

# INTEGRAL UNIVERSITY, LUCKNOW FACULTY OF PHARMACY BACHELOR IN PHARMACY (B. PHARM.)



#### STUDY & EVALUATION SCHEME

#### Semester - 1st

|           |                      |                                         | Т                   |   | Perio<br>Per<br>week |   | Eva    | aluatio | on Sch    | eme     |               |        |                  |                       |                          | A                        | Attributes                 |                                         |                        |                            |
|-----------|----------------------|-----------------------------------------|---------------------|---|----------------------|---|--------|---------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
| S.<br>No. | Course code          | Course Title                            | Type<br>of<br>Paper | L | Т                    | P | C<br>M | SE      | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES                |                                         |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP101T               | HUMAN ANATOMY & PHYSIOLOGY-1            | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                |                       |                          |                          |                            | ٧                                       | ٧                      | ٧                          |
| 2         | BP102T               | PHARMACEUTICAL ANALYSIS-1               | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       | ٧                      | ٧                          |
| 3         | BP103T               | PHARMACEUTICS-1                         | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         |                        | ٧                          |
| 4         | BP104T               | PHARMACEUTICAL INORGONIC<br>CHEMISTRY-1 | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                |                       |                          |                          |                            | ٧                                       | ٧                      | ٧                          |
| 5         | BP105T               | COMMUNICATION SKILLS -                  | Core                | 3 | 1                    | 0 | 5      | 10      | 15        | 35      | 50            | 4      | 4                |                       |                          |                          |                            |                                         | ٧                      |                            |
| 6         | BP106RBT<br>BP106MBT | REMEDIAL<br>BIOLOGY/MATHEMATICS         | core                | 3 | 1                    | 0 | 5      | 10      | 15        | 35      | 50            | 4      | 4                |                       |                          |                          |                            |                                         | ٧                      | ٧                          |
| PRA(      | CTICAL               |                                         |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP107P               | HUMAN ANATOMY & PHYSIOLOGY-             | Core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                |                       |                          |                          |                            |                                         |                        | ٧                          |
| 2         | BP108P               | PHARMACEUTICAL ANALYSIS-1               | Core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | √                     | √                        | √                        |                            | ٧                                       | ٧                      | ٧                          |
| 3         | BP109P               | PHARMACEUTICS-1                         | Core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        |                            |                                         |                        | ٧                          |
| 4         | BP110P               | PHARMACEUTICAL ORGANIC<br>CHEMISTRY-1   | Core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                |                       |                          |                          |                            | ٧                                       |                        | ٧                          |
| 5         | BP111P               | COMMUNICATION SKILLS-                   | Core                | 0 | 0                    | 4 | 5      | 5       | 10        | 15      | 25            | 2      | 2                |                       |                          |                          |                            |                                         | ٧                      |                            |
| 6         | BP112BP              | REMEDIAL BIOLOGY                        | Core                | 0 | 0                    | 4 | 5      | 5       | 10        | 15      | 25            | 2      | 2                |                       |                          |                          |                            | ٧                                       | ٧                      | ٧                          |
|           |                      |                                         | Total               |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

#### **Semester - IInd**

|           |             |                                        |                     | 1 | D                    |   | N 42   |        |           | _ 111   |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
|-----------|-------------|----------------------------------------|---------------------|---|----------------------|---|--------|--------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
|           |             |                                        |                     |   | Perio<br>Per<br>week |   | Eva    | luatio | on Sch    | eme     |               |        |                  |                       |                          | A                        | ttributes                  |                                         |                        |                            |
| S.<br>No. | Course code | Course Title                           | Type<br>of<br>Paper | L | Т                    | P | C<br>M | SE     | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES       |                                        |                     |   |                      |   |        |        |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP201T      | HUMAN ANATOMY &<br>PHYSIOLOGY-2        | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                |                       |                          |                          |                            |                                         |                        | ٧                          |
| 2         | BP202T      | PHARMACEUTICAL ORGANIC<br>CHEMISTRY –I | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                |                       |                          |                          | ٧                          | ٧                                       | ٧                      | ٧                          |
| 3         | BP203 T     | BIOCHEMISTRY                           | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                | ٧                     |                          | ٧                        |                            | ٧                                       | ٧                      | ٧                          |
| 4         | BP 204T     | PATHOPHYSIOLOGY                        | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        |                          |                            | ٧                                       | ٧                      |                            |
| 5         | BP205 T     | COMPUTER APPLICATIONS IN PHARMACY      | core                | 3 | 0                    | 0 | 10     | 15     | 25        | 50      | 75            | 3      | 3                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 6         | BP 206 T    | ENVIRONMENTAL SCIENCES                 | core                | 3 | 0                    | 0 | 10     | 15     | 25        | 50      | 75            | 3      | 3                | ٧                     | ٧                        | ٧                        |                            | ٧                                       | ٧                      | ٧                          |
| PRAC      | CTICAL      |                                        |                     |   |                      |   |        |        |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP207P      | HUMAN ANATOMY &<br>PHYSIOLOGY-2        | core                | 0 | 0                    | 4 | 5      | 10     | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        |                            | ٧                                       |                        | ٧                          |
| 2         | BP208P      | PHARMACEUTICAL ORGANIC<br>CHEMISTRY -I | core                | 0 | 0                    | 4 | 5      | 10     | 15        | 35      | 50            | 2      | 2                |                       |                          |                          | ٧                          | ٧                                       | ٧                      | ٧                          |
| 3         | BP 209 P    | BIOCHEMISTRY                           | core                | 0 | 0                    | 4 | 5      | 10     | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 4         | BP210P      | COMPUTER APPLICATIONS IN PHARMACY      | core                | 0 | 0                    | 2 | 5      | 5      | 10        | 15      | 25            | 1      | 1                | ٧                     | ٧                        | ٧                        |                            |                                         |                        |                            |
|           |             |                                        | Total               |   |                      |   |        |        |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

## **Semester - IIIrd**

|           |             |                                         |                     |   | Perio<br>Per<br>week |   | Eva    | aluatio | on Sch    | neme    |               |        |                  |                       |                          | A                        | Attributes                 |                                         |                        |                            |
|-----------|-------------|-----------------------------------------|---------------------|---|----------------------|---|--------|---------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
| S.<br>No. | Course code | Course Title                            | Type<br>of<br>Paper | L | Т                    | P | C<br>M | SE      | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES       |                                         |                     |   |                      |   |        |         |           |         | 1             |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP301T      | PHARMACEUTICAL ORGANIC<br>CHEMISTRY –II | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                |                       |                          |                          |                            | ٧                                       |                        | ٧                          |
| 2         | BP302T      | PHYSICAL PHARMACEUTICS-I                | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     |                          | ٧                        |                            |                                         |                        |                            |
| 4         | BP 303 T    | PHARMACEUTICAL<br>MICROBIOLOGY          | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         | ٧                      | ٧                          |
| 5         | BP 304 T    | PHARMACEUTICAL<br>ENGINEERING           | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       | ٧                      | ٧                          |
| PRAC      | CTICAL      |                                         |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP305P      | PHARMACEUTICAL ORGANIC<br>CHEMISTRY -II | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                |                       |                          |                          |                            | ٧                                       | ٧                      | ٧                          |
| 2         | BP306P      | PHYSICAL PHARMACEUTICS – I              | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     |                          | ٧                        |                            |                                         |                        |                            |
| 3         | BP 307P     | PHARMACEUTICAL<br>MICROBIOLOGY          | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        |                            | N                                       | ٧                      | ٧                          |
| 4         | BP308P      | PHARMACEUTICAL<br>ENGINEERING           | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        |                            | ٧                                       | ٧                      | ٧                          |
|           |             |                                         | Total               |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

#### **Semester - IVth**

|           |             |                                                   |                     |   | Perio<br>Per<br>week |   | Eva    | luatio | on Sch    | eme     |               |        |                  |                       |                          | A                        | attributes                 |                                         |                        |                            |
|-----------|-------------|---------------------------------------------------|---------------------|---|----------------------|---|--------|--------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
| S.<br>No. | Course code | Course Title                                      | Type<br>of<br>Paper | L | Т                    | P | C<br>M | SE     | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES       |                                                   |                     |   |                      |   |        |        |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP401T      | PHARMACEUTICAL ORGANIC<br>CHEMISTRY –III (Theory) | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                |                       |                          |                          |                            | ٧                                       |                        | ٧                          |
| 2         | BP402T      | MEDICINAL CHEMISTRY – I                           | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       |                        | ٧                          |
| 3         | BP 403 T    | PHYSICAL PHARMACEUTICS-II                         | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       |                        | ٧                          |
| 4         | BP 404 T    | PHARMACOLOGY-I                                    | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                | ٧                     |                          | ٧                        |                            | ٧                                       |                        | ٧                          |
| 5         | BP 405 T    | PHARMACOGNOSY AND<br>PHYTOCHEMISTRY -I (Theory)   | core                | 3 | 1                    | 0 | 10     | 15     | 25        | 75      | 100           | 4      | 4                |                       |                          |                          |                            | ٧                                       | ٧                      | ٧                          |
| PRAC      | CTICAL      |                                                   |                     |   |                      |   |        |        |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP406P      | MEDICINAL CHEMISTRY – I                           | core                | 0 | 0                    | 4 | 5      | 10     | 15        | 35      | 50            | 2      | 2                | ٧                     |                          | ٧                        |                            | ٧                                       | ٧                      |                            |
| 2         | BP 407P     | PHYSICAL PHARMACEUTICS- II                        | core                | 0 | 0                    | 4 | 5      | 10     | 15        | 35      | 50            | 2      | 2                | ٧                     |                          | ٧                        |                            |                                         |                        |                            |
| 3         | BP 408 P    | PHARMACOLOGY-I                                    | core                | 0 | 0                    | 4 | 5      | 10     | 15        | 35      | 50            | 2      | 2                | ٧                     |                          | ٧                        |                            | ٧                                       |                        | ٧                          |
| 4         | BP409 P     | PHARMACOGNOSY AND<br>PHYTOCHEMISTRY -I            | core                | 0 | 0                    | 4 | 5      | 10     | 15        | 35      | 50            | 2      | 2                |                       |                          |                          |                            | ٧                                       | ٧                      | ٧                          |
|           |             |                                                   | Total               |   |                      |   |        |        |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

#### **Semester - Vth**

|           |             | 1                                       |                     |   |                      |   |        | JULI    |           | UII     |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
|-----------|-------------|-----------------------------------------|---------------------|---|----------------------|---|--------|---------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
|           |             |                                         |                     |   | Perio<br>Per<br>week |   | Eva    | aluatio | on Sch    | neme    |               |        |                  |                       |                          | A                        | attributes                 |                                         |                        |                            |
| S.<br>No. | Course code | Course Title                            | Type<br>of<br>Paper | L | Т                    | P | C<br>M | SE      | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES       |                                         |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP501T      | MEDICINAL CHEMISTRY – II                | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     |                          | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 2         | BP 502 T    | INDUSTRIAL PHARMACY -I                  | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 3         | BP503.T     | PHARMACOLOGY-II                         | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        |                          | ٧                          |                                         |                        |                            |
| 4         | BP504 T     | PHARMACOGNOSY AND<br>PHYTOCHEMISTRY -II | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                |                       |                          |                          |                            |                                         | ٧                      | ٧                          |
| 5         | BP 505 T    | PHARMACEUTICAL<br>JURISPRUDENCE         | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     |                          | ٧                        |                            |                                         | ٧                      | ٧                          |
| PRAC      | CTICAL      |                                         |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP 506 P    | INDUSTRIAL PHARMACY -I                  | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 2         | BP 507 P    | PHARMACOLOGY-II                         | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        |                            |                                         |                        | ٧                          |
| 3         | BP 508 P    | PHARMACOGNOSY AND<br>PHYTOCHEMISTRY-II  | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                |                       |                          |                          |                            |                                         |                        | ٧                          |
|           |             |                                         | Total               |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

## **Semester - VIth**

|           |             |                                       | Period F. D. M. G.L. |   |             |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
|-----------|-------------|---------------------------------------|----------------------|---|-------------|---|--------|---------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
|           |             |                                       |                      |   | Per<br>Week |   | Eva    | aluatio | on Sch    | eme     |               |        |                  |                       |                          | A                        | Attributes                 |                                         |                        |                            |
| S.<br>No. | Course code | Course Title                          | Type<br>of<br>Paper  | L | Т           | P | C<br>M | SE      | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES       |                                       |                      |   |             |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP601T      | MEDICINAL CHEMISTRY – III             | core                 | 3 | 1           | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | √                     |                          | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 2         | BP602 T     | PHARMACOLOGY-III                      | core                 | 3 | 1           | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 3         | BP603T      | HERBAL DRUG TECHNOLOGY                | core                 | 3 | 1           | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         | ٧                      | ٧                          |
| 4         | BP 604 T    | BIOPHARMACEUTICS AND PHARMACOKINETICS | core                 | 3 | 1           | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          |                                         | ٧                      | ٧                          |
| 5         | BP 605 T    | PHARMACEUTICAL<br>BIOTECHNOLOGY       | core                 | 3 | 1           | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       |                        | ٧                          |
| 6         | BP606 T     | QUALITY ASSURANCE                     | core                 | 3 | 1           | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         |                        | ٧                          |
| PRAC      | CTICAL      |                                       |                      |   |             |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP607P      | MEDICINAL CHEMISTRY- III              | core                 | 0 | 0           | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     |                          | ٧                        |                            | ٧                                       |                        | ٧                          |
| 2         | BP 608 P    | PHARMACOLOGY-III                      | core                 | 0 | 0           | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     |                          | ٧                        | ٧                          |                                         | ٧                      | ٧                          |
| 3         | BP 609 P    | HERBAL DRUG TECHNOLOGY                | core                 | 0 | 0           | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        |                            |                                         | ٧                      | ٧                          |
|           |             |                                       | Total                |   |             |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

#### **Semester - VIIth**

|           |             |                                     |                     |   |                      | ~ |        |         |           | .1 (11  |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
|-----------|-------------|-------------------------------------|---------------------|---|----------------------|---|--------|---------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
|           |             |                                     |                     |   | Perio<br>Per<br>week |   | Eva    | aluatio | on Sch    | neme    |               |        |                  |                       |                          | A                        | ttributes                  |                                         |                        |                            |
| S.<br>No. | Course code | Course Title                        | Type<br>of<br>Paper | L | Т                    | P | C<br>M | SE      | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES       |                                     |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP701T      | INSTRUMENTAL METHODS OF<br>ANALYSIS | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 2         | BP 702 T    | INDUSTRIAL PHARMACYII               | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 3         | BP 703T     | PHARMACY PRACTICE                   | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 4         | BP 704T     | NOVEL DRUG DELIVERY<br>SYSTEMS      | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       |                        | ٧                          |
| PRA       | CTICAL      |                                     |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP705P      | INSTRUMENTAL METHODS OF<br>ANALYSIS | core                | 0 | 0                    | 4 | 5      | 10      | 15        | 35      | 50            | 2      | 2                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
|           |             |                                     | Total               |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

#### **Semester - VIIIth**

|           |             |                                                      |                     |   | Perio<br>Per<br>week |   | Eva    | aluatio | on Sch    | neme    |               |        |                  |                       |                          | A                        | Attributes                 |                                         |                        |                            |
|-----------|-------------|------------------------------------------------------|---------------------|---|----------------------|---|--------|---------|-----------|---------|---------------|--------|------------------|-----------------------|--------------------------|--------------------------|----------------------------|-----------------------------------------|------------------------|----------------------------|
| S.<br>No. | Course code | Course Title                                         | Type<br>of<br>Paper | L | Т                    | P | C<br>M | SE      | To<br>tal | ES<br>E | Sub.<br>Total | Credit | Total<br>Credits | Emplo<br>yabilit<br>y | Entrep<br>reneur<br>ship | Skill<br>Develo<br>pment | Gende<br>r<br>Equali<br>ty | Environ<br>ment &<br>Sustain<br>ability | Hum<br>an<br>Valu<br>e | Profes<br>sional<br>Ethics |
| THE       | ORIES       |                                                      |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP801T      | BIOSTATISITCS AND RESEARCH<br>METHODOLOGY            | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         |                        | ٧                          |
| 2         | BP 802T     | SOCIAL AND PREVENTIVE<br>PHARMACY                    | core                | 3 | 1                    | 0 | 10     | 15      | 25        | 75      | 100           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 3         | BP803ET     | PHARMA MARKETING<br>MANAGEMENT                       | core                | 3 | 1                    | 0 | 20     | 30      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       | ٧                      | ٧                          |
| 4         | BP804 ET    | PHARMACEUTICAL<br>REGULATORY SCIENCE                 | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       |                        | ٧                          |
| 5         | BP 805 ET   | PHARMACOVIGILANCE                                    | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 6         | BP 806 ET   | QUALITY CONTROL AND<br>STANDARDIZATION OF<br>HERBALS | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       |                        | ٧                          |
| 7         | BP 807 ET   | COMPUTER AIDED DRUG<br>DESIGN                        | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         |                        |                            |
| 8         | BP808ET     | CELL AND MOLECULAR<br>BIOLOGY                        | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     |                          |                          |                            |                                         |                        | ٧                          |
| 9         | BP809ET     | COSMETIC SCIENCE                                     | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         |                        | ٧                          |
| 10        | BP810 ET    | EXPERIMENTAL<br>PHARMACOLOGY                         | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     |                          | ٧                        |                            |                                         | ٧                      | ٧                          |
| 11        | BP 811 ET   | ADVANCED INSTRUMENTATION TECHNIQUES                  | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            |                                         |                        |                            |
| 12        | BP 812 ET   | DIETARY SUPPLEMENTS AND NUTRACEUTICALS               | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        | ٧                          | ٧                                       | ٧                      | ٧                          |
| 13        | BP813ET     | PHARMACEUTICAL PRODUCT<br>DEVELOPMENT                | core                | 3 | 1                    | 0 | 20     | 20      | 50        | 150     | 200           | 4      | 4                | ٧                     | ٧                        | ٧                        |                            | ٧                                       | ٧                      | ٧                          |
| PRA       | CTICAL      |                                                      |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |
| 1         | BP814PW     | PROJECT WORK                                         |                     |   |                      |   |        |         |           | 150     |               |        |                  | ٧                     | ٧                        | ٧                        |                            |                                         |                        |                            |
|           | Total       |                                                      |                     |   |                      |   |        |         |           |         |               |        |                  |                       |                          |                          |                            |                                         |                        |                            |

## **CO-PO MAPPING**

|                            |               | FACULTY OF PHA                                           | RMA  | CY, IN | NTEG | RAL  | UNIVE | RSITY,  | LUC  | CKN  | OW.  |      |       |     |      |  |   |   |  |
|----------------------------|---------------|----------------------------------------------------------|------|--------|------|------|-------|---------|------|------|------|------|-------|-----|------|--|---|---|--|
|                            |               |                                                          |      | CO-P   | O MA | PPIN | G     |         |      |      |      |      |       |     |      |  |   |   |  |
|                            |               | B. PHAR                                                  | RM.  |        | YEA  | R/SI | EMEST | ER: Fir | st   |      |      |      |       |     |      |  |   |   |  |
| COURS<br>E<br>CATE<br>GORY | CODE          | SUBJECT                                                  |      | PERI   | ODS  | T    | EVALU | ATION   |      |      |      |      |       | PO  |      |  |   |   |  |
| 2 2 2                      | CODE          | SCHOLCI                                                  | L    | T      | P    | C    | S     | ESE     |      |      | 1    |      |       | 10  |      |  | 1 | 1 |  |
| <b>L</b>                   | DD101T        | II.                                                      | 15   | 7.5    | -1   | 7-7  | -3    | 4       | V-   | 9-   | 7-1  | ∞-   | 6-0   | -10 | -111 |  |   |   |  |
| BP                         | BP101T        | Human anatomy and Physiology                             | 75   | PO-    | PO-( | PO   | PO-4  | PO-5    | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO  |      |  |   |   |  |
| 004                        | Gain knowle   | edge of the basic structural organisation of human bod   | n at |        |      |      |       | 4       | 4    |      |      | 4    | _     |     |      |  |   |   |  |
| CO1                        | cellular leve |                                                          | 3    | 2      | 2    | 1    | 1     |         | 1    | 1    | l    | 3    | 3     |     |      |  |   |   |  |
| CO2                        | Understand    |                                                          | 3    | 1      | 2    | 2    | 2     | 3       | 3    | 1    | 2    | 1    | 3     |     |      |  |   |   |  |
| CO3                        | Learn the ro  |                                                          | 3    | 1      | 2    | 2    | 1     | 2       | 1    | 1    | 2    | 2    | 2     |     |      |  |   |   |  |
| CO4                        | Learn the co  | oncepts of Peripheral Nervous System and special sense   |      | 3      | 1    | 2    | 2     | 1       | 3    | 2    | 1    | 2    | 1     | 3   |      |  |   |   |  |
| CO5                        | Understand    | the structural and functional classification of Cadiovas |      | 3      | 2    | 2    | 3     | 1       | 3    | 2    | 1    | 2    | 2     | 3   |      |  |   |   |  |

|                        |                                | FACULTY OF PHAR                                                                                     | MACY,      | INTEG    | RAL UN      | IVERS    | ITY, LU     | CKNOW.    |      |      |      |      |      |       |       |   |   |   |   |
|------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|------------|----------|-------------|----------|-------------|-----------|------|------|------|------|------|-------|-------|---|---|---|---|
|                        |                                |                                                                                                     | CO         | -PO MA   | APPING      |          |             |           |      |      |      |      |      |       |       |   |   |   |   |
|                        |                                | B. PHAR                                                                                             | М.         | YEA      | AR / SEN    | IESTER   | R: I / I    |           |      |      |      |      |      |       |       |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE                           | SUBJECT                                                                                             |            | PER      | IODS        |          | EVAL        | UATION    |      |      |      |      |      | PO    |       |   |   |   |   |
| COU                    | CODE                           | SUBJECT                                                                                             | L          | T        | P           | C        | S           | ESE       |      |      |      |      |      | Ю     |       |   |   |   |   |
| UG                     | BP102T                         | Pharmaceutical Analysis-I                                                                           | 15         | 75       | PO-1        | PO-2     | PO-3        | P0-4      | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |   |   |   |   |
| CO1                    | Understand the and formulation | he knowledge on preparatory pharmacy and professional way of ions.                                  | naterials  | 3        | 2           | 3        | 3           | 1         | 2    | 1    | 3    | 2    | 3    | 2     |       |   |   |   |   |
| CO2                    |                                | neoretical basis of commonly used statistical methods & correctly priments & observational studies. | analyze    | & interp | oret the re | sults of | statistical | data from | 3    | 2    | 3    | 3    | 1    | 2     | 1     | 3 | 2 | 3 | 2 |
| CO3                    | Illustrate sour                | rces of errors in analytical techniques, methods to minimize them                                   |            | 3        | 2           | 3        | 3           | 1         | 2    | 1    | 3    | 2    | 3    | 2     |       |   |   |   |   |
| CO4                    | Describe the                   | various titrimetric and electrochemical methods of analysis and t                                   | ceuticals. | 3        | 2           | 3        | 3           | 1         | 2    | 1    | 3    | 2    | 3    | 2     |       |   |   |   |   |
| CO5                    | Describe grav                  | vimetry and limit tests-principles and applications.                                                |            |          | 3           | 2        | 3           | 3         | 1    | 2    | 1    | 3    | 2    | 3     | 2     |   |   |   |   |
| CO6                    | Differentiate                  | between the ability and limitations of all the methods and be able                                  |            | 3        | 2           | 3        | 3           | 1         | 2    | 1    | 3    | 2    | 3    | 2     |       |   |   |   |   |

|          |                              | FACULTY OF PHAR                                                                            | MACY,      | , INTEG    | RAL UN  | IVERS        | ITY, LU    | CKNOW.    |      |      |      |      |      |      |      |      |      |       |       |
|----------|------------------------------|--------------------------------------------------------------------------------------------|------------|------------|---------|--------------|------------|-----------|------|------|------|------|------|------|------|------|------|-------|-------|
|          |                              |                                                                                            | CO         | -PO MA     | PPING   |              |            |           |      |      |      |      |      |      |      |      |      |       |       |
|          |                              | B. PHAR                                                                                    | M.         | YEA        | R / SEN | <b>MESTE</b> | R: I/ I    |           |      |      |      |      |      |      |      |      |      |       |       |
| COURSE   | CODE                         | SUBJECT                                                                                    |            | PER        | IODS    |              | EVAL       | UATION    |      |      |      |      |      | PO   |      |      |      |       |       |
| CATEGORY | CODE                         | SUBJECT                                                                                    | L          | T          | P       | C            | S          | ESE       |      |      |      |      |      | Ю    |      |      |      |       |       |
| BP       | BP103T                       | Pharmaceutics-1                                                                            | 3          | 1          | 0       | 4            | 25         | 75        | P0-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1      | Know about t                 | he career opportunities in pharmacy, Pharmacopoeias and history                            | a          |            | 2       | 1            | 1          | 2         | 1    | 2    | 2    | 2    | 3    | 2    | 1    |      |      |       |       |
| CO2      | About the diff and body surf | ferent types of dosage form, prescription along with their parts area.                     | ody weight | 2          | 1       | 1            | 2          | 1         | 2    | 2    | 2    | 3    | 2    | 1    |      |      |      |       |       |
| CO3      | To understand                | the Pharmaceutical calculations, its different system along with                           | method     | s of calcu | lation. |              |            |           |      |      |      |      |      |      |      |      |      |       |       |
| CO4      | Describe about techniques.   | ut powders and liquid dosage forms, excipients used in formulation                         | on of liq  | uid dosag  | e forms | and solu     | bility enh | ancement  | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO5      | Explain the di               | ifferent types of monophasic liquids formulations along with their                         | r prepara  | ation met  | hods.   |              |            |           | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO6      | Explain the bit problems.    | phasic liquids formulations, stability problems associated with the                        | nese forn  | nulations  | and the | methods      | to overco  | ome these | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO7      | To know abou                 | ut suppository, its methods of preparation, Displacement value &                           | its calcu  | ılations.  |         |              |            |           | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO8      | Describe phar                | rmaceutical incompatibilities, its type with examples.                                     |            |            |         |              |            |           | 2    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO9      |                              | solid dosage forms, mechanisms and factors influencing dermal age forms and its evaluation | f differen | t types of | 2       | 1            | 1          | 2         | 1    | 2    | 2    | 2    | 3    | 2    | 1    |      |      |       |       |

|                        |                | FACULTY OF PHAR                                                    | MACY,  | INTEGI | RAL UN  | IVERS | ITY, LU | CKNOW. |   |    |   |   |      |       |       |  |  |  |  |
|------------------------|----------------|--------------------------------------------------------------------|--------|--------|---------|-------|---------|--------|---|----|---|---|------|-------|-------|--|--|--|--|
|                        |                |                                                                    | CO     | -PO MA | PPING   |       |         |        |   |    |   |   |      |       |       |  |  |  |  |
|                        |                | B. PHARM                                                           | Л.     | YEA    | R / SEN | ESTE  | R: I/I  |        |   |    |   |   |      |       |       |  |  |  |  |
| RSE                    | CODE           | SUBJECT                                                            |        | PERI   | ODS     |       | EVALU   | JATION |   |    |   |   |      | PO    |       |  |  |  |  |
| COURSE<br>CATEGO<br>RY | CODE           | SUBJECT                                                            | S      | ESE    |         |       |         |        | = | ru |   |   |      |       |       |  |  |  |  |
|                        |                |                                                                    |        |        |         |       |         |        |   |    |   |   | PO-9 | PO-10 | PO-11 |  |  |  |  |
| CO1                    | Study the mor  |                                                                    | 3      | 2      | 3       | 3     | 1       | 2      | 1 | 3  | 2 | 3 | 2    |       |       |  |  |  |  |
| CO2                    | Distinguish th | ne sources of impurities and methods to determine the impurities i | icals. |        | 3       | 2     | 3       | 3      | 1 | 2  | 1 | 3 | 2    | 3     | 2     |  |  |  |  |
| CO3                    | Recognize the  | e medicinal and pharmaceutical importance of inorganic compour     |        |        | 3       | 2     | 3       | 3      | 1 | 2  | 1 | 3 | 2    | 3     | 2     |  |  |  |  |

|                            |                                                                                                                                                                                                                                                                           | Communication Skills  2 0 0 2 15  Idents will learn basic concepts/ knowledge of Communication process, its types, Barriers to communication and Perspect munication  Idents will learn Elements of communication: Tone, body language, gesture, communication styles, Verbal and Non-verbacommunication  Idents will leran about Basic Listening skills: active listening, listening in difficult situtaions, Written communication: sha aning, complexity of topic, Audience factor, organization of the message  Idents will be made aware about Interview skills, Do's and Don'ts of an interview, Presentation skills: planning and structure. |             |            |            |           |             |          |      |      |      |      |      |      |      |      |      |       |       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|------------|-----------|-------------|----------|------|------|------|------|------|------|------|------|------|-------|-------|
|                            |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CO          | -PO MA     | PPING      |           |             |          |      |      |      |      |      |      |      |      |      |       |       |
|                            |                                                                                                                                                                                                                                                                           | B. PHARI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | М.          | YEA        | R / SEM    | IESTER    | R: 1/1      |          |      |      |      |      |      |      |      |      |      |       |       |
| COURS CATEG                | CODE                                                                                                                                                                                                                                                                      | SUBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             | PER        | IODS       |           | EVALU       | JATION   |      |      |      |      |      | PO   |      |      |      |       |       |
| COURS<br>E<br>CATEG<br>ORY | CODE                                                                                                                                                                                                                                                                      | SOBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | L           | T          | P          | C         | S           | ESE      |      |      |      |      |      | 10   |      |      |      |       | _     |
| BP                         | BP105T                                                                                                                                                                                                                                                                    | Communication Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2           | 0          | 0          | 2         | 15          | 35       | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-0d | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                        |                                                                                                                                                                                                                                                                           | nd Perspec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ctives in   | 0          | 2          | 2         | 2           | 2        | 3    | 2    | 3    | 0    | 0    | 0    |      |      |      |       |       |
| CO2                        | Students will learn basic concepts/ knowledge of Communication process,its types, Barriers to communication and Persp communication  Students will learn Elements of communication:Tone, body language, gesture, communication styles, Verbal and Non-ve of communication |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |            |            |           |             |          |      |      | 0    | 0    | 3    | 3    | 3    | 3    | 0    | 0     | 0     |
| CO3                        |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | fficult sit | tutaions,  | Written    | commun    | ication: sh | nades of | 0    | 0    | 2    | 2    | 2    | 1    | 1    | 3    | 0    | 0     | 0     |
| CO4                        |                                                                                                                                                                                                                                                                           | be made aware about Interview skills, Do's and Don'ts of an inte<br>echniques of presentation as well                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | rview, P    | resentatio | on skills: | planning  | and struc   | turing,  | 0    | 3    | 2    | 3    | 3    | 3    | 1    | 3    | 0    | 0     | 0     |
| CO5                        | Students will<br>Don'ts of GD                                                                                                                                                                                                                                             | be made aware about Group Discussion and its nuanced aspects:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | role of o   | communi    | cation sk  | ills in G | D and Do'   | 's and   | 0    | 2    | 3    | 0    | 3    | 3    | 3    | 3    | 2    | 0     | 0     |

|          |                                                                                                                   | FACULTY OF PHARMA                                                                         | L T P C   |            |           |          |             |                |      |      |      |      |       |   |   |   |   |   |
|----------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------|------------|-----------|----------|-------------|----------------|------|------|------|------|-------|---|---|---|---|---|
|          |                                                                                                                   |                                                                                           | CO-P      | O MAPI     | PING      |          |             |                |      |      |      |      |       |   |   |   |   |   |
|          |                                                                                                                   | B PHARM                                                                                   | ,         | YEAR /     | SEMES     | TER:     | I/I         |                |      |      |      |      |       |   |   |   |   |   |
| COURSE   | CODE                                                                                                              | SUBJECT                                                                                   |           | PER        | IODS      |          | EVALU       | J <b>ATION</b> |      |      |      |      | PC    |   |   |   |   |   |
| CATEGORY | CODE                                                                                                              | SUBJECT                                                                                   | ${f L}$   | T          | P         | C        | S           | ESE            |      |      |      |      | 10    | , |   |   |   |   |
| BP       | BP106RBT                                                                                                          | 15                                                                                        | 35        | PO-1       | PO-2      | PO-3     | PO-4        | PO-5           | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 |   |   |   |   |   |
| CO1      | Students will be able to learn about basic concept/ Knowledge of animal cell, Aminal Tissue, cell division and ce |                                                                                           |           |            |           |          |             |                | 3    | 3    | 2    | 3    | 3     | 2 | 3 | 2 | 3 | 2 |
| CO2      |                                                                                                                   | be able to learn about basic concept/ Knowledge of plant respiration, photosynthesis      | tion, pla | nt growtl  | n and dev | elopme   | nt, plant a | nd             | 2    | 2    | 3    | 2    | 2     | 3 | 2 | 3 | 2 | 3 |
| CO3      |                                                                                                                   | be able to learn about classifications & salient feature of five king obysiology of plant | gdoms of  | f life Ana | atomy an  | d Physic | ology hum   | ıan,           | 3    | 3    | 2    | 3    | 2     | 1 | 2 | 2 | 3 | 2 |
| CO4      | Students will b                                                                                                   | be able to learn about circulatory, digestive, respiratory and excre                      | eatory sy | stem of l  | numan     |          | ·           |                | 3    | 2    | 2    | 2    | 2     | 2 | 2 | 2 | 3 | 2 |
| CO5      | Students will b                                                                                                   | be able to learn about Morphology of plant, Root, Stem, Leaf and                          | l its mod | ification  | ·         |          |             |                | 3    | 2    | 2    | 2    | 2     | 2 | 3 | 3 | 1 | 2 |

|                        |                 | FACULTY OF PHARMA                                                                                                                                                                                                                           | Y, LUCK   | NOW.      |            |          |             |      |   |          |      |      |      |      |      |      |      |       |
|------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|------------|----------|-------------|------|---|----------|------|------|------|------|------|------|------|-------|
|                        |                 |                                                                                                                                                                                                                                             | CO-PO     | ) MAPP    | ING        |          |             |      |   |          |      |      |      |      |      |      |      |       |
|                        |                 | B PHARM                                                                                                                                                                                                                                     | <u>/I</u> | YEAR      | : FIRS     | T YEAR   | R           |      |   |          |      |      |      |      |      |      |      |       |
| COURSE<br>CATEGO<br>RY | CODE            | SUBJECT                                                                                                                                                                                                                                     | EVAL      | UATION    |            |          |             |      | р | O        |      |      |      |      |      |      |      |       |
| COU<br>CAT<br>RY       | CODE            | SUBSECT                                                                                                                                                                                                                                     | S         | ESE       |            |          |             |      |   | <u> </u> |      |      |      |      |      |      |      |       |
| BP                     | BP106RMT        | tudents will be able to learn about basic skills and extend their knowledge as they prepare for more advanced work.                                                                                                                         |           |           |            |          |             |      |   |          | PO-3 | PO-4 | PO-5 | 9-O4 | PO-7 | PO-8 | PO-9 | PO-10 |
| CO1                    | Students will b | Students will be able to learn about basic skills and extend their knowledge as they prepare for more advanced work.                                                                                                                        |           |           |            |          |             |      |   |          |      | 3    | 2    | 2    | 3    | 2    | 3    | 2     |
| CO2                    | Students will b | tudents will be able to learn about basic skills and extend their knowledge as they prepare for more advanced work.  tudents will be able to learn about mathematical concepts and principles to perform computations for Pharmaceutical Sc |           |           |            |          |             |      |   |          |      | 2    | 2    | 3    | 2    | 3    | 2    | 3     |
| CO3                    |                 |                                                                                                                                                                                                                                             | athematic | es such a | s Identify | ying nun | nbers, arra | inge | 3 | 3        | 3    | 3    | 3    | 2    | 1    | 2    | 2    | 2     |
| CO4                    |                 |                                                                                                                                                                                                                                             | etermina  | nt, Integ | ration,    |          |             |      | 2 | 3        | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 2     |
| CO5                    |                 |                                                                                                                                                                                                                                             |           |           |            |          |             |      |   |          |      | 2    | 2    | 2    | 3    | 3    | 1    | 2     |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | FACULTY OF PHAR                                                     | MACY,      | INTEG     | RAL UN    | IVERS     | ITY, LU    | CKNOW.     |      |      |      |      |      |      |      |      |      |       |       |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------|-----------|-----------|-----------|------------|------------|------|------|------|------|------|------|------|------|------|-------|-------|
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                     | CO         | -PO MA    | APPING    |           |            |            |      |      |      |      |      |      |      |      |      |       |       |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | B. PHARM.                                                           |            | YEAR      | / SEME    | STER: 3   | 3rd/VIth   |            |      |      |      |      |      |      |      |      |      |       |       |
| RSE<br>EGO<br>Y | CODE  SUBJECT  BP201T HUMAN ANATOMY AND PHYSIOLOGY-II  The chief objective of the unit was to provide basic knowledge about the ANATOMY AND PHYSIOLOGY OF NE SYSTEM  This subject is designed to impart basic knowledge about the anatomy and physiology of gastrointestinal system and organ.  The chief objective of this unit is to provide basic knowledge of functioning of respiratory system and urinary system and organ.  The chief objective of this unit is to provide basic knowledge of functioning of respiratory system and urinary system and urinary system and urinary system and organ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                     |            |           | EVAL      | UATION    |            |            |      |      |      | PO   |      |      |      |      |      |       |       |
| COU<br>CAT      | B. PHARM. YEAR / SEMESTER: 30  CODE SUBJECT  BP201T HUMAN ANATOMY AND PHYSIOLOGY-II  The chief objective of the unit was to provide basic knowledge about the ANATOMY AND PHYSIOLOGY OF NOTING SYSTEM  This subject is designed to impart basic knowledge about the anatomy and physiology of gastrointestinal system an organ.  The chief objective of this unit is to provide basic knowledge of functioning of respiratory system and urinary systems.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                     |            |           |           |           |            | ESE        |      |      |      |      |      | Ю    |      |      |      |       |       |
| BP              | BP201T HUMAN ANATOMY AND PHYSIOLOGY-II 3 1 0 4  The chief objective of the unit was to provide basic knowledge about the ANATOMY AND PHYSIOLOGY OF NE SYSTEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |            |           |           |           |            | 75         | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1             | BP201T HUMAN ANATOMY AND PHYSIOLOGY-II 3 1 0 4 15 The chief objective of the unit was to provide basic knowledge about the ANATOMY AND PHYSIOLOGY OF NERV SYSTEM This subject is designed to impart basic knowledge about the anatomy and physiology of gastrointestinal system and its                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |            |           |           |           |            | JS         | 2    | 3    | 3    | 3    | 2    | 2    | 3    | 3    | 1    | 1     | 1     |
| CO2             | BP201T HUMAN ANATOMY AND PHYSIOLOGY-II 3 1 0 4 15  The chief objective of the unit was to provide basic knowledge about the ANATOMY AND PHYSIOLOGY OF NERV SYSTEM  This subject is designed to impart basic knowledge about the anatomy and physiology of gastrointestinal system and its organ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                     |            |           |           |           |            |            | 3    | 3    | 2    | 3    | 2    | 3    | 3    | 2    | 1    | 1     |       |
| CO3             | The chief obj                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ective of this unit is to provide basic knowledge of functioning of | f respirat | ory syste | em and ur | inary sys | stem.      |            | 3    | 3    | 3    | 2    | 2    | 3    | 3    | 2    | 1    | 1     |       |
| CO4             | CODE  SUBJECT  BP201T HUMAN ANATOMY AND PHYSIOLOGY-II  The chief objective of the unit was to provide basic knowledge about the ANATOMY AND PHYSIOLOGY OF NERVOU SYSTEM  This subject is designed to impart basic knowledge about the anatomy and physiology of gastrointestinal system and its accorgan.  The chief objective of this unit is to provide basic knowledge of functioning of respiratory system and urinary system.  1. This subject is designed to impart basic knowledge on the area of endocrinology. To study the anatomy and physiology of the |                                                                     |            |           |           |           |            | of various | 3    | 3    | 3    | 2    | 3    | 3    | 3    | 2    | 1    | 1     |       |
| CO5             | The chief obj                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ective of the unit was to provide basic knowledge of anantomy ar    | nd physic  | ology of  | male and  | female 1  | reproducti | ve system  | 3    | 3    | 3    | 2    | 2    | 3    | 3    | 2    | 1    | 1     |       |

|                        |                | FACULTY OF PHA                                                      | RMACY,      | INTEG      | RAL UN                 | IVERS    | ITY, LU   | CKNOW. |      |      |      |      |       |       |   |   |   |   |   |
|------------------------|----------------|---------------------------------------------------------------------|-------------|------------|------------------------|----------|-----------|--------|------|------|------|------|-------|-------|---|---|---|---|---|
|                        |                |                                                                     | CO          | -PO MA     | PPING                  |          |           |        |      |      |      |      |       |       |   |   |   |   |   |
|                        |                | B. PHAR                                                             | RM.         | YEA        | R / SEM                | ESTER    | R: I / II |        |      |      |      |      |       |       |   |   |   |   |   |
| RSE<br>EGO<br>Y        | CODE           | SUBJECT                                                             |             | PER        | IODS                   |          | EVALU     | JATION |      |      |      |      |       | PO    |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE           | SUBJECT                                                             | L           | T          | P                      | C        | S         | ESE    |      |      |      |      |       | Ю     |   |   |   |   |   |
| BP                     | BP202T         | Pharmaceutical Organic Chemistry –I (Theory)                        | 75          | PO-1       | PO-2                   | PO-3     | PO-4      | PO-5   | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |   |   |   |   |   |
| CO1                    | Recognise the  | e classification, nomenclature and structural isomerism in organ    | ic compou   | ınds.      |                        |          |           |        | 3    | 3    | 3    | 1    | 1     | 3     | 3 | 3 | 2 | 3 | 3 |
| CO2                    | Account the 1  | preparation and reactions of alkanes, alkenes and conjugated die    | nes.        |            |                        |          |           |        | 3    | 3    | 3    | 1    | 1     | 3     | 3 | 3 | 2 | 3 | 3 |
| CO3                    | Explore the n  | nethods of synthesis, reactions and uses of alkyl halides and alco  | ohols.      |            |                        |          |           |        | 3    | 3    | 3    | 1    | 1     | 3     | 3 | 3 | 2 | 3 | 3 |
| CO4                    | Investigate th | e synthetic routes, nucleophilic addition reactions, qualitative te | sts utilize | d for carl | onyl cor               | npounds  | S.        |        | 3    | 3    | 3    | 1    | 1     | 3     | 3 | 3 | 2 | 3 | 3 |
| CO5                    | Evaluate the   | preparation, effect of substituents on reactivity, structure and us | es of carbo | oxylic ac  | ids & ali <sub>j</sub> | hatic ar | nines.    |        | 3    | 3    | 3    | 1    | 1     | 3     | 3 | 3 | 2 | 3 | 3 |

|                        |                                                                                                              | FACULTY OF PHA                                                                                                                                               | RMACY,    | INTEG  | RAL UN  | NIVERS | ITY, LUC  | CKNOW. |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------|---------|--------|-----------|--------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                              |                                                                                                                                                              | CO        | -PO MA | PPING   |        |           |        |      |      |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                              | B. PHAR                                                                                                                                                      | RM.       | YEA    | R / SEN | IESTER | R: I / II |        |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                         | SUBJECT                                                                                                                                                      |           | PER    | IODS    |        | EVALU     | JATION |      |      |      |      |      | PO   |      |      |      |       |       |
| COU<br>CAT             | CODE                                                                                                         | SUBJECT                                                                                                                                                      | L         | T      | P       | C      | S         | ESE    |      |      |      |      |      | Ю    |      |      |      |       |       |
| BP                     | BP203T Biochemistry 3 1 0 4 15 Understand the importance of metabolism of substrates and their bioregulation |                                                                                                                                                              |           |        |         |        |           |        | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Understand th                                                                                                | Understand the importance of metabolism of substrates and their bioregulation                                                                                |           |        |         |        |           |        |      |      | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3     | 2     |
| CO2                    | Will acquire c                                                                                               | Inderstand the importance of metabolism of substrates and their bioregulation  Vill acquire chemistry and biological importance of biological macromolecules |           |        |         |        |           |        |      |      | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3     | 2     |
| CO3                    | •                                                                                                            | ith qualitative and quantitative estimation of the biological molecules                                                                                      |           |        |         |        |           |        | 3    | 2    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3     | 2     |
| CO4                    | Know, unders<br>Test La                                                                                      | tand and apply the interpretation of data emanating from a Diagob                                                                                            | gnostic   |        |         |        |           |        | 3    | 2    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3     | 2     |
| CO5                    |                                                                                                              | physiological conditions and their variation influence the structies of biomolecules                                                                         | tures and |        |         |        |           |        | 3    | 2    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3     | 2     |
| CO6                    | To understand                                                                                                | I the basic principles of protein and polysaccharide structure                                                                                               |           |        |         |        |           |        | 3    | 2    | 3    | 3    | 1    | 1    | 1    | 2    | 2    | 3     | 2     |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                  | FACU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | LTY OF PHARMA | ACY,    | INTEG     | RAL UN    | IVERS   | ITY, LUC   | CKNOW. |   |      |      |      |      |      |      |      |      |       |        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|-----------|-----------|---------|------------|--------|---|------|------|------|------|------|------|------|------|-------|--------|
|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               | CO-     | PO MA     | PPING     |         |            |        |   |      |      |      |      |      |      |      |      |       |        |
|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pathophysiolgy  3 1 0 4 25  reciples of cell injury, adaptation along with basic mechanism involved in the process of inflammation and repair will be demonstrated with a basic understanding of the concepts and elements and will learn also learn about various of the cardiovascular system  will understand the mechanisms, the diagnosis, and the treatment of diseases of the haematological and endocrine system will understand the mechanisms, the diagnosis, and the treatment of diseases of the nervous and gastrointestinal system.                                                                                                                                                                                                                                  |               |         |           |           |         | r          |        |   |      |      |      |      |      |      |      |      |       |        |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                                                                                                                                                                                                                                                                                             | CODE SUBJECT    PERIODS   EVALUATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |         |           |           |         |            | ATION  |   |      |      |      |      | PO   |      |      |      |       |        |
| COU<br>CAT<br>R        | CODE                                                                                                                                                                                                                                                                                                                                                                                                                             | SUBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               | L       | T         | P         | C       | S          | ESE    |   |      |      |      |      | 10   |      |      |      |       |        |
| BP                     | BP204T                                                                                                                                                                                                                                                                                                                                                                                                                           | asic principles of cell injury, adaptation along with basic mechanism involved in the process of inflammation and repair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |         |           |           |         |            |        |   | PO-2 | PO-3 | PO-4 | PO-5 | 9-0d | PO-7 | PO-8 | PO-9 | PO-10 | PO-111 |
| CO1                    | Basic principles of cell injury, adaptation along with basic mechanism involved in the process of inflammation and repair  Students will be demonstrated with a basic understanding of the concepts and elements and will learn also learn about various                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |         |           |           |         |            |        |   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 1      |
| CO2                    | Basic principles of cell injury, adaptation along with basic mechanism involved in the process of inflammation and repair  Students will be demonstrated with a basic understanding of the concepts and elements and will learn also learn about various diseases of the cardiovascular system  Students will understand the mechanisms, the diagnosis, and the treatment of diseases of the haematological and endocrine system |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |         |           |           |         |            |        |   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 1      |
| CO3                    |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |         |           |           |         |            |        | 3 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 1      |
| CO4                    |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               | nmatory | y and liv | er diseas | e. They | will devel | op a   | 3 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 1      |
| CO5                    | Students will disease                                                                                                                                                                                                                                                                                                                                                                                                            | P204T Pathophysiolgy  asic principles of cell injury, adaptation along with basic mechanism involved in the process of inflammation and repair tudents will be demonstrated with a basic understanding of the concepts and elements and will learn also learn about various is eases of the cardiovascular system tudents will understand the mechanisms, the diagnosis, and the treatment of diseases of the haematological and endocrine system and they will understand the mechanisms, the diagnosis, and the treatment of diseases of the nervous and gastrointestinal system tudents will develop basic understanding of the concepts and elements of inflammatory and liver disease. They will develop a assic understanding of cancer and the disease of bones and joints. |               |         |           |           |         |            |        | 3 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 1      |

|                    |               | FACULTY OF PHA                                                             | RMACY,        | INTEG    | RAL UN       | IVERS  | ITY, LU | CKNOW. |      |      |      |      |      |      |      |      |      |       |       |
|--------------------|---------------|----------------------------------------------------------------------------|---------------|----------|--------------|--------|---------|--------|------|------|------|------|------|------|------|------|------|-------|-------|
|                    |               |                                                                            | CO            | -PO MA   | PPING        |        |         |        |      |      |      |      |      |      |      |      |      |       |       |
|                    |               | B. 1                                                                       | PHARM.        | YEAR /   | <b>SEMES</b> | TER:1/ | 2       |        |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGORY | CODE          | SUBJECT                                                                    |               | PER      | IODS         |        | EVALU   | JATION |      |      |      |      |      | PO   |      |      |      |       |       |
| CATEGORI           |               |                                                                            | L T P C S ESE |          |              |        |         |        |      |      |      |      |      |      |      |      |      |       |       |
| BP                 | BP205T        | ODE SUBJECT  L T P C S  P205T COMPUTER APPLICATIONS IN PHARMACY 3 0 0 3 25 |               |          |              |        |         | 50     | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-O- | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                | Understanding | g various types number systems.                                            |               |          |              |        | 1       |        | 3    | 2    | 2    | 1    | 0    | 2    | 0    | 2    | 0    | 0     | 0     |
| CO2                | Understanding | g various types of databases.                                              |               |          |              |        |         |        | 2    | 0    | 3    | 0    | 1    | 0    | 3    | 0    | 2    | 0     | 1     |
| CO3                | Understanding | g various types of application of computers in pharmacy.                   |               |          |              |        |         |        | 1    | 1    | 0    | 0    | 3    | 3    | 0    | 2    | 0    | 3     | 0     |
| CO4                | Understanding | g Bioinformatics and databases and impact of Bioinformatics in             | Vaccine !     | Discover | y.           |        |         |        | 2    | 2    | 0    | 3    | 2    | 0    | 3    | 0    | 3    | 0     | 2     |
| CO5                | Understanding | g Computers as data analysis in Preclinical development.                   |               |          |              |        |         |        | 2    | 0    | 3    | 0    | 3    | 0    | 3    | 0    | 1    | 0     | 2     |

|          |                | FACULTY OF PHAR                                                      | MACY,       | INTEG         | RAL UN | IVERS | ITY, LU  | CKNOW.        |      |      |      |      |      |      |      |      |      |       |       |
|----------|----------------|----------------------------------------------------------------------|-------------|---------------|--------|-------|----------|---------------|------|------|------|------|------|------|------|------|------|-------|-------|
|          |                |                                                                      | CO          | -PO MA        | PPING  |       |          |               |      |      |      |      |      |      |      |      |      |       |       |
|          |                | B. PHARM. YEA                                                        | R / SEM     | <b>IESTER</b> | : SECO | ND/TH | IRD (BP3 | <b>801T</b> ) |      |      |      |      |      |      |      |      |      |       |       |
| COURSE   | CODE           | CUDIECT                                                              |             | PER           | IODS   |       | EVALU    | JATION        |      |      |      |      |      | PO   |      |      |      |       |       |
| CATEGORY |                |                                                                      |             |               |        |       |          |               |      |      |      |      |      | PU   |      |      |      |       |       |
| BP       | BP301T         |                                                                      |             |               |        |       |          |               | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1      | Understand th  |                                                                      |             |               |        |       |          |               | 3    | 3    | 3    | 2    | 3    | 2    | 2    | 2    | 3    | 2     | 3     |
| CO2      | recognize diff | erent reactions given by different acidic and basic aromatic comp    | pounds      |               |        |       |          |               | 3    | 3    | 3    | 2    | 3    | 3    | 2    | 3    | 3    | 3     | 3     |
| CO3      | Learn about li | pids, their types and different analytical constants to find the qua | ality of li | pids.         |        |       |          |               | 3    | 3    | 3    | 2    | 3    | 3    | 2    | 2    | 3    | 2     | 3     |
| CO4      | Leaen about p  | olynuclear hydrocarbons, their reactions and structure elucidatio    | n           |               |        |       |          |               | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 3    | 3     | 3     |
| CO5      | Learn about c  | ycloalkanes and different theories for the stabilities of cycloalkan | nes         |               |        |       |          |               | 3    | 3    | 3    | 2    | 3    | 2    | 2    | 2    | 3    | 2     | 3     |

|          | CO-PO MAPPING  B. PHARM. YEAR / SEMESTER:  CODE  SUBJECT  BP302T Physical Pharmaceutics-1  understand the mechanisms of solute solvent interactions, different factors which improve solubility of drugs and principles in biological systems.  Know about solubility of gas in liquids, solubility of liquid in liquids, Raoult's law, Distribution law and different understand states of matter and properties of matter, eutectic mixtures and different forms of solids.  Explain various physicochemical properties of drug molecules in designing the dosage forms. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             | ITY, LU  | CKNOW. | 1    |      |      |      |      |      |      |      |       |       |   |   |   |   |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|--------|------|------|------|------|------|------|------|------|-------|-------|---|---|---|---|
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CO          | -PO MA   | PPING  |      |      |      |      |      |      |      |      |       |       |   |   |   |   |
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | B. PHARM. YEAR / SEMESTER: III/VI  SUBJECT  B. PHARM. YEAR / SEMESTER: III/VI  PERIODS  L T P C S  Physical Pharmaceutics-1  at the mechanisms of solute solvent interactions, different factors which improve solubility of drugs and diffusion is in biological systems.  Sout solubility of gas in liquids, solubility of liquid in liquids, Raoult's law, Distribution law and different types of a states of matter and properties of matter, eutectic mixtures and different forms of solids.  Various physicochemical properties of drug molecules in designing the dosage forms.  Tabout surface tension, differentiate between surface and interfacial tension and how to measure surface and interface active agents, HLB Scale and adsorption at solid interface.  The protein binding and how protein binding effect on drug action and crystalline structures of complexes. |             |          |        |      |      |      |      |      |      |      |      |       |       |   |   |   |   |
| COURSE   | CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SUBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EVALU       | JATION   |        |      |      |      |      | PO   |      |      |      |       |       |   |   |   |   |
| CATEGORY | CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SUBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | S           | ESE      |        |      |      |      |      | 10   |      |      |      |       |       |   |   |   |   |
| BP       | BP302T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Physical Pharmaceutics-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 25          | 75       | PO-1   | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |   |   |   |   |
| CO1      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | d diffusion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1           | 3        | 1      | 1    | 2    | 0    | 0    | 1    | 2    | 1    | 2    | 1     |       |   |   |   |   |
| CO2      | Know about s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | solubility of gas in liquids, solubility of liquid in liquids, Raoult's                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | nt types of | liquids. | 3      | 1    | 1    | 2    | 0    | 0    | 1    | 2    | 1    | 2     | 1     |   |   |   |   |
| CO3      | understand st                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |          |        |      |      |      |      |      |      |      |      | l     |       |   |   |   |   |
| CO4      | Explain vario                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3           | 1        | 1      | 2    | 0    | 0    | 1    | 2    | 1    | 2    | 1    |       |       |   |   |   |   |
| CO5      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | acial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3           | 1        | 1      | 2    | 0    | 0    | 1    | 2    | 1    | 2    | 1    |       |       |   |   |   |   |
| CO6      | Explain surfa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3           | 1        | 1      | 2    | 0    | 0    | 1    | 2    | 1    | 2    | 1    |       |       |   |   |   |   |
| CO7      | know about c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3           | 1        | 1      | 2    | 1    | 0    | 1    | 2    | 1    | 2    | 1    |       |       |   |   |   |   |
| CO8      | Describe prot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | tein binding and how protein binding effect on drug action and cr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             | 3        | 1      | 1    | 2    | 1    | 0    | 1    | 2    | 1    | 2    | 1     |       |   |   |   |   |
| CO9      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SUBJECT    Physical Pharmaceutics-1   3   1   0   4   25   75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |          |        |      |      |      |      |      |      |      |      | 0     | 1     | 2 | 1 | 2 | 1 |

|                        |              | Pharmaceutical Microbiology  3 1 0 4 25 75                                                                        |                 |         |           |           |          |            |          |      |      |      |      |       |       |   |   |   |   |   |
|------------------------|--------------|-------------------------------------------------------------------------------------------------------------------|-----------------|---------|-----------|-----------|----------|------------|----------|------|------|------|------|-------|-------|---|---|---|---|---|
|                        |              |                                                                                                                   |                 | CO-     | PO MA     | PPING     |          |            |          |      |      |      |      |       |       |   |   |   |   |   |
|                        |              | В                                                                                                                 | . PHARM.        |         | YEAR      | / SEME    | STER:    | 2nd/3rd    |          |      |      |      |      |       |       |   |   |   |   |   |
| RSE                    | CODE         | CIDIECT                                                                                                           |                 |         | PER       | IODS      |          | EVALU      | JATION   |      |      |      |      |       | DΩ    |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE         | SUBJECT                                                                                                           |                 | L       | T         | P         | C        | S          | ESE      |      |      |      |      |       | PU    |   |   |   |   |   |
| BP                     | BP303T       | Pharmaceutical Microbiology                                                                                       | 25              | 75      | PO-1      | PO-2      |          | PO-4       | PO-5     | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |   |   |   |   |   |
| CO1                    | The students | should understand the methods of identification, cultiv                                                           | isms.           | •       | 3         | 1         | 2        | 2          | 1        | 1    | 2    | 1    | 2    | 2     | 2     |   |   |   |   |   |
| CO2                    | The students | should understand about Staining, sterilization and Eva                                                           | ods.            |         | 3         | 2         | 2        | 3          | 1        | 2    | 2    | 1    | 2    | 1     | 2     |   |   |   |   |   |
| CO3                    | To understar | nd about disinfectants, and their evaluation, sterility test                                                      | ting methods of | f phar  | maceuti   | cal produ | icts.    |            |          | 3    | 2    | 2    | 3    | 1     | 2     | 2 | 1 | 2 | 2 | 2 |
| CO4                    |              |                                                                                                                   | mination, clear | n area  | classific | cation an | d microl | oiological |          | 3    | 2    | 2    | 3    | 1     | 2     | 2 | 1 | 2 | 3 | 2 |
| CO5                    |              | s should understand the microbial spoilage of pharmace alology and its applications in pharmaceutical industries. |                 | s, Pres | ervation  | of pharr  | naceutic | al produc  | ts, cell | 3    | 1    | 1    | 2    | 1     | 2     | 2 | 1 | 2 | 3 | 2 |

|                        |                | Pharmaceutical Engineering    C   S   ESE     Pharmaceutical Engineering   3   1   0   4   25   75   0   0   0   0   0   0   0   0   0                                          |            |            |         |       |          |        |    |    |    |    |    |     |    |    |    |     |     |
|------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|---------|-------|----------|--------|----|----|----|----|----|-----|----|----|----|-----|-----|
|                        |                |                                                                                                                                                                                 | CO         | -PO MA     | PPING   |       |          |        |    |    |    |    |    |     |    |    |    |     |     |
|                        |                | B. PHARM                                                                                                                                                                        | <b>1</b> . | YEA        | R / SEM | ESTER | : II/III |        |    |    |    |    |    |     |    |    |    |     |     |
| RSE<br>EGO<br>Y        | CODE           | CLID LECT                                                                                                                                                                       |            | PER        | IODS    |       | EVALU    | JATION |    |    |    |    |    | DO. |    |    |    |     |     |
| COURSE<br>CATEGO<br>RY | CODE           | SUBJECT                                                                                                                                                                         | L          | T          | P       | C     | S        | ESE    |    |    |    |    |    | PO  |    |    |    |     |     |
|                        |                | Pharmaceutical Engineering                                                                                                                                                      | _          |            | _       |       |          |        | -1 |    | Ę. | 4  | -5 | 9-  | -7 | ×- | -9 | 10  | 11  |
| BP                     |                |                                                                                                                                                                                 |            |            |         |       |          |        |    | PO | PO | PO | PO | PO  | PO | ЬО | PO | P0- | P0- |
| CO1                    | 1. Understand  | . Understand the process of size reduction, size separation and fluid flow Describe the importance of different unit operations used in pharmaceutical manufacturing.           |            |            |         |       |          |        |    |    | 2  | 2  | 2  | 2   | 2  | 2  | 2  | 2   | 2   |
|                        |                | Describe the importance of different unit operations used in pharmaceutical manufacturing.                                                                                      |            |            |         |       |          |        |    |    |    | 3  |    | 3   | 3  |    | 2  | 3   | 3   |
| CO2                    |                | Describe the importance of different unit operations used in pharmaceutical manufacturing.  Apply the principles of different heat processes used in pharmaceutical industries. |            |            |         |       |          |        |    |    |    | 3  | 2  | 3   | 3  | 3  | 2  | 3   | 3   |
|                        |                | *                                                                                                                                                                               |            |            |         |       |          |        | 3  | 3  | 3  | 3  |    | 3   | 3  | 3  |    |     |     |
| CO3                    |                |                                                                                                                                                                                 |            |            |         |       |          |        | 3  | 3  | 3  | 3  | 3  | 3   | 3  | 3  | 2  | 3   | 3   |
|                        | 2. Explain dif | ferent equipments employed in drying and mixing processes.                                                                                                                      |            |            |         |       |          |        | 3  | 3  | 3  | 3  | 3  | 3   | 3  | 3  | 2  |     |     |
| CO4                    |                | filtration process used during pharmaceutical manufacturing.                                                                                                                    |            |            |         |       |          |        | 3  | 3  | 3  | 3  | 2  | 3   | 3  | 2  | 2  | 3   | 3   |
|                        | 2. Recall mec  | hanisms and equipments of centrifugation.                                                                                                                                       |            |            |         |       |          |        | 3  | 3  | )  | 3  |    | 3   | 3  |    | 2  | 3   | 3   |
| CO5                    | 1. Describe di | fferent preventive methods used for the control of corrosion in pl                                                                                                              | harmace    | utical pla | ints.   |       |          |        | 3  | 2  | 2  | 3  | 3  | 2   | 2  | 2  | 3  | 3   | 3   |
|                        | 2. Assess the  | significance of material selection and material handling systems                                                                                                                |            | 3          | 3       | 3     | 3        | 3      | 3  | 2  | 2  | 3  | 3  | 3   |    |    |    |     |     |

|                        |                                                                                                                                            | FACULTY OF PHARMA                                                                                                                                                             | CY, IN | regra  | L UNIV | ERSITY | , LUCK   | NOW.        |      |      |      |      |       |       |   |   |   |   |   |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|----------|-------------|------|------|------|------|-------|-------|---|---|---|---|---|
|                        |                                                                                                                                            |                                                                                                                                                                               | CO-PO  | MAPP   | NG     |        |          |             |      |      |      |      |       |       |   |   |   |   |   |
|                        |                                                                                                                                            | B. PHARM. YEAR / S                                                                                                                                                            | EMEST  | ER: SE | COND/  | FOURT  | H (BP401 | <b>(T</b> ) |      |      |      |      |       |       |   |   |   |   |   |
| RSE<br>EGO<br>Y        | CODE                                                                                                                                       | SUBJECT                                                                                                                                                                       |        | PER    | ODS    |        | EVALU    | JATION      |      |      |      |      |       | PO    |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                       | SUBJECT                                                                                                                                                                       | L      | T      | P      | C      | S        | ESE         |      |      |      |      |       | Ю     |   |   |   |   |   |
| BP                     | BP401T                                                                                                                                     | 25                                                                                                                                                                            | 75     | PO-1   | PO-2   | PO-3   | PO-4     | PO-5        | 9-0d | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |   |   |   |   |   |
| CO1                    | Understand te                                                                                                                              | 1                                                                                                                                                                             | 3      | 3      | 3      | 2      | 2        | 2           | 3    | 2    | 3    | 2    | 2     |       |   |   |   |   |   |
| CO2                    | Understand te                                                                                                                              | concept of geometrical isomerism                                                                                                                                              |        |        |        |        |          |             | 3    | 3    | 2    | 2    | 3     | 2     | 3 | 3 | 3 | 2 | 2 |
| CO3                    | Understand te concept of geometrical isomerism  Learn about nomenclature, classification and chemical reactions of heterocyclic compounds. |                                                                                                                                                                               |        |        |        |        |          |             |      |      | 3    | 3    | 3     | 3     | 2 | 2 | 3 | 3 | 3 |
| CO4                    | Understand di                                                                                                                              | fferent reactions and medicinal uses of larger heterocyclic compo                                                                                                             | ounds  | ·      | ·      |        |          | ·           | 3    | 2    | 3    | 2    | 3     | 2     | 3 | 2 | 3 | 2 | 3 |
| CO5                    | Learn the cond                                                                                                                             | Understand different reactions and medicinal uses of larger heterocyclic compounds  Learn the concept of reduction, oxidation, rearrangement reactions and their applications |        |        |        |        |          |             |      |      |      |      | 3     | 2     | 3 | 2 | 3 | 2 | 3 |

|                        |                | FACULTY OF PHARMA                                                | ACY, IN    | TEGRA     | L UNIV    | ERSITY   | , LUCK   | NOW.   |      |      |      |       |       |    |   |   |   |   |   |
|------------------------|----------------|------------------------------------------------------------------|------------|-----------|-----------|----------|----------|--------|------|------|------|-------|-------|----|---|---|---|---|---|
|                        |                |                                                                  | CO-PO      | MAPP      | ING       |          |          |        |      |      |      |       |       |    |   |   |   |   |   |
|                        |                | B. PHARM.                                                        | YEA        | R / SEM   | ESTER     | : Second | l/Fourth |        |      |      |      |       |       |    |   |   |   |   |   |
| RSE<br>EGO<br>Y        | CODE           | SUBJECT                                                          |            | PER       | IODS      |          | EVALU    | JATION |      |      |      |       |       | РО |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE           | SUBJECT                                                          | L          | T         | P         | C        | S        | ESE    |      |      |      |       |       | Ю  |   |   |   |   |   |
| BP                     | BP 402T        | 75                                                               | PO-1       | PO-2      | PO-3      | PO-4     | PO-5     | PO-6   | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |    |   |   |   |   |   |
| CO1                    | Understand ba  |                                                                  | 1          | 1         | 1         | 2        | 2        | 2      | 2    | 0    | 2    | 2     | 1     |    |   |   |   |   |   |
| CO2                    | Well acquainte | ed with the chemistry of cholinergic and anti-cholinergic drugs. |            |           |           |          |          |        | 2    | 0    | 1    | 2     | 1     | 1  | 2 | 0 | 1 | 2 | 2 |
| CO3                    | To understand  | chemistry of drugs acting on autonomic nervous system.           |            |           |           |          |          |        | 1    | 1    | 2    | 2     | 1     | 1  | 2 | 0 | 1 | 1 | 2 |
| CO4                    | Have basic kn  | owledge, chemistry of drugs acting on CNS like sedatiives, hyp   | notics, ar | ntipsycho | otic & an | ticonvul | sant.    |        | 1    | 1    | 2    | 2     | 1     | 1  | 2 | 0 | 1 | 2 | 2 |
| CO5                    | Well acquainte | ed with thw chemistry of general anaesthetics, Narcotic & Non-   | narcotics  | and Anti  | i-inflamn | natory a | gents.   |        | 2    | 1    | 2    | 2     | 1     | 1  | 2 | 0 | 1 | 2 | 2 |

|                        |                                                                                                                                                                                                                                                      | FACULTY OF PHARMA                                                   | CY, IN     | TEGRA     | L UNIV   | ERSITY   | Y, LUCK  | NOW.   |   |   |      |      |      |      |      |      |      |       |       |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------|-----------|----------|----------|----------|--------|---|---|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                                                                                                                      |                                                                     | CO-PO      | MAPP      | ING      |          |          |        |   |   |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                                                                                                                      | B. PHARM.                                                           | Y          | EAR / S   | EMEST    | ER: 2nd  | l /4th   |        |   |   |      |      |      |      |      |      |      |       |       |
| RSE<br>EGO<br>Y        | CODE                                                                                                                                                                                                                                                 | SUBJECT                                                             |            | PER       | IODS     |          | EVALU    | JATION |   |   |      |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                                                                                                                 | SUBJECT                                                             | L          | T         | P        | C        | S        | ESE    |   |   |      |      |      | Ю    |      |      |      |       |       |
|                        | BP 403T Physical Pharmaceutics-II 3 1 1 4 25                                                                                                                                                                                                         |                                                                     |            |           |          |          |          |        |   |   | PO-3 | PO-4 | PO-5 | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| BP                     | Understand various physicochemical properties of drug molecules in the designing the dosage form                                                                                                                                                     |                                                                     |            |           |          |          |          |        |   |   | 2    | 2    | 1    |      | 1    | 1    |      |       |       |
| CO1                    |                                                                                                                                                                                                                                                      |                                                                     |            |           |          |          |          |        |   | 2 | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     |       |
| CO2                    | Understand th                                                                                                                                                                                                                                        | e concept of viscosity and flow behaviour in the formulation dev    | elopmen    | t and eva | aluation | of dosag | e forms. |        | 3 | 2 | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |
| CO3                    | Understand the concept of viscosity and flow behaviour in the formulation development and evaluation of dosage forms.  Knowledge of physicochemical properties, formulation factors and instability markers in development of biphasic liquid forms. |                                                                     |            |           |          |          |          |        |   | 2 | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |
| CO4                    | Demonstrate t                                                                                                                                                                                                                                        |                                                                     | ·          | 3         | 2        | 2        | 2        | 2      | 3 | 2 | 1    | 2    | 3    | 3    |      |      |      |       |       |
| CO5                    | 1.Know the pr                                                                                                                                                                                                                                        | rinciples of chemical kinetics & to use them in assigning expiry of | late for F | ormulati  | on       |          | •        |        | 3 | 2 | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |

|                        |                                                                                                                                                                  | FACULTY OF PHARMA                                                                                                                                          | CY, IN | ΓEGRA   | L UNIV | ERSITY  | Y, LUCKI    | NOW.  |      |      |      |      |       |      |   |   |   |   |   |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------|--------|---------|-------------|-------|------|------|------|------|-------|------|---|---|---|---|---|
|                        |                                                                                                                                                                  |                                                                                                                                                            | CO-PO  | MAPP    | ING    |         |             |       |      |      |      |      |       |      |   |   |   |   |   |
|                        |                                                                                                                                                                  | B. PHARM.                                                                                                                                                  | 7      | EAR / S | SEMES' | TER: II | / <b>IV</b> |       |      |      |      |      |       |      |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                             | SUBJECT                                                                                                                                                    |        | PER     | IODS   |         | EVALU       | ATION |      |      |      |      |       | PO   |   |   |   |   |   |
| COU<br>CAT             | CODE                                                                                                                                                             | SUBJECT                                                                                                                                                    | L      | T       | P      | C       | S           | ESE   |      |      |      |      |       | Ю    |   |   |   |   |   |
|                        | BP 404T                                                                                                                                                          |                                                                                                                                                            |        | P0-1    | PO-2   | 0-3     | PO-4        | 0-5   | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | 0-11 |   |   |   |   |   |
| BP                     |                                                                                                                                                                  | 25                                                                                                                                                         | 75     | Ь       | Р      | Ь       | Ь           | Ъ     | Ь    | Ь    | Р    | Р    | P     | P    |   |   |   |   |   |
| CO1                    | Understand the                                                                                                                                                   |                                                                                                                                                            | 3      | 2       | 3      | 3       | 2           | 3     | 2    | 2    | 3    | 3    | 3     |      |   |   |   |   |   |
| CO2                    | Understand the pharmacological actions of different categories of drugs  Explain the mechanism of drug action at organ system/sub cellular/macromolecular levels |                                                                                                                                                            |        |         |        |         |             |       |      |      |      | 3    | 2     | 2    | 1 | 3 | 2 | 2 | 3 |
| CO3                    | Apply the basi                                                                                                                                                   |                                                                                                                                                            | 3      | 3       | 3      | 2       | 2           | 3     | 2    | 2    | 3    | 3    | 3     |      |   |   |   |   |   |
| CO4                    | Observe the ef                                                                                                                                                   | pply the basic pharmacological knowledge in the prevention and treatment of various diseases below the effect of drugs on animals by simulated experiments |        |         |        |         |             |       |      |      |      |      | 2     | 1    | 1 | 1 | 1 | 2 | 3 |
| CO5                    | Appreciate con                                                                                                                                                   | appreciate correlation of pharmacology with other bio medical sciences                                                                                     |        |         |        |         |             |       |      |      |      |      | 2     | 2    | 2 | 1 | 2 | 2 | 3 |

|                        |              | FACULTY OF PHARMA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | CY, IN   | ΓEGRA   | L UNIV   | ERSITY    | Y, LUCK  | NOW.     |   |   |   |      |      |      |      |      |      |       |       |
|------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|----------|-----------|----------|----------|---|---|---|------|------|------|------|------|------|-------|-------|
|                        |              | P 405T Pharmacognosy and Phytochemistry  ain knowledge on biological source, active constituents and uses of crude drugs Inderstand the techniques of evaluation of crude drugs as per the WHO guidelines Inderstand the basic principles of cultivation, collection and storage of crude drugs Inderstand the crop improvement concepts involved in techniques for improvement of quality of medicinal plants Inderstand the applications of Primary & Secondary metabolites of the plant and explore its medicinal importance base its chemical class Inderstand the principles and application of different system of alternative medicine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |         |          |           |          |          |   |   |   |      |      |      |      |      |      |       |       |
|                        |              | CO-PO MAPPING  B. PHARM. YEAR / SEMESTER: II / IV  SUBJECT  Pharmacognosy and Phytochemistry  The pharmacogn |          |         |          |           |          |          |   |   |   |      |      |      |      |      |      |       |       |
| RSE                    | CODE         | CO-PO MAPPING   B. PHARM.   YEAR / SEMESTER: II / IV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |         |          |           |          |          |   |   |   |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE         | CO-PO MAPPING   B. PHARM.   YEAR / SEMESTER: II / IV   PERIODS   EVALUATE   T   P   C   S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |         |          |           |          |          |   |   |   |      |      | 10   |      |      |      |       |       |
| BP                     | BP 405T      | In knowledge on biological source, active constituents and uses of crude drugs derstand the techniques of evaluation of crude drugs as per the WHO guidelines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |         |          |           |          |          |   |   |   | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Gain knowle  | B. PHARM. YEAR / SEMESTER: II / IV    PERIODS   EVALUATI   L T P C S E   EVALUATI   DESCRIPTION   EVALUATI   DESCRIPTION  |          |         |          |           |          |          |   |   | 2 | 1    | 1    | 0    | 0    | 0    | 1    | 3     | 3     |
|                        | Understand t | B. PHARM. YEAR / SEMESTER: II / IV  CODE  SUBJECT  B. PHARM. YEAR / SEMESTER: II / IV  PERIODS  L T P C S EX  BP 405T Pharmacognosy and Phytochemistry  4 0 1 4 25 7  Gain knowledge on biological source, active constituents and uses of crude drugs  Understand the techniques of evaluation of crude drugs as per the WHO guidelines  Understand the basic principles of cultivation, collection and storage of crude drugs  Application of the crop improvement concepts involved in techniques for improvement of quality of medicinal plants  Exploring the tissue culture technique in medicinal plants  Appreciate the applications of Primary & Secondary metabolites of the plant and explore its medicinal importance base in its chemical class                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |         |          |           |          |          |   |   |   | 2    | 2    | 3    | 3    | 0    | 2    | 0     | 3     |
| CO2                    | Understand t | B. PHARM. YEAR / SEMESTER: II / IV    CODE   SUBJECT   PERIODS   EVALUATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |         |          |           |          |          |   |   | 2 | 2    | 0    | 0    | 1    | 1    | 2    | 2     | 2     |
|                        | Application  | Pharmacognosy and Phytochemistry  4 0 1 4 25 75  in knowledge on biological source, active constituents and uses of crude drugs derstand the techniques of evaluation of crude drugs as per the WHO guidelines derstand the basic principles of cultivation, collection and storage of crude drugs plication of the crop improvement concepts involved in techniques for improvement of quality of medicinal plants preciate the applications of Primary &Secondary metabolites of the plant and explore its medicinal importance base                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |         |          |           |          |          |   |   |   | 2    | 0    | 3    | 2    | 1    | 2    | 0     | 3     |
| CO3                    | Exploring tl | he tissue culture technique in medicinal plants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |         |          |           |          |          | 3 | 2 | 2 | 3    | 0    | 3    | 2    | 1    | 2    | 0     | 2     |
| CO4                    | * *          | • • • • • • • • • • • • • • • • • • • •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | lant and | explore | e its me | dicinal i | mportano | ce based | 2 | 0 | 3 | 2    | 1    | 0    | 0    | 1    | 0    | 0     | 2     |
|                        | Understand t | Pharmacognosy and Phytochemistry  4 0 1 4 25 7  In knowledge on biological source, active constituents and uses of crude drugs  Iderstand the techniques of evaluation of crude drugs as per the WHO guidelines  Iderstand the basic principles of cultivation, collection and storage of crude drugs  Indication of the crop improvement concepts involved in techniques for improvement of quality of medicinal plants  Indication of the applications of Primary & Secondary metabolites of the plant and explore its medicinal importance basits chemical class  Iderstand the principles and application of different system of alternative medicine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |         |          |           |          |          |   |   |   | 1    | 1    | 0    | 0    | 2    | 1    | 2     | 2     |
| CO5                    | Explore nove | SUBJECT  Pharmacognosy and Phytochemistry  4 0 1 4 25 75  Towledge on biological source, active constituents and uses of crude drugs and the techniques of evaluation of crude drugs as per the WHO guidelines and the basic principles of cultivation, collection and storage of crude drugs at the crop improvement concepts involved in techniques for improvement of quality of medicinal plants are the applications of Primary & Secondary metabolites of the plant and explore its medicinal importance based themical class                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |         |          |           |          |          |   |   |   | 0    | 0    | 1    | 0    | 1    | 0    | 2     | 2     |

|                        |                              | FACULTY OF PHARMA                                                                                                                                                                                          | CY, IN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ΓEGRA      | L UNIV | ERSITY | , LUCK | NOW.   |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|--------|--------|--------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                              |                                                                                                                                                                                                            | PERIODS  L T P C  3 1 0 4  requirement of drugs interacting with them and acting as Antihistamines, Gastric Proton pump of thyroids, Antidiabetics and Local Anesthetics. If it receptors or enzymes and the molecular efficient on the following cate Diuretics, CVS drugs, Steroids, Thyroids and antithyroids, CVS, Steroids, Thyroids and antithyroids and antithyroids and antithyroids CVS, Steroids, Thyroids and antithyroids and antithyroids, CVS, Steroids, Thyroids and antithyroids and antithyroids, CVS, Steroids, Thyroids and antithyroids and antithyroids, CVS, Steroids, Thyroids and antithyroids and antithyroids. |            |        |        |        |        |      |      |      |      |      |      |      |      |      |       |       |
|                        | <del></del>                  | B. PHARM.                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | YEAR /     | SEMES  | 3/5    |        |        |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                         | SUBJECT                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | EVALU      | JATION |        |        |        |      |      | PO   |      |      |      |      |      |      |       |       |
| COT<br>CAT<br>RY       | CODE                         | SCHGECT                                                                                                                                                                                                    | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | S          | ESE    |        |        |        |      |      | 10   |      |      |      | 1    |      |      |       |       |
| BP                     | BP501T                       | MEDICINAL CHEMISTRY- II                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1          | 0      | 4      | 25     | 75     | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | correlate the b              | es of biological targets in humans and the structural requirement<br>biological systems involved in drug action for drugs acting as Ances, Diuretics, CVS drugs, Steroids, Thyroids and antithyroids, Ar   | n pump                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | inhibitors |        | 3      | 2      | 3      | 2    | 3    | 3    | 1    | 1    | 3    | 2    | 3    |      |       |       |
| CO2                    | respective ago               | gory of d                                                                                                                                                                                                  | rugs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3          | 2      | 3      | 3      | 3      | 2    | 2    | 3    | 3    | 2    | 3    |      |      |      |       |       |
| CO3                    |                              |                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            | 3      | 2      | 3      | 3      | 3    | 2    | 2    | 3    | 3    | 2    | 3    |      |      |       |       |
| CO4                    | the storage of Antihistamine | ug metabolic pathways, adverse effect and therapeutic value from<br>drugs based on the chemical stability.<br>es, Gastric Proton pump inhibitors, Antineoplastics, Diuretics, CV<br>and Local Anesthetics. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            | _      | -      |        | ion on | 3    | 2    | 3    | 3    | 3    | 2    | 2    | 3    | 3    | 2     | 3     |
| CO5                    | Methotrexate,                | knowledge of chemical synthesis of important drugs such as Cim<br>Acetazolamide, Chlorothiazide, Furosemide, Methyl dopa, Nitro<br>Benzocaine, Procaine and Dibucaine.                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |        |        |        | in,    | 3    | 2    | 3    | 3    | 1    | 1    | 3    | 1    | 2    | 3     | 3     |

|                        |               | FACULTY OF PHARMA                                                 | CY, IN | ΓEGRA] | L UNIV  | ERSITY              | Y, LUCK         | NOW.   |      |      |      |      |       |       |   |   |   |   |   |
|------------------------|---------------|-------------------------------------------------------------------|--------|--------|---------|---------------------|-----------------|--------|------|------|------|------|-------|-------|---|---|---|---|---|
|                        |               |                                                                   | CO-PO  | MAPP   | ING     |                     |                 |        |      |      |      |      |       |       |   |   |   |   |   |
|                        |               | B. PHARM.                                                         |        | YEAR/  | Semeste | r:3 <sup>rd</sup> / | 5 <sup>th</sup> |        |      |      |      |      |       |       |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE          | SUBJECT                                                           |        | PER    | IODS    |                     | EVALU           | JATION |      |      |      |      |       | PO    |   |   |   |   |   |
| COU<br>CAT<br>RY       | CODE          | SUBJECT                                                           | L      | T      | P       | C                   | S               | ESE    |      |      |      |      |       | Ю     |   |   |   |   |   |
| BP                     | BP502T        | 25                                                                | 75     | PO-1   | PO-2    | PO-3                | PO-4            | PO-5   | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | P0-11 |   |   |   |   |   |
| CO1                    | Acquire the k | nowledge of Preformulation                                        |        | •      |         |                     | •               | •      | 3    | 3    | 2    | 2    | 1     | 3     | 3 | 2 | 2 | 1 | 2 |
| CO2                    | Know the var  | rious pharmaceutical dosage forms and their manufacturing techn   | iques. |        |         |                     |                 |        | 3    | 3    | 2    | 2    | 3     | 2     | 3 | 2 | 2 | 1 | 2 |
| CO3                    | Know variou   | s considerations in development of pharmaceutical dosage forms.   | •      |        |         |                     |                 |        | 3    | 3    | 2    | 2    | 2     | 3     | 3 | 3 | 1 | 1 | 2 |
| CO4                    | Formulate sol | id, liquid and semisolid dosage forms and evaluate them for their |        |        | 3       | 3                   | 3               | 2      | 3    | 2    | 2    | 2    | 1     | 3     | 2 |   |   |   |   |

|                        |                                                                                                                                                                                                  | FACULTY OF PHARM                                                                                    | ACY, IN     | TEGRA     | L UNIV     | ERSITY   | , LUCK      | NOW.     |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------|-----------|------------|----------|-------------|----------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                                                                  |                                                                                                     | CO-PC       | ) MAPP    | ING        |          |             |          |      |      |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                                                                  | B. PHARM.                                                                                           |             | YE        | AR / SE    | MESTE    | R: III/V    | 7        |      |      |      |      |      |      |      |      |      |       |       |
| RSE                    | CODE                                                                                                                                                                                             | SUBJECT                                                                                             |             | PER       | IODS       |          | EVAL        | UATION   |      |      |      |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                                                             | SUBJECT                                                                                             | L           | T         | P          | C        | S           | ESE      |      |      |      |      |      | 10   |      |      |      |       |       |
| BP                     | BP 503T                                                                                                                                                                                          | PHARMACOLOGY-II                                                                                     |             |           |            |          |             |          | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Discuss & Interpret about the application of various blood forming agents and their role in treatment of cardiovascular dis Further able to analyze the importance of Diuretics in certain CVDs. |                                                                                                     |             |           |            |          |             |          |      |      | 3    | 2    | 2    | 3    | 2    | 1    | 2    | 1     | 3     |
| CO2                    | Explain about the mechanism of drug action and its relevance in the treatment of different diseases.                                                                                             |                                                                                                     |             |           |            |          |             |          |      |      | 3    | 3    | 2    | 3    | 2    | 2    | 1    | 1     | 3     |
| CO3                    |                                                                                                                                                                                                  | knowledge to understand and describe about how Autocoids involution and their treatment.            | lved in de  | evelopme  | ent of inf | lammato  | ry disord   | ers like | 3    | 3    | 2    | 3    | 1    | 2    | 2    |      | 1    | 1     | 3     |
| CO4                    |                                                                                                                                                                                                  | about endocrine hormones and their physiological role and can mone regulators in various disorders. | justify the | uses of l | Insulin ,  | OHA,Co   | orticostero | oids,    | 3    | 3    | 2    | 3    | 2    | 2    | 2    | 3    | 2    |       | 3     |
| CO5                    | Detect the redrug.                                                                                                                                                                               | ole of sex hormones and their applications as in Oral contraceptive                                 | ves. Defin  | e Bioassa | ay types   | and meth | nods for s  | pecific  | 3    | 3    | 2    | 3    | 2    | 2    | 1    | 2    | 2    | 1     | 3     |

|                        |                                                                                                                                                                                                                                                | FACULTY OF PHARMACY                                                 | Y, INTE   | GRAL I     | UNIVER        | RSITY, 1 | LUCKNO | W.    |      |      |      |      |       |              |   |   |   |   |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------|------------|---------------|----------|--------|-------|------|------|------|------|-------|--------------|---|---|---|---|
|                        |                                                                                                                                                                                                                                                | C                                                                   | O-PO M    | IAPPIN     | G             |          |        |       |      |      |      |      |       |              |   |   |   |   |
|                        |                                                                                                                                                                                                                                                | B. PHARM.                                                           | YEA       | R / SEN    | <b>1ESTER</b> | R: 3rd/  | 5th    |       |      |      |      |      |       |              |   |   |   |   |
| RSE                    | CODE                                                                                                                                                                                                                                           | SUBJECT                                                             |           | PER        | IODS          |          | EVALU  | ATION |      |      |      |      | P     | $\mathbf{O}$ |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                                                                                                           | SUBJECT                                                             | L         | T          | P             | C        | S      | ESE   |      |      |      |      | Г     | J            |   |   |   |   |
| BP                     | BP 504T                                                                                                                                                                                                                                        | 25                                                                  | 75        | PO-1       | PO-2          | PO-3     | PO-4   | PO-5  | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 |              |   |   |   |   |
| CO1                    | Discuss the ge                                                                                                                                                                                                                                 |                                                                     |           | 2          | 3             | 3        | 3      | 1     | 2    | 2    | 2    | 2    | 2     |              |   |   |   |   |
| CO2                    | Discuss the general technique of biosynthesis of phytoconstituents in plants.  Apprehended the composition, chemistry & chemical classes, bio-sources, therapeutic uses and commercial applications of different plants secondary metabolites. |                                                                     |           |            |               |          |        |       |      |      |      | 3    | 2     | 3            | 2 | 2 | 3 | 3 |
| CO3                    | Accomplished                                                                                                                                                                                                                                   |                                                                     | 3         | 3          | 2             | 2        | 2      | 2     | 3    | 2    | 2    | 3    |       |              |   |   |   |   |
| CO4                    | Accomplished                                                                                                                                                                                                                                   | d in the production estimation and utilization of phytoconstituents | s in indu | strial sca | le            |          |        |       | 2    | 2    | 3    | 3    | 1     | 2            | 2 | 3 | 3 | 3 |
| CO5                    | Accomplished and spectrosco                                                                                                                                                                                                                    | graphy                                                              | 3         | 3          | 3             | 3        | 2      | 3     | 2    | 2    | 2    | 2    |       |              |   |   |   |   |

|                        |                                                                                                                                                        | FACULTY OF PHARMA                                                                                      | CY, IN  | ΓEGRA    | L UNIV | ERSIT | Y, LUCK | NOW.   |   |      |      |      |      |      |      |      |      |       |       |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------|----------|--------|-------|---------|--------|---|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                        |                                                                                                        | CO-PC   | MAPP     | ING    |       |         |        |   |      |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                        | B. PHARM.                                                                                              |         | YEAR A   | SEME   | STER: | 3/5     |        |   |      |      |      |      |      |      |      |      |       |       |
| RSE                    | CODE                                                                                                                                                   | SUBJECT                                                                                                |         | PER      | IODS   |       | EVALU   | JATION |   |      |      |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                   | SUBJECT                                                                                                | L       | T        | P      | C     | S       | ESE    |   |      |      |      |      | Ю    |      |      |      |       |       |
| BP                     | BP505T Pharmaceutical Jurisprudence 3 1 0 4 25  Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals |                                                                                                        |         |          |        |       |         |        |   | PO-2 | PO-3 | PO-4 | PO-5 | 9-O4 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals                                                 |                                                                                                        |         |          |        |       |         |        |   | 1    | 3    | 3    | 0    | 2    | 3    | 1    | 2    | 0     | 2     |
| CO2                    | Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals  Various Indian Pharmaceutical Laws             |                                                                                                        |         |          |        |       |         |        |   |      | 1    | 3    | 0    | 3    | 3    | 0    | 3    | 0     | 2     |
| CO3                    | The regulator                                                                                                                                          | y authorities and agencies governing the manufacture and sale of                                       | pharmac | euticals |        |       |         |        | 2 | 3    | 1    | 1    | 0    | 2    | 3    | 0    | 0    | 0     | 2     |
| CO4                    | The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals  Code of ethics to be followed during pharmacy practice  |                                                                                                        |         |          |        |       |         |        |   |      | 1    | 1    | 1    | 2    | 3    | 1    | 3    | 0     | 2     |
| CO5                    | Various Intell                                                                                                                                         | ectual Property Rights                                                                                 |         |          |        |       |         |        | 2 | 3    | 1    | 1    | 0    | 2    | 3    | 0    | 0    | 0     | 2     |
| CO6                    | Various offen                                                                                                                                          | Various Intellectual Property Rights Various offences and penalties in contravention to different Acts |         |          |        |       |         |        |   |      |      | 1    | 0    | 2    | 3    | 0    | 1    | 0     | 2     |

|                    |                                           | FACULTY OF PHARMA                                                                                                                                                                     | , LUCK     | NOW.     |           |           |             |          |      |      |      |      |      |      |      |      |      |       |       |
|--------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|-----------|-----------|-------------|----------|------|------|------|------|------|------|------|------|------|-------|-------|
|                    |                                           |                                                                                                                                                                                       |            |          |           |           |             |          |      |      |      |      |      |      |      |      |      |       |       |
|                    | 1                                         | B. PHARM.                                                                                                                                                                             | STER: 3    |          |           | 1         |             |          |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGORY | CODE                                      | SUBJECT                                                                                                                                                                               |            | JATION   |           |           |             |          |      | PO   |      |      |      |      |      |      |      |       |       |
| CATEGORY           | 0022                                      | 5520201                                                                                                                                                                               | C          | S        | ESE       |           | 1 1         |          |      |      |      | 1    |      | 1    |      |      |      |       |       |
| BP                 | BP601T                                    | MEDICINAL CHEMISTRY- III                                                                                                                                                              | 3          | 1        | 0         | 4         | 25          | 75       | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                | correlate the                             | bes of biological targets in humans and the structural requirement<br>biological systems involved in drug action for drugs acting as Anals, Antivirals, Antifungals and Anthelmintics |            |          |           |           |             | end and  | 3    | 2    | 3    | 2    | 3    | 3    | 1    | 1    | 3    | 2     | 3     |
| CO2                | Explain chem respective ag Antibiotics, A |                                                                                                                                                                                       |            | 3        | 2         | 3         | 3           | 3        | 2    | 2    | 3    | 3    | 2    | 3    |      |      |      |       |       |
| CO3                | Justify the ab<br>Antibacterial           | ive –                                                                                                                                                                                 |            | 3        | 2         | 3         | 3           | 3        | 2    | 2    | 3    | 3    | 2    | 3    |      |      |      |       |       |
| CO4                |                                           | rug metabolic pathways, adverse effect and therapeutic value from f drugs based on the chemical stability.                                                                            | n the stru | cture of | drugs an  | d provid  | e informat  | tion on  | 3    | 2    | 3    | 3    | 3    | 2    | 2    | 3    | 3    | 2     | 3     |
| CO5                | Para amino sa                             | knowledge of chemical synthesis of important drugs such as Chloalicylic acid, Ciprofloxacin, Nitrofurantoin, Acyclovir, Miconazoe, Sulfacetamide, Sulfamethoxazole, Dapsone.          |            |          |           |           |             | niazid,  | 3    | 2    | 3    | 3    | 1    | 1    | 3    | 1    | 2    | 3     | 3     |
| CO6                |                                           | ico chemical properties related to QSAR and Describe various ap<br>Combinatorial chemistry                                                                                            | proaches   | and desi | igning of | f drug mo | olecules in | ncluding | 3    | 1    | 3    | 3    | 3    | 1    | 3    | 1    | 2    | 2     | 3     |

|                    |                 | FACULTY OF PHARMA                                                                                                                                                                      | CY, IN      | ΓEGRA      | L UNIV   | ERSIT     | Y, LUCK      | NOW.    |      |      |      |      |      |      |      |      |      |       |       |
|--------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|----------|-----------|--------------|---------|------|------|------|------|------|------|------|------|------|-------|-------|
|                    |                 |                                                                                                                                                                                        |             |            |          |           |              |         |      |      |      |      |      |      |      |      |      |       |       |
|                    | 1               | B. PHARM.                                                                                                                                                                              | ER: III     | 1          |          | ı         |              |         |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGORY | CODE            | SUBJECT                                                                                                                                                                                |             | UATION     |          |           |              |         |      | PO   |      |      |      |      |      |      |      |       |       |
| CATEGORT           |                 |                                                                                                                                                                                        | L           | Т          | P        | C         | S            | ESE     |      | 1    |      | 1    | 1    | 1    | l    | 1    | l    | _     |       |
| BP                 | BP 602 T        | Pharmacology-III                                                                                                                                                                       | 3           | 1          | 0        | 4         | 15           | 75      | PO-1 | PO-2 | €-0d | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                | 3               | ective of the unit was to provide basic knowledge about the diseaused in these problems.                                                                                               | se of resp  | piratory s | system/g | astrointe | etinal syste | em      | 2    | 3    | 3    | 3    | 2    | 2    | 3    | 3    | 1    | 1     | 1     |
|                    | This subject is | s designed to impart basic knowledge on the area of medicine use                                                                                                                       | ed in infe  | ctious pr  | oblems.  |           |              |         |      |      |      |      |      |      |      |      |      |       |       |
| CO2                |                 | bjective of the unit was to provide basic knowledge about the disthese problems.                                                                                                       | ons by ba   | cteria/vir | us and   | 3         | 3            | 2       | 3    | 2    | 3    | 3    | 2    | 1    | 1    |      |      |       |       |
|                    |                 | of action, adverse effect, drug interaction, contraindication arise<br>col, macrolides,quinolones and fluoroquinolins, tetracycline and                                                | •           | •          | ent.     |           |              |         |      |      |      |      |      |      |      |      |      |       |       |
| CO3                |                 | ective of this unit is to provide basic knowledge of drugs used in ion, fungal and amoebic infection                                                                                   | sy,viral ii | nfection,  | 3        | 3         | 3            | 2       | 2    | 3    | 3    | 2    | 1    | 1    |      |      |      |       |       |
|                    |                 | t is designed to impart basic knowledge on the area of medicine n and immunity enhancer agents.                                                                                        | mitted dis  | seases,    |          |           |              |         |      |      |      |      |      |      |      |      |      |       |       |
| CO4                |                 | bjective of the unit was to provide basic knowledge about the an unostimulants and immunosuppressants drugs.                                                                           | ticancer o  | drugs, dr  | ugs used | in sexua  | ally transr  | nitted  | 3    | 3    | 3    | 2    | 3    | 3    | 3    | 2    | 1    | 1     |       |
|                    | 3. Mechanism    | of action, adverse effect, drug interaction, contraindication arise                                                                                                                    | es due to   | use of th  | ese drug | s and the | eir manag    | ement . |      |      |      |      |      |      |      |      |      |       |       |
|                    | The chief obje  | ective of the unit was to provide basic knowledge about the of ac                                                                                                                      | ute, suba   | cute and   | chronic  |           |              |         |      |      |      |      |      |      |      |      |      |       |       |
| CO5                | mutagenicity,   | rugs used in these problems. Definition and basic knowledge of general principles of treatment of poisoning, Clinical symptoms anophosphorus compound and lead, mercury and arsenic po | and mana    |            |          |           | ogenicity    | and     | 3    | 3    | 3    | 2    | 2    | 3    | 3    | 2    | 1    | 1     |       |
|                    | 3. Definition   | of rhythm and cycles.Biological clock and their significance lead                                                                                                                      |             |            |          |           |              |         |      |      |      |      |      |      |      |      |      |       |       |

|                        |                        | FACULTY OF PHARMAC                                                             | Y, INTE     | GRAL U        | JNIVER | RSITY, I | LUCKNO | w.    |      |      |      |      |      |       |   |   |   |   |
|------------------------|------------------------|--------------------------------------------------------------------------------|-------------|---------------|--------|----------|--------|-------|------|------|------|------|------|-------|---|---|---|---|
|                        |                        | C                                                                              | CO-PO M     | <b>IAPPIN</b> | G      |          |        |       |      |      |      |      |      |       |   |   |   |   |
|                        |                        | B. PHARM.                                                                      | YEA]        | R / SEM       | ESTER  | : 3rd/   | 6th    |       |      |      |      |      |      |       |   |   |   |   |
| RSE                    | CODE                   | SUBJECT                                                                        |             | PER           | ODS    |          | EVALU  | ATION |      |      |      |      | P    | ^     |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE                   | SUBJECT                                                                        | L           | T             | P      | C        | S      | ESE   |      |      |      |      | r    | U     |   |   |   |   |
| BP                     | BP 603T                | Herbal Drug Technology                                                         | 25          | 75            | PO-1   | PO-2     | PO-3   | PO-4  | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 |   |   |   |   |
| CO1                    | Discuss the omedicine. | l system o                                                                     | f           | 2             | 1      | 3        | 2      | 1     | 2    | 1    | 1    | 2    | 2    |       |   |   |   |   |
| CO2                    | Apprehended            | ons.                                                                           |             | 3             | 1      | 3        | 3      | 2     | 3    | 2    | 2    | 3    | 3    |       |   |   |   |   |
| CO3                    |                        |                                                                                |             |               |        |          |        |       |      |      |      | 2    | 2    | 2     | 3 | 2 | 2 | 3 |
| CO4                    |                        | ed the Patenting aspects, Regulatory Issues and WHO and ICH guatural Products. | nent of Tra | aditional     | 2      | 2        | 3      | 3     | 1    | 2    | 2    | 3    | 3    | 3     |   |   |   |   |
| CO5                    | Discuss the O          | General Introduction to Herbal Industry and Good Manufacturing                 | cine.       |               | 3      | 2        | 3      | 3     | 2    | 3    | 1    | 2    | 2    | 2     |   |   |   |   |

|                        |                                | , LUCK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NOW.       |            |           |           |            |           |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|-----------|-----------|------------|-----------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                | E SUBJECT  L T P C S  4T Biopharmaceutics 3 1 0 4 25  derstand the mechanisms of drug absorption through GIT, factors influencing drug absorption though GIT and absorption non per oral extra-vascular routes.  The about the tissue permeability of drugs, kinetics of protein binding and clinical significance of protein binding of drugstand the basic understanding of metabolic pathways, factors affecting renal excretion of drugs and non renal routes of the standard protein binding of drugstand the basic understanding of metabolic pathways, factors affecting renal excretion of drugs and non renal routes of the standard protein binding of drugstand the basic understanding of metabolic pathways, factors affecting renal excretion of drugs and non renal routes of the standard protein binding of drugstand protein binding and clinical significance of protein binding of drugstand protein binding and clinical significance of protein binding of drugstand protein binding and clinical significance of protein binding of drugstand protein binding and clinical significance of protein binding of drugstand protein binding and clinical significance of protein binding of drugstand protein binding and clinical significance of protein binding of drugstand protein binding and clinical significance of protein binding and clinical s |            |            |           |           |            |           |      |      |      |      |      |      |      |      |      |       |       |
|                        |                                | B. PHARM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7          | EAR / S    | SEMES     | ΓER: III  | I/VI       |           |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                           | CIDICT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            | PER        | IODS      |           | EVALU      | JATION    |      |      |      |      |      | PO   |      |      |      |       |       |
| COU<br>CAT             | CODE                           | SUBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | L          | T          | P         | C         | S          | ESE       |      |      |      |      |      | Ю    |      |      |      |       |       |
| BP                     | BP604T                         | Biopharmaceutics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3          | 1          | 0         | 4         | 25         | 75        | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    |                                | otion of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3          | 1          | 1         | 2         | 1          | 2         | 2    | 2    | 3    | 2    | 1    |      |      |      |      |       |       |
| CO2                    | Know about th                  | ing of dru                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | gs.        | 3          | 1         | 1         | 2          | 1         | 2    | 2    | 2    | 3    | 2    | 1    |      |      |      |       |       |
| CO3                    | understand the excretion of de |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | enal excre | etion of d | rugs and  | l non ren | al routes  | of drug   | 3    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO4                    |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |            |           | orrelatio | ns, bioeqı | uivalence | 3    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO5                    | explain compa                  | artmental modeling, various pharmacokinetic parameters, their si                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ignifican  | ce and ap  | plication | ıs.       |            |           | 3    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO6                    | know about ki                  | netics of multiple dosing, calculations of loading and mainetnan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ce doses   | and their  | signific  | ance.     |            |           | 3    | 1    | 1    | 2    | 1    | 2    | 2    | 2    | 3    | 2     | 1     |
| CO7                    | understand the estimating par  | e concept of non-linear pharmacokinetics and factors causing nor<br>rameters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            | 3          | 1         | 1         | 2          | 1         | 2    | 2    | 2    | 3    | 2    | 1    |      |      |      |       |       |

|                        |                                                                                                                                                               | FACULTY OF PHARMA                                                   | CY, IN    | TEGRA      | L UNIV    | ERSIT    | Y, LUCK           | NOW.   |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------|------------|-----------|----------|-------------------|--------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                               |                                                                     | CO-PO     | MAPP:      | ING       |          |                   |        |      |      |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                               | B. PHARM.                                                           | Y         | EAR / S    | EMEST     | TER: 3rd | 1/6 <sup>th</sup> |        |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                          | SUBJECT                                                             |           | PER        | IODS      |          | EVALU             | JATION |      |      |      |      |      | PO   |      |      |      |       |       |
| COU<br>CAT             | CODE                                                                                                                                                          | SUBJECT                                                             | L         | T          | P         | C        | S                 | ESE    |      |      |      |      |      | Ю    |      |      |      |       |       |
| BP                     | BP 605T                                                                                                                                                       | Pharmaceutical Biotechnology                                        | 3         | 1          | 3         | 4        | 25                | 75     | P0-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Understanding the basics of biotechnology including genetic engineering, Protein Engineering and Production of Enzymes enzymes immobilization and biosensors. |                                                                     |           |            |           |          |                   |        |      | 1    | 1    | 3    | 1    | 2    | 2    | 1    | 2    | 1     | 1     |
| CO2                    | Understanding                                                                                                                                                 | g Genetic engineering, Study of Recombinant DNA technology, l       | PCR and   | producti   | on of bi  | otechnol | logical pro       | ducts. | 3    | 2    | 2    | 3    | 1    | 2    | 2    | 1    | 2    | 1     | 1     |
| CO3                    | Understanding                                                                                                                                                 | g the immune system, Hypersensitivity reactions, Monoclonal an      | tibodies  | and vacc   | ines.     |          |                   |        | 3    | 2    | 2    | 3    | 1    | 2    | 2    | 1    | 2    | 1     | 1     |
| CO4                    | Know the imp                                                                                                                                                  | portance of various immunological techniques i.e. Microbial gene    | tics, Mic | crobial bi | otransfo  | rmation  | and Muta          | tion.  | 3    | 1    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 2     | 1     |
| CO5                    | Study of fern<br>Blood Produc                                                                                                                                 | nentation technology, production of various pharmaceutical produts. | icts and  | Collection | on, Proce | ssing an | d Storage         | of     | 3    | 2    | 1    | 3    | 2    | 2    | 2    | 2    | 2    | 1     | 2     |

|                        |                | FACULTY OF PHARMA                                       | CY, IN | TEGRA: | L UNIV  | ERSITY                | , LUCK          | NOW.   |   |   |   |      |      |      |      |      |      |       |       |
|------------------------|----------------|---------------------------------------------------------|--------|--------|---------|-----------------------|-----------------|--------|---|---|---|------|------|------|------|------|------|-------|-------|
|                        |                |                                                         | CO-PO  | MAPP   | ING     |                       | ,               |        |   |   |   |      |      |      |      |      |      |       |       |
|                        |                | B. PHARM.                                               |        | YEAR / | Semeste | er: 3 <sup>rd</sup> / | 6 <sup>th</sup> |        |   |   |   |      |      |      |      |      |      |       |       |
| RSE<br>EGO<br>Y        | CODE           | CUDIECT                                                 |        | PER    | IODS    |                       | EVALU           | JATION |   |   |   |      |      | DO.  |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE           | SUBJECT                                                 | L      | T      | P       | C                     | S               | ESE    |   |   |   |      |      | PO   |      |      |      |       |       |
| BP                     | BP606T         | BP606T QUALITY ASSURANCE 3 1 0 4 2                      |        |        |         |                       |                 |        |   |   |   | PO-4 | PO-5 | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Understand th  | e cGMP aspects in Pharmaceutical industry.              | l      |        |         |                       |                 |        | 3 | 3 | 2 | 2    | 3    | 3    | 3    | 2    | 2    | 1     | 2     |
| CO2                    | Acquire know   | ledge about prevention and control of various diseases. |        |        |         |                       |                 |        | 3 | 3 | 2 | 2    | 3    | 2    | 2    | 2    | 1    | 1     | 2     |
| CO3                    | Acquire the sc | cope of certification in pharmaceutical industries.     |        |        |         |                       |                 |        | 3 | 3 | 2 | 2    | 3    | 3    | 3    | 3    | 1    | 1     | 2     |
| CO4                    | Understand th  | ne responsibilities of QA &QC departments               | •      |        |         |                       | •               |        | 3 | 3 | 2 | 2    | 3    | 2    | 2    | 2    | 1    | 1     | 2     |

|                        |                 | FACULTY OF PHARMA                                                                                                                                                                                                                 | CY, IN   | ΓEGRA     | L UNIV | ERSITY | , LUCK | NOW.  |      |      |      |       |       |    |   |   |   |   |   |
|------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|--------|--------|--------|-------|------|------|------|-------|-------|----|---|---|---|---|---|
|                        |                 |                                                                                                                                                                                                                                   | CO-PO    | MAPP      | ING    |        |        |       |      |      |      |       |       |    |   |   |   |   |   |
|                        |                 | B. PHARM.                                                                                                                                                                                                                         | Y        | EAR / S   | EMEST  | ER: IV | / VII  |       |      |      |      |       |       |    |   |   |   |   |   |
| RSE<br>EGO<br>Y        | CODE            | SUBJECT                                                                                                                                                                                                                           |          | PERI      | ODS    |        | EVALU  | ATION |      |      |      |       |       | PO |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE            | SUBJECT                                                                                                                                                                                                                           | L        | T         | P      | C      | S      | ESE   |      |      |      |       |       | Ю  |   |   |   |   |   |
| BP                     | BP701T          | 75                                                                                                                                                                                                                                | PO-1     | PO-2      | PO-3   | PO-4   | PO-5   | 9-O4  | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |    |   |   |   |   |   |
| CO1                    | Investigate the |                                                                                                                                                                                                                                   | 3        | 3         | 3      | 3      | 1      | 2     | 3    | 3    | 3    | 3     | 3     |    |   |   |   |   |   |
| CO2                    | Analyze the es  | ssentials of nepheloturbidometry, flame photometry and atomic a                                                                                                                                                                   | bsorptio | n spectro | scopy. |        |        |       | 3    | 3    | 3    | 3     | 1     | 2  | 3 | 3 | 3 | 3 | 3 |
| CO3                    | Apprehend the   |                                                                                                                                                                                                                                   | 3        | 3         | 3      | 3      | 1      | 2     | 3    | 3    | 3    | 3     | 3     |    |   |   |   |   |   |
| CO4                    | Recognize the   | pprehend the analysis of a pharmaceutical substances by chromatographic techniques and electrophoresis.  ecognize the principle, instrumentation and applications of gas chromatography & high performance liquid chromatography. |          |           |        |        |        |       |      |      |      |       | 1     | 2  | 3 | 3 | 3 | 3 | 3 |
| CO5                    | Deal with the   | eal with the fundamentals of ion exchange, affinity chromatography and gel chromatography.                                                                                                                                        |          |           |        |        |        |       |      |      |      |       | 1     | 2  | 3 | 3 | 3 | 3 | 3 |

|                        |                | FACULTY OF PHARMA                                                  | CY, IN    | [EGRA] | L UNIV  | ERSITY              | , LUCK          | NOW.   |   |   |   |   |      |      |      |      |      |       |       |
|------------------------|----------------|--------------------------------------------------------------------|-----------|--------|---------|---------------------|-----------------|--------|---|---|---|---|------|------|------|------|------|-------|-------|
|                        |                |                                                                    | CO-PO     | MAPP   | ING     |                     |                 |        |   |   |   |   |      |      |      |      |      |       |       |
|                        |                | B. PHARM.                                                          |           | YEAR/  | Semeste | r:4 <sup>th</sup> / | 7 <sup>th</sup> |        |   |   |   |   |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE           | SUBJECT                                                            |           | PER    | IODS    |                     | EVALU           | JATION |   |   |   |   |      | РО   |      |      |      |       |       |
| COU<br>CAT             | CODE           | SUBJECT                                                            | L         | T      | P       | C                   | S               | ESE    |   |   |   |   |      | Ю    |      |      |      |       |       |
| BP                     | BP702T         | PP702T Industrial Pharmacy-II 3 1 0 4 25                           |           |        |         |                     |                 |        |   |   |   |   | PO-5 | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Acquire the ab | pility about process of pilot plant and scale up of pharmaceutical | dosage f  | orms   | •       |                     | 1               |        | 3 | 3 | 3 | 2 | 3    | 3    | 3    | 2    | 2    | 3     | 2     |
| CO2                    | Able to comm   | unicate the process of technology transfer from lab scale to com-  | nercial b | atch   |         |                     |                 |        | 3 | 3 | 3 | 2 | 3    | 2    | 2    | 2    | 2    | 1     | 2     |
| CO3                    | Know the diffe | erent Laws and Acts that regulate pharmaceutical industry          |           |        |         |                     |                 |        | 3 | 3 | 3 | 2 | 3    | 3    | 3    | 3    | 1    | 1     | 2     |
| CO4                    | Understand the | e approval process and regulatory requirements for drug product    |           | 3      | 3       | 2                   | 2               | 3      | 2 | 2 | 2 | 1 | 1    | 2    |      |      |      |       |       |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | FACULTY OF PHA    | RMACY, IN | ГЕGRA       | L UNIV              | ERSITY                | Y, LUCK | NOW. |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------|-------------|---------------------|-----------------------|---------|------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   | CO-PC     | <b>MAPP</b> | ING                 |                       |         |      |      |      |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | B. PHA            | ARM       | YEAR :      | 4 <sup>th</sup> Yea | r (7 <sup>th</sup> Se | em)     |      |      |      |      |      |      |      |      |      |      |       |       |
| RSE<br>EGO             | CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | JATION            |           |             |                     |                       |         | PO   |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SUBJECT           | L         | T           | P                   | C                     | S       | ESE  |      |      |      |      |      | PU   |      |      |      |       |       |
| BP                     | 703T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Pharmacy Practice | 3         | 1           | 0                   | 4                     | 25      | 75   | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1                 | 3         | 3           | 2                   | 2                     | 2       | 2    | 1    | 2    | 2    | 2    | 2    |      |      |      |      |       |       |
| CO2                    | pharmacist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   | 3         | 3           | 3                   | 2                     | 2       | 2    | 1    | 0    | 2    | 2    | 2    |      |      |      |      |       |       |
| CO3                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |           |             |                     |                       |         |      | 3    | 3    | 3    | 2    | 2    | 2    | 1    | 2    | 3    | 3     | 3     |
| CO4                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | rational          | 3         | 2           | 2                   | 2                     | 2       | 2    | 1    | 2    | 3    | 3    | 3    |      |      |      |      |       |       |
| CO5                    | Know and understand the Hospital organization and detect and assess adverse drug reactions, reporting and its management.  Knowledge of various drug distribution methods system in the hospital, and monitor drug therapy of Patient, role pharmacist in medication adherence and community pharmacy management .also know how to obtain medication history interview  Able to understand the medication of management, budget preparation and its implementation, and also help in rause of common over the counter medication  Able to understand the appreciate pharmacy stores and inventory control management and able to interpret selected laboratory results of specific disease states and controlling of investigational use of drugs. |                   |           |             |                     |                       |         |      |      | 3    | 3    | 2    | 2    | 2    | 3    | 2    | 3    | 3     | 3     |

|                        |                                                                                                                                                                                                                                                                                                                                                        | FACULTY OF PHARMA                                            | CY, IN     | TEGRA     | L UNIV     | ERSITY   | , LUCK      | NOW.           |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------|-----------|------------|----------|-------------|----------------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                                                                                                                                                                                                                        |                                                              | CO-PC      | MAPP:     | ING        |          |             |                |      |      |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                                                                                                                                                                                                                        | B. PHARM.                                                    | Y          | EAR / S   | EMEST      | ER: 2nd  | l/3rd       |                |      |      |      |      |      |      |      |      |      |       |       |
| RSE<br>EGO<br>Y        | CODE                                                                                                                                                                                                                                                                                                                                                   | SUBJECT                                                      |            | PER       | IODS       |          | EVALU       | J <b>ATION</b> |      |      |      |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                                                                                                                                                                                                                   | SUBJECT                                                      | L          | T         | P          | C        | S           | ESE            |      |      |      |      |      | PU   |      |      |      |       |       |
| BP                     | BP704T                                                                                                                                                                                                                                                                                                                                                 | Novel Drug Delivery Systems                                  | 3          | 1         | 0          | 4        | 25          | 75             | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Understand various approaches for development of novel drug delivery systems.  2. Know the criteria for selection of drugs and polymers for the development of novel drug delivery systems, their formulation evaluation.  Know the approaches, technologies and drug carriers used in the process of drug delivery which serves to improve the select |                                                              |            |           |            |          |             |                |      |      | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |
| CO2                    |                                                                                                                                                                                                                                                                                                                                                        |                                                              | ıg delive  | ery which | serves t   | o improv | ve the sele | ectivity,      | 3    | 2    | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |
| CO3                    | effectiveness, and/or safety of drug administration.  The students should understand about Transdermal Drug Delivery Systems, Gastro-retentive drug delivery systems and Nas pulmonary drug delivery system.                                                                                                                                           |                                                              |            |           |            |          |             |                |      |      | 2    | 2    | 1    | 1    | 2    | 1    | 2    | 1     | 3     |
| CO4                    | To understand                                                                                                                                                                                                                                                                                                                                          | Targeted Drug Delivery including liposomes, niosomes, nanopa | rticles, r | nonoclor  | nal antib  | odies.   |             |                | 3    | 1    | 1    | 3    | 1    | 1    | 2    | 1    | 2    | 1     | 3     |
| CO5                    | To understand                                                                                                                                                                                                                                                                                                                                          | Ocular Drug Delivery Systems and Intrauterine Drug Delivery  | Systems    | including | g intra ut | erine de | vices (IUI  | Os).           | 3    | 2    | 1    | 3    | 2    | 1    | 2    | 2    | 2    | 1     | 2     |

|                        |              | FACULTY OF PHARMACY                                                                                                      | , INTE   | GRAL U  | JNIVER    | RSITY, 1 | LUCKNO | w.    |   |   |   |      |      |              |      |      |      |       |
|------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------|----------|---------|-----------|----------|--------|-------|---|---|---|------|------|--------------|------|------|------|-------|
|                        |              | C                                                                                                                        | O-PO M   | IAPPIN  | G         |          |        |       |   |   |   |      |      |              |      |      |      |       |
|                        |              | B. PHARM.                                                                                                                | YEA      | R: 4th  | Year / 8t | h Semes  | ster   |       |   |   |   |      |      |              |      |      |      |       |
| COURSE<br>CATEGO<br>RY | CODE         | SUBJECT                                                                                                                  |          | PER     | IODS      |          | EVALU  | ATION |   |   |   |      | P    | $\mathbf{O}$ |      |      |      |       |
| COT<br>CAT<br>R        | CODE         | SUBJECT                                                                                                                  | L        | T       | P         | C        | S      | ESE   |   |   |   |      | 1    | <u> </u>     |      |      |      |       |
| BP                     |              |                                                                                                                          |          |         |           |          |        |       |   |   |   | PO-4 | PO-5 | 9-Od         | PO-7 | PO-8 | PO-9 | PO-10 |
| CO1                    |              |                                                                                                                          |          |         |           |          |        |       |   |   |   | 1    | 1    | 2            | 0    | 0    | 0    | 1     |
| CO2                    |              | pplications of Biostatics in Pharmacy such as Regression, Probabing technique, Parametric tests and Non Parametric tests | oility   |         |           |          |        |       | 1 | 1 | 3 | 1    | 1    | 1            | 1    | 0    | 0    | 1     |
| CO3                    |              |                                                                                                                          |          |         |           |          |        |       |   |   |   | 1    | 0    | 2            | 1    | 0    | 1    | 1     |
| CO4                    | Accomplished | the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (D                                                                | esign of | experim | ent).     |          |        |       | 1 | 2 | 3 | 3    | 1    | 2            | 0    | 0    | 0    | 0     |
| CO5                    | Accomplished | the statistical techniques in Design and Analysis of experiments                                                         |          |         | 1         | 2        | 3      | 2     | 0 | 1 | 1 | 0    | 0    | 1            |      |      |      |       |

|                        |               | FACULTY OF PHARMA                                                                                                                                            | CV IN | recev. | I IINIV | FRSITY                  | V I IICK        | NOW    |   |   |   |      |      |      |      |      |      |       |       |
|------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|---------|-------------------------|-----------------|--------|---|---|---|------|------|------|------|------|------|-------|-------|
|                        |               | FACULTI OF THAKWA                                                                                                                                            |       | ) MAPP |         | LIKSII.                 | I, LUCK         | 1011.  |   |   |   |      |      |      |      |      |      |       |       |
|                        |               |                                                                                                                                                              | CO-FC |        |         |                         |                 |        |   |   |   |      |      |      |      |      |      |       |       |
|                        |               | B. PHARM.                                                                                                                                                    |       | YEAR/  | Semeste | er: 4 <sup>th</sup> / 3 | 8 <sup>th</sup> |        |   |   |   |      |      |      |      |      |      |       |       |
| RSE<br>EGO<br>Y        | CODE          | SUBJECT                                                                                                                                                      |       | PER    | IODS    |                         | EVALU           | JATION |   |   |   |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE          | SUBJECT                                                                                                                                                      | L     | T      | P       | C                       | S               | ESE    |   |   |   |      |      | Ю    |      |      |      |       |       |
| BP                     | BP802T        | BP802T Social and Preventive Pharmacy 3 1 0 4 25                                                                                                             |       |        |         |                         |                 |        |   |   |   | PO-4 | PO-5 | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Able to know  | P802T Social and Preventive Pharmacy 3 1 0 4 25  Dele to know about disease, health and health education and acquire the knowledge of nutrition and hygiene. |       |        |         |                         |                 |        |   |   |   | 2    | 3    | 3    | 3    | 2    | 1    | 1     | 2     |
| CO2                    | Acquire know  | wledge about prevention and control of various diseases.                                                                                                     |       |        |         |                         |                 |        | 3 | 3 | 2 | 2    | 3    | 2    | 3    | 2    | 1    | 1     | 2     |
| CO3                    | Able to under | rstand various national health programs.                                                                                                                     |       |        |         |                         |                 |        | 3 | 3 | 2 | 2    | 3    | 3    | 3    | 2    | 1    | 1     | 2     |
| CO4                    | Understand a  | bout National health intervention programme.                                                                                                                 |       |        |         |                         |                 |        | 3 | 3 | 2 | 2    | 3    | 2    | 3    | 2    | 1    | 1     | 2     |
| CO5                    | Acquire the k | the knowledge of community services, NRHM and NUHM.                                                                                                          |       |        |         |                         |                 |        |   |   |   |      | 3    | 3    | 3    | 2    | 1    | 1     | 2     |

|                        |                          | FACULTY OF PHARMA                                                                                                    | CY, IN     | TEGRA    | L UNIV    | ERSITY    | Y, LUCKI  | NOW.   |      |      |      |      |      |       |       |   |   |   |   |
|------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------|------------|----------|-----------|-----------|-----------|--------|------|------|------|------|------|-------|-------|---|---|---|---|
|                        |                          |                                                                                                                      | CO-PO      | MAPP     | ING       |           |           |        |      |      |      |      |      |       |       |   |   |   |   |
|                        |                          | B. PHARM.                                                                                                            | YE         | CAR / SE | EMEST     | ER: IV    | / VIII    |        |      |      |      |      |      |       |       |   |   |   |   |
| RSE<br>EGO<br>Y        | CODE                     | SUBJECT                                                                                                              |            | PER      | IODS      |           | EVALU     | JATION |      |      |      |      |      | PO    |       |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE                     | SUBJECT                                                                                                              | L          | T        | P         | C         | S         | ESE    |      |      |      |      |      | Ю     |       |   |   |   |   |
| UG                     | BP 803ET                 | Pharmaceutical Marketing Management                                                                                  | 25         | 75       | PO-1      | PO-2      | PO-3      | PO-4   | PO-5 | 9-O4 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |   |   |   |   |
| CO1                    |                          | eutical industry, requires skilled managers who can take the industry are imperative for the growth of the industry. | ng the con | nplex    | 1         | 3         | 3         | 2      | 3    | 3    | 3    | 3    | 3    | 2     | 3     |   |   |   |   |
| CO2                    | The Knowled management.  | ge and Know-how of marketing management groom the people f                                                           | es and Pro | duct     | 1         | 3         | 3         | 2      | 3    | 3    | 3    | 3    | 3    | 2     | 3     |   |   |   |   |
| CO3                    | The course air industry. | ms to provide an understanding of marketing concepts and technic                                                     | ques and   | their ap | plication | is in the | pharmacei | ıtical | 1    | 3    | 3    | 2    | 3    | 3     | 3     | 3 | 3 | 2 | 3 |

|                        |                                                                                                                                                                                                                                                              | PHARMACEUTICAL REGULATORY SCIENCE  3 1 0 4 25 75  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process.  The concepts of innovator and generic drugs, drug development process. |            |          |           |           |            |           |      |      |      |      |      |      |      |      |      |       |       |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|-----------|-----------|------------|-----------|------|------|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CO-PC      | ) MAPP   | ING       |           |            |           |      |      |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                                                                                                                              | B. PHARM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |          | YEAR      | / SEME    | STER: 41   | th/8th    |      |      |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                                                                                                                         | SURIECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            | PER      | IODS      |           | EVAL       | UATION    |      |      |      |      |      | PO   |      |      |      |       |       |
| COU<br>CAT<br>RY       | CODE                                                                                                                                                                                                                                                         | SUBJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | L          | T        | P         | C         | S          | ESE       |      |      |      |      |      | 10   |      |      |      |       |       |
| МРН                    | BP-804ET                                                                                                                                                                                                                                                     | PHARMACEUTICAL REGULATORY SCIENCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3          | 1        | 0         | 4         | 25         | 75        | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Understand th                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3          | 2        | 2         | 2         | 2          | 3         | 2    | 1    | 2    | 3    | 3    |      |      |      |      |       |       |
| CO2                    | Understand the concepts of innovator and generic drugs, drug development process.  Know the regulatory guidance's and guidelines for filing and approval process, preparation of dossiers and their submission to regulatory agencies in different countries |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |          |           |           |            |           |      |      |      | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |
| CO3                    |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | sale of ph | narmaceu | ticals an | d the sul | omission o | of global | 3    | 2    | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |
| CO4                    |                                                                                                                                                                                                                                                              | ocuments in CTD/ eCTD, ASEAN formats.  Inderstand the clinical trials requirements for approvals for conducting clinical trials, pharmacovigilance and process of onitoring in clinical trials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |          |           |           |            |           |      |      |      |      | 2    | 3    | 2    | 1    | 2    | 3     | 3     |
| CO5                    | Knowledge o                                                                                                                                                                                                                                                  | f basic terminology, regulatory guidance's, guidelines, laws and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | l acts.    |          |           |           |            |           | 3    | 2    | 2    | 2    | 2    | 3    | 2    | 1    | 2    | 3     | 3     |

|                        |                                         | FACULTY OF PHARMA                                                  | CY, IN | ΓEGRA   | L UNIV | ERSIT | Y, LUCK | NOW.   |      |      |      |       |      |    |   |   |   |    |    |
|------------------------|-----------------------------------------|--------------------------------------------------------------------|--------|---------|--------|-------|---------|--------|------|------|------|-------|------|----|---|---|---|----|----|
|                        |                                         |                                                                    | CO-PC  | MAPP:   | ING    |       |         |        |      |      |      |       |      |    |   |   |   |    |    |
|                        |                                         | B. PHARM.                                                          | Y      | EAR / S | EMEST  | ER:IV | VIII    |        |      |      |      |       |      |    |   |   |   |    |    |
| RSE<br>EGO<br>Y        | CODE                                    | SUBJECT                                                            |        | PER     | IODS   |       | EVALU   | JATION |      |      |      |       |      | PO |   |   |   |    |    |
| COURSE<br>CATEGO<br>RY | CODE                                    | ESE                                                                |        |         |        |       |         | PU     |      |      |      |       |      |    |   |   |   |    |    |
|                        |                                         | 75                                                                 | P0-1   | PO-2    | PO-3   | PO-4  | PO-5    | PO-6   | PO-7 | PO-8 | PO-9 | PO-10 | )-11 |    |   |   |   |    |    |
| BP                     | BP 805ET PHARMACOVIGILANCE 6 2 0 8 25 7 |                                                                    |        |         |        |       |         |        |      |      |      |       | P    | P  | P | P | P | P( | PO |
| CO1                    | Understanding                           | g History and development of pharmacovigilance                     |        |         |        |       |         |        | 3    | 0    | 1    | 1     | 1    | 2  | 2 | 1 | 1 | 2  | 3  |
| CO2                    | Knowledge of                            | National and International scenario of pharmacovigilance           |        |         |        |       |         |        | 3    | 2    | 3    | 1     | 1    | 2  | 0 | 3 | 3 | 0  | 2  |
| CO3                    | Being relevan                           | t to dictionaries, coding and terminologies used in pharmacovigi   | lance  |         |        |       |         |        | 3    | 3    | 2    | 3     | 1    | 2  | 0 | 3 | 2 | 0  | 2  |
| CO4                    | Detection of n                          | ew adverse drug reactions and their assessment                     |        |         |        |       |         |        | 2    | 2    | 3    | 1     | 1    | 2  | 0 | 2 | 3 | 2  | 3  |
| CO5                    | Understanding                           | g International standards for classification of diseases and drugs |        |         |        |       |         |        | 3    | 3    | 3    | 1     | 1    | 2  | 2 | 3 | 2 | 0  | 3  |

|                        |                             | FACULTY OF PHARMA                                                               | CY, IN    | TEGRA     | L UNIV   | ERSITY    | Y, LUCK  | NOW.     |      |      |      |       |       |    |   |   |   |   |   |
|------------------------|-----------------------------|---------------------------------------------------------------------------------|-----------|-----------|----------|-----------|----------|----------|------|------|------|-------|-------|----|---|---|---|---|---|
|                        |                             |                                                                                 | CO-PC     | ) MAPP    | ING      |           |          |          |      |      |      |       |       |    |   |   |   |   |   |
|                        |                             | B. PHARM.                                                                       | Y         | EAR / SI  | EMEST    | ER: IV    | / VIII   |          |      |      |      |       |       |    |   |   |   |   |   |
| RSE                    | CODE                        | SUBJECT                                                                         |           | PER       | IODS     |           | EVALU    | JATION   |      |      |      |       |       | PO |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE                        | SUBJECT                                                                         | L         | T         | P        | C         | S        | ESE      |      |      |      |       |       | 10 |   |   |   |   |   |
| BP                     | BP806ET                     | 75                                                                              | 1-0d      | PO-2      | PO-3     | PO-4      | PO-5     | 9-Od     | PO-7 | 8-Od | 6-Od | PO-10 | PO-11 |    |   |   |   |   |   |
| CO1                    | Gain knowled                | ain knowledge on biological source, active constituents and uses of crude drugs |           |           |          |           |          |          |      |      |      |       |       |    | 0 | 0 | 1 | 3 | 3 |
|                        | Understand th               | ne techniques of evaluation of crude drugs as per the WHO guide                 | lines     |           |          |           |          |          | 3    | 0    | 2    | 2     | 2     | 3  | 3 | 0 | 2 | 0 | 3 |
| CO2                    | Understand th               | ne basic principles of cultivation, collection and storage of crude             | drugs     |           |          |           |          |          | 3    | 0    | 2    | 2     | 0     | 0  | 1 | 1 | 2 | 2 | 2 |
|                        | Application of              | of the crop improvement concepts involved in techniques for improvement         | rovement  | of quali  | ty of me | dicinal p | lants    |          | 3    | 1    | 2    | 2     | 0     | 3  | 2 | 1 | 2 | 0 | 3 |
| CO3                    | Exploring th                | e tissue culture technique in medicinal plants                                  |           |           |          |           |          |          | 3    | 2    | 2    | 3     | 0     | 3  | 2 | 1 | 2 | 0 | 2 |
| CO4                    | Appreciate to on its chemic | he applications of Primary &Secondary metabolites of the p<br>cal class         | olant and | l explore | e its me | dicinal i | mportanc | ce based | 2    | 0    | 3    | 2     | 1     | 0  | 0 | 1 | 0 | 0 | 2 |
|                        | Understand th               | ne principles and application of different system of alternative m              | edicine   |           |          |           |          |          | 3    | 0    | 2    | 1     | 1     | 0  | 0 | 2 | 1 | 2 | 2 |
| CO5                    | Explore nove                | l medicinal agents from different sources of natural origin                     |           |           |          |           |          |          | 3    | 1    | 2    | 0     | 0     | 1  | 0 | 1 | 0 | 2 | 2 |

|                        |                                                                       | FACULTY OF PHARM                                                                                                   | ACY, I   | NTEGR   | AL UNI | VERSIT  | ΓY, LUCK | NOW.  |   |   |   |      |      |      |      |      |      |       |       |
|------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------|---------|--------|---------|----------|-------|---|---|---|------|------|------|------|------|------|-------|-------|
|                        |                                                                       |                                                                                                                    | CO-P     | O MAP   | PING   |         |          |       |   |   |   |      |      |      |      |      |      |       |       |
|                        |                                                                       | B. PHARM.                                                                                                          | 7        | EAR / S | SEMES' | ΓER: IV | / / VIII |       |   |   |   |      |      |      |      |      |      |       |       |
| RSE                    | CODE                                                                  | SUBJECT                                                                                                            |          | PER     | IODS   |         | EVALU    | ATION |   |   |   |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                  | SUBJECT                                                                                                            | L        | T       | P      | C       | S        | ESE   |   |   |   |      |      | Ю    |      |      |      |       |       |
| BP                     | BP807ET     Computer Aided Drug Design     3     1     0     4     25 |                                                                                                                    |          |         |        |         |          |       |   |   |   | PO-4 | PO-5 | PO-6 | PO-7 | PO-8 | PO-9 | PO-10 | P0-11 |
| CO1                    | Understand tl                                                         | BP807ET Computer Aided Drug Design 3 1 0 4 25 75  Understand the process of Design and discovery of lead molecules |          |         |        |         |          |       |   |   |   |      |      | 2    | 3    | 3    | 2    | 3     | 2     |
| CO2                    | Appreciate th                                                         | ne role of drug design in drug discovery process                                                                   |          |         |        |         |          |       | 3 | 2 | 3 | 3    | 2    | 2    | 3    | 3    | 2    | 3     | 2     |
| CO3                    | Understand a                                                          | nd apply the concept of QSAR and docking                                                                           |          |         |        |         |          |       | 3 | 2 | 3 | 3    | 2    | 2    | 3    | 3    | 2    | 3     | 2     |
| CO4                    | Apply variou                                                          | s strategies to develop new drug like molecules                                                                    |          |         |        |         |          |       | 3 | 2 | 3 | 3    | 2    | 2    | 3    | 3    | 2    | 3     | 2     |
| CO5                    | Understand tl                                                         | he designing of new drug molecules using molecular modeling so                                                     | oftware  |         |        |         |          |       | 3 | 2 | 3 | 3    | 2    | 2    | 3    | 3    | 2    | 3     | 2     |
| CO6                    | Appreciate in                                                         | nportance of computational methods in drug design and discover                                                     | y proces | sses    |        |         |          |       | 3 | 2 | 3 | 3    | 2    | 2    | 3    | 3    | 2    | 3     | 2     |

|                            |                | FACULTY OF PHARM                                                  | ACY, IN  | NTEGR    | AL UNI       | VERSI  | TY, LUC   | KNOW.      |      |      |      |       |       |    |   |   |   |   |   |
|----------------------------|----------------|-------------------------------------------------------------------|----------|----------|--------------|--------|-----------|------------|------|------|------|-------|-------|----|---|---|---|---|---|
|                            |                |                                                                   | CO-P     | O MAP    | PING         |        |           |            |      |      |      |       |       |    |   |   |   |   |   |
|                            |                | B. PHARM.                                                         | 7        | EAR / S  | <b>SEMES</b> | TER: I | V / VIII  |            |      |      |      |       |       |    |   |   |   |   |   |
| UR<br>TE                   | CODE           | SUBJECT                                                           |          | PERI     | ODS          |        | EVAL      | UATION     |      |      |      |       |       | PO |   |   |   |   |   |
| COUR<br>SE<br>CATE<br>GORY | CODE           | SUBJECT                                                           | L        | T        | P            | C      | S         | ESE        |      |      |      |       |       | Ю  |   |   |   |   |   |
| BP                         | BP808ET        | 75                                                                | PO-1     | PO-2     | PO-3         | PO-4   | PO-5      | 9-Od       | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |    |   |   |   |   |   |
|                            |                | ng the history of cell and molecular biology, cellular functi     | oning a  | nd comp  | osition      | and ch | emical fo | oundations | 3    | 1    | 1    | 3     | 1     | 2  | 2 | 1 | 2 | 1 | 1 |
| CO1                        | of cell biolog | gy.                                                               |          |          |              |        |           |            | ,    | _    |      | ,     | _     | _  |   | _ |   | _ | _ |
| CO2                        | Understandin   | ng about DNA and RNA and their functioning.                       |          |          |              |        |           |            | 3    | 2    | 2    | 3     | 1     | 2  | 2 | 1 | 2 | 1 | 1 |
| CO3                        | Students able  | e to Describe protein structure and function, Protein Synthe      | esis.    |          |              |        |           |            | 3    | 2    | 2    | 3     | 1     | 2  | 2 | 1 | 2 | 1 | 1 |
| CO4                        | Know the ba    | sic molecular genetic mechanisms.                                 |          |          |              |        |           |            | 3    | 1    | 1    | 2     | 1     | 1  | 2 | 1 | 2 | 2 | 1 |
| CO5                        | Summarize t    | he Cell Cycle including Cell Signals, Receptors for Cell Signals, | gnals, S | Signalin | g Pathw      | ays.   |           |            | 3    | 1    | 1    | 3     | 1     | 2  | 2 | 1 | 2 | 1 | 1 |

|                        |               | FACULTY OF PHARMA                                                      | CY, IN     | ΓEGRA     | L UNIV | ERSITY | , LUCK  | NOW.   |   |    |   |   |   |    |      |      |      |       |       |
|------------------------|---------------|------------------------------------------------------------------------|------------|-----------|--------|--------|---------|--------|---|----|---|---|---|----|------|------|------|-------|-------|
|                        |               |                                                                        |            | MAPP      |        |        | ,       |        |   |    |   |   |   |    |      |      |      |       |       |
|                        |               | B. PHARM.                                                              |            |           | YEAR   | / SEME | STER: I | V/VIII |   |    |   |   |   |    |      |      |      |       |       |
| RSE<br>EGO             | CODE          | SUDIECT                                                                |            | PER       | ODS    |        | EVALU   | ATION  |   |    |   |   |   | PO |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE          | SUBJECT                                                                | S          | ESE       |        |        |         |        |   | PU |   |   |   |    |      |      |      |       |       |
| BP                     | BP809ET       | CODE SUBJECT  L T P C S ESE  BP809ET Cosmetic Science  3 1 0 4 25 75 5 |            |           |        |        |         |        |   |    |   |   |   |    | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Gain informat | ion on key ingredients used in cosmetics and cosmeceuticals            |            |           |        |        | •       |        | 1 | 1  | 0 | 0 | 0 | 3  | 0    | 0    | 2    | 2     | 1     |
| CO2                    | Understand ke | ey building blocks of cosmetics for various formulations               |            |           |        |        |         |        | 1 | 1  | 0 | 0 | 0 | 3  | 0    | 0    | 2    | 1     | 1     |
| CO3                    | Know the curr | rent technologies in the market                                        |            |           |        |        |         |        | 1 | 1  | 0 | 0 | 0 | 3  | 0    | 0    | 2    | 1     | 1     |
| CO4                    | Understand th | e scientific principles to develop cosmetics and cosmeceuticals v      | vith desir | ed safety | 7      |        |         |        | 1 | 1  | 0 | 0 | 0 | 3  | 0    | 0    | 2    | 1     | 1     |

|          |                             | FACULTY OF PHARMA                                                                                                 | CY, IN    | ΓEGRA     | L UNIV    | ERSIT   | Y, LUCK    | NOW.   |      |       |      |      |       |       |   |   |   |   |   |
|----------|-----------------------------|-------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|---------|------------|--------|------|-------|------|------|-------|-------|---|---|---|---|---|
|          |                             |                                                                                                                   | CO-PC     | MAPP:     | ING       |         |            |        |      |       |      |      |       |       |   |   |   |   |   |
|          |                             | M. PHARM. SPECIALIZATIO                                                                                           | N: Phar   | macolog   | y         | Y       | EAR / SE   | MESTER | : IV | / VII | [    |      |       |       |   |   |   |   |   |
| COURSE   | CODE                        | SUBJECT                                                                                                           |           | PER       | IODS      |         | EVALU      | JATION |      |       |      |      |       | РО    |   |   |   |   |   |
| CATEGORY | CODE                        | SUBJECT                                                                                                           | L         | T         | P         | C       | S          | ESE    |      |       |      |      |       | Ю     |   |   |   |   |   |
| BP       | BP810ET                     | Experimental Pharmacology                                                                                         | 75        | PO-1      | PO-2      | PO-3    | PO-4       | PO-5   | PO-6 | PO-7  | PO-8 | PO-9 | PO-10 | PO-11 |   |   |   |   |   |
| CO1      | Appreciate the development. | e knowledge gained on preclinical evaluation of drugs and recent                                                  | ery and   | 3         | 3         | 1       | 2          | 0      | 1    | 3     | 1    | 0    | 0     | 2     |   |   |   |   |   |
| CO2      |                             | ne various of laboratory animals and their maintenance as per the aintenance and handling of experimental animals | guidelin  | es and al | so descri | be good | laborator  | у      | 3    | 3     | 2    | 3    | 0     | 2     | 1 | 1 | 0 | 0 | 3 |
| CO3      | Appraised the               | regulations and ethical requirement for the usage of experimenta                                                  | al animal | s.        |           |         |            |        | 3    | 3     | 2    | 1    | 1     | 0     | 1 | 2 | 0 | 1 | 3 |
| CO4      | Learnt and de               | scribe the various preclinical screening methods (in-vitro and in-                                                | vivo) inv | olved in  | the drug  | discove | ery proces | s.     | 3    | 3     | 2    | 1    | 1     | 1     | 2 | 1 | 1 | 0 | 2 |
| CO5      | Correlate the               | preclinical data to human's clinical data.                                                                        |           |           |           |         |            |        | 3    | 3     | 3    | 1    | 1     | 1     | 2 | 1 | 0 | 0 | 3 |

|                        |                                                                         | FACULTY OF PHARMA                                                 | CY, IN   | [EGRA]   | L UNIV | ERSIT  | Y, LUCKI | NOW.   |   |   |   |      |      |      |      |      |      |       |       |
|------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------|----------|----------|--------|--------|----------|--------|---|---|---|------|------|------|------|------|------|-------|-------|
|                        |                                                                         |                                                                   | CO-PO    | MAPP     | ING    |        |          |        |   |   |   |      |      |      |      |      |      |       |       |
|                        |                                                                         | B. PHARM.                                                         | YE       | EAR / SI | EMEST  | ER: IV | / VIII   |        |   |   |   |      |      |      |      |      |      |       |       |
| RSE<br>EGO<br>Y        | CODE                                                                    | SUBJECT                                                           |          | PER      | IODS   |        | EVALU    | JATION |   |   |   |      |      | PO   |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                    | SUBJECT                                                           | L        | T        | P      | C      | S        | ESE    |   |   |   |      |      | Ю    |      |      |      |       |       |
| BP                     | BP811ET   Advanced Instrumentation Techniques   3   1   0   4   25   75 |                                                                   |          |          |        |        |          |        |   |   |   | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Investigate the                                                         | e pharmaceutical substances by NMR spectroscopy and mass spe      | ctrometr | y.       |        |        |          |        | 3 | 3 | 3 | 3    | 1    | 2    | 3    | 3    | 3    | 3     | 3     |
| CO2                    | Analyze the ea                                                          | ssentials of thermal methods of analysis and X ray diffraction me | thods.   |          |        |        |          |        | 3 | 3 | 3 | 3    | 1    | 2    | 3    | 3    | 3    | 3     | 3     |
| CO3                    | Apprehend the                                                           | e calibration and validation of analytical instruments.           |          |          |        |        |          |        | 3 | 3 | 3 | 3    | 1    | 2    | 3    | 3    | 3    | 3     | 3     |
| CO4                    | Recognize the                                                           | fundamentals of radio immune assay and extraction techniques.     |          |          |        |        |          |        | 3 | 3 | 3 | 3    | 1    | 2    | 3    | 3    | 3    | 3     | 3     |
| CO5                    | Deal with the                                                           | fundamentals of hyphenated techniques.                            |          |          | •      | •      |          |        | 3 | 3 | 3 | 3    | 1    | 2    | 3    | 3    | 3    | 3     | 3     |

|                        |                                                                                                                                                          | FACULTY OF PHARMA                                                                                      | CY, IN    | TEGRA      | L UNIV    | ERSITY    | , LUCK    | NOW.     |   |   |      |      |      |      |      |      |      |       |       |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------|------------|-----------|-----------|-----------|----------|---|---|------|------|------|------|------|------|------|-------|-------|
|                        |                                                                                                                                                          |                                                                                                        | CO-PC     | ) MAPP     | ING       |           |           |          |   |   |      |      |      |      |      |      |      |       |       |
|                        |                                                                                                                                                          | B. PHARM.                                                                                              | Y         | EAR / S    | EMEST     | TER: 4th  | /8th      |          |   |   |      |      |      |      |      |      |      |       |       |
| COURSE<br>CATEGO<br>RY | CODE                                                                                                                                                     | SUBJECT                                                                                                |           | PER        | IODS      |           | EVALU     | UATION   |   |   |      |      |      | PO   |      |      |      |       |       |
| COU<br>CAT             | CODE                                                                                                                                                     | SUBJECT                                                                                                | L         | T          | P         | C         | S         | ESE      |   |   |      |      |      | 10   |      |      |      |       |       |
| BP                     | BP812ET Dietary Supplements and Nutraceuticals 3 1 3 4 25  Understand the need of supplements by the different group of people to maintain healthy life. |                                                                                                        |           |            |           |           |           |          |   |   | PO-3 | PO-4 | PO-5 | 9-Od | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |
| CO1                    | Understand the need of supplements by the different group of people to maintain healthy life.                                                            |                                                                                                        |           |            |           |           |           |          |   |   |      | 1    | 2    | 2    | 2    | 2    | 2    | 1     | 3     |
| CO2                    | Understand the dietary supple                                                                                                                            | e need of supplements by the different group of people to maintagements.                               | in health | ny life an | d the ou  | tcome of  | deficienc | cies in  | 3 | 2 | 2    | 1    | 2    | 2    | 2    | 2    | 3    | 1     | 3     |
| CO3                    |                                                                                                                                                          | ree radicals production and its damaging reactions on lipids, prot and complex carbohydrates.          | eins, car | bohydrat   | es, nucle | eic acids | and Study | y about  | 3 | 2 | 2    | 2    | 1    | 1    | 2    | 2    | 2    | 2     | 2     |
| CO4                    |                                                                                                                                                          | e effect of Free Radicals' in Various Disorders and ageing, imponmental factors on the nutraceuticals. | rtance aı | nd types   | of Antio  | xidants a | nd the ef | fect of  | 3 | 1 | 1    | 1    | 1    | 1    | 2    | 2    | 2    | 2     | 2     |
| CO5                    | Appreciate the foods.                                                                                                                                    | e regulatory and commercial aspects of dietary supplements inclu                                       | iding hea | ılth clain | ns. To kr | now abou  | t Adulter | ation of | 3 | 2 | 2    | 1    | 2    | 2    | 3    | 2    | 2    | 2     | 1     |

|                        |              | FACULTY OF PHARMA                                        | ACY, IN  | ΓEGRA | L UNIV       | ERSITY   | , LUCK | NOW.   |      |      |      |       |       |    |   |   |   |   |   |
|------------------------|--------------|----------------------------------------------------------|----------|-------|--------------|----------|--------|--------|------|------|------|-------|-------|----|---|---|---|---|---|
|                        |              |                                                          | CO-PC    | MAPP  | ING          |          |        |        |      |      |      |       |       |    |   |   |   |   |   |
|                        |              | B. PHARM.                                                | Y        | EAR/S | <b>EMEST</b> | TER: 4th | /8th   |        |      |      |      |       |       |    |   |   |   |   |   |
| COURSE<br>CATEGO<br>RY | CODE         | SUBJECT                                                  |          | PER   | IODS         |          | EVALU  | JATION |      |      |      |       |       | PO |   |   |   |   |   |
| COU                    | CODE         | SUBJECT                                                  | L        | T     | P            | C        | S      | ESE    |      |      |      |       |       | 10 |   |   |   |   |   |
| BP                     | BP813ET      | 75                                                       | PO-1     | PO-2  | PO-3         | PO-4     | PO-5   | PO-6   | PO-7 | PO-8 | PO-9 | PO-10 | PO-11 |    |   |   |   |   |   |
| CO1                    | Explain phar |                                                          | 3        | 0     | 0            | 0        | 0      | 0      | 0    | 3    | 0    | 3     | 2     |    |   |   |   |   |   |
| CO2                    | Know pharm   | naceutical excipients                                    |          |       |              |          |        |        | 3    | 0    | 0    | 0     | 0     | 0  | 0 | 3 | 0 | 3 | 2 |
| CO3                    | Improve pha  | rmaceutical product development by quality by design (Qb | D) techn | iques |              |          |        |        | 0    | 2    | 3    | 2     | 1     | 0  | 0 | 3 | 0 | 3 | 2 |
| CO4                    | Application  | of excipients in pharmaceutical formulations             |          |       |              |          |        |        | 1    | 0    | 2    | 3     | 1     | 0  | 0 | 3 | 0 | 3 | 2 |