

Siliguri Institute of Technology
Department of Computer Science & Engineering
SYLLABUS OF BASIC ELECTRICAL ENGINEERING
Paper Code: ES EE 101

Module 3: Transformers (6 hours)

Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

Module 4: Electrical Machines (8 hours)

Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

Module 5: Power Converters (6 hours)

DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation.

Siliguri Institute of Technology Department of Engineering Sciences and Humanities Second Internal Examination Syllabus, Odd Semester, 2019					
Subject Name	Subject Code	Stream(EE, CE, ECE)	Part of the Syllabus Selected for Second Internal Examination according to its Course Outcomes		
			Name of the Module of Syllabus as per W.B.U.T	Name of the topics of syllabus according to W.B.U.T	Mention the CO matches with the Selected Topic
Mathematics-I B	BS M102	Dr. Somnath Mandal & Mr. Bikiran Das	Module III	Fourier series: Half range sine and cosine series, Parseval's theorem.	CO3
			Module IV	Limit, continuity and partial derivatives, Directional derivatives, Total Derivative, Chain rule, Jacobians.	CO4
			Module V	Inverse and rank of a matrix, Rank-nullity theorem; System of linear equations. Symmetric, Skew-symmetric and Orthogonal matrices; Determinants. Eigenvalues and Eigenvectors; Diagonalization of matrices; Cayley-Hamilton Theorem, and Orthogonal transformation.	CO5

Second Internal Examination Syllabus, Odd Semester, 2019

Subject Name	Subject Code	Stream(CSE & IT)	Part of the Syllabus Selected for Second Internal Examination according to its Course Outcomes		
			Name of the Module of Syllabus as per W.B.U.T	Name of the topics of syllabus according to W.B.U.T	Mention the CO matches with the Selected Topic
Mathematics-I A	BS M101	Dr. Debasmiti Bhattacharya & Mr. Soumendu Golui	Module III	Matrices, Vectors: addition and scalar multiplication, matrix multiplication; Linear systems of equations, linear Independence, rank of a matrix, determinants, Cramer's Rule, inverse of a matrix, Gauss elimination and Gauss-Jordan method	CO3
			Module IV	Vector Space, linear dependence of vectors, Basis, Dimension; Linear transformations (maps), Range and Kernel of a linear map, Rank and Nullity, Inverse of a linear transformation, Rank-Nullity theorem, composition of linear maps, Matrix associated with a linear map.	CO4
			Module V	Eigenvalues, Eigenvectors, Symmetric, Skew-symmetric, and Orthogonal Matrices, Eigenbases. Diagonalization; Inner product spaces, Gram-Schmidt orthogonalization.	CO5

SILIGURI INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ENGINEERING SCIENCES & HUMANITIES

Detailed Syllabus for B-Tech 1st Year, 1st Sem, 2nd Internal Examination 2019

Subject: Basic Electrical Engineering

Subject Code: ES-EE-101

Section	Faculty Name	CO covered	Detailed Syllabus mentioning the COs
EE	Sunhajit Roy, Subhojit Dawn	CO2	<p>Module 3: Transformers (6 hours) Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.</p> <p>Module 4: Electrical Machines (8 hours) Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.</p> <p>Module 5: Power Converters (6 hours) DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation.</p>
		CO3	<p>Module 6: Electrical Installations (6 hours) Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.</p>

SYLLABUS FOR 2ND INTERNAL EXAMINATION

SEMESTER: 1ST, BRANCH : ECE

Module3: Transformers Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

Module 4: Electrical Machines Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

Module 6: Electrical Installations Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

Siliguri Institute of Technology
Department of Information Technology
Syllabus of (2nd Internal Examination), 1st Semester
November – 2019

Paper Name: Basic Electrical Engineering
Full Marks: 30

Paper Code: ES-EE101
Time: 1h

Module 3: Transformers

:Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

Module 4: Electrical Machines:

Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

Module 5: Power Converters :

DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation.

Basic Electrical Engineering (ES-EE 101)
Civil Engineering Department
Syllabus for 2nd Internal Examination

Full Marks: 30

Exam time duration: 1 hour

Module 3: Transformers (CO-1) {To understand and analyze basic electric and magnetic circuits}

Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

Module 4: Electrical Machines (CO-2) {To study the working principles of electrical machines and power converters.}

Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

Module 5: Power Converters (CO-2) {To study the working principles of electrical machines and power converters.}

DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation.

Module 6: Electrical Installations (CO-3) {To introduce the components of low voltage electrical installations}

Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.