**Lesson plan**

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| **Name of Faculty** | | | Renu Bala | | |
| **Discipline** | | | Electrical Engineering | | |
| **Semester** | | | 6th | | |
| **Subject** | | | Industrial electronics and control of drives | | |
| **Lesson Plan Duration** | | | From FEB 2024 to June 2024 | | |
| **Work load [Theory + Practical] Per Week** | | | [04+02] | | |
| **Week** | **Day** | **Theory Topic/ Assignment/ Test** | | **No.** | **Practical** |
| 1st | 1 | **Unit-I Introduction to SCR** | | 1 | To draw V-I characteristics of an SCR |
| 2 | Construction and working principles of an SCR | |
| 3 | Characteristics of SCR, Two transistor analogy | |
| 4 | SCR specifications and rating, Construction,  working principles and V-I characteristics of DIAC | |
| 2nd | 1 | and TRIAC and Quadriac | | 2 | To draw V-I characteristics of a TRIAC |
| 2 | Basic idea about the selection of heat sinks for SCR  and TRIACS | |
| 3 | Methods of triggering a Thyristor , Study of  triggering circuits | |
| 4 | UJT, its Construction, working principles and V-I  characteristics | |
| 3rd | 1 | UJT as relaxation oscillator | | 3 | To draw V-I characteristics of a DIAC |
| 2 | Commutation of Thyristors | |
| 3 | Series and parallel operation of Thyristors | |
| 4 | Applications of SCR, TRIACS and Quadriac | |
| 4th | 1 | dv/dt and di/dt protection of SCR | | 4 | Revision/File checking |
| 2 | Assignment/Class test of 1st unit | |
| 3 | **Unit2: Introduction to Controlled Rectifiers** | |
| 4 | Single phase half wave controlled rectifier with  resistive load | |
| 5th | 1 | With Inductive load and freewheeling diode | | 5 | To draw unjunction transistor characteristics |
| 2 | Single phase half controlled full wave rectifier | |
| 3 | Single phase fully controlled full wave rectifier  bridge | |
| 4 | Single phase full wave Centre tapped rectifier | |
| 6th | 1 | Three phase full wave half controlled bridge  rectifier | | 6 | Observe tha output wave of an UJT relaxation oscillator |
| 2 | Three phase full wave fully controlled bridge  rectifier | |
| 3 | Assignment/Class test of 1st unit | |
| 4 | Revision/checking/Problems solutions | |
| 7th | 1 | **Unit3: Introduction to Inverters, Choppers, Dual**  **Converters and Cyclo Converters** | | 7 | Mid- term viva-voice/file checking |
| 2 | Working principles and application of VSI | |
| 3 | Working principles and application of CSI | |
| 4 | Choppers-introduction, types of choppers and their  working principles and applications | |
| 8th | 1 | Class A,B and C | | 8 | Observe the wave shape across SCR and load of an illumination control circuit |
| 2 | Class D and E | |
| 3 | Dual convertors-introduction, working principles  and applications | |
| 4 | Cyclo-convertors- introduction | |

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| 9th | 1 | types, working principles and applications | 9 | Fan speed regulator using TRIAC Quadriac (fabrication  of this circuit) |
| 2 | Assignment/Class test of 1st unit |
| 3 | Revision/checking/Problems solutions |
| 4 | **Unit4:Thyristor Control of Electric Drives** |
| 10th | 1 | DC drives control | 10 | Speed-control of a DC shunt motor or universal motor |
| 2 | Half wave drives |
| 3 | Full wave drives |
| 4 | Chopper drives |
| 11th | 1 | AC drives control | 11 | Revision/File checking |
| 2 | Phase control |
| 3 | Variable frequency a.c. drives |
| 4 | Constant V/F application |
| 12th | 1 | Voltage controlled inverter drives | 12 | Revision/File checking |
| 2 | Constant current inverter drives |
| 3 | Cycloconvertors controlled AC drives |
|  | 4 | Slip control AC drives |  | |
| 13th | 1 | Assignment / Class test | 13 | Single phase controlled rectifier |
| 2 | Problem solution/ test check |
| 3 | **Unit5: Uninterrupted Power Supplies** |
| 4 | UPS, UPS online, off line |
| 14th | 1 | Stabilizers, SMPS | 14 | Use of Variable Frequency Drive for running a 3 phase Induction motor |
| 2 | Storage devices (batteries) and their maintenance |
| 3 | Revision of important topics |
| 4 | Revision of important topics |
| 15th | 1 | Assignment / Class test | 15 | Revision/File checking/ Internal Practical |
| 2 | Problem solution/ test check |
| 3 | Revision/Review/Test of old HSBTE Papers |
| 4 | Revision/Review/Test of old HSBTE Papers |