**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 SCRand TRIACS |
| 3 | Methods of triggering a Thyristor , Study oftriggering circuits |
| 4 | UJT, its Construction, working principles and V-Icharacteristics |
| 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 withresistive 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 rectifierbridge |
| 4 | Single phase full wave Centre tapped rectifier |
| 6th | 1 | Three phase full wave half controlled bridgerectifier | 6 | Observe tha output wave of an UJT relaxation oscillator |
| 2 | Three phase full wave fully controlled bridgerectifier |
| 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 theirworking 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 principlesand applications |
| 4 | Cyclo-convertors- introduction |

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| 9th | 1 | types, working principles and applications | 9 | Fan speed regulator using TRIAC Quadriac (fabricationof 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 |