Special Purpose Electrical Machines, Khanna Publishers, New Delhi, ISBN: 9788174091529
- Janardanan E. G, Special Electrical Machines, Prentice Hall India, New Delhi ISBN: 9788120348806
- Hughes E., Electrical Technology, ELBS
- Cotton H., Electrical Technology, ELBS

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Fundamentals of Power Electronics — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27

Subject 4.3 (Practicum) • Total 100 Marks • 4 Credits • L 2 - P 4

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.3	Fundamentals of Power Electronics	Practicum	2 - 4	4	60	40 (3 hrs)	100
Fundamentals of Power Electronics Total				4	60	40	100

What This Subject Aims To Do

To help students maintain the proper functioning of power electronic devices.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
------	-------	---------	-------------

I	Power Electronic Devices	08	30%
II	Turn-on and Turn-off Methods of Thyristors	08	26%
III	Phase Controlled Rectifiers	06	22%
IV	Inverters, Choppers, Dual Converters, Cyclo-converters	06	22%

Unit - I: Power Electronic Devices (08 Periods, 30%)

Topics: Definition – Scope and Applications; Power Electronic Switch Specifications: Power Diode, Power transistor, IGBT, GTO, DIAC, TRIAC; SCR – rating and their importance, Symbol, Circuit, Working, Characteristics, Protection and Applications - Battery charger using SCR, Emergency light system, Temperature controller using SCR; Working Principle of UJT.

Unit - II: Turn-on and Turn-off Methods of Thyristors (08 Periods, 26%)

Topics: SCR Turn-On methods: Voltage triggering, Thermal triggering, Illumination triggering, dv/dt triggering, Gate triggering; SCR triggering using UJT, PUT: Relaxation Oscillator and Synchronized UJT circuit; Pulse transformer and opto-coupler based triggering; Application: UPS and SMPS; SCR Turn-Off methods: Natural & Forced Commutations.

Unit - III: Phase Controlled Rectifiers (06 Periods, 22%)

Topics: Phase control: firing angle, conduction angle, extinction angle; Single phase half controlled, full controlled and midpoint-controlled rectifier with R, RL load: Circuit diagram, working, input-output waveforms, equations for DC output and effect of freewheeling diode; Different configurations of bridge-controlled rectifiers: Full-Wave & Half Wave.

Unit - IV: Inverters, Choppers, Dual Converters, Cyclo-converters (06 Periods, 22%)

Topics: Inverter: Introduction, working principles, voltage and current driven series and parallel inverters and applications; Choppers: Introduction, types of choppers and their working principles and applications; Dual converters: Introduction, working principles and applications; Cyclo-converters: Introduction, types, working principles and applications.

Practical Work

- Unit I — Identification & testing of SCR, TRIAC, DIAC, MOSFET and IGBT using a digital multimeter.
- Unit I — Obtain V-I characteristics of SCR.
- Unit I — Plot the V-I characteristics of IGBT and determine the break over voltage.
- Unit I — Plot the V-I characteristics of DIAC and determine the break over voltage.
- Unit I — Determine the latching current and holding current using V-I characteristics of SCR.
- Unit I — Plot the V-I characteristics of TRIAC and determine the break over voltage.
- Unit I — Illumination control / fan speed control through TRIAC.
- Unit II — Test the variation of R, C in R and RC triggering circuits on firing angle of SCR.
- Unit II — To Study UJT Triggering Techniques for Half Wave Controlled rectifiers.
- Unit II — To Study UJT Triggering Techniques for Full Wave Controlled rectifiers.
- Unit II — Perform the operation of Class - A, B, C, turn off circuits.
- Unit II — Perform the operation of Class - D, E, F turn off circuits.
- Unit III — Use CRO to observe the output waveform of half wave-controlled rectifier with resistive load and determine the load voltage.
- Unit III — Draw the output waveform of Full wave-controlled rectifier with R load, RL load, freewheeling diode and determine the load voltage.
- Unit III — Determine the firing angle using DIAC and TRIAC phase-controlled circuit on output power under different loads such as lamp, motor or heater.
- Unit IV — Test the performance of given SMPS, UPS.
- Unit IV — Performance Measurement and Analysis of DC-DC Buck Regulator.
- Unit IV — Performance Measurement and Analysis of DC-DC Boost Regulator.

Reference Books (as listed in the syllabus)

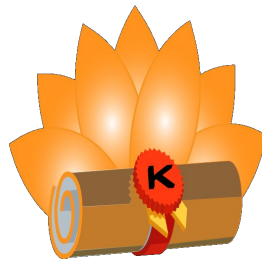
- Ramamoorthy M., An Introduction to Thyristors and their applications, East-West Press Pvt. Ltd., New Delhi, ISBN: 8185336679
- Sugandhi, Rajendra Kumar & Sugandhi, Krishna Kumar, Thyristors: Theory and Applications, New Age International (P) Ltd. Pub., New Delhi, ISBN: 978-0-85226-852-0
- Bhattacharya, S.K., Fundamentals of Power Electronics, Vikas Publishing House Pvt. Ltd. Noida. ISBN: 978-8125918530
- Jain & Alok, Power Electronics and its Applications, Penram International Publishing (India) Pvt. Ltd, Mumbai, ISBN: 978-8187972228
- Rashid, Muhammad, Power Electronics Circuits Devices and Applications, Pearson Education India, Noida, ISBN: 978-0133125900
- Singh, M. D. and Khanchandani, K.B., Power Electronics, Tata McGraw Hill Publishing Co. Ltd, New Delhi, 2008 ISBN: 9780070583894

- Zbar, Paul B., Industrial Electronics: A Text – Lab Manual, McGraw Hill Publishing Co. Ltd., New Delhi, ISBN: 978-0070728226
- Grafham D.R., SCR Manual, General Electric Co., ISBN: 978-0137967711
- Rahul Wadhawa, Industrial Electronics And Control, Asian Publishers, Muzaffarnagar. ISBN: 978-93-5502-131-1

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Industrial Automation and Control — Complete Syllabus (Program Elective-1, Option 1)

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27

Subject 4.4.1 (Program Elective-1, Practicum) • Total 100 Marks • 3 Credits • L 1 – P 4 •

Choose this OR Industrial Instrumentation and Condition Monitoring

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.4	Program Elective -1: Industrial Automation and Control	Practicum	1 - 4	3	60	40 (3 hrs)	100
Industrial Automation and Control Total				3	60	40	100

What This Subject Aims To Do

To help students maintain industrial automation systems.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Introduction to Industrial Automation	02	17%
II	PLC Fundamentals Building blocks of PLC	02	17%
III	PLC Programming and Applications	05	28%
IV	Electric Drives and special machines	02	19%
V	Supervisory Control and Data Acquisition (SCADA) System	03	19%

Unit - I: Introduction to Industrial Automation (02 Periods, 17%)

Topics: Need and benefits; Types of automation system: Fixed, Programmable, Flexible; Different systems used for Industrial automation: PLC, HMI, SCADA, DCS, Drives.

Unit - II: PLC Fundamentals Building blocks of PLC (02 Periods, 17%)

Topics: Components of PLC - CPU, Memory organization, Input-output modules (discrete and analog), I/O Modules, Power supply, Fixed and Modular PLC, Redundancy in PLC module, I/O module selection criteria, Interfacing different I/O devices with appropriate I/O modules.

Unit - III: PLC Programming and Applications (05 Periods, 28%)

Topics: PLC I/O addressing; PLC programming Instructions: Relay type instructions, Timer instructions: On delay, off delay, retentive, Counter instructions: Up, Down, High speed, Logical instructions, Comparison Instructions, Data handling Instructions, Arithmetic instructions; PLC programming language: Functional Block Diagram (FBD), Instruction List, Structured text, Sequential Function Chart (SFC), Ladder Programming; Simple Programming examples using ladder logic: Language based on relay, timer counter, logical, comparison, arithmetic and data handling instructions; PLC Based Applications: Motor sequence control, Traffic light control, Elevator control, Tank Level control, Conveyor system, Stepper motor control.

Unit - IV: Electric Drives and special machines (02 Periods, 19%)

Topics: Electric drives: Types, functions, characteristics, four quadrant operation; DC and AC drive controls: V/F control, Parameters, direct torque control; Drives: Specifications, Applications - Speed control of AC motor / DC Motor.

Unit - V: Supervisory Control and Data Acquisition (SCADA) System (03 Periods, 19%)

Topics: Introduction to SCADA: Typical SCADA architecture/block diagram, Benefits of SCADA; Various editors of SCADA; Interfacing SCADA system with PLC: Typical connection diagram, Object Linking & embedding for Process Control (OPC) architecture, Steps in Creating SCADA Screen for simple object, Steps for Linking SCADA object (defining Tags and Items) with PLC ladder program using OPC; Applications of SCADA: Traffic light control, water distribution, pipeline control.

Practical Work

- Unit I — Identify various automation systems available in different appliances/ devices/ machines in day-to-day use.
- Unit II — Identify various parts of the given PLC and front panel status indicators.
- Unit III — Use PLC to test the START STOP logic using two inputs and one output.
- Unit III — Develop/Execute a ladder program for the given application using following: timer, counter, comparison, logical, arithmetic instructions.
- Unit III — Use PLC to control the following devices like lamp, motor, push button switches, proximity sensor.
- Unit III — Measure the temperature of the given liquid using RTD or Thermocouple and PLC.
- Unit III — Develop and test ladder program to blink the LED/lamp.
- Unit III — Develop ladder program for Traffic light control system.
- Unit III — Develop and test ladder program for pulse counting using limit switch / Proximity sensor.
- Unit III — Develop and test ladder program for rotating stepper motor in forward and reverse direction at constant speed.
- Unit IV — Identify various front panel controls of VFD (smart drive).
- Unit V — Use various functions of SCADA simulation editors to develop simple project.
- Unit V — Develop a SCADA mimic diagram for Tank level control.

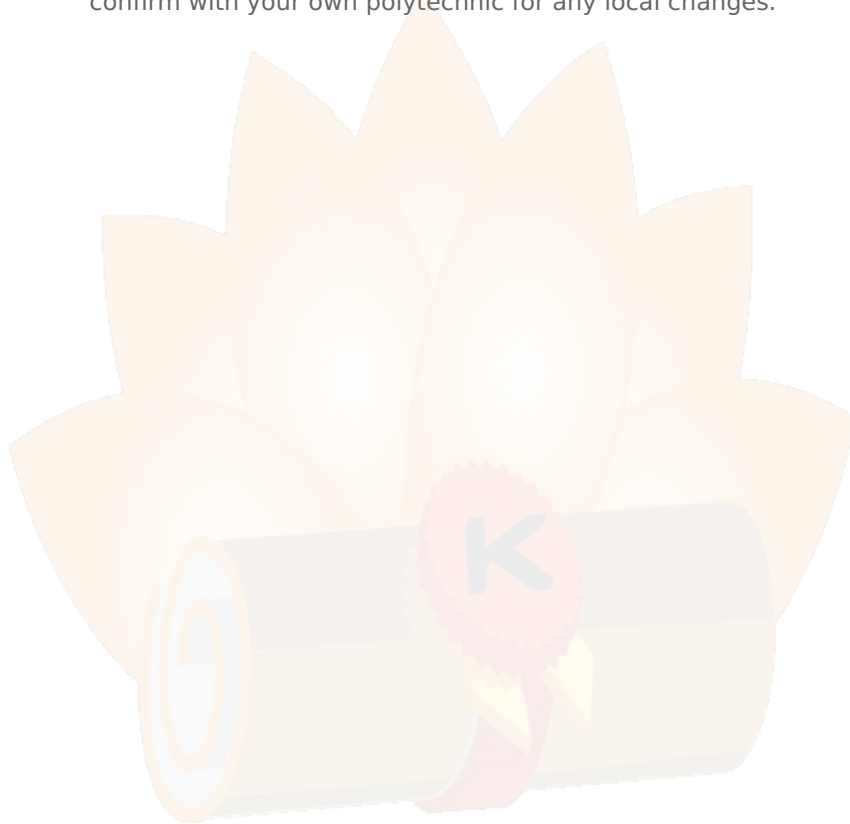
Reference Books (as listed in the syllabus)

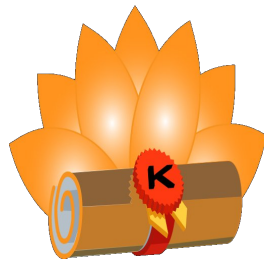
- Dunning, G., Introduction to Programmable Logic Controllers, Thomson / Delmar learning, New Delhi, 2005, ISBN 13: 9781401884260
- Jadhav, V. R., Programmable Logic Controller, Khanna publishers, New Delhi, 2017, ISBN: 9788174092281
- Petruzella, F.D., Programmable Logic Controllers, McGraw Hill India, New Delhi, 2010, ISBN: 9780071067386
- Hackworth, John; Hackworth, Federic, Programmable Logic Controllers, PHI Learning, New Delhi, 2003, ISBN: 9780130607188

- Stenerson Jon, Industrial automation and Process control, PHI Learning, New Delhi, 2003, ISBN: 9780130618900
- Mitra, Madhuchandra; Sengupta, Samarjit, Programmable Logic Controllers and Industrial Automation - An introduction, Penram International Publication, 2015, ISBN: 9788187972174
- Boyar, S. A., Supervisory Control and Data Acquisition, ISA Publication, USA, ISBN: 978-1936007097

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Industrial Instrumentation and Condition Monitoring — Complete Syllabus (Program Elective-1, Option 2)

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27
Subject 4.4.2 (Program Elective-1, Practicum) • Total 100 Marks • 3 Credits • L 1 – P 4 •
Choose this OR Industrial Automation and Control

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Note: In the PDF, the third practical of Unit – V is printed as a bare number “3.” with no text — its content could not be read and is not included here.

Examination Scheme

Code	Paper	Type	L – P	Credits	Internal	External	Total
4.4	Program Elective -1: Industrial Instrumentation and Condition Monitoring	Practicum	1 – 4	3	60	40 (3 hrs)	100
Industrial Instrumentation and Condition Monitoring Total				3	60	40	100

What This Subject Aims To Do

To help students use instrumentation equipment for condition monitoring and control.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Fundamentals of instrumentation	02	15%
II	Transducers	02	20%
III	Measurement of Non-Electrical Quantities	05	25%
IV	Signal Conditioning	02	15%
V	Data Acquisition System and Condition Monitoring	03	25%

Unit - I: Fundamentals of instrumentation (02 Periods, 15%)

Topics: Basic purpose of instrumentation; Basic block diagram (transduction, signal conditioning, signal presentation) and their function; Construction, working and application of switching devices - Push button, limit switch, float switch, pressure switch, thermostat, electromagnetic relay.

Unit - II: Transducers (02 Periods, 20%)

Topics: Comparison between Primary and Secondary, Electrical and Mechanical, Analog and Digital, Active and Passive; Advantages of electric transducers; Required characteristics of transducers; Construction and working principle of resistive transducer - Potentiometer, variac and strain gauges; Gauge factor, Types of strain gauges; Construction and principle of Inductive transducers - L.V.D.T. and R.V.D.T, their applications; Construction, principle and applications of transducers - Piezo-Electric transducer, photoconductive cells, photo voltaic cells.

Unit - III: Measurement of Non-Electrical Quantities (05 Periods, 25%)

Topics: Temperature measurement - RTD, Thermistor and Thermocouple, radiation pyrometer; Pressure measurement - bourdon tube, bellow diaphragm and strain gauge, Combination of transducer - diaphragm and inductive transducer, Bourdon tube and LVDT, bellow and LVDT, diaphragm capacitance and bridge Circuit; Speed Measurement by contacting and non-Contact Type - DC tachometer, photo-electric tachometer, toothed rotor tachometer Generator - magnetic pickup and Stroboscope; Vibration measurement by accelerometer - LVDT accelerometer, Structure Piezo electric type; Flow measurement by electromagnetic and Turbine Flow meter; Liquid level measurement by resistive, inductive, capacitive gamma rays and Ultrasonic methods; Thickness measurement by resistive, inductive, capacitive, ultrasonic and nuclear methods.

Unit - IV: Signal Conditioning (02 Periods, 15%)

Topics: Basic Concept of signal conditioning System; Pin configuration of IC 741; Ideal OP-AMP and Practical of OP-AMP; Different Parameters of op-amp: Input offset voltage, Input offset current, Input bias current, Differential input resistance, CMRR, voltage gain, output voltage, slew rate, gain bandwidth, Output, short circuit current; Use of op-amp as inverting, non-inverting mode, adder, subtractor, and Working of Differential amplifier and instrumentation amplifier.

Unit - V: Data Acquisition System and Condition Monitoring (03 Periods, 25%)

Topics: DAS - Block diagram and description; Difference between Single Channel and Multi-Channel DAS; Data conversion - Construction and Working of Analog to digital conversion - successive approximation method, ramp type method; Digital to Analog conversion - Construction and Working of binary weighted resistance method; Telemetry system and its type - Electrical telemetering system; Digital display device - operation and its application of seven segment display, dot matrix display and concept of $3\frac{1}{2}$, $4\frac{1}{2}$ digits, LED and LCD applications; Definition of condition monitoring, Insulation deterioration Mechanism - factors affecting occurrence and rate of deterioration, types of stresses responsible for deterioration; Different tests on transformer, their purpose, and the necessary condition of machine; Tests on Circuit breaker, purpose and required condition of machine; Tests on CT, purpose, item to be tested and required condition of machine.

Practical Work

- Unit I — Identify different switches used in instrumentation system.

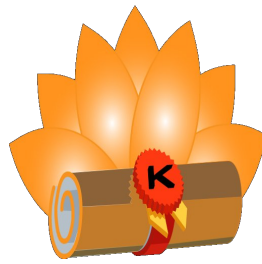
- Unit II — Measure linear displacement by L.V.D.T.
- Unit II — Measure the strain with the help of strain gauge.
- Unit III — Measure temperature by PT-100, thermistor, thermocouple along with simple resistance bridge.
- Unit III — Use Thermocouple to control the temperature of a furnace/machine.
- Unit III — Measure pressure using pressure sensor kit.
- Unit III — Measure angular speed using stroboscope and tachometer.
- Unit III — Measure the flow using flow meter.
- Unit IV — Use op-amp as inverter, non-inverting mode, adder, differentiator and integrator.
- Unit V — Convert digital data into analog data by using analog to digital converters and analog data into digital data by digital to analog converter.
- Unit V — Prepare a Report on various tools and equipment used for condition monitoring of electrical machines.

Reference Books (as listed in the syllabus)

- Sawhney, A.K. Electric and Electronic Measurement and instrumentation, Dhanpat Rai and Co. Author, Nineteenth revised edition 2011 reprint, 2014, ISBN: 10: 8177001000
- Rangan, C.S. G.R. Sharma and V.S. V. Mani, Instrumentation devices and system, Pen ram International Publishing India Pvt. Ltd. Fifth edition, ISBN: 10: 0074633503
- Mehta, V.K. Electronics and instrumentation, Third edition - S. Chand and company Pvt Ltd Reprint, 2010, ISBN: 81-219-2729-3
- Singh, S.K. Industrial instrumentation and control, Tata McGraw-Hill, 1987. ISBN: 007451914X, 9780074519141
- J.G. Joshi, Electronic Measurement and Instrumentation, Khanna Publishing House, New Delhi, ISBN: 978-93-86173-621

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Renewable Energy Power Plants — Complete Syllabus (Program Elective-2, Option 1)

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27

Subject 4.5.1 (Program Elective-2, Theory) • Total 100 Marks • 3 Credits • L 3 - P 0 •

Choose this OR Biomass and Micro-Hydro Power Plants

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.5	Program Elective -2: Renewable Energy Power Plants	Theory	3 - 0	3	40	60 (3 hrs)	100
Renewable Energy Power Plants Total				3	40	60	100

What This Subject Aims To Do

To help students maintain the efficient operation of various types of renewable energy power plants.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Solar PV and Concentrated Solar Power Plants	07	20%
II	Large Wind Power Plants	09	20%
III	Small Wind Turbines	08	20%
IV	Micro Hydro Power Plants	09	20%
V	Biomass-based Power Plants	09	20%

Unit - I: Solar PV and Concentrated Solar Power Plants (07 Periods, 20%)

Topics: Solar Map of India: Global solar power radiation; Classification of solar thermal collectors, construction and working of (a) flat type, (b) focusing type; Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors; Solar Photovoltaic (PV) power plant: components layout, construction, working; Rooftop solar PV power system, on-grid and off-grid solar PV system.

Unit - II: Large Wind Power Plants (09 Periods, 20%)

Topics: Wind Map of India: Wind power density in watts per square meter; Lift and drag principle; long path theory; Geared type wind power plants: components, layout and working; Direct drive type wind power plants: components, layout and working; Constant Speed Electric Generators: Squirrel Cage Induction Generators (SCIG), Wound Rotor Induction Generator (WRIG); Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG), permanent magnet synchronous generator (PMSG).

Unit - III: Small Wind Turbines (08 Periods, 20%)

Topics: Horizontal axis small wind turbine: direct drive type, components and working; Horizontal axis small wind turbine: geared type, components and working; Vertical axis small wind turbine: direct drive and geared, components and working; Types of towers and installation of small wind turbines on roof tops and open fields; Electric generators used in small wind power plants.

Unit - IV: Micro Hydro Power Plants (09 Periods, 20%)

Topics: Energy conversion process of hydro power plant; Classification of hydro power plant: High, medium and low head; Layouts of micro-hydro power plants; Construction and working of hydro turbines used in different types of hydro power plant: (a) High head – Pelton turbine, (b) Medium head – Francis turbine, (c) Low head – Kaplan turbine; Pumped storage hydro power plants; Safe Practices for micro hydro power plants.

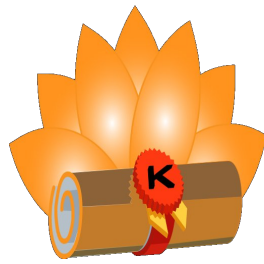
Unit - V: Biomass-based Power Plants (09 Periods, 20%)

Topics: Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste; Properties of liquid and gaseous fuel for biomass power plants: Jatropha, bio-diesel, gobar gas; Gasifier and its types; Types of Bio-gas power plant – fixed and floating dome type; Layout of a Bio-chemical based (e.g. biogas), Thermo-chemical based (e.g. Municipal waste), Agro-chemical based (e.g. bio-diesel) power plant.

Reference Books (as listed in the syllabus)

- Deambi, Suneel: From Sunlight to Electricity: a practical handbook on solar photovoltaic application; TERI, New Delhi ISBN: 9788179935736
- David M. Buchla, Thomas E. Kissell, Thomas L. Floyd – Renewable Energy Systems, Pearson Education New Delhi, ISBN: 9789332586826
- Rachel, Sthuthi; Earnest, Joshua – Wind Power Technologies, PHI Learning, New Delhi, ISBN: 978-93-88028-49-3; E-book 978-93-88028-50-9
- Khoiyangbam, R S Navindu; Gupta and Sushil Kumar; Biogas Technology: Towards Sustainable Development; TERI, New Delhi; ISBN: 9788179934043
- Gipe, Paul: Wind Energy Basics, Chelsea Green Publishing Co; ISBN: 978-1603580304
- Wizelius, Tore & Earnest, Joshua - PHI Learning, New Delhi, ISBN: 978-8120351660
- Kothari, D.P. et al: Renewable Energy Sources and Emerging Technologies, PHI Learning, New Delhi, ISBN: -978-81-203-4470-9
- Bhadra, S.N., Kastha, D., Banerjee, S, Wind Electrical Systems installation; Oxford University Press, New Delhi, ISBN: 9780195670936
- O.P. Gupta, Energy Technology, Khanna Publishing House, New Delhi (ISBN: 978-9386173-683)

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP
Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Biomass and Micro-Hydro Power Plants — Complete Syllabus (Program Elective-2, Option 2)

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27
Subject 4.5.2 (Program Elective-2, Theory) • Total 100 Marks • 3 Credits • L 3 - P 0 •
Choose this OR Renewable Energy Power Plants

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.5	Program Elective -2: Biomass and Micro-Hydro Power Plants	Theory	3 - 0	3	40	60 (3 hrs)	100
Biomass and Micro-Hydro Power Plants Total				3	40	60	100

What This Subject Aims To Do

To help students maintain the efficient operation of various types of biomass and micro-hydro power plants.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Basics of Biomass-based Power Plants	7	20%
II	Biomass Gasification Power Plants	8	20%
III	Different Types of Gasifiers	9	23%
IV	Micro-hydro Power Plants	9	17%
V	Different types of Micro-hydro power plants	9	20%

Unit - I: Basics of Biomass-based Power Plants (7 Periods, 20%)

Topics: Types of biomass fuel - bagasse, wood chips, rice husk, municipal waste, Jatropha, bio-diesel, gobar gas, Layout of a Bio-chemical based (e.g. biogas) power plant; Layout of a Thermo-chemical based (e.g. Municipal waste) power plant; Layout of an Agro-chemical based (e.g. bio-diesel) power plant; Selection of biomass power plants.

Unit - II: Biomass Gasification Power Plants (8 Periods, 20%)

Topics: The basic principle to convert Agriculture and forestry products and wood processing remains (including rick husks, wood powder, branches, offcuts, corn straws, rice straws, wheat straws, cotton straws, fruit shells, coconut shells, palm shells, bagasse, corncobs) into combustible gas; General Construction and working of a typical gasifier; Power generation in gas engine.

Unit - III: Different Types of Gasifiers (9 Periods, 23%)

Topics: Construction, working and limitations of the following types of gasifiers: Rice Husk Gasification Power Plant and their specifications, Straw Gasification Power Plant and their specifications; Bamboo Waste, Bamboo Chips Gasification Power Plant and their specifications; Coconut shell, coconut peat, coconut husk, Gasification Power Plant and their specifications; Bagasse/Sugar Cane Trash Gasification Power Plant and their specifications; Gobar gas plant and its specifications.

Unit - IV: Micro-hydro Power Plants (9 Periods, 17%)

Topics: Locations of micro-hydro power plant; Energy conversion process of hydro power plant; Classification of hydro power plant: High, medium and low head; General Layouts of typical micro-hydro power plant; Strengths and limitations of micro-hydro power plants.

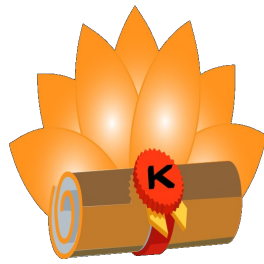
Unit - V: Different types of Micro-hydro power plants (9 Periods, 20%)

Topics: Construction and working of High head – Pelton turbine and their specifications; Construction and working of medium head – Francis turbines and their specifications; Construction and working of Low head – Kaplan turbine and their specifications; Preventive and breakdown maintenance of micro-hydro power plants; Safe Practices for micro-hydro power plants.

Reference Books (as listed in the syllabus)

- Khoiyangbam, R S Navindu; Gupta and Sushil Kumar; Biogas Technology: Towards Sustainable Development; TERI, New Delhi; ISBN: 9788179934043
- David M. Buchla; Thomas E. Kissell; Thomas L. Floyd - Renewable Energy Systems, Pearson Education New Delhi, ISBN: 9789332586826
- Kothari, D.P. et al: Renewable Energy Sources and Emerging Technologies, PHI
- Rachel, Sthuthi, Earnest, Joshua; - Wind Power Technologies, PHI Learning
- O.P. Gupta, Energy Technology, Khanna Publishing House, ISBN: 978-93-86173-683

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP
Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electric Machine- II (Lab) — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27
Subject 4.6 (Practical) • Total 100 Marks • 2 Credits • L 0 - P 4 • Perform any 10 of 15 practicals

Please note — cover year vs approval: BTEUP's own file for this curriculum prints "YEAR 2025-2026" on its cover, while carrying the approval line "UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026" on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: This is the lab for the theory paper 4.2 (Electric Machine- II). The PDF lists 15 practicals and says to perform any ten.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.6	Electric Machine- II (Lab)	Practical	0 - 4	2	60	40 (3 hrs)	100
Electric Machine- II (Lab) Total				2	60	40	100

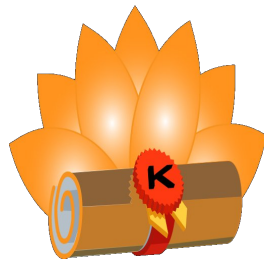
Practical Work

- Identify the different parts (along with function and materials) for the given single phase and three phase induction motor.
- Connect and run the three-phase squirrel cage induction motors (in both directions) using the DOL, star-delta, auto-transformer starters (any two).

- Perform the direct load test on the three-phase squirrel cage induction motor and plot the (a) efficiency versus output, (b) power factor versus output, (c) power factor versus motor current and (d) torque – slip/speed characteristics.
- Conduct the No-load and Blocked-rotor tests on given 3-phase squirrel cage induction motor and determine the equivalent circuit parameters.
- Control the speed of the given three phase squirrel cage/slip ring induction motor using the applicable methods: (a) auto-transformer, (b) VVVF.
- Measure the open circuit voltage ratio of the three-phase slip ring induction motor.
- Conduct the direct load test to determine the efficiency and speed regulation for different loads on the given single phase induction motor; plot the efficiency and speed regulation curves with respect to the output power.
- Demonstrate that power factor of an induction motor load is improved by connecting capacitor bank.
- Perform the direct loading test on the given three phase alternator and determine the regulation and efficiency.
- Determine the regulation and efficiency of the given three phase alternator from OC and SC tests (Synchronous impedance method).
- Conduct the test on load or no load to plot the 'V' curves and inverted 'V' curves (at no-load) of 3-phase synchronous motor.
- Synchronization of 3 Phase Alternators by a) Lamp method. b) Synchroscope method.
- Control the speed and reverse the direction of stepper motor.
- Control the speed and reverse the direction of the AC servo motor.
- Control the speed and reverse the direction of the DC servo motor.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Economic Policies in India — Complete Syllabus (Open Elective-2, Option 1)

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27
Subject 4.7 (Open Elective-2, Theory) (Q) • 50 Marks internal • 2 Credits • L 2 – P 0 •
Choose this OR Mechatronics • Qualifying only

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: Open Elective-2 (4.7) is a (Q) qualifying subject — compulsory to appear and pass, but marks are not included for percentage and division. **Numbering note:** in the PDF the units are numbered 1, 2, 3, 4 and then 6 (there is no Unit 5 heading); the marks table lists rows 1-5. The unit names below follow the PDF headings exactly.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.7	Economic Policies in India (Open Elective-2)	Theory (Q)	2 - 0	2	50	—	NA
Open Elective-2 Total				2	50	—	NA

What This Subject Aims To Do

To familiarise students of different streams with the basic concepts, structure, problems and issues concerning the Indian economy.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
1	Basic features and problems of Indian Economy	08	23%
2	Sectorial composition of Indian Economy	05	20%
3	Industrial development, small scale and cottage industries, industrial Policy, Public sector in India, service sector in India	04	17%
4	Economic Policies	06	20%
6	External sector in India	05	20%

Unit - 1: Basic features and problems of Indian Economy (08 Periods, 23%)

Topics: Economic History of India; Nature of Indian Economy, demographic features and Human Development Index, Problems of Poverty, Un employment, Inflation, income inequality, Black money in India.

Unit - 2: Sectorial composition of Indian Economy (05 Periods, 20%)

Topics: Issues in Agriculture sector in India, land reforms Green Revolution and agriculture policies of India.

Unit - 3: Industrial development, small scale and cottage industries, industrial Policy, Public sector in India, service sector in India (04 Periods, 17%)

Topics: Industrial development, small scale and cottage industries, industrial Policy, Public sector in India, service sector in India.

Unit - 4: Economic Policies (06 Periods, 20%)

Topics: Economic Planning in India, Planning commission v/s NITI Aayog, Five Year Plans, monetary policy in India, Fiscal Policy in India, Centre state Finance Relations, Finance commission in India. LPG policy in India.

Unit - 6: External sector in India (05 Periods, 20%)

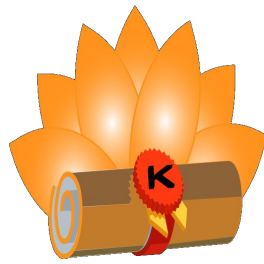
Topics: India's foreign trade value composition and direction, India Balance of payment since 1991, FDI in India, Impact of Globalization on Indian Economy, WTO and India.

Reference Books (as listed in the syllabus)

- Dutt Rudder and K.P.M Sunderam (2017). Indian Economy. S Chand & Co. Ltd. New Delhi
- Mishra S.K & V.K Puri (2017). Indian Economy and – Its Development Experience. Himalaya Publishing House
- Singh, Ramesh, (2016): Indian Economy, Tata-McGraw Hill Publications, New Delhi
- Dhingra, I.C., (2017): March of the Indian Economy, Heed Publications Pvt. Ltd.
- Karam Singh Gill, (1978): Evolution of the Indian Economy, NCERT, New Delhi
- Kaushik Basu (2007): The Oxford Companion to Economics of India, Oxford University Press

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Mechatronics — Complete Syllabus (Open Elective-2, Option 2)

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27
Subject 4.7 (Open Elective-2, Theory) (Q) • 50 Marks internal • 2 Credits • L 2 – P 0 •
Choose this OR Economic Policies in India • Qualifying only

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: Open Elective-2 (4.7) is a (Q) qualifying subject — compulsory to appear and pass, but marks are not included for percentage and division. **Note:** the PDF's printed course objective for Mechatronics is about developing a project plan; the learning outcomes (understanding mechatronics, drivers, hydraulic & pneumatic systems) are what the aim below is drawn from.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.7	Mechatronics (Open Elective-2)	Theory (Q)	2 - 0	2	50	—	NA
Open Elective-2 Total				2	50	—	NA

What This Subject Aims To Do

To build an understanding of mechatronics — its systems and elements, drives, and hydraulic and pneumatic systems — and to identify problems and decide applications for future development.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Introduction to Mechatronics	05	20%
II	Elements in Mechatronics	08	23%
III	Drives	05	20%
IV	Hydraulic Systems	05	20%
V	Pneumatic System	05	17%

Unit - I: Introduction to Mechatronics (05 Periods, 20%)

Topics: Introduction to System Concepts, Analysis and Design, Mechatronics basic definitions; systems and components; Systems with mixed disciplines, Electronics Fundamentals Review.

Unit - II: Elements in Mechatronics (08 Periods, 23%)

Topics: Data conversion devices, sensors, micro-sensors, transducers, signal processing devices, timers; Microprocessors, Microcontrollers, PID Controllers and PLCs.

Unit - III: Drives (05 Periods, 20%)

Topics: Stepper Motors, Servo Drives, Linear Motion bearings, cams; Systems controlled by camshafts, electronic cams, Tool magazines and indexing mechanisms.

Unit - IV: Hydraulic Systems (05 Periods, 20%)

Topics: Flow, Pressure and Direction Control Valves, Actuators, Supporting Elements, Hydraulic Power Packs, Pumps; Design of Hydraulic circuits.

Unit - V: Pneumatic System (05 Periods, 17%)

Topics: Production, Distribution and conditioning of compressed air; System Components and Graphic representations; Design of Systems.

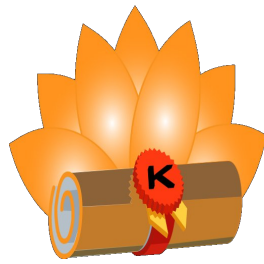
Reference Books (as listed in the syllabus)

- Analysis and design of Dynamic Systems Cochin, Era and Cadwallender, Addison Wesley, 1997
- Mechatronics Engineering Tomkinson, D. And Horne, J. Longman McGraw Hill, 1996
- Mechatronics Bolton, W, Pearson Prentice Hall edition, 2008
- Fundamental of mechatronic M. Jouaneh Cengage Learning ISBN - 978-1111569020
- Mechatronics – An Integrated Approach Clarence W. de Silva CRC Press ISBN - 978-0849312748

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Essence of Indian Knowledge and Tradition — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 4th Semester • Session 2026-27

Subject 4.8 (Audit Course) (Q) • 50 Marks internal • 0 Credits • L 2 - P 0 • Qualifying only
• Assessment: Viva-Voce Exam

Please note — cover year vs approval: BTEUP's own file for this curriculum prints “YEAR 2025-2026” on its cover, while carrying the approval line “UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026” on every page. It is filed in BTEUP's 2026-27 folder (folder2627), so it is treated here as the 2026-27 syllabus on the strength of that approval. The scheme it carries is identical, subject for subject and mark for mark, to the 2025-26 scheme.

About this document: 4.8 is an audit course marked (Q) — compulsory to appear and pass, but marks are not included for percentage and division. Assessment is by viva-voce exam.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
4.8	Essence of Indian Knowledge and Tradition (Q)	Audit Course	2 - 0	—	50	—	NA
Essence of Indian Knowledge and Tradition Total				—	50	—	NA

What This Subject Aims To Do

To understand the fundamental aspects of the Indian Knowledge System, its integration with modern science, principles of Yoga and holistic healthcare, and practical applications in contemporary contexts.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Introduction to Indian Knowledge System	16	50%
II	Modern Science and Indian Knowledge System	06	20%
III	Yoga and Holistic Healthcare	04	15%
IV	Case Studies / Assignment	02	15%

Unit - I: Introduction to Indian Knowledge System (16 Periods, 50%)

Topics: Overview of Indian Knowledge System; Importance and relevance: 1. Introduction to the Vedas, 2. Upavedas, 3. Vedangas, 4. Upangas.

Unit - II: Modern Science and Indian Knowledge System (06 Periods, 20%)

Topics: 1. Relevance of Science and Spirituality, 2. Science and Technology in Ancient India.

Unit - III: Yoga and Holistic Healthcare (04 Periods, 15%)

Topics: 1. Basic principles of Yoga, 2. Benefits of holistic healthcare practices, 3. Integration with modern healthcare.

Unit - IV: Case Studies / Assignment (02 Periods, 15%)

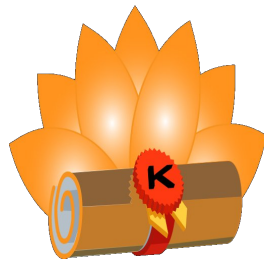
Topics: Practical Applications / Case studies demonstrating the relevance of Indian Knowledge System in modern times.

Reference Books

Reference books are not listed in the official syllabus for this subject.

Source: BTEUP 2nd Year curriculum (folder2627) — cover prints YEAR 2025-2026, but the approval line 'UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026' appears on every page (95 times); treated as the 2026-27 curriculum. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

5th Semester — Complete Examination Scheme

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Semester total 650 Marks • 20 Credits • (Q) = qualifying only, marks not counted for percentage/division

About this document: The full 5th-semester study and evaluation scheme as printed in the curriculum. (Q) subjects are compulsory to appear and pass, but their marks are not included for percentage and division.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.1	Switch Gear and Protection	Theory	3 - 0	4	40	60 (3 hrs)	100
5.2	Program Elective-3	Theory	3 - 0	3	40	60 (3 hrs)	100
5.3	Energy Conservation and Audit	Practicum	2 - 4	4	60	40 (3 hrs)	100
5.4	Program Elective-4	Practicum	1 - 4	3	60	40 (3 hrs)	100
5.5	Indian Constitution (Q)	Audit Course	2 - 0	—	50	—	N/A
5.6	Electrical Estimation and Contracting	Practicum	2 - 4	4	60	40 (3 hrs)	100
5.7		Internship	—	2	60		100

	Summer Internship (6 Weeks)					40 (3 hrs)	
#	Student Centred Activities (SCA)	Activity	0 – 10	—	50	—	50
5th Semester Total				20	370	280	650

Program Elective-3 (5.2) — Options

(1) Solar Power Technologies; (2) Electric Traction.

Program Elective-4 (5.4) — Options

(1) Electrical Testing and Commissioning; (2) Illumination Practices.

Summer Internship (5.7) — 6 Weeks, 100 Marks

Six weeks of industrial training, mandatory after the IV semester during the summer vacation. Students present a seminar/viva on their summer internship along with certificate, project and report. Internal assessment 60, external assessment 40 (3 hrs).

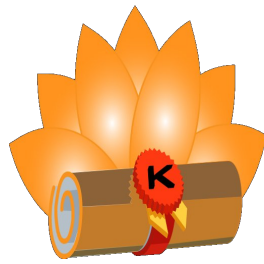
Student Centred Activities (SCA) — 50 Marks

Co-curricular activities like extension lectures, games, hobby clubs (e.g. photography), seminars, declamation contests, educational field visits, N.C.C., NSS, library, cultural activities and self-study. Marks distribution: 15 marks general behaviour and discipline; 10 marks attendance (75–80% = 6, 80–85% = 8, above 85% = 10); odd-semester activities (25 marks maximum): Language Lab Practices / foreign language practices, Group Discussion and Personality Development, Industrial Visits/Industrial Talks, Power Point Presentations and Resume Making, Development of Aptitude and Reasoning Skills, participation in technical exhibitions, symposiums, seminars, workshops at institute/district/state/national level.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Switch Gear and Protection — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27

Subject 5.1 (Theory) • Total 100 Marks • 4 Credits • L 3 – T 1 – P 0

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.1	Switch Gear and Protection	Theory	3 - 0	4	40	60 (3 hrs)	100
Switch Gear and Protection Total				4	40	60	100

What This Subject Aims To Do

To help students maintain switchgear and protection schemes used in electrical power systems.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Basics of Protection & Fundamental quality requirements	10	17%
II	Circuit Interruption Devices Isolators	11	20%
III	Protective Relays	13	23%
IV	Protection of Alternator, Transformer and Motors	11	20%
V	Protection of Busbar, Transmission Line and Concept of Neutral Grounding	11	20%

Unit - I: Basics of Protection & Fundamental quality requirements (10 Periods, 17%)

Topics: Necessity, purpose and functions of protective switchgear; Characteristics of a protection system, Normal and abnormal conditions; Types of faults, their causes and effects; Protection zones and backup protection, Need of current limiting reactors and their arrangements.

Unit - II: Circuit Interruption Devices Isolators (11 Periods, 20%)

Topics: Vertical break, Horizontal break and Pantograph type; HRC fuses - Construction, working, characteristics and applications; Arc formation process, methods of arc extinction (High resistance and Low resistance), Arc voltage, Recovery voltage, Re-striking voltage, RRRV; HT circuit breakers (Sulphur-hexa Fluoride (SF₆), Vacuum circuit breaker) - Working, construction; L.T. circuit breaker (Air circuit breakers (ACB), Miniature circuit breakers (MCB)) - Working and applications; Selection of LT and HT circuit breakers (ratings); Gas insulated switchgear.

Unit - III: Protective Relays (13 Periods, 23%)

Topics: Basic relay terminology - Protective relay, Relay time, Breaker time, Fault Clearing time, Pick-up, reset value, current setting, plug setting multiplier, Time setting multiplier, burden, reach; Protective relays: Classification, principle of working, construction and operation of - Electromagnetic, Induction type relays; Block diagram and working of Static relays; Overcurrent relay - Time current characteristics, principle of operation of - Non directional Over Current relay, Induction type Directional Power Relay, Directional Induction type Over Current relay; Introduction to Microprocessor based over current relays; Distance relaying - Principle, operation and classification of distance relays; Differential relay - operation of current balance and voltage balance differential relays.

Unit - IV: Protection of Alternator, Transformer and Motors (11 Periods, 20%)

Topics: Alternator Protection: Faults, Differential protection, Over current, earth fault, overheating protection; Transformer Protection: Faults, Differential, over current, earth fault, over heating protection, Limitations of differential protection; Buchholz relay: Construction, operation; Motor Protection: Short circuit protection, Overload protection (through thermal Relay), Single phase preventer.

Unit - V: Protection of Busbar, Transmission Line and Concept of Neutral Grounding (11 Periods, 20%)

Topics: Faults on Bus bar and Transmission Lines; Bus bar protection: Differential and Fault bus protection; Transmission line protection: Over current, Distance and Pilot wire protection; Grounding (equipment and system), Ungrounded Neutral system, Need of neutral grounded, Methods of Neutral Grounding.

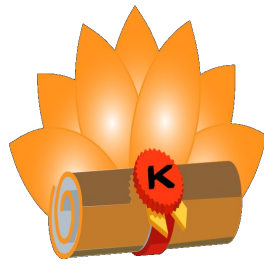
Reference Books (as listed in the syllabus)

- Mehta V. K; Rohit Mehta, Principles of Power System, S. Chand and Co., New Delhi., ISBN: 978-81-2192-496-2
- Rao, Sunil S., Switchgear and Protection, Khanna Publishers, New Delhi, ISBN: 978-81-7409-232-3
- Singh, R. P., Switchgear and Power System Protection, PHI Learning, New Delhi, ISBN: 978-81-203-3660-5
- Gupta. J. B., Switchgear and Protection, S. K. Kataria and Sons, New Delhi, ISBN: 978-93-5014-372-8
- Veerapan, N., Krishnamurty, S. R., Switchgear and Protection, S. Chand and Co., New Delhi. ISBN: 978-81-2193-212-7
- Ram, Badri; Vishwakarma D. N., Power System Protection and Switchgear, McGraw-Hill, New Delhi. ISBN: 978-07-107774-X
- Dr. T. D. Bisht, Ashish Sahoo, Pooja Yadav, Switch Gear & Protection, Asian Publishers, Muzaffarnagar, ISBN No. 978-93-91541-62-0

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Solar Power Technologies — Complete Syllabus (Program Elective-3, Option 1)

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.2.1 (Program Elective-3, Theory) • Total 100 Marks • 3 Credits • L 3 - P 0 •
Choose this OR Electric Traction

Note: In the PDF the recommended-books list ends with a blank entry numbered “6.” — no sixth book is named, so it is not included here.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.2	Program Elective-3: Solar Power Technologies	Theory	3 - 0	3	40	60 (3 hrs)	100
Solar Power Technologies Total				3	40	60	100

What This Subject Aims To Do

To help students maintain the efficient operation of various types of solar power technologies.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Solar Energy	06	14%
II	Concentrated Solar Power (CSP)	08	18%

III	Solar PV Panel and Installation	10	25%
IV	Solar PV Electronics	10	25%
V	Solar PV Off-grid and Grid Tied Systems	08	18%

Unit - I: Solar Energy (06 Periods, 14%)

Topics: Solar Map of India: Global solar power radiation; Different types of Solar water heaters: working and installation; Solar Heating systems, Different types of Solar cookers, Solar lighting.

Unit - II: Concentrated Solar Power (CSP) (08 Periods, 18%)

Topics: Concentrated Solar Power (CSP) plants or solar thermal electric systems; Parabolic Trough: working and specifications; Parabolic Dish: Construction, working and specifications; Power Tower, Fresnel Reflectors: Construction, working and specifications; Solar Stirling engines.

Unit - III: Solar PV Panel and Installation (10 Periods, 25%)

Topics: Types construction, working, Typical specifications of solar cells; Solar PV working principle: Series and parallel connections of solar modules; Solar Photovoltaic (PV) system: components layout and working; Solar modules, arrays and their standard specifications; Roof top and streetlight solar PV systems; Solar water pumping application.

Unit - IV: Solar PV Electronics (10 Periods, 25%)

Topics: Solar Charge controllers: working and specifications, switchgear and cables; Batteries: Different types for solar PV systems, Solar Inverters: working; Signal conditioning systems: working, Solar Power tracking: construction, working, I-V, P-V characteristics.

Unit - V: Solar PV Off-grid and Grid Tied Systems (08 Periods, 18%)

Topics: Solar off grid systems: Layout; Solar Grid tied (on grid) systems: Working principle of grid-tied dc-ac inverter, grid synchronization and active power export; Net metering: main features and working.

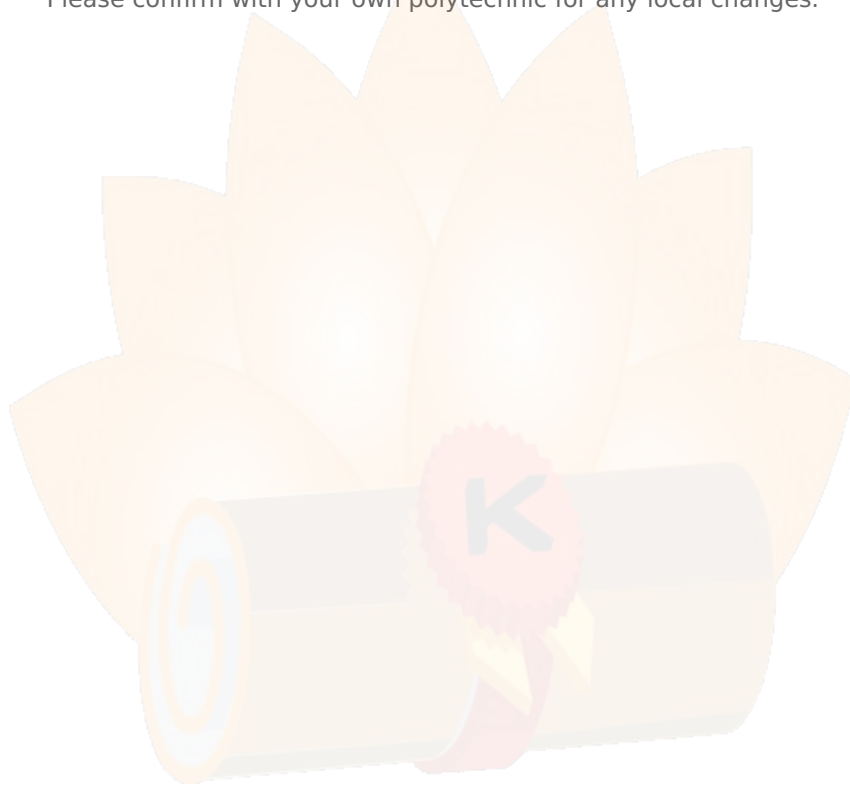
Reference Books (as listed in the syllabus)

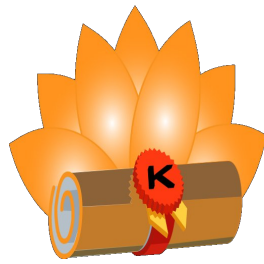
- Solanki, Chetan Singh, - Solar Photovoltaics: Fundamentals, Technologies and Applications, PHI Learning, New Delhi, ISBN: 9788120351110
- Kothari, D.P. et al: Renewable Energy Sources and Emerging Technologies, PHI
- David M. Buchla, Thomas E. Kissell, Thomas L. Floyd, - Renewable Energy Systems, Pearson Education New Delhi, ISBN: 9789332586826
- Rachel, Sthuthi, Earnest, Joshua; - Wind Power Technologies, PHI Learning
- O.P. Gupta, Energy Technology, Khanna Publishing House, ISBN: 978-93-86173-683

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electric Traction — Complete Syllabus (Program Elective-3, Option 2)

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.2.2 (Program Elective-3, Theory) • Total 100 Marks • 3 Credits • L 3 - P 0 •
Choose this OR Solar Power Technologies

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.2	Program Elective-3: Electric Traction	Theory	3 - 0	3	40	60 (3 hrs)	100
Electric Traction Total				3	40	60	100

What This Subject Aims To Do

To help students maintain electric traction systems.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Basics of Traction	06	14%
II	Power Supply Arrangements	08	19%
III	Overhead Equipment	07	17%
IV	Electric Locomotive	07	17%

V	Traction Motors and Train Lighting	08	19%
VI	Signalling and Supervisory Control	06	14%

Unit - I: Basics of Traction (06 Periods, 14%)

Topics: General description of Electrical Traction system in India; Advantages and Disadvantages of Electric Drive, Diesel Electric Drive, Battery Drive; Problems associated with AC traction System and remedies for it.

Unit - II: Power Supply Arrangements (08 Periods, 19%)

Topics: Traction Substation: layout, list of equipment and their functions; Miscellaneous equipment at control post or Switching station; Protection system for traction transformer and 25 kV centenary construction.

Unit - III: Overhead Equipment (07 Periods, 17%)

Topics: Different types of overhead equipments; Pentagonal OHE Centenary Construction; OHE Supporting Structure, Cantilever assembly diagram; Overhead system - Trolley collector, Bow collector, Pantograph Collector; Types and construction of pantograph.

Unit - IV: Electric Locomotive (07 Periods, 17%)

Topics: Classification and Nomenclature of Electric Locomotive; Block diagram of AC locomotive; Power Circuit of AC Locomotive; Equipment (List and Function only) used in auxiliary circuit of AC Locomotive.

Unit - V: Traction Motors and Train Lighting (08 Periods, 19%)

Topics: Desirable characteristics of traction motor; Types of motors used for traction with their characteristics and features; Control of motors used for traction and methods to control; Requirements of braking, types of braking; Electric braking, Regenerative braking; brief idea of train lighting system.

Unit - VI: Signalling and Supervisory Control (06 Periods, 14%)

Topics: Requirements of signalling systems; Types of signals, track circuits; Advantages of remote control; Systems of remote control, equipment and network; Metro rail - supply systems, advantages, schemes in India.

Reference Books (as listed in the syllabus)

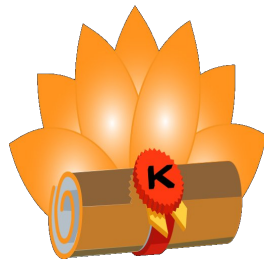
- G.C. Garg, Utilization of Electric Power & Electric Traction, Khanna Book Publishing Co., New Delhi (ISBN: 978-93-86173-355) Revised Ed. 2018
- Gupta J.B., S.K. Kataria and Son, Utilization of Electric power and traction
- Partab H., Dhanpat Rai and Co, Art and Science of Utilization of Electrical Energy
- Partab H., Dhanpat Rai and Co, Modern Electric Traction
- Suryanarayana N.V., New Age International Publishers, Reprint 2010
- Open Shaw Taylor, Orient Longman Ltd., Utilisation of electrical energy
- Dr. T. D. Bisht, Ashish Sahoo, Pooja Yadav, Electric Traction, Asian Publishers, Muzaffarnagar, ISBN No. 978-93-91541-68-2

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Energy Conservation and Audit — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.3 (Practicum) • Total 100 Marks • 4 Credits • L 2 - P 4

Note: In the PDF the unit headings give Unit III as 06 periods and Unit IV as 08 periods, but the Suggested Distribution of Marks table gives Unit III as 08 periods and Unit IV as 06 periods (total 28 either way). The unit headings are used here.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.3	Energy Conservation and Audit	Practicum	2 - 4	4	60	40 (3 hrs)	100
Energy Conservation and Audit Total				4	60	40	100

What This Subject Aims To Do

To help students undertake energy conservation and energy audit.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Energy Conservation	02	14%
II	Energy Conservation in Electrical Machines	06	24%

III	Energy conservation in Electrical Installation systems	06	24%
IV	Energy conservation through Cogeneration and Tariff	08	24%
V	Energy Audit of Electrical System	06	14%

Unit - I: Energy Conservation (02 Periods, 14%)

Topics: Basics Energy Scenario: Primary and Secondary Energy, Energy demand and supply, National scenario; Energy conservation and Energy audit; concepts and difference; Indian Electricity Conservation Act 2001 and its latest amendments; relevant clauses of energy conservation; BEE and its Roles; Star Labelling: Need and its benefits.

Unit - II: Energy Conservation in Electrical Machines (06 Periods, 24%)

Topics: Need for energy conservation in induction motor and transformer; Energy conservation techniques in induction motor by: Improving Power quality, Motor survey, Matching motor with loading, Operating in star mode, Replacement by energy efficient motor; Energy conservation techniques in Transformer; Replacement by energy efficient transformers; Energy Conservation Equipment: Soft starters, Automatic star delta convertor, Variable Frequency Drives, Automatic p.f. controller (APFC), Intelligent p.f. controller (IPFC); Energy efficient motor; significant features, advantages, applications and limitations.

Unit - III: Energy conservation in Electrical Installation systems (06 Periods, 24%)

Topics: Energy Conservation in HVAC and Refrigeration System: Introduction, Concept of Energy Efficiency Ratio (EER), Energy saving opportunities in Heating, Ventilation and Air Conditioning (HVAC) and Refrigeration Systems; Energy Conservation in Lighting System: a) Replacing Lamp sources, b) Using energy efficient luminaries, c) Using light-controlled gears, d) Installation of separate transformer / servo stabilizer for lighting; Energy Conservation techniques in fans, electronic regulators.

Unit - IV: Energy conservation through Cogeneration and Tariff (08 Periods, 24%)

Topics: Co-generation: concept, significance for energy conservation, Types of cogeneration basis of technology (Steam turbine cogeneration, Gas turbine cogeneration); Factors governing the selection of cogeneration system; Advantages of cogeneration; Tariff: Types of tariff structure, Transformers Tariff structure, Special tariffs; Time-off-day tariff, Peak-off-day tariff, Power factor tariff, Maximum Demand tariff, Load factor tariff; Application of tariff system to reduce energy bill; Concept of sanctioned load, maximum demand, contract demand and monthly minimum charges (MMC).

Unit - V: Energy Audit of Electrical System (06 Periods, 14%)

Topics: Energy audit (definition as per Energy Conservation Act); Energy audit instruments and their use; Questionnaire for energy audit projects; Energy flow diagram (Sankey diagram); Simple payback period, Energy Audit procedure (walk through audit and detailed audit); Energy Audit report format.

Practical Work

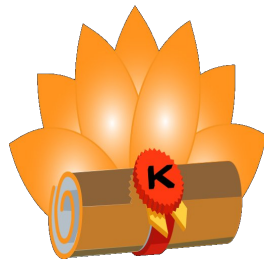
- Unit I — Identify star labelled electrical apparatus and compare the data for Three-star ratings.
- Unit I — Identify star labelled electrical apparatus and compare the data for Four-star ratings.
- Unit I — Identify star labelled electrical apparatus and compare the data for Five-star ratings.
- Unit II — Demonstrate that power factor of an induction motor load is improved by connecting capacitor bank.
- Unit II — Conduct a survey on installed motor and assess the matching of motor with its load. Determine the reduction in power consumption in star mode operation of Induction motor compared to delta mode.
- Unit II — Connect Soft starter with suitable rating Induction Motor and Observe its operation during starting and running. Also measure the current and power consumption.
- Unit III — To measure energy efficiency ratio (EER) of an air conditioner.
- Unit III — Compare power consumption of different types of Tube light with choke, electronic ballast and LED lamps by direct measurements.
- Unit III — Measure the Current, Power and Energy consumption of Modern BLDC Ceiling Fan.
- Unit III — Measure the Current, Power and Energy consumption of Ceiling Fan.
- Unit IV — Collect electricity bill of a commercial consumer and suggest suitable tariff for conservation and reduction of its energy bill.

- Unit IV — Collect electricity bill of a residential consumer and suggest suitable means for conservation and reduction of the energy bill.
- Unit IV — Collect Electricity bills of typical residential or College service connections for the period of 1 year and prepare the bar chart of energy consumption and energy cost. Discuss the result.
- Unit V — Carrying out Mini Energy Audit of Institute's lab/classroom (lighting, fans and ACs) and preparation of sample energy audit report format.
- Unit V — Prepare a sample energy audit questionnaire for the given industrial facility.

Reference Books (as listed in the syllabus)

- Guidebooks No. 1 and 3 for National Certification Examination for Energy Managers and Energy Auditors, Bureau of Energy Efficiency (BEE), Bureau of Energy Efficiency (A Statutory body under Ministry of Power, Government of India) (Fourth Edition 2015)
- O.P. Gupta, Energy Technology, Khanna Publishing House, New Delhi
- Henderson, P. D., India - The Energy Sector, University Press, Delhi, 2016. ISBN: 978-0195606539
- Turner, W. C., Energy Management Handbook, Fairmount Press, 2012, ISBN 9781304520708
- Sharma, K. V., Venkateshaiah; P., Energy Management and Conservation, I K International Publishing House Pvt. Ltd; 2011 ISBN 9789381141298
- Mehta, V. K., Principles of Power System, S. Chand & Co. New Delhi, 2016, ISBN 9788121905947
- Singh, Sanjeev; Rathore, Umesh, Energy Management, S K Kataria & Sons, New Delhi ISBN-13: 9789350141014
- Desai, B. G.; Rana, J. S.; A. Dinesh, V.; Paraman, R., Efficient Use and Management of Electricity in Industry, Devki Energy Consultancy Pvt. Ltd.
- Chakrabarti, Aman, Energy Engineering and Management, e-books Kindle Edition
- Dr. Vijay Mittal, Dr. T.D.Bisht, Anil Kumar Kukreja, Ravindra Patel, Asian Publishers, Muzaffarnagar, ISBN No. 978-93-91541-11-8

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP
 Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.
 Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electrical Testing and Commissioning — Complete Syllabus (Program Elective-4, Option 1)

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.4.1 (Program Elective-4, Practicum) • Total 100 Marks • 3 Credits • L 1 – P 4 •
Choose this OR Illumination Practices

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.4	Program Elective-4: Electrical Testing and Commissioning	Practicum	1 - 4	3	60	40 (3 hrs)	100
Electrical Testing and Commissioning Total				3	60	40	100

What This Subject Aims To Do

To help students follow standard safety procedures in testing and commissioning of electrical equipment.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Electrical Safety and Insulation	03	20%

II	Installation & Erection Concept of foundation for installation of machinery	02	15%
III	Testing and Commissioning	03	20%
IV	Troubleshooting Plans	03	20%
V	Maintenance	03	25%

Unit - I: Electrical Safety and Insulation (03 Periods, 20%)

Topics: Do's and don'ts regarding safety in domestic electrical appliances as well for substation/ power station operators; Electrical safety in industry/power stations/ substations at the time of operation/ control/ maintenance; Fire detection alarm, fire-fighting equipment's, measuring insulation resistance by different methods such as i) Polarization, ii) Dielectric absorption, iii) Megger and to predict the condition of insulation; Reconditioning of insulation, insulating oil - properties of insulating oil, causes of deterioration of oil.

Unit - II: Installation & Erection Concept of foundation for installation of machinery (02 Periods, 15%)

Topics: Requirements of foundation for static and rotating electrical machinery; Concept of leveling and aligning; Procedure for leveling and aligning alignment of direct coupled drive, effects of mis-alignment; Installation of transformer and procedure of installation of transformer, Requirements of installation of pole mounted transformer; Devices and tools required for loading, unloading, lifting, and carrying heavy equipment and precautions to be taken while handling them.

Unit - III: Testing and Commissioning (03 Periods, 20%)

Topics: Concept of testing and Objective of testing; Roles of I.S.S. in testing of electrical equipment, Types of tests and concepts: Routine tests, supplementary test, special tests, Methods of testing - Direct/Indirect/Regenerative testing; Tolerances for the various items for equipment - transformer, induction motor, dc motor, synchronous machines; Commissioning, Tests before Commissioning for transformer, induction motor, alternator; Testing of three-phase Induction motor as per I.S.325; Testing of single-phase induction motor; Testing of synchronous machines and D.C. machines.

Unit - IV: Troubleshooting Plans (03 Periods, 20%)

Topics: Internal and external causes for failure / abnormal operation of equipment; List of mechanical faults, electrical faults and magnetic faults in the electrical equipment remedies, applications; Use of tools like bearing puller filler gauges, dial indicator; Common troubles in electrical equipments and machines; Preparation of trouble shooting charts for D.C. Machines, AC Machines and transformers.

Unit - V: Maintenance (03 Periods, 25%)

Topics: Concept of maintenance, types of maintenance, Routine, preventive and breakdown maintenance; Causes of failure of electrical machines; Preventive maintenance - procedure or developing maintenance schedules for electrical machines; Factors affecting preventive maintenance schedule: (a) Distribution transformer, (b) Single phase and three phase Induction motors, (c) Batteries.

Practical Work

- Unit I — Determine breakdown strength of transformer oil.
- Unit I — Perform insulation resistance test on any one motor/transformer using Megger.
- Unit II — Evaluating the parts of an Alternator and testing an assembled alternator same on a test bench for proper operation.
- Unit II — Evaluating the parts of a Transformer assembled Transformer same on a test bench for proper operation.
- Unit III — Find regulation and efficiency of single-phase transformer by direct loading and back-to-back connection method and compare the results.
- Unit III — Determine efficiency of D.C. machine by Swinburne's test.
- Unit III — Determine efficiency of D.C. machine by Hopkinson's test.
- Unit IV — Prepare trouble shooting charts for electrical machines such as Transformer, D.C. machines, Induction motor, and Synchronous machines.
- Unit IV — Use of tools like bearing puller, filler gauges, dial indicator.
- Unit V — Prepare the preventive maintenance schedule of Distribution transformer.
- Unit V — Prepare the preventive maintenance schedule of induction motor.
- Unit V — Prepare the preventive maintenance schedule of batteries.

Reference Books (as listed in the syllabus)

- Deshpande, M. V. PHI Learning Pvt. Ltd., 2010, Design and Testing of Electrical Machines ISBN No 8120336453, 9788120336452
- Rao, B V S Asia Club House, First Reprint, 2011, Operation and Maintenance of Electrical Equipment Vol-I, ISBN No 8185099022

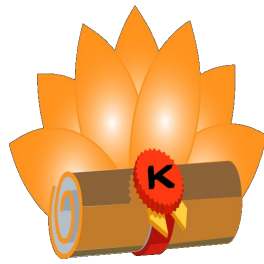
- Rosenberg. Mc GRAW-HILL, 1st Edition, May 2003, Maintenance and Repairs, ISBN No 9780071396035
- Sharotri, S.K. Glencoe/ McGraw-Hill; 2nd Edition, June 1969; Preventive Maintenance of Electrical Apparatus, ISBN No 10: 007030839X 13: 978-0070308398

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Illumination Practices — Complete Syllabus (Program Elective-4, Option 2)

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.4.2 (Program Elective-4, Practicum) • Total 100 Marks • 3 Credits • L 1 – P 4 •
Choose this OR Electrical Testing and Commissioning

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.4	Program Elective-4: Illumination Practices	Practicum	1 – 4	3	60	40 (3 hrs)	100
Illumination Practices Total				3	60	40	100

What This Subject Aims To Do

To help students design illumination schemes and the associated electrification of buildings.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Fundamentals of illumination	2	18%
II	Types of lamps	3	22%
III	Illumination Control and Control Circuits	4	22%
IV	Illumination for Interior Applications	2	16%

V	Illumination for Other Applications	3	22%
---	-------------------------------------	---	-----

Unit - I: Fundamentals of illumination (2 Periods, 18%)

Topics: Basic illumination, Terminology, Laws of illumination, Concept of Photometry, Measurement of illumination; Lighting calculation methods, Watt / m² method, Lumens or light flux method, Point to point method.

Unit - II: Types of lamps (3 Periods, 22%)

Topics: Incandescent lamp, ARC lamps – AC and DC arc lamps, fluorescent lamp; Types of other lamps: Mercury vapour lamp, HPMV lamp, Mercury iodide lamp, Sodium vapour lamp, Halogen Lamps, Ultraviolet Lamps, Neon Lamps; Neon Sign Tubes; Metal halides, HID and Arc lamps, LED lamps, CFL.

Unit - III: Illumination Control and Control Circuits (4 Periods, 22%)

Topics: Purpose of lighting control and Dimmer, Dimmer Transformer, Auto transformer dimmer, Two winding transformer dimmer; Electronic Dimmer: working principle and operation: 1. Thyristor operated dimmer, 2. Triac operated dimmer; Control of Enhance Lighting, Methods used for light control, Control circuits for lamps: ON/OFF control; Control circuits for lamps: single lamp controlled by single switch, two switches.

Unit - IV: Illumination for Interior Applications (2 Periods, 16%)

Topics: Standard for various locations of Interior Illumination; Design considerations for Interior location of residence premises (1/2 BHK); Illumination scheme for different Interior locations of Commercial, industrial unit.

Unit - V: Illumination for Other Applications (3 Periods, 22%)

Topics: Factory Lighting, Street Lighting (Latest Technology), Flood Lighting, Railway Lighting; Brief idea: Lighting for advertisement / Hoardings / sports lighting, Agriculture and Horticulture lighting, Health Care Centers / Hospitals, Decorating Purposes, Stage Lighting, Aquariums and Ship-yards.

Practical Work

- Unit I — Conduct illumination level assessment in workplace using lux meter.
- Unit I — Measure illumination level with and without reflectors used in the various Luminaries.

- Unit II — Fit the given lamp in the selected mounting.
- Unit II — Estimate and compare luminous efficiency of incandescent and compact fluorescent lamp.
- Unit III — Prepare light dimmer arrangement using the relevant dimmer type of transformer.
- Unit III — Build an electronic dimmer – Part I.
- Unit III — Build another type of electronic dimmer – Part II.
- Unit IV — Measure the illumination output of different lamps (Incandescent, Fluorescent, CFL, LED, HPSV, HPMV) and compare it with their wattage.
- Unit V — Build a single lamp control by single switch.
- Unit V — Build a single lamp control by two switches.

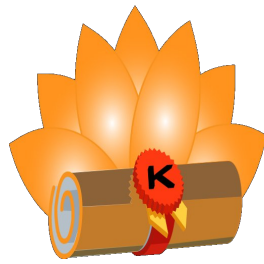
Reference Books (as listed in the syllabus)

- Lindsey, Jack L., Applied Illumination Engineering, The Fairmont Press Inc.
- Simons, R. H., Bean, Robert; Lighting Engineering: Applied Calculations, Architectural Press. ISBN: 0750650516
- Casimer M Decusatis, Handbook of Applied Photometry, Springer, ISBN 1563964163
- Butterworths, Lyons Stanley, Handbook of Industrial Lighting, Butterworths
- Simpson Robert S, Lighting Control Technology and Applications, Focal Press
- Kao Chen, Energy Management in Illuminating Systems, CRC Press

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Indian Constitution — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27

Subject 5.5 (Audit Course) (Q) • 50 Marks internal • 0 Credits • L 2 - P 0 • Qualifying only

About this document: 5.5 is an audit course marked (Q) — compulsory to appear and pass, but marks are not included for percentage and division.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.5	Indian Constitution (Q)	Audit Course	2 - 0	—	50	—	N/A
Indian Constitution Total				—	50	—	N/A

What This Subject Aims To Do

To provide a comprehensive understanding of the Indian Constitution's history and philosophy, and to familiarise students with the administrative structure, powers and functions of the Union, State and Local governments, along with the Judiciary and Election Commission.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	The Constitution – Introduction	6	20%
II	Union Government	6	20%
III	Indian Legislature & Judiciary	6	20%

IV	State Government	3	12%
V	Local Administration	4	16%
VI	Election Commission	3	12%

Unit - I: The Constitution - Introduction (06 Periods, 20%)

Topics: The History of the Making of the Indian Constitution; Preamble and the Basic Structure, and its interpretation; Fundamental Rights and Duties and their interpretation.

Unit - II: Union Government (06 Periods, 20%)

Topics: Structure of the Indian Union Government; President – Election, Role and Power; Prime Minister and Council of Ministers.

Unit - III: Indian Legislature & Judiciary (06 Periods, 20%)

Topics: Composition of Lok Sabha and Rajya Sabha; Powers & Functions of Lok Sabha and Rajya Sabha; Structure of Supreme Court including Appointment of Judges; Powers & Functions of Supreme Court.

Unit - IV: State Government (03 Periods, 12%)

Topics: Governor – Role and Power; Chief Minister and Council of Ministers; State Secretariat.

Unit - V: Local Administration (04 Periods, 16%)

Topics: District Administration; Municipal Corporation; Zila Panchayat.

Unit - VI: Election Commission (03 Periods, 12%)

Topics: Structure of Election Commission of India; Role and Function of Election Commission.

Reference Books (as listed in the syllabus)

- Ethics and Politics of the Indian Constitution Rajeev Bhargava Oxford University Press, New Delhi, 2008
- The Constitution of India B.L. Fadia Sahitya Bhawan; New edition (2017)
- Introduction to the Constitution of India DD Basu Lexis Nexis; Twenty-Third 2018 edition

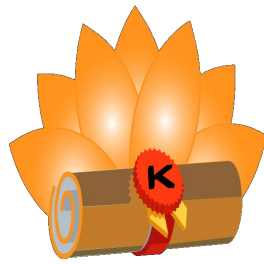
- Our Constitution Subhash Chand Kashyap NBT New Delhi

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Electrical Estimation and Contracting — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.6 (Practicum) • Total 100 Marks • 4 Credits • L 2 - P 4

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.6	Electrical Estimation and Contracting	Practicum	2 - 4	4	60	40 (3 hrs)	100
Electrical Estimation and Contracting Total				4	60	40	100

What This Subject Aims To Do

To help students design electrical installations with costing for tendering.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Electric Installation and Safety	04	15%
II	Estimation and Costing	08	30%
III	Non-Industrial Installations	06	20%
IV	Industrial Installation	04	15%
V	Distribution Lines and LT Substation	06	20%

Unit - I: Electric Installation and Safety (04 Periods, 15%)

Topics: Scope and features of National electric code 2023; Types of electrical installation; Fundamental principles for electrical installation; Permit to work, safety instructions and safety practices; Purpose of estimating and costing.

Unit - II: Estimation and Costing (08 Periods, 30%)

Topics: Meaning and purpose of - rough estimate, detailed estimate, supplementary estimate, annual maintenance estimate and revised estimate; Factors to be considered while preparation of detailed estimate and economical execution of work; Contracts - Concepts of contracts, types of contracts, contractor, role of contractor; Tenders and Quotations - Type of tender, tender notice, preparation of tender document, and method of opening of tender; Quotation, quotation format, comparison between tender and quotation; Comparative statement, format comparative statement; Order format, placing of purchasing order; Principles of execution of works, planning, organizing and completion of work, Billing of work.

Unit - III: Non-Industrial Installations (06 Periods, 20%)

Topics: Types of non-industrial installations - Office buildings, shopping and commercial centre, residential installation, Electric service and supply; Design consideration of electrical installation in commercial buildings; Design procedure of installation - steps involved in detail, Estimating and costing of unit; Earthing of commercial installation; Design electrical installation scheme of commercial complex.

Unit - IV: Industrial Installation (04 Periods, 15%)

Topics: Classification of industrial buildings; Classification based on power consumption; Drawing of wiring diagram and single line diagram for single phase and three phase Motors; Design consideration in industrial installations; Design procedure of installation - detailed steps; Design electrical installation scheme of factory/ small industrial unit, Preparation of material schedule and detailed estimation; Installation and estimation of agricultural pump and flourmill.

Unit - V: Distribution Lines and LT Substation (06 Periods, 20%)

Topics: Introduction to overhead and underground distribution line; Materials used for distribution line HT and LV; Cables used for distribution line, factors determining selection of LT/ HT power Cables, cable laying and cable termination method according to IS; Design, estimation and costing of HT LT overhead line and underground cabling; Estimation of load, Load factor, diversity factor and determination of rating of distribution Transformer; Design, estimation and costing of outdoor and indoor 11 KV substation.

Practical Work

- Unit I — To understand the objective of safety in Electric installation.
- Unit I — List out all the personal protective equipment's PPE's available in industry.
- Unit I — Prepare an estimate of institute/College for electrical connection and costing of equipment's used.
- Unit II — Prepare a tender notice for purchasing a transformer of 100 KVA for commercial installation.
- Unit II — Prepare a quotation for purchasing different electrical material required.
- Unit II — Prepare a comparative statement for above material. Prepare purchase order for the same.
- Unit II — Estimate with a proposal of the electrical Installation of streetlight scheme for small premises after designing.
- Unit II — Estimate with a proposal of the L.T. line installation. Prepare report and draw sheet.
- Unit III — Prepare Electrical Estimation for Residential and Industrial wirings.
- Unit III — Design drawing, estimating and costing of hall / cinema theatre / commercial installation. Prepare report and draw sheet.
- Unit IV — Design electrical installation scheme for any one factory / small industrial unit. Draw detailed wiring diagram. Prepare material schedule and detailed estimate. Prepare report and draw sheet.
- Unit IV — To plan multiple earthing system for industrial installation.
- Unit IV — To measure the earth resistance of various equipment installed in institute/ college.
- Unit IV — List out the various bus schemes in substation.
- Unit V — Estimate with a proposal of the electrical Installation of streetlight scheme for small premises after designing.
- Unit V — Estimate with a proposal of the L.T. line installation. Prepare report and draw sheet.
- Unit V — Estimate with a proposal of the 500 KVA, 11/0.433 KV outdoor substation and prepare a report.

- Unit V — Identify indoor and outdoor switch gear system.

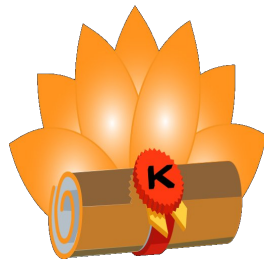
Reference Books (as listed in the syllabus)

- Raina, K.B.; Dr. S. K. Bhattacharya New Age International Publisher First, Reprint 2010, Electrical Design Estimating and Costing ISBN: 978-81-224-0363-3
- Allagappan, N. S. Ekambarram, Tata Mc-Graw Hill Publishing Co. Ltd, Electrical Estimating and Costing, ISBN 13: 9780074624784
- Singh, Surjit Ravi Deep Singh, Dhanpat Rai and Sons, Electrical Estimating and Costing, ISBN13: 1234567150995
- Gupta, J.B. S.K. Kataria and Sons Reprint Edition, A Course in Electrical Installation Estimating and Costing ISBN 10: 9350142791 13: 978-9350142790
- Bureau of Indian Standard. IS: 732-1989, Code of Practice for Electrical Wiring Installation
- Bureau of Indian Standard. SP-30:2011, National Electrical Code 2011
- Dr. T. D. Bisht, Ashish Sahoo, Dinesh Kumar Gautam, Electrical Design, Drawing & Estimating -I, ISBN No. 978-93-5502-015-4
- Dr. T. D. Bisht, Ashish Sahoo, Electrical Design, Drawing & Estimating -II, ISBN No. 978-93-5502-194-6

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Summer Internship-II & Student Centred Activities — 5th Semester

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.7 (Internship) 100 Marks • SCA 50 Marks • Total 150 Marks • 2 Credits

About this document: Summer Internship-II is the 6-week industrial training done after the 4th-semester examinations, during the summer vacation. It is evaluated in the 5th semester. The PDF gives no separate detailed internship syllabus — only the scheme row and the notes below.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.7	Summer Internship (6 Weeks)	Internship	—	2	60	40 (3 hrs)	100
#	Student Centred Activities (SCA)	Activity	0 - 10	—	50	—	50
Internship-II + SCA Total				2	110	40	150

Summer Internship-II — What It Is

Six weeks of industrial training, mandatory after the IV semester during the summer vacation (total marks allotted to industrial training after II and IV semesters are respectively 50 & 100). Students present a seminar/viva on their summer internship along with certificate, project and report.

Student Centred Activities (SCA) — 50 Marks

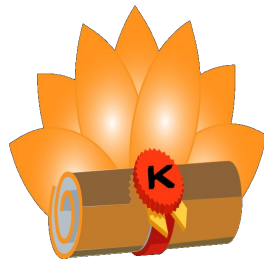
A provision for overall personality development, including co-curricular activities such as extension lectures, games, hobby clubs (e.g. photography), seminars, declamation contests, educational field visits, N.C.C., NSS, library, cultural activities and self-study. Marks distribution: 15 marks general behaviour and discipline; 10 marks attendance (75–80% = 6, 80–85% = 8, above 85% = 10); odd-semester activities (25 marks maximum): Language Lab Practices / foreign language practices, Group Discussion and Personality Development, Industrial Visits/Industrial Talks, Power Point Presentations and Resume Making, Development of Aptitude and Reasoning Skills, participation in technical exhibitions, symposiums, seminars, workshops at institute/district/state/national level.

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

6th Semester — Complete Examination Scheme (Normal Pathway)

BTEUP Diploma in Electrical Engineering • 6th Semester • Session 2026-27
Semester total 650 Marks • 20 Credits • (Q) = qualifying only, marks not counted for percentage/division • An Industrial Pathway is also offered (see below)

About this document: The full 6th-semester study and evaluation scheme (normal pathway) as printed in the curriculum. (Q) subjects are compulsory to appear and pass, but their marks are not included for percentage and division. The 6th semester is also offered as an Industrial Pathway (one semester of industrial training/internship, optional along with usual classroom training).

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
6.1	Building Electrification	Practicum	2 - 4	4	60	40 (3 hrs)	100
6.2	Entrepreneurship and Start-Ups	Theory	2 - 0	2	40	60 (3 hrs)	100
6.3	In-House Project	Project	4 - 16	12	240	160	400
6.4	Advance Skill Development (Open Elective-3) (Q)	Theory	2 - 0	2	50	—	N/A
#	Student Centred Activities (SCA)	Activity	0 - 6	—	50	—	50

6th Semester Total (Normal Pathway)	20	390	260	650
--	-----------	------------	------------	------------

Open Elective-3 (6.4) — Options

Theory courses (choose one): (1) Project Management; (2) Internet of Things.

Certification courses (choose one, not less than 20 hrs, offline/online, from agencies of repute): courses conducted by Centre of Excellence (e.g. Tata Technologies — see Annexure 1), Infosys Springboard, TCS iON, other relevant government / international / national organisations or platforms of repute, AICTE-ELIS and Centrally Funded Technical Institutes, C-DAC, NIELIT.

6th Semester — Industrial Pathway (alternative to the normal pathway)

The industrial training tenure should not be less than 14 weeks. The industry must be registered with MSME / Directorate of Industries / Limited Organization / State / Central Government establishments. Monthly progress reports of the intern/trainee should be attested and forwarded by the industrial supervisor during the internship/training. The institute deposes one faculty member as mentor for at least 20–30 students. “Entrepreneurship and Start-up” is also mandatory in industrial internship/training mode, conducted online by the polytechnic; after completing the online course, students must appear for the exam conducted by the Board of Technical Education, Lucknow.

Code	Subject	Credits	Internal	External	Total
6.1	Entrepreneurship and Start-Ups (Online Mode)	2	100	—	100
6.2	Industrial Hands-on Practice	12	150 (faculty mentor)	200 (industry)	350
6.3	Industrial Project	4	50 (faculty mentor)	50 (industry)	100
6.4	Seminar	2	100	—	100
	Total	20			650

Industrial Hands-on Practice, Industrial Project and seminar are evaluated on the basis of the AICTE Internship Policy: Guidelines and procedures (Chapter 9). The seminar is evaluated through a seminar presentation / viva-voce at the institute, based on the training report, before an expert committee constituted by the concerned department.

Student Centred Activities (SCA) — 50 Marks

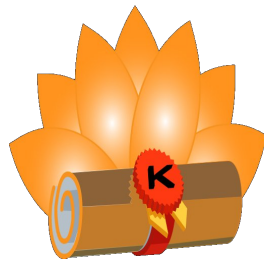
Co-curricular activities like extension lectures, games, hobby clubs (e.g. photography), seminars, declamation contests, educational field visits, N.C.C., NSS, library, cultural activities and self-study. Marks distribution: 15 marks general behaviour and discipline; 10 marks attendance (75–80% = 6, 80–85% = 8, above 85% = 10); even-semester activities (25 marks maximum): Sports/NCC/Cultural/Co-curricular/NSS activities (State/National level participation, participation in two of the above activities, Inter-Polytechnic level participation).

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Building Electrification — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 6th Semester • Session 2026-27

Subject 6.1 (Practicum) • Total 100 Marks • 4 Credits • L 2 - P 4

Note: In the PDF the unit headings give 04/06/06/08/04 periods (total 28), but the Suggested Distribution of Marks table gives 11/11/11/13/10 periods (total 56). The unit headings are used here; the marks-table periods look copied from a theory subject.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
6.1	Building Electrification	Practicum	2 - 4	4	60	40 (3 hrs)	100
Building Electrification Total				4	60	40	100

What This Subject Aims To Do

To help students design electrical installation systems in building complexes.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Wiring Tools and Accessories	04	20%
II	Electrical Wires and Underground Cables	06	20%
III	Wiring Methods and wiring layout	06	20%
IV	Residential Building Electrification	08	23%

V	Protective Devices and Earthing for Electrical Installation	04	17%
---	---	----	-----

Unit - I: Wiring Tools and Accessories (04 Periods, 20%)

Topics: Various tools required for wiring; Application, care & maintenance of tools: Screwdrivers, pliers, Try square, saws, hacksaw, chisel, hammers, mallet, rawal punch, hand drill machine, portable drilling machine, files, plumb bob, line thread, electricians' knife, test lamp, tester; Switch - Their types according to construction such as surface switch, flush switch, and pull switch, rotary switch, knife switch, pendent switch, Main-switch (ICDP, ICTP); Their types according to working such as single pole, double pole, two-way, two-way centre off, intermediate, series parallel switch; Holders - Their types such as bayonet cap lamp holder, pendent holder, batten lamp holder, angle holder, bracket holder, tube light holder, screw type Edison and goliath Edison lamp holder, swivel lamp holder; Socket outlets and plugs - two pin, three-pin, multi pin sockets, two-pin and three-pin plug; Others - Iron connector, adaptor, and ceiling rose, distribution box, neutral link, bus-bar chamber; Wooden/ mica boards, Moulded/ MS Concealed boxes of different sizes; Modular accessories; BIS symbols of various electrical accessories.

Unit - II: Electrical Wires and Underground Cables (06 Periods, 20%)

Topics: Conductors: Wire, cable, bus bar, stranded conductor, cable, armoured cable, flexible cable, solid conductor, PVC wires, CTS wire, LC wire, FR (Fire retardant) wire; Tools used for measurement of wire size, Wire jointing methods; Classification of cables, low tension, high tension, and extra high-tension cables, solid, oil filled and gas filled type; Cable insulation materials - Polyvinyl chloride (PVC), cross linked polythene (XLPE); Selection of suitable cable size and type from standard data; Cable jointing methods; Cable laying methods; Factors determining selection of electric cables.

Unit - III: Wiring Methods and wiring layout (06 Periods, 20%)

Topics: Factors determining the selection of wiring methods; Classification of wiring methods; PVC casing-capping wiring - wiring rules according to IS: 732-2019; Conduit wiring - Types of conduit, types of conduit wiring (Surface/Concealed); Conduit wiring accessories; Comparison of various wiring systems; General BIS rules for domestic installations; Design, working and drawing of following electrical circuits: Simple light and fan circuits, Staircase wiring, Go-down wiring circuit, Bedroom lighting circuit, Corridor lighting circuit, Series parallel circuit, Master switch control circuit, Different lighting circuit using - Intermediate switch, Call bell circuit using bell indicator, Design of wiring circuits according to user's requirement.

Unit - IV: Residential Building Electrification (08 Periods, 23%)

Topics: Domestic Dwellings/Residential Buildings: Reading of Civil Engineering building drawing, Interpretation of electrical installation plan and electrical diagrams, electrical symbols as per IS: 732:2019; Electrical installation for residential building as per NEC 2023; Difference between residential and industrial load, rules/requirements related to lighting load followed in electrical installations, Positioning of equipment; Lighting and power circuits: Light and fan circuit, Power circuit wiring and circuit Schematic diagram according to IS: 2042(Part-I)-1962: multiline and single line representation; Load assessment: Selection of size of conductors, Selection of rating of main switch and protective switch gear; Design and drawing, estimation and costing of a residential installation having maximum 5 KW load; Sequence to be followed for preparing estimate; Calculation of length of wire and other materials, labour cost; Testing of wiring installation as per IS: 732-2019: Insulation resistance - between earth and conductors, between conductors, polarity test of single pole switches; Testing of earth continuity path; Residential building Service Connection - types Underground and overhead; Calculation of Material required for service connection.

Unit - V: Protective Devices and Earthing for Electrical Installation (04 Periods, 17%)

Topics: Miniature circuit Breaker (MCB), Construction, Principle, rating and uses; MCCB - Construction, Principal rating and uses; Earth Leakage Circuit Breaker (ELCB) - Construction, Principle, rating and uses; Residual Current Circuit Breaker (RCCB) - Construction, Principle rating and uses; System and equipment earthing and its requirements, Measurement of earth resistance using earth tester, Methods of reducing earth resistance, Methods of earthing and their procedure - Driven pipe, pipe and plate earthing, modern methods of earthing.

Practical Work

- Unit I — Prepare the chart of electrical accessories with their symbols.
- Unit II — Select the electric wire using measuring and testing instruments for particular applications.
- Unit II — Identify cables of different current ratings.
- Unit III — Prepare wiring installation on a board showing control of one lamp, one fan and one socket from one switch board in PVC surface conduit wiring system.
- Unit III — Control one lamp from two different places using PVC surface conduit wiring system.
- Unit III — Prepare wiring installation on a board. Control one lamp from three different places using PVC surface conduit wiring system.

- Unit IV — Design 2 BHK residential installation scheme and estimate the material required. And draw the details required for installation on A4 size sheet.
- Unit IV — Perform go-down wiring for three blocks using PVC casing capping.
- Unit IV — Test wiring installation using megger.
- Unit V — Measurement of Earth Resistance by using Earth tester.
- Unit V — Dismantling of MCB and identify various parts.

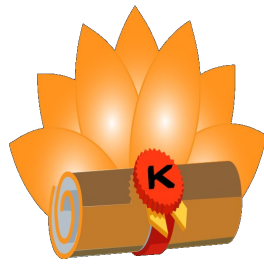
Reference Books (as listed in the syllabus)

- Raina, K.B. and S.K. Bhattacharya, Electrical Design Estimating and Costing, New Age International Ltd., New Delhi, ISBN 978-81-224-0363-3
- Allagappan, N., S. Ekambarram, Electrical Estimating and Costing, New Delhi, ISBN-13: 9780074624784
- Singh, Surjit, Electrical Estimating and Costing, Dhanpat Rai and Co. New Delhi, ISBN: 1234567150995
- Gupta, J B: A Course in Electrical Installation Estimating and Costing, S K Kataria and Sons, New Delhi, ISBN: 978-93-5014-279-0
- Bureau of Indian Standard, IS: 732-2019, Code of practice for electrical wiring installation
- Bureau of Indian Standard, SP 30 National Electrical Code 2023
- Bureau of Indian Standard, SP 72 National Lighting Codes 2010

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Entrepreneurship and Start-Ups — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 6th Semester • Session 2026-27
Subject 6.2 (Theory) • Total 100 Marks • 2 Credits • L 2 - P 0 • In the Industrial Pathway
this subject is taken online (see 6th-semester scheme)

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
6.2	Entrepreneurship and Start-Ups	Theory	2 - 0	2	40	60 (3 hrs)	100
Entrepreneurship and Start-Ups Total				2	40	60	100

What This Subject Aims To Do

To foster an entrepreneurial mindset by equipping students with the skills to identify business opportunities, formulate comprehensive business plans, understand management functions, and navigate the financial and legal landscapes of starting and sustaining a venture.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Introduction to Entrepreneurship and Start - Ups	05	15%
II	Business Ideas and their implementation	04	15%
III	Ideas to Start-up	08	25%

IV	Management	06	20%
V	Financing and Protection of Ideas	03	10%
VI	Succession, Dissolution and Harvesting strategy	02	15%

Unit - I: Introduction to Entrepreneurship and Start - Ups (05 Periods, 15%)

Topics: Definitions, Classification of Entrepreneur; Traits of an Entrepreneur, Intrapreneurship, Motivation; Types of Business Structures - On the Basis of size and on the basis of ownership; Similarities/differences between entrepreneurs and managers.

Unit - II: Business Ideas and their implementation (04 Periods, 15%)

Topics: Discovering ideas and visualizing the business; Activity map; Business Plan (Case Study).

Unit - III: Ideas to Start-up (08 Periods, 25%)

Topics: Marketing and Accounting - Definition and Importance; Market Analysis - STP (Segmentation, Targeting, Positioning); Competition evaluation and Strategy Development - Vision, Mission, Goal, Objectives; Risk analysis - SWOT Analysis.

Unit - IV: Management (06 Periods, 20%)

Topics: Definition Concept and Functions of Management; Company's Organization Structure - Concept and Classification; Recruitment and Selection - Definition, Training and Development - Importance.

Unit - V: Financing and Protection of Ideas (03 Periods, 10%)

Topics: Financing methods available for Entrepreneurship/ Startups in India (Government Scheme, Banking, NBFCs, SHG and Micro Financing); Intellectual Property Rights - Overview of - Copyrights, Trademark, Geographical Indicators, Patenting and Licenses; Communication of Ideas to potential investors - Investor Pitch.

Unit - VI: Succession, Dissolution and Harvesting strategy (02 Periods, 15%)

Topics: Ways of succession; Types of Dissolution.

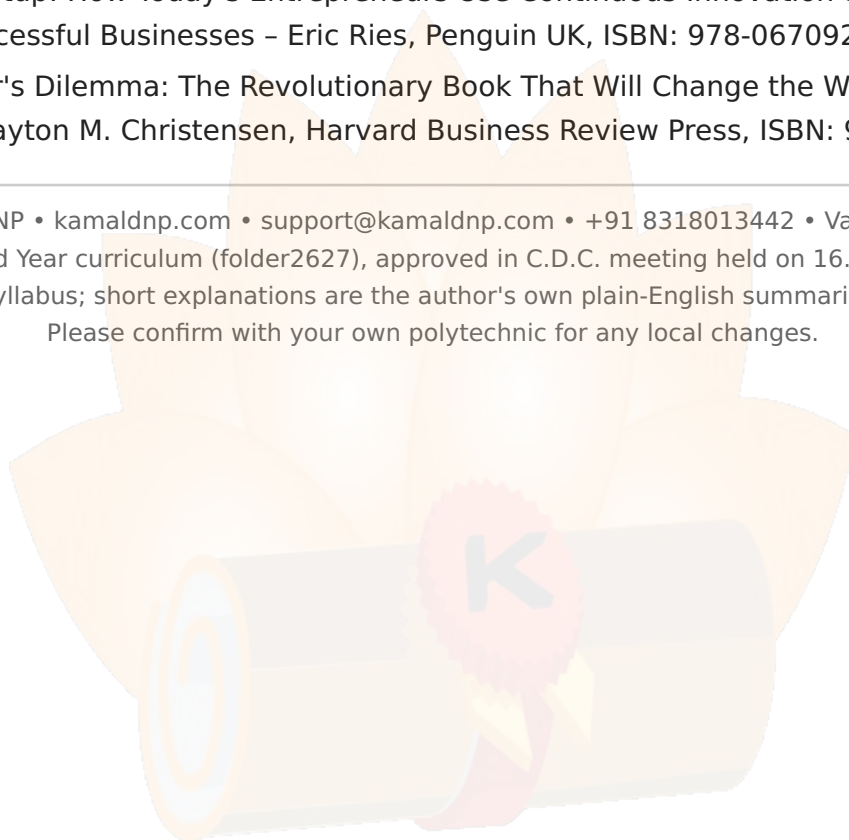
Reference Books (as listed in the syllabus)

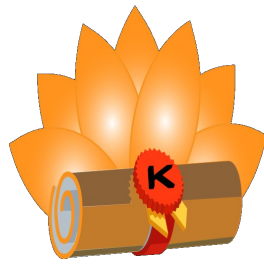
- The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company – Steve Blank and Bob Dorf, K & S Ranch, ISBN: 978-0984999392
- Entrepreneurship Development (A New Venture Creation) – Vasant Desai, Himalaya Publishing House
- Entrepreneurship Development – S.S. Khanka, S. Chand & Company Ltd., New Delhi
- Entrepreneurship Development – Gupta and Srinivasan, S. Chand & Company Ltd., New Delhi
- Demand: Creating What People Love Before They Know They Want It – Adrian J. Slywotzky with Karl Weber, Headline Book Publishing, ISBN: 978-0755388974
- The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses – Eric Ries, Penguin UK, ISBN: 978-0670921607
- The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business – Clayton M. Christensen, Harvard Business Review Press, ISBN: 978-1422196021

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

In-House Project — 6th Semester

BTEUP Diploma in Electrical Engineering • 6th Semester • Session 2026-27

Subject 6.3 (Project) • Total 400 Marks • 12 Credits • L 4 – P 16

About this document: The PDF gives the scheme row for the In-House Project (6.3) but contains NO detailed syllabus section for it — no units, practicals or books are listed anywhere in the curriculum. Only the scheme figures below are from the PDF. In the Industrial Pathway this is replaced by Industrial Hands-on Practice + Industrial Project + Seminar (see the 6th-semester scheme).

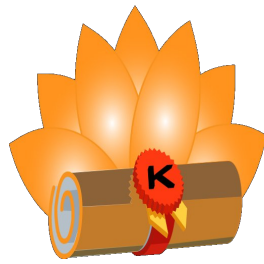
Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
6.3	In-House Project	Project	4 - 16	12	240	160	400
In-House Project Total				12	240	160	400

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.



KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Project Management — Complete Syllabus (Open Elective-3, Option 1)

BTEUP Diploma in Electrical Engineering • 6th Semester • Session 2026-27

Subject 6.4.1 (Open Elective-3, Theory) (Q) • 50 Marks internal • 2 Credits • L 2 - P 0 •

Choose this OR Internet of Things • Qualifying only

About this document: Open Elective-3 (6.4) is a (Q) qualifying subject — compulsory to appear and pass, but marks are not included for percentage and division. Choose either this theory course or Internet of Things, or a certification course (not less than 20 hrs) from the approved providers.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
6.4	Project Management (Open Elective-3)	Theory (Q)	2 - 0	2	50	—	N/A
Open Elective-3 Total				2	50	—	N/A

What This Subject Aims To Do

To help students develop the idea of a project plan — from defining and confirming the project goals and objectives, to identifying tasks and how goals will be achieved.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
------	-------	---------	-------------

I	Concept of a project	04	18%
II	Capital budgeting process	06	22%
III	Financial estimates and projections	06	20%
IV	Basic techniques in capital budgeting	06	20%
V	Project administration	06	20%

UNIT-I: Concept of a project (04 Periods, 18%)

Topics: Classification of projects - importance of project management - The project life cycle - establishing project priorities (scope-cost-time) project priority matrix - work break down structure.

UNIT-II: Capital budgeting process (06 Periods, 22%)

Topics: Planning - Analysis - Selection - Financing - Implementation - Review; Generation and screening of project ideas - market and demand analysis - Demand forecasting techniques; Market planning and marketing research process - Technical analysis.

UNIT-III: Financial estimates and projections (06 Periods, 20%)

Topics: Cost of projects - means of financing - estimates of sales and production - cost of production - working capital requirement and its financing - profitability, projected cash flow statement and balance sheet; Break even analysis.

UNIT-IV: Basic techniques in capital budgeting (06 Periods, 20%)

Topics: Non discounting and discounting methods - payback period - Accounting rate of return - net present value - Benefit cost ratio - internal rate of return; Project risk; Social cost benefit analysis and economic rate of return; Non-financial justification of projects.

UNIT-V: Project administration (06 Periods, 20%)

Topics: Progress payments, expenditure planning, project scheduling and network planning, use of Critical Path Method (CPM), schedule of payments and physical progress, time-cost trade off; Concepts and uses of PERT cost as a function of time, Project Evaluation and Review Techniques/cost mechanisms; Determination of least cost duration; Post project evaluation; Introduction to various Project management software.

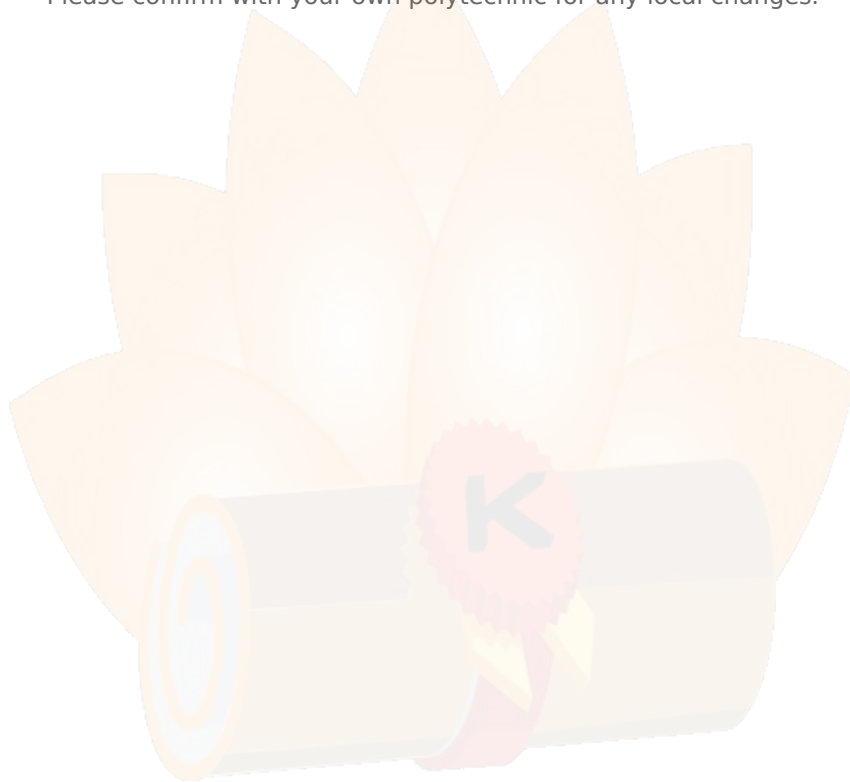
Reference Books (as listed in the syllabus)

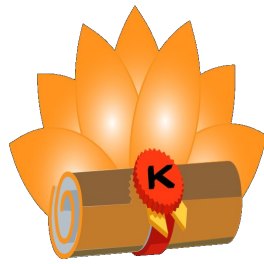
- Project planning, analysis, selection, implementation and review – Prasannachandra – Tata McGraw Hill
- Project Management – the Managerial Process – Clifford F. Gray & Erik W. Larson – McGraw Hill
- Project management - David I Cleland - McGraw Hill International Edition, 1999
- Project Management – Gopala krishnan – Mcmillan India Ltd.
- Project Management - Harry - Maylor - Pearson Publication

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.





KAMALDNP

kamaldnp.com • IT Training, Varanasi

PDF created by Raj Kamal using AI

Internet of Things — Complete Syllabus (Open Elective-3, Option 2)

BTEUP Diploma in Electrical Engineering • 6th Semester • Session 2026-27

Subject 6.4.2 (Open Elective-3, Theory) (Q) • 50 Marks internal • 2 Credits • L 2 - P 0 •

Choose this OR Project Management • Qualifying only

About this document: Open Elective-3 (6.4) is a (Q) qualifying subject — compulsory to appear and pass, but marks are not included for percentage and division. Choose either this theory course or Project Management, or a certification course (not less than 20 hrs) from the approved providers.

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
6.4	Internet of Things (Open Elective-3)	Theory (Q)	2 - 0	2	50	—	N/A
Open Elective-3 Total				2	50	—	N/A

What This Subject Aims To Do

To provide foundational knowledge of the Internet of Things — its architecture, components, networking, data handling and real-world applications — enabling students to understand and contribute to IoT systems across domains.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Introduction to Internet of Things	05	20%
II	Design consideration of IoT	05	20%
III	Interfacing by IoT devices	07	22%
IV	Data Handling and IoT Platforms	07	22%
V	Applications, Projects and Future of IoT	04	16%

Unit I - Introduction to Internet of Things (05 periods, 20%)

Topics: Basic Definition of “Internet of Things (IoT)” ; Evolution and history of IoT; Technological trends enabling IoT: ubiquitous computing, cloud computing, low-cost sensors, wireless communication; IoT architecture overview: perception, network, and application layers; Impact of IoT on society: smart cities, healthcare, agriculture, transportation, and home automation; Challenges in IoT: privacy, security, scalability.

Unit II - Design consideration of IoT (05 Periods, 20%)

Topics: Overview of embedded systems in IoT; Components of an embedded system: microcontroller, sensors, actuators, memory, power supply; Interactions of embedded systems with the physical world; Introduction to Core hardware components and software tools most commonly used in IoT devices.

Unit III Interfacing by IoT devices (07 Periods, 22%)

Topics: Interaction between software and hardware in an IoT device; IoT networking basics: IP addressing, MAC, DNS, DHCP; Basic networking hardware: routers, switches, access points, gateways; Introduction to Structure of the Internet: client-server and peer-to-peer models; Overview of Wireless communication protocols: Wi-Fi, Bluetooth, ZigBee, LoRa, NB-IoT; Brief introduction to Cloud connectivity and MQTT/HTTP protocols.

Unit IV: Data Handling and IoT Platforms (07 Periods, 22%)

Topics: Role of data in IoT: sensing, logging, analysis, and actuation; Data acquisition and storage methods (local and cloud-based); Introduction to data analytics in IoT: basic visualization, dashboards; Overview of popular IoT platforms: ThingSpeak, Blynk, Google Firebase, AWS IoT; Real-time data monitoring and alerts; Security concerns and basic protection mechanisms (encryption, authentication, firewalls).

Unit V: Applications, Projects and Future of IoT (04 Periods, 16%)

Topics: Overview of Application domains: Smart home, Industrial IoT, Healthcare, Smart farming; Mini project ideas: Smart temperature logger, IoT-based light control, Air quality monitor; Social, ethical, and environmental implications of IoT; Career prospects and skills in IoT; Trends and future scope of IoT: AIoT, 5G, Edge Computing.

Reference Books (as listed in the syllabus)

- "Internet of Things" by Jeeva Jose – Beginner-friendly, suitable for diploma students, covers basics to applications
- "Internet of Things: A Hands-On Approach" by Arshdeep Bahga & Vijay Madisetti – Practical approach with architecture, design, and cloud integration
- "Getting Started with the Internet of Things" by Cuno Pfister – Ideal for Arduino beginners with sensor interfacing and networking basics
- "Internet of Things: Architecture and Design Principles" by Raj Kamal – Covers technical architecture, protocols, and design considerations
- "Exploring Raspberry Pi" by Derek Molloy – For advanced learners, focuses on Linux-based IoT development and hardware interfacing

KAMALDNP • kamaldnp.com • support@kamaldnp.com • +91 8318013442 • Varanasi, UP

Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.
Please confirm with your own polytechnic for any local changes.