

**Shri G.S. Institute of Technology & Science**  
**Scheme of Examination 25-26**  
**II YEAR B.Tech. (Biomedical Engineering)**  
*Applicable to Students Admitted in session 2024-25*

**Semester - III**

| Semester - III |                  |              |                                     | Hours per Week |   |   | Credits |    | Maximum Marks |     |           |     |       |       |
|----------------|------------------|--------------|-------------------------------------|----------------|---|---|---------|----|---------------|-----|-----------|-----|-------|-------|
| S. No.         | Subject Category | Subject Code | Subject Name                        | L              | T | P | Th      | Pr | Theory        |     | Practical |     | Total | Total |
|                |                  |              |                                     |                |   |   |         |    | Th.           | CW  | SW        | Pr. |       |       |
| 1              | BSC              | MA-29204     | Mathematics - III                   | 3              | 1 | 0 | 4       | -  | 70            | 30  | 0         | 0   | 100   | 4     |
| 2              | ESC              | EE-29021     | Network Analysis                    | 3              | - | - | 3       | -  | 70            | 30  | 0         | 0   | 100   | 3     |
| 3              | PCC              | BM-29031     | Analog Electronics                  | 3              | 1 | - | 4       | -  | 70            | 30  | 0         | 0   | 100   | 4     |
| 4              | PCC              | BM-29027     | Bioelectricity & Transducers        | 3              | - | - | 3       | -  | 70            | 30  | 0         | 0   | 100   | 3     |
| 5              | PCC              | BM-29013     | Human Anatomy & Physiology          | 3              | - | - | 3       | -  | 70            | 30  | 0         | 0   | 100   | 3     |
| 6              | LC (PCC)         | BM-29402     | Bioelectricity Transducers Lab      | -              | - | 2 | -       | 1  |               |     | 40        | 60  | 100   | 1     |
| 7              | LC (ESC)         | BM-29404     | Analog Electronics Lab              | -              | - | 2 | -       | 1  |               |     | 40        | 60  | 100   | 1     |
| 8              | LC (ESC)         | EE-29403     | Electrical Networks Lab             | -              | - | 2 | -       | 1  |               |     | 40        | 60  | 100   | 1     |
| 9              | LC               | EE 29498     | Electrical workshop                 | -              | - | 2 | -       | 1  |               |     | 40        | 60  | 100   | 1     |
| 10             | HSMC             | HU-29481     | Values, Humanities and Professional | -              | 2 | - | 2       | -  | -             | 100 | -         | -   | 100   | 2     |
| 11             | MC               | HUM2001      | Constitution Of India (Audit Only)  | 2              | - | - | -       | -  | -             | 50  | -         | -   | 50    | -     |
| TOTAL          |                  |              |                                     | 17             | 4 | 8 | 19      | 4  | 350           | 300 | 160       | 240 | 1050  | 23    |

**Semester - IV**

| S. No. | Subject Category | Subject Code | Subject Name                       | Hours per Week |   |   | Credits |    | Maximum Marks |     |           |     |       | Total |
|--------|------------------|--------------|------------------------------------|----------------|---|---|---------|----|---------------|-----|-----------|-----|-------|-------|
|        |                  |              |                                    | L              | T | P | Th      | Pr | Theory        |     | Practical |     | Total |       |
|        |                  |              |                                    |                |   |   |         |    | Th.           | CW  | SW        | Pr. |       |       |
| 1      | BSC              | MA-29501     | Mathematics IV                     | 3              | 1 | - | 4       | -  | 70            | 30  | 0         | 0   | 100   | 4     |
| 2      | ESC              | EC-29519     | Digital Electronics                | 3              | - | - | 3       | -  | 70            | 30  | 0         | 0   | 100   | 3     |
| 3      | PCC              | BM-29513     | Programming Tools and Techniques   | 3              | 1 | - | 4       | -  | 70            | 30  | 0         | 0   | 100   | 4     |
| 4      | ESC              | EI-29522     | Fundamentals of Measurement        | 3              | - | - | 3       | -  | 70            | 30  | 0         | 0   | 100   | 3     |
| 5      | HSMC             | HU-29507     | Economics for Engineers            | 3              | - | - | 3       | -  | 70            | 30  | 0         | 0   | 100   | 3     |
| 6      | LC(EI)           | EI-29804     | Electronic Workshop                | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1     |
| 7      | LC(EC)           | EC-29802     | Digital Electronics Lab            | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1     |
| 8      | LC (BM)          | BM-29801     | Programming Tools and Techniques   | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1     |
| 9      | LC (EI)          | EI-29803     | Fundamentals of Measurement Lab    | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1     |
| 10     |                  | IP29882      | Design Thinking                    | 1              | - | - | 1       | -  | -             | 30  | -         | -   | 30    | 1     |
| 10     | MC               | BMM2053      | Environmental Science (Audit Only) | 2              | - | - | -       | -  | -             | 50  | -         | -   | 50    | -     |
| TOTAL  |                  |              |                                    | 18             | 2 | 8 | 18      | 4  | 350           | 230 | 160       | 240 | 980   | 22    |

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*Applicable to Students Admitted in session 2023-24*

**Semester - V**

| S. No. | Subject Category | Subject Code | Subject Name                               | Hours per Week |   |   | Credits |    | Maximum Marks |     |           |     |       | Total Credit |
|--------|------------------|--------------|--------------------------------------------|----------------|---|---|---------|----|---------------|-----|-----------|-----|-------|--------------|
|        |                  |              |                                            | L              | T | P | Th      | Pr | Theory        |     | Practical |     | Total |              |
|        |                  |              |                                            |                |   |   |         |    | Th.           | CW  | SW        | Pr. |       |              |
| 1      | OEC              | IPO5001      | Industrial Engineering & Management        | 3              | 1 | - | 4       | -  | 70            | 30  | -         | -   | 100   | 4            |
| 2      | PCC              | BM-39031     | Signals and Systems                        | 3              | - | - | 3       | -  | 70            | 30  | -         | -   | 100   | 3            |
|        | PCC              | BM- 39006    | Biomechanics                               | 3              | - | - | 3       | -  | 70            | 30  | -         | -   | 100   | 3            |
| 3      | PCC              | BM-39023     | Biomedical Instrumentation I               | 3              | 1 | - | 4       | -  | 70            | 30  | -         | -   | 100   | 4            |
| 4      | PEC              |              | Elective-I                                 | 3              | - | - | 3       | -  | 70            | 30  | -         | -   | 100   | 3            |
| 5      | S/I/I            | BM-39482     | Industrial Training/Internship(Evaluation) | -              | - | - | -       | 2  | -             | -   | 100       | -   | 100   | 2            |
| 6      | LC (PCC)         | BM- 39401    | Signals & Systems Lab                      | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1            |
|        | LC (PCC)         | BM- 39402    | Biomechanics Lab                           | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1            |
| 7      | LC (PCC)         | BM- 39403    | Biomedical Instrumentation I               | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1            |
| 8      | LC (PEC)         | BM- 39226/27 | Elective I Lab                             | -              | - | 2 | -       | 1  | -             | -   | 40        | 60  | 100   | 1            |
| TOTAL  |                  |              |                                            | 15             | 2 | 8 | 17      | 6  | 350           | 150 | 260       | 240 | 1000  | 23           |

**Elective-I: (1) BM-39206 -Artificial Intelligence and Machine Learning for Medical Applications**

**Open Elective -I: (1) BM-xxxxx -Biomedical Instrumentation**

e: BMED students can choose any subject from open electives offered by other departments except the one offered by I

**Semester - VI**

| Semester - I |                  |              |                                                      |                |   |    |         |    |               |     |           |     |       |              |
|--------------|------------------|--------------|------------------------------------------------------|----------------|---|----|---------|----|---------------|-----|-----------|-----|-------|--------------|
| S. No.       | Subject Category | Subject Code | Subject Name                                         | Hours per Week |   |    | Credits |    | Maximum Marks |     |           |     |       | Total Credit |
|              |                  |              |                                                      | L              | T | P  | Th      | Pr | Theory        |     | Practical |     | Total |              |
|              |                  |              |                                                      |                |   |    |         |    | Th.           | CW  | SW        | Pr. |       |              |
| 1            | PCC              | EE39518      | Control Systems                                      | 3              | 1 | -  | 4       | -  | 70            | 30  | -         | -   | 100   | 4            |
| 2            | PCC              | BM-39511     | Biomedical Signal Processing                         | 3              | - | -  | 3       | -  | 70            | 30  | -         | -   | 100   | 3            |
|              |                  | BM- 39505    | Biomedical Statistical Signal Processing             | 3              | - | -  | 3       | -  | 70            | 30  | -         | -   | 100   | 3            |
| 3            | PCC              | BM-39522     | Biomedical Instrumentation II                        | 3              | - | -  | 3       | -  | 70            | 30  | -         | -   | 100   | 3            |
| 4            | PEC              |              | Elective-II                                          | 3              | - | -  | 3       | -  | 70            | 30  | -         | -   | 100   | 3            |
| 5            | PROJECT          | BM-39953     | Minor Project                                        | -              | - | 8  | -       | 4  | -             | -   | 40        | 60  | 100   | 4            |
| 6            | LC (PCC)         | EE39803      | Control Systems Lab                                  | -              | - | 2  | -       | 1  | -             | -   | 40        | 60  | 100   | 1            |
| 7            | LC (PCC)         | BM- 39801    | Biomedical Signal Processing Lab                     | -              | - | 2  | -       | 1  | -             | -   | 40        | 60  | 100   | 1            |
| 8            | LC (PCC)         | BM- 39802    | Biomedical Instrumentation II Lab                    | -              | - | 2  | -       | 1  | -             | -   | 40        | 60  | 100   | 1            |
| 9            | MC               |              | Essence of Indian Traditional Knowledge (Audit Only) |                |   |    |         |    |               |     |           |     |       |              |
|              |                  | HUM3951      |                                                      | 2              | - | -  | -       | -  | -             | 50  | -         | -   | 50    | 0            |
| TOTAL        |                  |              |                                                      | 17             | 1 | 14 | 16      | 7  | 350           | 200 | 160       | 240 | 950   | 23           |

**Elective-II : (1) EC-39602 Analog & Digital Communication (2) BM-39601 Embedded Systems**

\* 2 weeks training during semester break after VI semester is mandatory

Vocational Degree in Biomedical Engineering shall be awarded after

| Vocational Degree in Biomedical Engineering Additional Credit Requirement |                  |              |                                           |                |   |    |         |    |               |    |           |     |       |       |
|---------------------------------------------------------------------------|------------------|--------------|-------------------------------------------|----------------|---|----|---------|----|---------------|----|-----------|-----|-------|-------|
| S. No.                                                                    | Subject Category | Subject Code | Subject Name                              | Hours per Week |   |    | Credits |    | Maximum Marks |    |           |     |       | Total |
|                                                                           |                  |              |                                           | L              | T | P  | Th      | Pr | Theory        |    | Practical |     | Total |       |
|                                                                           |                  |              |                                           |                |   |    |         |    | Th.           | CW | SW        | Pr. |       |       |
| 1                                                                         | BSC              | BM-XXXXXX    | Calibration of Medical Instruments        | -              | - | 4  | -       | 2  | -             | -  | 40        | 60  | 100   | 2     |
| 2                                                                         | PCC              | BM-XXXXXX    | Medical imaging technique instrumentation | 2              | - | -  | 2       | -  | 70            | 30 | -         | -   | 100   | 2     |
| 3                                                                         | S/I/I            | BM-XXXXXX    | Seminar/Hospital Training/Internship      | -              | - | 12 | -       | 6  | -             | -  | 40        | 60  | 100   | 6     |
|                                                                           |                  |              | Total                                     | 2              | 0 | 16 | 2       | 8  | 70            | 30 | 80        | 120 | 300   | 10    |

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**IIIYEAR B.Tech. (Biomedical Engineering)**  
*Applicable to Students Admitted in session 2022-23*

| Semester-VII |              |                     |                                                                                                                                                                                                                                                                            |            |          |           |                        |            |            |            |           |          |           |
|--------------|--------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|-----------|------------------------|------------|------------|------------|-----------|----------|-----------|
| S. No.       | Subject Code | Category            | Subject Name                                                                                                                                                                                                                                                               | Hour /Week |          |           | Maximum Marks allotted |            |            |            | Credits   |          | Total     |
|              |              |                     |                                                                                                                                                                                                                                                                            |            |          |           | Theory                 |            | Practical  |            |           |          |           |
|              |              |                     |                                                                                                                                                                                                                                                                            | L          | T        | P         | Th.                    | CW         | SW         | Pr.        | T         | P        |           |
| 1            | BM- 49004    | PCC                 | Biomechanics                                                                                                                                                                                                                                                               | 2          | 1        | 2         | 70                     | 30         | 40         | 60         | 3         | 1        | 4         |
| 2            | BM-49003     | PCC                 | Medical Imaging Systems                                                                                                                                                                                                                                                    | 3          | 1        | -         | 70                     | 30         | -          | -          | 4         | -        | 4         |
| 3            | BM- 49005    | PCC                 | Biological Control Systems                                                                                                                                                                                                                                                 | 3          | -        | 2         | 70                     | 30         | 40         | 60         | 3         | 1        | 4         |
| 4            | BM-          | PEC                 | Elective-III                                                                                                                                                                                                                                                               | 2          | -        | 2         | 70                     | 30         | 40         | 60         | 2         | 1        | 3         |
| 5            | BM-49498     | PROJECT             | Major Project-I(AB Group)                                                                                                                                                                                                                                                  | -          | -        | 8         | -                      | -          | 40         | 60         | -         | 4        | 4         |
| 6            | BM-49998     | PROJECT             | Major Project-II (BA Group)                                                                                                                                                                                                                                                | -          | -        | 8         | -                      | -          | 40         | 60         | -         | 4        | 4         |
| 7            | BM-49482     | S/I/I               | Summer Industrial Training/Internship/Seminar                                                                                                                                                                                                                              | -          | -        | 4         | -                      | -          | 40         | 60         | -         | 2        | 2         |
|              |              |                     | <b>Total(AB Group)</b>                                                                                                                                                                                                                                                     | <b>10</b>  | <b>2</b> | <b>18</b> | <b>280</b>             | <b>120</b> | <b>200</b> | <b>300</b> | <b>12</b> | <b>9</b> | <b>21</b> |
|              |              |                     | <b>Total(BA Group)</b>                                                                                                                                                                                                                                                     | <b>10</b>  | <b>2</b> | <b>18</b> | <b>280</b>             | <b>120</b> | <b>200</b> | <b>300</b> | <b>12</b> | <b>9</b> | <b>21</b> |
|              |              |                     |                                                                                                                                                                                                                                                                            |            |          |           |                        |            |            |            |           |          |           |
|              |              | <b>Elective-III</b> | 1. BM-49205 : AI & ML for medical Applications (Not offered for 25-26 session)<br>2. BM-xxxxx :Power Electronics (Not offered for 25-26 session)<br>3. BM-49261 : Hospital Management and Information Systems<br>4. BM-49204 : Internet of Things for Medical Applications |            |          |           |                        |            |            |            |           |          |           |

\*PEC --> Can be replaced by NPTEL/Moocs/Swayam Course in consultation with mentor

| Semester- VIII |              |                    |                                                                                                                                                                                           |               |          |           |                        |           |                                                                                   |            |          |          |           |
|----------------|--------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------|-----------|------------------------|-----------|-----------------------------------------------------------------------------------|------------|----------|----------|-----------|
| S. No.         | Subject Code | Category           | Subject Name                                                                                                                                                                              | Periods /Week |          |           | Maximum Marks allotted |           |                                                                                   |            | Credits  |          | Total     |
|                |              |                    |                                                                                                                                                                                           |               |          |           | Theory                 |           | Practical                                                                         |            |          |          |           |
|                |              |                    |                                                                                                                                                                                           | L             | T        | P         | Th.                    | CW        | SW                                                                                | Pr.        | T        | P        |           |
| 1              | BM-          | PEC                | Elective-IV                                                                                                                                                                               | 3             | -        | -         | 70                     | 30        | -                                                                                 | -          | 3        | -        | 3         |
| 2              | BM-          | PEC                | Elective-V                                                                                                                                                                                | 3             | 1        | -         | 70                     | 30        | -                                                                                 | -          | 4        | -        | 4         |
| 3              | BM-49883     | S/I/I              | Industrial Training/Internship/Seminar                                                                                                                                                    | -             | -        | 10        | -                      | -         | 40                                                                                | 60         | -        | 5        | 5         |
| 4              | BM-49998     | PROJECT            | Major Project-II (AB Group)                                                                                                                                                               | -             | -        | 8         | -                      | -         | 40                                                                                | 60         | -        | 4        | 4         |
| 5              | BM-49498     | PROJECT            | Major Project-I (BA Group)                                                                                                                                                                | -             | -        | 8         | -                      | -         | 40                                                                                | 60         | -        | 4        | 4         |
|                |              |                    | <b>Total(AB GROUP)</b>                                                                                                                                                                    | <b>6</b>      | <b>1</b> | <b>18</b> | <b>140</b>             | <b>60</b> | <b>80</b>                                                                         | <b>120</b> | <b>7</b> | <b>9</b> | <b>16</b> |
|                |              |                    | <b>Total(BA GROUP)</b>                                                                                                                                                                    | <b>6</b>      | <b>1</b> | <b>18</b> | <b>140</b>             | <b>60</b> | <b>80</b>                                                                         | <b>120</b> | <b>7</b> | <b>9</b> | <b>16</b> |
|                |              |                    |                                                                                                                                                                                           |               |          |           |                        |           |                                                                                   |            |          |          |           |
|                |              | <b>Elective-IV</b> | 1. BM-49612 :Rehabilitation Engineering<br>2. BM-49611 :Hospital Technology Systems<br>3. BM-49613 : Medical Image Processing<br>4. BM-xxxxx :Design and manufacturing of medical devices |               |          |           | <b>Elective-V</b>      |           | 1. BM-49701: Biomaterials<br>2. BM-49702: Telemedicine<br>3. BM-XXXX: Nanosensors |            |          |          |           |

\*PEC --> Can be replaced by NPTEL/Moocs/Swayam Course in consultation with mentor