

**Sarvajani College of Engineering and Technology**

**Department of Electrical Engineering**

**Bachelor of Technology**

| Semester 1 / Semester 2 |          |              |                                        | Teaching Scheme |          |           | Total Credits | Total Hours | Evaluation Scheme |            |             |
|-------------------------|----------|--------------|----------------------------------------|-----------------|----------|-----------|---------------|-------------|-------------------|------------|-------------|
| Sr. No.                 | Category | Subject Code | Subject Name                           | L               | T        | P         | C             | H           | CCE               | SEE        | TOTAL       |
| 1                       | MC       | BTMD7101     | Induction Program                      | -               | -        | -         | 0             | 21 Days     | -                 | -          | 0           |
| 2                       | HSMC     | BTAS25101    | Technical Communication                | 2               | 0        | 0         | 2             | 2           | 50                | 50         | 100         |
| 3                       | HSMC     | BTAS25102    | Technical Communication Lab            | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 4                       | HSMC     | BTAS25103    | Universal Human Values                 | 2               | 0        | 0         | 2             | 2           | 50                | 50         | 100         |
| 5                       | ESC      | BTCO22101    | Python Programming                     | 2               | 0        | 0         | 2             | 2           | 50                | 50         | 100         |
| 6                       | ESC      | BTCO22102    | Python Programming Lab                 | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 7                       | ESC      | BTCO22103    | Programming for problem solving        | 2               | 0        | 0         | 2             | 2           | 50                | 50         | 100         |
| 8                       | ESC      | BTCO22104    | Programming for problem solving Lab    | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 9                       | ESC      | BTEC22101    | Applied Electronics                    | 3               | 0        | 0         | 3             | 3           | 50                | 50         | 100         |
| 10                      | ESC      | BTEC22102    | Applied Electronics Lab                | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 11                      | ESC      | BTEL22101    | Basic Electrical Engineering           | 3               | 0        | 0         | 3             | 3           | 50                | 50         | 100         |
| 12                      | ESC      | BTEL22102    | Basic Electrical Engineering Lab       | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 13                      | ESC      | BTGN22101    | Design Thinking                        | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 14                      | ESC      | BTGN22102    | Electrical and Electronics Workshop    | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 15                      | ESC      | BTME22101    | Engineering Graphics & Design          | 1               | 0        | 0         | 1             | 1           | 25                | 25         | 50          |
| 16                      | ESC      | BTME22102    | Engineering Graphics & Design Lab      | 0               | 0        | 4         | 2             | 4           | 50                | 50         | 100         |
| 17                      | ESC      | BTME22105    | Manufacturing Practices & Workshop     | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 18                      | BSC      | BTAS21103    | Semiconductor Physics                  | 2               | 0        | 0         | 2             | 2           | 50                | 50         | 100         |
| 19                      | BSC      | BTAS21104    | Semiconductor Physics lab              | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
| 25                      | BSC      | BTAS21105    | Mathematics-I                          | 3               | 1        | 0         | 4             | 4           | 50                | 50         | 100         |
| 21                      | BSC      | BTAS21106    | Physics - Engineering Electromagnetics | 3               | 0        | 0         | 3             | 3           | 50                | 50         | 100         |
| 22                      | BSC      | BTAS21251    | Mathematics II                         | 3               | 1        | 0         | 4             | 4           | 50                | 50         | 100         |
| 23                      | BSC      | BTCH22101    | Energy & Environment Science           | 2               | 0        | 0         | 2             | 2           | 50                | 50         | 100         |
| 24                      | BSC      | BTCH22102    | Energy & Environment Science Lab       | 0               | 0        | 2         | 1             | 2           | 25                | 25         | 50          |
|                         |          |              |                                        | <b>28</b>       | <b>2</b> | <b>24</b> | <b>42</b>     | <b>54</b>   | <b>875</b>        | <b>875</b> | <b>1750</b> |

**Sarvajani University**  
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| Semester 3 |          |              |                                               | Teaching Scheme |          |          | Total Credits | Total Hours | Evaluation Scheme |            |            |
|------------|----------|--------------|-----------------------------------------------|-----------------|----------|----------|---------------|-------------|-------------------|------------|------------|
| Sr. No.    | Category | Subject Code | Subject Name                                  | L               | T        | P        | C             | H           | CCE               | SEE        | TOTAL      |
| 1          | MC       | BTMD27301    | Indian Constitution                           | 2               | 0        | 0        | 0             | 2           | 50                | 00         | 50         |
| 2          | BSC      | BTAS21303    | Applied Mathematics to Electrical Engineering | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 3          | BSC      | BTAS21304    | Applied Mathematics to Electrical Engineering | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50         |
| 4          | PCC      | BTEL23301    | Electrical Machine – 1                        | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 5          | PCC      | BTEL23302    | Electrical Machine - 1 Lab                    | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50         |
| 6          | PCC      | BTEL23303    | Electrical Circuit Analysis                   | 4               | 0        | 0        | 4             | 4           | 50                | 50         | 100        |
| 7          | PCC      | BTEL23304    | Electrical Circuit Analysis Lab               | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50         |
| 8          | PCC      | BTEL23305    | Analog And digital Circuit                    | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 9          | PCC      | BTEL23306    | Analog and Digital Circuit lab                | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50         |
| 10         | PCC      | BTEL23307    | Electrical Power System – 1                   | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 11         | PCC      | BTEL233##M   | MOOC – 1                                      | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
|            |          |              |                                               | <b>21</b>       | <b>0</b> | <b>8</b> | <b>25</b>     | <b>29</b>   | <b>450</b>        | <b>400</b> | <b>850</b> |

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| Semester 4 |          |              |                                            | Teaching Scheme |          |          | Total Credits | Total Hours | Evaluation Scheme |            |             |
|------------|----------|--------------|--------------------------------------------|-----------------|----------|----------|---------------|-------------|-------------------|------------|-------------|
| Sr. No.    | Category | Subject Code | Subject Name                               | L               | T        | P        | C             | H           | CCE               | SEE        | TOTAL       |
| 1          | MC       | BTMD27601    | IKS – 1 / NEP Course from Online portal    | 2               | 0        | 0        | 0             | 2           | 50                | 00         | 50          |
| 2          | HSMC     | BTAS20301    | Fundamentals of Management for Engineers   | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 3          | OEC      | BTXX254##    | Open Elective - 1                          | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 4          | PCC      | BTEL23401    | Electrical Machine – 2                     | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 5          | PCC      | BTEL23402    | Electrical Machine - 2 Lab                 | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50          |
| 6          | PCC      | BTEL23403    | Electrical Power System – 2                | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 7          | PCC      | BTEL23404    | Electrical Power System – 2 Lab            | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50          |
| 8          | PCC      | BTEL23405    | Electrical Measurement and Instruments     | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 9          | PCC      | BTEL23406    | Electrical Measurement and Instruments Lab | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50          |
| 10         | PCC      | BTEL23407    | Signal and Systems                         | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 11         | PCC      | BTEL233##M   | MOOC – 2                                   | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 12         | PCC      | BTEL233##M   | MOOC – 3                                   | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100         |
| 13         | PROJ     | BTMD26401    | Internship / Training / Project (2 Weeks)  | -               | -        | -        | 0             | -           | -                 | -          | -           |
|            |          |              |                                            | <b>26</b>       | <b>0</b> | <b>6</b> | <b>27</b>     | <b>32</b>   | <b>525</b>        | <b>475</b> | <b>1000</b> |

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| Semester 5 |          |              |                                            | Teaching Scheme |          |          | Total Credits | Total Hours | Evaluation Scheme |            |            |
|------------|----------|--------------|--------------------------------------------|-----------------|----------|----------|---------------|-------------|-------------------|------------|------------|
| Sr. No.    | Category | Subject Code | Subject Name                               | L               | T        | P        | C             | H           | CCE               | SEE        | TOTAL      |
| 1          | MC       | BTMD27701    | IKS – 2 / NEP Course from Online portal    | 2               | 0        | 0        | 0             | 2           | 50                | 00         | 50         |
| 2          | HSMC     | BTGN20501    | Foundations of Research Innovation and IPR | 2               | 1        | 0        | 3             | 3           | 50                | 50         | 100        |
| 3          | OEC      | BTXX255##    | Open Elective - 2                          | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 4          | PCC      | BTEL23501    | Control System                             | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 5          | PCC      | BTEL23502    | Control System Lab                         | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50         |
| 6          | PCC      | BTEL23503    | Interconnected Power System                | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 7          | PCC      | BTEL23504    | Interconnected Power System Lab            | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50         |
| 8          | PCC      | BTEL23505    | Power Electronics                          | 4               | 0        | 0        | 4             | 4           | 50                | 50         | 100        |
| 9          | PCC      | BTEL23506    | Power Electronics Lab                      | 0               | 0        | 2        | 1             | 2           | 25                | 25         | 50         |
| 10         | PEC      | BTEL245##    | Professional Elective - 1                  | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
| 11         | PEC      | BTEL247##    | Professional Elective – 5/6                | 3               | 0        | 0        | 3             | 3           | 50                | 50         | 100        |
|            |          |              |                                            | <b>23</b>       | <b>1</b> | <b>6</b> | <b>25</b>     | <b>30</b>   | <b>475</b>        | <b>425</b> | <b>900</b> |



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| Semester 6 |          |              |                                           | Teaching Scheme |   |    | Total Credits | Total Hours | Evaluation Scheme |     |       |
|------------|----------|--------------|-------------------------------------------|-----------------|---|----|---------------|-------------|-------------------|-----|-------|
| Sr. No.    | Category | Subject Code | Subject Name                              | L               | T | P  | C             | H           | CCE               | SEE | TOTAL |
| 1          | OEC      | BTXX256##    | Open Elective – 3                         | 3               | 0 | 0  | 3             | 3           | 50                | 50  | 100   |
| 2          | PCC      | BTEL23601    | Electrical Drives                         | 3               | 0 | 0  | 3             | 3           | 50                | 50  | 100   |
| 3          | PCC      | BTEL23602    | Electrical Drives Lab                     | 0               | 0 | 2  | 1             | 2           | 25                | 25  | 50    |
| 4          | PCC      | BTEL23603    | Microprocessor and Micro controller       | 4               | 0 | 0  | 4             | 4           | 50                | 50  | 100   |
| 5          | PCC      | BTEL23604    | Microprocessor and Micro controller Lab   | 0               | 0 | 2  | 1             | 2           | 25                | 25  | 50    |
| 6          | PEC      | BTEL246##    | Professional Elective – 2                 | 3               | 0 | 0  | 3             | 3           | 50                | 50  | 100   |
| 7          | PEC      | BTEL246##    | Professional Elective – 3                 | 0               | 0 | 2  | 1             | 2           | 25                | 25  | 50    |
| 8          | PEC      | BTEL246##    | Professional Elective – 4                 | 3               | 0 | 0  | 3             | 3           | 50                | 50  | 100   |
| 9          | PCC      | BTEL236##M   | MOOC – 4                                  | 3               | 0 | 0  | 3             | 3           | 50                | 50  | 100   |
| 10         | PEC      | BTEL246##M   | MOOC – 5                                  | 3               | 0 | 0  | 3             | 3           | 50                | 50  | 100   |
| 11         | PROJ     | BTEL26601    | Mini Project                              | 0               | 0 | 4  | 2             | 4           | 50                | 50  | 100   |
| 12         | PROJ     | BTMD26601    | Internship / Training / Project (4 Weeks) | -               | - | -  | 0             | -           | -                 | -   | -     |
|            |          |              |                                           | 22              | 0 | 10 | 27            | 32          | 475               | 475 | 950   |

| Semester 7 |          |              |              | Teaching Scheme |   |    | Total Credits | Total Hours | Evaluation Scheme |     |       |
|------------|----------|--------------|--------------|-----------------|---|----|---------------|-------------|-------------------|-----|-------|
| Sr. No.    | Category | Subject Code | Subject Name | L               | T | P  | C             | H           | CCE               | SEE | TOTAL |
| 1          | PROJ     | BTEL26701    | Project      | 0               | 0 | 8  | 4             | 8           | 50                | 50  | 100   |
| 2          | PROJ     | BTEL26801    | Internship   | 0               | 0 | 24 | 12            | 24          | 100               | 100 | 200   |
|            |          |              |              | 0               | 0 | 32 | 16            | 32          | 150               | 150 | 300   |

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| List of Professional Elective Courses |          |              |                                                       | Teaching Scheme |   |   | Total Credits | Total Hours | Evaluation Scheme |     |       |
|---------------------------------------|----------|--------------|-------------------------------------------------------|-----------------|---|---|---------------|-------------|-------------------|-----|-------|
| Sr. No.                               | Category | Subject Code | Subject Name                                          | L               | T | P | C             | H           | CCE               | SEE | TOTAL |
| 1                                     | PEC – 1  | BTEL24501    | Advance Electrical Machine                            | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                                     |          | BTEL24502    | Engineering Optimization                              |                 |   |   |               |             |                   |     |       |
| 3                                     |          | BTEL24503    | Energy Management and Audit                           |                 |   |   |               |             |                   |     |       |
| 4                                     |          | BTEL24504    | Battery Management Technology                         |                 |   |   |               |             |                   |     |       |
| 1                                     | PEC – 2  | BTEL24601    | Application of Power Electronics in Power systems     | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                                     |          | BTEL24603    | Advance Power Electronics                             |                 |   |   |               |             |                   |     |       |
| 3                                     |          | BTEL24605    | Renewable Power Generation Systems                    |                 |   |   |               |             |                   |     |       |
| 4                                     |          | BTEL24607    | High Voltage Engineering                              |                 |   |   |               |             |                   |     |       |
| 1                                     | PEC – 3  | BTEL24602    | Application of Power Electronics in Power systems Lab | 0               | 0 | 2 | 1             | 2           | 25                | 25  | 50    |
| 2                                     |          | BTEL24604    | Advance Power Electronics Lab                         |                 |   |   |               |             |                   |     |       |
| 3                                     |          | BTEL24606    | Renewable Power Generation Systems Lab                |                 |   |   |               |             |                   |     |       |
| 4                                     |          | BTEL24608    | High Voltage Engineering Lab                          |                 |   |   |               |             |                   |     |       |
| 1                                     | PEC – 4  | BTEL24609    | Computer Aided Power System                           | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                                     |          | BTEL24610    | Power Quality Mitigation Techniques                   |                 |   |   |               |             |                   |     |       |
| 3                                     |          | BTEL24611    | Artificial Intelligence Techniques                    |                 |   |   |               |             |                   |     |       |
| 4                                     |          | BTEL24612    | Advance Control System                                |                 |   |   |               |             |                   |     |       |
| 1                                     | PEC – 5  | BTEL24701    | Digital Signal Processing                             | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                                     |          | BTEL24702    | Power System Operation and Control                    |                 |   |   |               |             |                   |     |       |
| 3                                     |          | BTEL24703    | Smart Grid                                            |                 |   |   |               |             |                   |     |       |
| 4                                     |          | BTEL24704    | Internet on Things                                    |                 |   |   |               |             |                   |     |       |
| 1                                     | PEC – 6  | BTEL24705    | Substation Automation and design                      | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                                     |          | BTEL24706    | Electrical Vehicle                                    |                 |   |   |               |             |                   |     |       |
| 3                                     |          | BTEL24707    | Embedded System                                       |                 |   |   |               |             |                   |     |       |
| 4                                     |          | BTEL24708    | Utilization and Illumination                          |                 |   |   |               |             |                   |     |       |

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| List of Open Elective Courses |          |              |                                        | Teaching Scheme |   |   | Total Credits | Total Hours | Evaluation Scheme |     |       |
|-------------------------------|----------|--------------|----------------------------------------|-----------------|---|---|---------------|-------------|-------------------|-----|-------|
| Sr. No.                       | Category | Subject Code | Subject Name                           | L               | T | P | C             | H           | CCE               | SEE | TOTAL |
| 1                             | OEC – 1  | BTEL25401    | Electrical Machines                    | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                             |          | BTEL25402    | Electrical and Electronics Measurement |                 |   |   |               |             |                   |     |       |
| 1                             | OEC – 2  | BTEL5501     | Renewable Energy Sources               | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                             |          | BTEL25502    | Electrical and Hybrid Vehicles         |                 |   |   |               |             |                   |     |       |
| 1                             | OEC – 3  | BTEL25601    | Energy Management systems              | 3               | 0 | 0 | 3             | 3           | 50                | 50  | 100   |
| 2                             |          | BTEL25602    | Modern control system                  |                 |   |   |               |             |                   |     |       |