

# University of Mumbai



No. AAMS\_UGS/ICC/2023-24/73

## CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology is invited to this office Circular No. UG/01 of 2021 dated 10<sup>th</sup> May, 2021 relating to the equivalence of B.E. program.

They are hereby informed that the recommendations made by the Board of Deans at its meeting held on 27<sup>th</sup> October, 2023 **vide** item No. 6.17 (N) have been accepted by the Academic Council at its meeting held on 01<sup>st</sup> November, 2023 **vide** item No. 6.17 (N) and that in accordance therewith, the **Equivalence/alternate subjects of the B.E. program Revised 2016 to Rev. 2019** is as per appendix attached herewith and the same has been brought into force with effect from the academic year 2023-24.

(The said circular is available on the University's website [www.mu.ac.in](http://www.mu.ac.in)).

MUMBAI – 400 032  
24<sup>th</sup> November, 2023

  
(Prof. Sunil Bhirud)  
I/c. REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

**A.C/6.17(N) /01/11/2023**

Copy forwarded with Compliments for information to:-

- 1) The Chairman, Board of Deans,
- 2) The Dean, Faculty of Science & Technology,
- 3) The Chairman, Board of Studies,
- 4) The Director, Board of Examinations and Evaluation,
- 5) The Director, Department of Students Development,
- 6) The Director, Department of Information & Communication Technology,
- 7) The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,
- 8) The Co-ordinator, MKCL.

**Copy for information and necessary action :-**

1. The Deputy Registrar, College Affiliations & Development Department (CAD),
2. College Teachers Approval Unit (CTA),
3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),
4. The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA)
5. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),
6. The Deputy Registrar, Executive Authorities Section (EA)  
He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
7. The Deputy Registrar, PRO, Fort, (Publication Section),
8. The Deputy Registrar, Special Cell,
9. The Deputy Registrar, Fort Administration Department (FAD) Record Section,
10. The Deputy Registrar, Vidyanagari Administration Department (VAD),

**Copy for information :-**

1. The Director, Dept. of Information and Communication Technology (DICT), Vidyanagari,  
He is requested to upload the Circular University Website
2. The Director of Department of Student Development (DSD),
3. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,
4. All Deputy Registrar, Examination House,
5. The Deputy Registrars, Finance & Accounts Section,
6. The Assistant Registrar, Administrative sub-Campus Thane,
7. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,
8. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,
9. P.A to Hon'ble Vice-Chancellor,
10. P.A to Pro-Vice-Chancellor,
11. P.A to Registrar,
12. P.A to All Deans of all Faculties,
13. P.A to Finance & Account Officers, (F & A.O),
14. P.A to Director, Board of Examinations and Evaluation,
15. P.A to Director, Innovation, Incubation and Linkages,
16. P.A to Director, Department of Lifelong Learning and Extension (DLLE),
17. The Receptionist,
18. The Telephone Operator,

**Copy with compliments for information to :-**

19. The Secretary, MUASA
20. The Secretary, BUCTU.

# **UNIVERSITY OF MUMBAI**



## **BACHELOR OF ENGINEERING**

### **SUBJECTS EQUIVALENCE**

**REV-2016' B SCHEME to REV-2019' C SCHEME**

**Under**

**FACULTY OF SCIENCE & TECHNOLOGY**

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**CIVIL ENGINEERING SUBJECTS EQUIVALENCE (R 2016 - R 2019)**

**CIVIL ENGINEERING SUBJECTS EQUIVALENCE (SEM-III) (R-2016 to R-2019)**

| <b>Sr.<br/>No.</b> | <b>R-2016 CBCGS Subject</b> |                         |            | <b>R-2019 CBCGS Subject</b> |                             |            |                  |
|--------------------|-----------------------------|-------------------------|------------|-----------------------------|-----------------------------|------------|------------------|
|                    | <b>Subject Code</b>         | <b>Subject Name</b>     | <b>Sem</b> | <b>Subject Code</b>         | <b>Subject Name</b>         | <b>Sem</b> | <b>Remark</b>    |
| <b>1</b>           | CE-C301                     | Applied Mathematics III | <b>III</b> | CEC301                      | Engineering Mathematics-III | III        | Equivalent       |
| <b>2</b>           | CE-C302                     | Surveying – I           | <b>III</b> | CEC403                      | <b>Survey</b>               | <b>IV</b>  | <b>Alternate</b> |
| <b>3</b>           | CE-C303                     | Strength of Materials   | <b>III</b> | CEC302                      | Mechanics of Solids         | III        | Equivalent       |
| <b>4</b>           | CE-C304                     | Engineering Geology     | <b>III</b> | CEC303                      | Engineering Geology         | III        | Equivalent       |
| <b>5</b>           | CE-C305                     | Fluid Mechanics - I     | <b>III</b> | CEC305                      | Fluid Mechanics - I         | III        | Equivalent       |

**CIVIL ENGINEERING SUBJECTS EQUIVALENCE (SEM-IV) (R-2016 to R-2019)**

| <b>Sr.<br/>No.</b> | <b>R-2016 CBCGS Subject</b> |                                              |            | <b>R-2019 CBCGS Subject</b> |                                              |            |               |
|--------------------|-----------------------------|----------------------------------------------|------------|-----------------------------|----------------------------------------------|------------|---------------|
|                    | <b>Subject Code</b>         | <b>Subject Name</b>                          | <b>Sem</b> | <b>Subject Code</b>         | <b>Subject Name</b>                          | <b>Sem</b> | <b>Remark</b> |
| <b>1</b>           | CE-C401                     | Applied Mathematics – IV                     | IV         | CEC401                      | Engineering Mathematics IV                   | IV         | Equivalent    |
| <b>2</b>           | CE-C402                     | Surveying – II                               | IV         | CEC403                      | <b>Survey</b>                                | <b>IV</b>  | Alternate     |
| <b>3</b>           | CE-C403                     | Structural Analysis – I                      | IV         | CEC402                      | <b>Structural Analysis</b>                   | <b>IV</b>  | Alternate     |
| <b>4</b>           | CE-C404                     | Building Design & Drawing                    | IV         | CEC304                      | Architectural Planning & Design of Buildings | III        | Equivalent    |
| <b>5</b>           | CE-C405                     | Building Materials & Construction Technology | IV         | CEC404                      | Building Materials & Concrete Technology     | IV         | Equivalent    |
| <b>6</b>           | CE-C406                     | Fluid Mechanics - II                         | IV         | CEC405                      | Fluid Mechanics - II                         | IV         | Equivalent    |

**CIVIL ENGINEERING SUBJECTS EQUIVALENCE (SEM-V) (R-2016 to R-2019)**

| Sr. No. | R-2016 CBCGS Subject |                               |     | R-2019 CBCGS Subject |                                           |     |            |
|---------|----------------------|-------------------------------|-----|----------------------|-------------------------------------------|-----|------------|
|         | Subject Code         | Subject Name                  | Sem | Subject Code         | Subject Name                              | Sem | Remark     |
| 1       | CE-C501              | Structural Analysis – II      | V   | CEC402               | Structural Analysis                       | IV  | Alternate  |
| 2       | CE-C502              | Geotechnical Engineering-I    | V   | CEC503               | Geotechnical Engineering-I                | V   | Equivalent |
| 3       | CE-C503              | Applied Hydraulics            | V   | CEC502               | Applied Hydraulics                        | V   | Equivalent |
| 4       | CE-C504              | Environmental Engineering-I   | V   | CEC604               | Environmental Engineering                 | VI  | Alternate  |
| 5       | CE-C505              | Transportation Engineering-I  | V   | CEC504               | Transportation Engineering                | V   | Alternate  |
| 6       | DLO506X              | <b>DLOC-I</b>                 | V   |                      |                                           |     |            |
| 7       | CE-DLO5061           | Advanced Surveying            | V   | CEDLO5011            | Modern Surveying Instruments & Techniques | V   | Equivalent |
| 8       | CE-DLO5062           | Advanced Concrete Technology  | V   | CEDLO5017            | Advanced Concrete Technology              | V   | Equivalent |
| 9       | CE-DLO5063           | Building Services & Repairs   | V   | CEDLO5012            | Building Services & Repairs               | V   | Equivalent |
| 10      | CE-DLO5064           | Advanced Structural Mechanics | V   | CEDLO5014            | Advanced Structural Mechanics             | V   | Equivalent |

**CIVIL ENGINEERING SUBJECTS EQUIVALENCE (SEM-VI) (R-2016 to R-2019)**

| Sr. No. | R-2016 CBCGS Subject |                                        |     | R-2019 CBCGS Subject |                                      |     |            |
|---------|----------------------|----------------------------------------|-----|----------------------|--------------------------------------|-----|------------|
|         | Subject Code         | Subject Name                           | Sem | Subject Code         | Subject Name                         | Sem | Remark     |
| 1       | CE-C601              | Geotechnical Engineering. – II         | VI  | CEC603               | Geotechnical Engineering-II          | VI  | Equivalent |
| 2       | CE-C602              | Design and Drawing of Steel Structures | VI  | CEC601               | Design & Drawing of Steel Structures | VI  | Equivalent |
| 3       | CE-C603              | Transportation Engineering. – II       | VI  | CEDLO5016            | Transportation Planning & Economics  | V   | Equivalent |
| 4       | CE-C604              | Environmental Engineering. – II        | VI  | CEC604               | Environmental Engineering            | VI  | Alternate  |
| 5       | CE-C605              | Water Resource Engineering –I          | VI  | CEC602               | Water Resources Engineering          | VI  | Equivalent |
| 6       | CE-DLO606X           | <b>DLOC-II</b>                         | VI  |                      |                                      |     |            |
| 7       | CE-DLO6061           | Advanced Construction Equipment        | VI  | CEDLO6013            | Construction Equipment & Techniques  | VI  | Equivalent |
| 8       | CE-DLO6062           | Traffic Engineering and Management     | VI  | CEDLO6017            | Traffic Engineering and Management   | VI  | Equivalent |
| 9       | CE-DLO6063           | Ground Improvement Techniques          | VI  | CEDLO7023            | Ground Improvement techniques        | VII | Equivalent |
| 10      | CE-DLO6064           | Advanced Structural Analysis           | VI  | CEDLO6016            | Computational Structural Analysis    | VI  | Equivalent |

**CIVIL ENGINEERING SUBJECTS EQUIVALENCE (SEM-VII) (R-2016 to R-2019)**

| Sr. No. | R-2016 CBCGS Subject |                                          |      | R-2019 CBCGS Subject |                                                 |      |            |
|---------|----------------------|------------------------------------------|------|----------------------|-------------------------------------------------|------|------------|
|         | Subject Code         | Subject Name                             | Sem  | Subject Code         | Subject Name                                    | Sem  | Remark     |
| 1       | CE-C701              | Quantity Survey Estimation and Valuation | VIII | CEC702               | Quantity Survey, Estimation and Valuation       | VII  | Equivalent |
| 2       | CE-C702              | Theory of Reinforced Concrete Structures | VIII | CEC501               | Theory of Reinforced Concrete Structures        | V    | Equivalent |
| 3       | CE-C703              | Water Resource Engineering –II           | VIII | CEDLO8012            | Design of Hydraulic Structures                  | VIII | Equivalent |
| 4       | CE-DLO704X           | <b>DLOC-III</b>                          | VIII |                      |                                                 |      |            |
| 5       | CE-DLO7041           | Pre-stressed Concrete                    | VIII | CEDLO7011            | Pre-stressed Concrete                           | VII  | Equivalent |
| 6       | CE-DLO7042           | Solid Waste management                   | VIII | CEDLO7022            | Solid and Hazardous Waste Management            | VII  | Equivalent |
| 7       | CE-DLO7043           | Pavement Sub-grade and Materials         | VIII | CEDLO7016            | Pavement Materials Construction and Maintenance | VII  | Equivalent |
| 8       | CE-DLO7044           | Structural Dynamics                      | VIII | CEDLO8025            | Structural Dynamics                             | VIII | Equivalent |
| 9       | CE-DLO7045           | Application of GIS and Remote Sensing    | VIII | CEDLO5011            | Modern Surveying Instruments and Techniques     | V    | Alternate  |
| 10      | CE-DLO7046           | Foundation Analysis and Design           | VIII | CEDLO7021            | Foundation Analysis and Design                  | VII  | Equivalent |

**CIVIL ENGINEERING SUBJECTS EQUIVALENCE (SEM-VIII) (R-2016 to R-2019)**

| Sr. No. | R-2016 CBCGS Subject |                                                      |      | R-2019 CBCGS Subject |                                                      |      |            |
|---------|----------------------|------------------------------------------------------|------|----------------------|------------------------------------------------------|------|------------|
|         | Subject Code         | Subject Name                                         | Sem  | Subject Code         | Subject Name                                         | Sem  | Remark     |
| 1       | CE-C801              | Design and Drawing of Reinforced Concrete Structures | VIII | CEC701               | Design and Drawing of Reinforced Concrete Structures | VII  | Equivalent |
| 2       | CE-C802              | Construction Management                              | VIII | CEC801               | Construction Management                              | VIII | Equivalent |
| 3       | CE-DLO803X           | <b>DLOC-IV</b>                                       |      |                      |                                                      |      |            |
| 4       | CE-DLO 8031          | Advanced Design of Steel Structures                  | VIII | CEDLO7027            | Advanced Steel Structures                            | VII  | Equivalent |
| 5       | CE-DLO8032           | Industrial Waste Treatment                           | VIII | CEDLO8015            | Industrial Waste Treatment                           | VIII | Equivalent |
| 6       | CE – DLO8033         | Pavement Design and Construction                     | VIII | CEDLO8014            | Pavement Design                                      | VIII | Equivalent |
| 7       | CE-DLO 8034          | Bridge Engineering and Design                        | VIII | CEDLO8011            | Bridge Engineering                                   | VIII | Equivalent |
| 8       | CE-DLO 8035          | Appraisal Implementation of Infrastructure Projects  | VIII | CEDLO7013            | Appraisal Implementation of Infrastructure Projects  | VII  | Equivalent |
| 9       | CE-DLO8036           | Soil Dynamics                                        | VIII | CEDLO8016            | Soil Dynamics                                        | VIII | Equivalent |
| 10      | CE-DLO8037           | Applied Hydrology and Flood Control                  | VIII | CEDLO7012            | Applied Hydrology and Flood Control                  | VII  | Equivalent |

## **MECHANICAL ENGINEERING SUBJECTS EQUIVALENCE (R 2016 - R 2019)**

### **Mechanical Engineering: Equivalent Subjects (Rev-2016 to Rev 2019)**

| Sr No           | Scheme R 2016 CBCGS |                                             | Scheme R 2019 CBCS |                                       |      |
|-----------------|---------------------|---------------------------------------------|--------------------|---------------------------------------|------|
|                 | Subject code        | Subject Name                                | Subject code       | Subject Name                          | Sem  |
| <b>Sem VIII</b> |                     |                                             |                    |                                       |      |
| 1               | MEC801              | Design of Mechanical Systems                | MEC701             | Design of Mechanical Systems          | VII  |
| 2               | MEC802              | Industrial Engineering and Management       | MEC801             | Operation Planning and Control        | VIII |
| 3               | MEC803              | Power Engineering                           | MEC602             | Turbo Machinery                       | VI   |
| 4               | MEDLO8041           | Power Plant Engineering                     | MEDLO7032          | Renewable Energy Sources              | VII  |
|                 | MEDLO8042           | Rapid Prototyping                           | HC3DP601           | 3D Printing: Introduction & Processes | VI   |
|                 | MEDLO8043           | Renewable Energy Systems                    | MEDLO7032          | Renewable Energy Systems              | VII  |
|                 | MEDLO8044           | Energy Management in Utility Systems        | ILO7018            | Energy Audit and Management           | VII  |
| <b>Sem VII</b>  |                     |                                             |                    |                                       |      |
|                 | MEC701              | Machine Design II                           | MEC601             | Machine Design                        | VI   |
|                 | MEC702              | CAD/CAM/CAE                                 | MEC404             | CAD/CAM                               | IV   |
|                 | MEC703              | Production Planning and Control             | MEC801             | Operations Planning and Control       | VII  |
|                 | MEDLO703X           | <b>Department Level Optional Course III</b> |                    |                                       |      |
|                 | MEDLO7031           | Mechanical Vibrations                       | MEDLO7042          | Vibration Controls                    | VII  |
|                 | MEDLO7032           | Automobile Engineering                      | MEDLO7033          | Vehicle Systems                       | VII  |

|               |            |                                            |           |                                                          |      |
|---------------|------------|--------------------------------------------|-----------|----------------------------------------------------------|------|
|               | MEDLO7033  | Pumps, Compressors and Fans                | MEC602    | Turbo Machinery                                          | VI   |
|               | MEDLO7034  | Computational Fluid Dynamics               | MEDLO5013 | Computational Methods                                    | V    |
| <b>Sem VI</b> |            |                                            |           |                                                          |      |
|               | MEC601     | Metrology and Quality engineering          | MEC501    | Mechanical Measurements and Controls                     | V    |
|               | MEC602     | Machine Design I                           | MEC601    | Machine Design                                           | VI   |
|               | MEC603     | Finite Element analysis                    | MEC504    | Finite Element Analysis                                  | V    |
|               | MEC604     | Refrigeration and Air Conditioning         | MEC603    | Heating, Ventilation, Air conditioning and Refrigeration | V    |
|               | MEDLO602X  | <b>Department Level Optional Course II</b> |           |                                                          |      |
|               | MEDLO6021  | Mechatronics                               | MEC604    | Automation & AI                                          | VI   |
|               | MEDLO6022  | Robotics                                   | HRBC501   | Industrial Robotics (Honours)                            | VI   |
|               | MEDLO6023  | Industrial Automation                      | MEC604    | Automation and Artificial Intelligence                   | VI   |
| <b>Sem V</b>  |            |                                            |           |                                                          |      |
|               | MEC501     | Internal Combustion Engines                | MEC502    | Thermal Engineering                                      | V    |
|               | MEC502     | Mechanical Measurements and Control        | MEC501    | Mechanical Measurements and Controls                     | V    |
|               | MEC503     | Heat Transfer                              | MEC502    | Thermal Engineering                                      | V    |
|               | MEC504     | Dynamics of Machinery                      | MEC503    | Dynamics of Machinery                                    | V    |
|               | MEDLO 501X | <b>Department Level Optional Course I</b>  |           |                                                          |      |
|               | MEDLO5011  | Press Tool Design                          | MEDLO6021 | Press Tool Design                                        | VI   |
|               | MEDLO5012  | Machining Sciences and Tool Design         | MEDLO6022 | Tool Engineering                                         | VI   |
|               | MEDLO5013  | Design of Jigs and Fixtures                | MEDLO8063 | Total Quality Management                                 | VIII |

|                |        |                         |        |                             |     |
|----------------|--------|-------------------------|--------|-----------------------------|-----|
| <b>Sem IV</b>  |        |                         |        |                             |     |
|                | MEC401 | Applied Mathematics IV  | MEC401 | Engineering Mathematics-IV  | IV  |
|                | MEC402 | Fluid Mechanics         | MEC402 | Fluid Mechanics             | IV  |
|                | MEC403 | Industrial Electronics  | MEC405 | Industrial Electronics      | IV  |
|                | MEC404 | Production Process II   | MEC303 | Production Processes        | III |
|                | MEC405 | Kinematics of Machinery | MEC403 | Kinematics of Machinery     | IV  |
| <b>Sem III</b> |        |                         |        |                             |     |
|                | MEC301 | Applied Mathematics III | MEC301 | Engineering Mathematics-III | III |
|                | MEC302 | Thermodynamics          | MEC305 | Thermodynamics              | III |
|                | MEC303 | Strength of Materials   | MEC302 | Strength of Materials       | III |
|                | MEC304 | Production Process I    | MEC303 | Production Processes        | III |
|                | MEC305 | Material Technology     | MEC304 | Materials and Metallurgy    | III |

## ELECTRICAL ENGINEERING

### Electrical Engineering Subject Equivalence (Rev-2016 to Rev-2019)

| Rev-2016 Sem. VIII Electrical Engineering Subject Equivalence |                                                       |      |                                                   |           |      |             |
|---------------------------------------------------------------|-------------------------------------------------------|------|---------------------------------------------------|-----------|------|-------------|
| Code                                                          | Rev-2016 CBCGS Subjects                               | Sem  | Rev-2019 Subjects                                 | Code      | Sem  | Remark      |
| EEC801                                                        | Design, Management and Auditing of Electrical Systems | VIII | Electrical System Design, Management and Auditing | EEC801    | VIII | Equivalence |
| EEC802                                                        | Flexible AC Transmission System                       | VIII | Power Quality and FACTs                           | EEDO8011  | VIII | Equivalence |
| EEDLO8041                                                     | Illumination Engineering                              | VIII | Lighting System Design                            | EEDO8022  | VIII | Equivalence |
| EEDLO8042                                                     | Smart Grid                                            | VIII | Electric Vehicle System Design                    | EEDO 8024 | VIII | Alternate   |
| EEDLO8043                                                     | Power System Modeling and Control                     | VIII | Power System Dynamics and Control                 | EEDO7022  | VII  | Equivalence |
| EEDLO8044                                                     | Power System Planning and Reliability                 | VIII | Power System Planning and Reliability             | EEDO8021  | VIII | Equivalence |

| Rev-2016 Sem. VII Electrical Engineering Subject Equivalence |                                          |     |                                      |          |      |             |
|--------------------------------------------------------------|------------------------------------------|-----|--------------------------------------|----------|------|-------------|
| Code                                                         | Rev-2016 CBCGS Subjects                  | Sem | Rev-2019 Subjects                    | Code     | Sem  | Remark      |
| EEC701                                                       | Power System III                         | VII | Electrical Power System III          | EEC702   | VII  | Equivalence |
| EEC702                                                       | Drives And Control                       | VII | Electrical Drives And Control        | EEC701   | VII  | Equivalence |
| EEC703                                                       | High Voltage Direct Current Transmission | VII | HVDC Transmission Systems            | EEDO7012 | VII  | Equivalence |
| EEDLO7031                                                    | High Voltage Engineering                 | VII | High Voltage Engineering             | EEDO6013 | VI   | Equivalence |
| EEDLO7032                                                    | Electric Vehicle Technology              | VII | Electric And Hybrid Electric Vehicle | EEC405   | IV   | Equivalence |
| EEDLO7033                                                    | Industrial Controller                    | VII | Automation And Control               | EDO8012  | VIII | Alternate   |
| EEDLO7034                                                    | Power Quality                            | VII | Internet of Things                   | EEDO7013 | VII  | Alternate   |

| Rev-2016 Sem. VI Electrical Engineering Subject Equivalence |                                       |     |                                      |          |     |             |
|-------------------------------------------------------------|---------------------------------------|-----|--------------------------------------|----------|-----|-------------|
| Code                                                        | Rev-2016 CBCGS Subjects               | Sem | Rev-2019 Subjects                    | Code     | Sem | Remark      |
| EEC601                                                      | Protection And Switchgear Engineering | VI  | Power System Protection & Switchgear | EEC601   | VI  | Equivalence |
| EEC602                                                      | Electrical Machines IV                | VI  | Electrical Machines II               | EEC501   | V   | Equivalence |
| EEC603                                                      | Signal Processing                     | VI  | Signals And Systems                  | EEC604   | VI  | Equivalence |
| EEC604                                                      | Microcontroller And Its Application   | VI  | Microcontroller Applications         | EEC602   | VI  | Equivalence |
| EEC605                                                      | Control System-II                     | VI  | Control System Design                | EEC603   | VI  | Equivalence |
| EEDLO6021                                                   | Digital Communication Engineering     | VI  | Analog and Digital Communication     | EEDO5014 | V   | Alternate   |
| EEDLO6022                                                   | Microgrid                             | VI  | Microgrid and Smart-grid             | EEDO7021 | VII | Alternate   |
| EEDLO6023                                                   | Advanced Power Electronics            | VI  | Advanced Power Electronics           | EEDO5012 | V   | Equivalence |

| Rev-2016 Sem. V Electrical Engineering Subject Equivalence |                                     |     |                                        |          |      |             |
|------------------------------------------------------------|-------------------------------------|-----|----------------------------------------|----------|------|-------------|
| Code                                                       | Rev-2016 CBCGS Subjects             | Sem | Rev-2019 Subjects                      | Code     | Sem  | Remark      |
| EEC501                                                     | Power System II                     | V   | Electrical Power System II             | EEC502   | V    | Equivalence |
| EEC502                                                     | Electrical Machines III             | V   | Electrical AC Machines I               | EEC402   | IV   | Alternate   |
| EEC503                                                     | Control System-I                    | V   | Control Systems                        | EEC503   | V    | Equivalence |
| EEC504                                                     | Power Electronics                   | V   | Power Electronics Devices And Circuits | EEC404   | IV   | Equivalence |
| EEDLO5011                                                  | Communication Engineering           | V   | Cyber Physical Systems                 | EEDO8023 | VIII | Alternate   |
| EEDLO5012                                                  | Renewable Energy And Energy Storage | V   | Renewable Energy Sources               | EEDO5011 | V    | Equivalence |
| EEDLO5013                                                  | Utilization Of Electrical Energy    | V   | Electric Traction                      | EEDO6012 | VI   | Alternate   |

| Rev-2016 Sem. IV Electrical Engineering Subject Equivalence |                                        |     |                                  |          |     |             |
|-------------------------------------------------------------|----------------------------------------|-----|----------------------------------|----------|-----|-------------|
| Code                                                        | Rev-2016 CBCGS Subjects                | Sem | Rev-2019 Subjects                | Code     | Sem | Remark      |
| EEC401                                                      | Applied Mathematics IV                 | IV  | Engineering Mathematics IV       | EEC401   | IV  | Equivalence |
| EEC402                                                      | Power Systems- I                       | IV  | Electrical Power Systems I       | EEC304   | III | Equivalence |
| EEC403                                                      | Electrical Machines II                 | IV  | Special Electrical Machine       | EEDO6011 | VI  | Alternate   |
| EEC404                                                      | Electromagnetic Fields And Waves       | IV  | Electromagnetic Fields And Waves | EEC504   | V   | Equivalence |
| EEC405                                                      | Analog And Digital Integrated Circuits | IV  | Digital Electronics              | EEC403   | IV  | Alternate   |
| EEC406                                                      | Electrical Network                     | IV  | Electric Circuit Analysis        | EEC302   | III | Equivalence |

| <b>Rev-2016 Sem. III Electrical Engineering Subject Equivalence</b> |                                                    |            |                                                    |             |            |               |
|---------------------------------------------------------------------|----------------------------------------------------|------------|----------------------------------------------------|-------------|------------|---------------|
| <b>Code</b>                                                         | <b>Rev-2016 CBCGS Subjects</b>                     | <b>Sem</b> | <b>Rev-2019 Subjects</b>                           | <b>Code</b> | <b>Sem</b> | <b>Remark</b> |
| EEC301                                                              | Applied Mathematics III                            | III        | Engineering Mathematics III                        | EEC301      | III        | Equivalence   |
| EEC302                                                              | Electronics Devices And Circuits                   | III        | Analog Electronics                                 | EEC305      | III        | Equivalence   |
| EEC303                                                              | Conventional And Non-Conventional Power Generation | III        | Energy Storage                                     | EEDO6014    | VI         | Alternate     |
| EEC304                                                              | Electrical And Electronics Measurements            | III        | Advanced Measurements and Instrumentation          | EEDO5013    | V          | Alternate     |
| EEC305                                                              | Electrical Machines I                              | III        | Fundamentals of Electrical Machines & Measurements | EEC303      | III        | Alternate     |

## PRODUCTION ENGINEERING

### Equivalence of Rev 2016 syllabus scheme to Rev 2019 scheme

| Rev 2016    |                                      |     | Equivalence from Rev 2019 |                                                  |      |
|-------------|--------------------------------------|-----|---------------------------|--------------------------------------------------|------|
| Course code | Course Name                          | Sem | Course code               | Course Name                                      | Sem  |
| PEC301      | Applied Mathematics – III**          | III | PEC301                    | Engineering Mathematics III                      | III  |
| PEC302      | Applied Thermodynamics               | III | MEC305                    | Thermodynamics <b>(Mechanical Engg)</b>          | III  |
| PEC303      | Manufacturing Engineering-I          | III | PEC304                    | Manufacturing Processes                          | III  |
| PEC304      | Material Science and Engineering     | III | PEC305                    | Engineering Materials and Metallurgy             | III  |
| PEC305      | Mechanics of Solids                  | III | PEC303                    | Mechanics of Materials                           | III  |
|             |                                      |     |                           |                                                  |      |
| PEC401      | Applied Mathematics – IV**           | IV  | PEC401                    | Engineering Mathematics IV                       | IV   |
| PEC402      | Dynamics of Machines                 | IV  | PEC403                    | Theory of Machines                               | IV   |
| PEC403      | Manufacturing Engineering-II         | IV  | PEC405                    | Advanced Manufacturing Processes                 | IV   |
| PEC404      | Fluid & Thermal Engineering          | IV  | MEC402                    | Fluid Mechanics <b>(Mechanical Engg)</b>         | IV   |
| PEC405      | Electrical & Electronics Engineering | IV  | PEC404                    | Applied Electrical and Electronics.              | IV   |
|             |                                      |     |                           |                                                  |      |
| PEC501      | Design of Mold & Metal Forming Tools | V   | PEC402                    | Mould and Metal Forming Technology               | IV   |
| PEC502      | Operations Research                  | V   | PEC604                    | Operation Research                               | VI   |
| PEC503      | Machine Design-I                     | V   | PEC502                    | Machine Design – I                               | V    |
| PEC504      | CAD/CAM/CIM                          | V   | PEC802                    | Computer Aided Engineering                       | VIII |
| PEC505      | Metrology & Quality Engineering      | V   | PEC504                    | Metrology & Quality Engineering                  | V    |
| PEDLO5011   | Internal Combustion Engines          | V   | PEDO6011                  | Internal Combustion Engine                       | VI   |
| PEDLO5012   | Finite Element Analysis              | V   | MEC504                    | Finite Element Analysis <b>(Mechanical Engg)</b> | V    |
| PEDLO5013   | Plastic Engineering                  | V   | PEDO5012                  | Plastic Engineering                              | V    |
| PEDLO5014   | Micro and Nano Manufacturing         | V   | PEC405                    | Advanced Manufacturing Processes                 | IV   |
| PEDLO5015   | Sustainable Manufacturing            | V   | PEDO5014                  | Sustainable Manufacturing                        | V    |
|             |                                      |     |                           |                                                  |      |
| PEC601      | Machining Science and Technology     | VI  | PEC503                    | Machining Science and Technology                 | V    |
| PEC602      | Process Engineering and Tooling      | VI  | PEC601                    | Process Engineering                              | VI   |
| PEC603      | Production Tooling                   | VI  | PEC501                    | Production Tooling                               | V    |
| PEC604      | Machine Design – II                  | VI  | PEC602                    | Machine Design – II                              | VI   |

|           |                                                      |      |          |                                                                 |      |
|-----------|------------------------------------------------------|------|----------|-----------------------------------------------------------------|------|
| PEC605    | Production and Operation Management                  | VI   | PEC603   | Industrial Engineering                                          | VI   |
| PEDLO6011 | Manufacturing Planning and Control                   | VI   | MEC801   | Operations Planning and Control ( <b>Mechanical Engg</b> )      | VIII |
| PEDLO6012 | Refrigeration and Air Conditioning                   | VI   | PEDO6012 | Refrigeration & Air Conditioning                                | VI   |
| PEDLO6013 | Reliability Engineering                              | VI   | PEDO6015 | Maintenance Engineering                                         | VI   |
| PEDLO6014 | Industrial Robotics                                  | VI   | PEDO5013 | Industrial Robotics                                             | V    |
| PEDLO6015 | Rapid Prototyping and Manufacturing                  | VI   | PEDO6013 | Rapid prototyping & Manufacturing                               | VI   |
|           |                                                      |      |          |                                                                 |      |
| PEC701    | Industrial Training & Project                        | VII  | PEC701   | Industrial Training & Project                                   | VII  |
|           |                                                      |      |          |                                                                 |      |
| PEC801    | Fluid Power & Automation                             | VIII | PEC801   | Automation & Control Engineering                                | VIII |
| PEC802    | Industrial Engineering and Human Resource Management | VIII | PEC603   | Industrial Engineering                                          | VI   |
| PEC803    | Economics, Finance, Accounting & Costing             | VIII | PEC804   | Engineering Economics, Finance, Costing and Accounting          | VIII |
| PEDLO8011 | Product Design and Industrial Marketing              | VIII | PEDO8012 | Product Design and Industrial Marketing                         | VIII |
| PEDLO8012 | World Class Manufacturing                            | VIII | PEDO8013 | World Class Manufacturing                                       | VIII |
| PEDLO8013 | Logistics and Supply Chain Management                | VIII | PEDO6014 | Logistics and Supply Chain Management                           | VI   |
| PEDLO8014 | Plant Engineering                                    | VIII | PEDO8014 | Plant Engineering                                               | VIII |
| PEDLO8015 | Process Control and Instrumentation                  | VIII | ISC504   | Process Instrumentation System ( <b>Instrumentation Engg.</b> ) | V    |

| <b><u>ELECTRONICS AND TELECOMMUNICATION ENGINEERING</u></b>   |                    |            |                                              |                    |            |               |
|---------------------------------------------------------------|--------------------|------------|----------------------------------------------|--------------------|------------|---------------|
| <b>Equivalent Subjects for SEM III (Rev-2016 to Rev-2019)</b> |                    |            |                                              |                    |            |               |
| <b>Semester III</b>                                           |                    |            |                                              |                    |            |               |
| <b>Scheme R_2016 CBSGS</b>                                    | <b>Course Code</b> | <b>Sem</b> | <b>Scheme R_2019 C Scheme</b>                | <b>Course Code</b> | <b>Sem</b> | <b>Branch</b> |
| Applied Mathematics- III                                      | ECC301             | III        | Engineering Mathematics-III                  | ECC301             | III        | EXTC          |
| Electronic Devices and Circuits I                             | ECC302             | III        | Electronic Devices & Circuits                | ECC302             | III        | EXTC          |
| Digital System Design                                         | ECC303             | III        | Digital System Design                        | ECC303             | III        | EXTC          |
| Circuit Theory and Networks                                   | ECC304             | III        | Network Theory                               | ECC304             | III        | EXTC          |
| Electronic Instrumentation and Control                        | ECC305             | III        | Electronic Instrumentation & Control Systems | ECC305             | III        | EXTC          |

| <b>Electronics and Telecommunication Engineering</b>         |                    |            |                                         |                    |            |               |
|--------------------------------------------------------------|--------------------|------------|-----------------------------------------|--------------------|------------|---------------|
| <b>Equivalent Subjects for SEM IV (Rev-2016 to Rev-2019)</b> |                    |            |                                         |                    |            |               |
| <b>Semester IV</b>                                           |                    |            |                                         |                    |            |               |
| <b>Scheme R_2016 CBSGS</b>                                   | <b>Course Code</b> | <b>Sem</b> | <b>Scheme R_2019 C Scheme</b>           | <b>Course Code</b> | <b>Sem</b> | <b>Branch</b> |
| Applied Mathematics- IV                                      | ECC401             | IV         | Engineering Mathematics -IV             | ECC401             | IV         | EXTC          |
| Electronic Devices and Circuits II                           | ECC402             | IV         | Electronic Devices & Circuits           | ECC302             | III        | EXTC          |
| Linear Integrated Circuits                                   | ECC403             | IV         | Linear Integrated Circuits              | ECC403             | IV         | EXTC          |
| Signals & Systems                                            | ECC404             | IV         | Signals & Systems                       | ECC404             | IV         | EXTC          |
| Principles of Communication Engineering                      | ECC405             | IV         | Principles of Communication Engineering | ECC405             | IV         | EXTC          |

| <b>Electronics and Telecommunication Engineering</b>        |                    |            |                                 |                    |            |               |
|-------------------------------------------------------------|--------------------|------------|---------------------------------|--------------------|------------|---------------|
| <b>Equivalent Subjects for SEM V (Rev-2016 to Rev-2019)</b> |                    |            |                                 |                    |            |               |
| <b>Semester V</b>                                           |                    |            |                                 |                    |            |               |
| <b>Scheme R_2016 CBSGS</b>                                  | <b>Course Code</b> | <b>Sem</b> | <b>Scheme R_2019 C Scheme</b>   | <b>Course Code</b> | <b>Sem</b> | <b>Branch</b> |
| Microprocessor & Peripherals Interfacing                    | ECC501             | V          | Microcontrollers                | ECC402             | IV         | EXTC          |
| Digital Communication                                       | ECC502             | V          | Digital Communication           | ECC501             | V          | EXTC          |
| Electromagnetic Engineering                                 | ECC503             | V          | Electromagnetics and Antenna    | ECC601             | VI         | EXTC          |
| Discrete Time Signal Processing                             | ECC504             | V          | Discrete Time Signal Processing | ECC502             | V          | EXTC          |
| <b>Department Level Optional Course</b>                     |                    |            |                                 |                    |            |               |
| Microelectronics                                            | ECCDLO 5011        | V          | Digital VLSI                    | ECC603             | VI         | EXTC          |
| TV & Video Engineering                                      | ECCDLO 5012        | V          | Digital and IPTV Engineering    | ECCDLO5011         | V          | EXTC          |

|                                 |             |   |                                   |            |     |      |
|---------------------------------|-------------|---|-----------------------------------|------------|-----|------|
| Finite Automata Theory          | ECCDLO 5013 | V | Digital System Design             | ECC303     | III | EXTC |
| Data Compression and Encryption | ECCDLO 5014 | V | Data Compression and Cryptography | ECCDLO5012 | V   | EXTC |

| Electronics and Telecommunication Engineering<br>Equivalent Subjects for SEM VI (Rev-2016 to Rev-2019) |             |                                     |             |      |        |
|--------------------------------------------------------------------------------------------------------|-------------|-------------------------------------|-------------|------|--------|
| Semester VI                                                                                            |             |                                     |             |      |        |
| Scheme R_2016 CBSGS                                                                                    | Course Code | Scheme R02019 C Scheme              | Course Code | Sem. | Branch |
| Microcontrollers & Applications                                                                        | ECC601      | Microcontrollers                    | ECC402      | IV   | EXTC   |
| Computer Communication Networks                                                                        | ECC602      | Computer Communication Networks     | ECC602      | VI   | EXTC   |
| Antenna & Radio Wave Propagation                                                                       | ECC603      | Electromagnetics and Antenna        | ECC601      | VI   | EXTC   |
| Image Processing and Machine Vision                                                                    | ECC604      | Image Processing and Machine Vision | ECC603      | VI   | EXTC   |
| Department Level Optional Course                                                                       |             |                                     |             |      |        |
| Digital VLSI Design                                                                                    | ECCDLO 6021 | Digital VLSI                        | ECC503      | V    | EXTC   |
| Radar Engineering                                                                                      | ECCDLO 6022 | Radar Engineering                   | ECCDLO6016  | VI   | EXTC   |
| Database Management System                                                                             | ECCDLO 6023 | Database Management System          | ECCDLO6014  | VI   | EXTC   |
| Audio Processing                                                                                       | ECCDLO 6024 | Discrete Time Signal Processing     | ECC502      | V    | EXTC   |

| <b>Electronics and Telecommunication Engineering</b><br><b>Equivalent Subjects for SEM VII (Rev-2016 to Rev-2019)</b> |             |      |                                           |             |      |        |
|-----------------------------------------------------------------------------------------------------------------------|-------------|------|-------------------------------------------|-------------|------|--------|
| Semester VII                                                                                                          |             |      |                                           |             |      |        |
| Scheme R_2016 CBSGS                                                                                                   | Course Code | Sem. | Scheme R_2019 C Scheme                    | Course Code | Sem  | Branch |
| Microwave Engineering                                                                                                 | ECC701      | VII  | Microwave Engineering                     | ECC701      | VII  | EXTC   |
| Mobile Communication System                                                                                           | ECC702      | VII  | Mobile Communication System               | ECC702      | VII  | EXTC   |
| Optical Communication                                                                                                 | ECC703      | VII  | Optical Communication and Networks        | ECC801      | VIII | EXTC   |
| Department Level Optional Course                                                                                      |             |      |                                           |             |      |        |
| Neural Networks and Fuzzy Logic                                                                                       | ECCDLO7031  | VII  | Artificial Neural Network and Fuzzy Logic | ECC604      | VI   | EXTC   |
| Big Data Analytics                                                                                                    | ECCDLO7032  | VII  | Big Data Analytics                        | ECCDLO 7014 | VII  | EXTC   |
| Internet Communication Engineering                                                                                    | ECCDLO7033  | VII  | Internet Communication Engineering        | ECCDLO 7023 | VII  | EXTC   |
| CMOS Mixed Signal VLSI                                                                                                | ECCDLO7034  | VII  | Mixed Signal VLSI                         | ECCDLO 7023 | VI   | EXTC   |
| Embedded System                                                                                                       | ECCDLO7035  | VII  | Microcontrollers                          | ECC402      | IV   | EXTC   |

| Institute Level Elective                    |        |     |                                             |             |     |      |
|---------------------------------------------|--------|-----|---------------------------------------------|-------------|-----|------|
| Product Lifecycle Management                | LO7011 | VII | Product Lifecycle Management                | ECCILO 7011 | VII | EXTC |
| Reliability Engineering                     | LO7012 | VII | Reliability Engineering                     | ECCILO 7012 | VII | EXTC |
| Management Information System               | LO7013 | VII | Management Information System               | ECCILO 7013 | VII | EXTC |
| Design of Experiments                       | LO7014 | VII | Design of Experiments                       | ECCILO 7014 | VII | EXTC |
| Operation Research                          | LO7015 | VII | Operation Research                          | ECCILO 7015 | VII | EXTC |
| Cyber Security and Laws                     | LO7016 | VII | Cyber Security and Laws                     | ECCILO 7016 | VII | EXTC |
| Disaster Management and Mitigation Measures | LO7017 | VII | Disaster Management and Mitigation Measures | ECCILO 7017 | VII | EXTC |
| Energy Audit and Management                 | LO7018 | VII | Energy Audit and Management                 | ECCILO 7018 | VII | EXTC |
| Development Engineering                     | LO7019 | VII | Development Engineering                     | ECCILO 7019 | VII | EXTC |

| Bachelor of Electronics and Telecommunication Engineering<br>Equivalent Subjects for SEM VIII(Rev-2016 to Rev-2019) |             |      |                                               |             |      |        |
|---------------------------------------------------------------------------------------------------------------------|-------------|------|-----------------------------------------------|-------------|------|--------|
| Semester VIII                                                                                                       |             |      |                                               |             |      |        |
| Scheme R_2016 CBSGS                                                                                                 | Course Code | Sem  | Scheme R_2019 C Scheme                        | Course Code | Sem  | Branch |
| RF Design                                                                                                           | ECC801      | VIII | RF Design                                     | ECCDLO8015  | VIII | EXTC   |
| Wireless Networks                                                                                                   | ECC802      | VIII | Wireless Networks                             | ECCDLO8013  | VIII | EXTC   |
| RF Design Lab                                                                                                       | ECL801      | VIII | Microwave Engineering Laboratory              | ECL701      | VII  | EXTC   |
| Wireless Networks Lab                                                                                               | ECL802      | VIII | Mobile Communication System Laboratory        | ECL702      | VII  | EXTC   |
| Department Level Optional Lab IV                                                                                    | ECLDLO 804X | VIII | Optical Communication and Networks Laboratory | ECL801      | VIII | EXTC   |
| Department Level Optional Course                                                                                    |             |      |                                               |             |      |        |
| Optical Networks                                                                                                    | ECCDLO8041  | VIII | Optical Communication and Networks            | ECC801      | VIII | EXTC   |
| Advanced Digital Signal Processing                                                                                  | ECCDLO8042  | VIII | Advanced Digital Signal Processing            | ECCDLO 7024 | VII  | EXTC   |
| Satellite Communication                                                                                             | ECCDLO8043  | VIII | Satellite and Nano Satellite Communication    | ECCDLO 8022 | VIII | EXTC   |
| Network management in Telecommunication                                                                             | ECCDLO8044  | VIII | Network Management in Telecommunication       | ECCDLO 8023 | VIII | EXTC   |

| Institute Level Elective Course             |         |      |                                             |             |      |      |
|---------------------------------------------|---------|------|---------------------------------------------|-------------|------|------|
| Project Management                          | ILO8021 | VIII | Project Management                          | ECCILO 8011 | VIII | EXTC |
| Finance Management                          | ILO8022 | VIII | Finance Management                          | ECCILO 8012 | VIII | EXTC |
| Entrepreneurship Development and Management | ILO8023 | VIII | Entrepreneurship Development and Management | ECCILO 8013 | VIII | EXTC |
| Human Resource Management                   | ILO8024 | VIII | Human Resource Management                   | ECCILO 8014 | VIII | EXTC |
| Professional Ethics and CSR                 | ILO8025 | VIII | Professional Ethics and CSR                 | ECCILO 8015 | VIII | EXTC |
| Research Methodology                        | ILO8026 | VIII | Research Methodology                        | ECCILO 8016 | VIII | EXTC |
| IPR and Patenting                           | ILO8027 | VIII | IPR and Patenting                           | ECCILO 8017 | VIII | EXTC |
| Digital Business Management                 | ILO8028 | VIII | Digital Business Management                 | ECCILO 8018 | VIII | EXTC |
| Environmental Management                    | ILO8029 | VIII | Environmental Management                    | ECCILO 8019 | VIII | EXTC |

| <b><u>ELECTRONICS ENGINEERING</u></b><br><b>Equivalent Subjects for SEM III (Rev-2016 to Rev-2019)</b> |                    |                                             |                                           |                                                                        |             |
|--------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------|-------------------------------------------|------------------------------------------------------------------------|-------------|
| <b>REV- 2016 syllabus Courses:</b>                                                                     |                    |                                             | <b>Equivalent in REV- 2019 ‘C’ Scheme</b> |                                                                        |             |
| <b>Sem.</b>                                                                                            | <b>Course Code</b> | <b>Course Name</b>                          | <b>Course Code</b>                        | <b>Course Name</b>                                                     | <b>Sem.</b> |
| 3                                                                                                      | ELX301             | Applied Mathematics III                     | ELC301                                    | Engineering Mathematics III                                            | 3           |
| 3                                                                                                      | ELX302             | Electronic Devices and Circuits I           | ELC302                                    | Electronic Devices and Circuits I                                      | 3           |
| 3                                                                                                      | ELX303             | Digital Circuit Design                      | ELC303                                    | Digital Logic Circuits                                                 | 3           |
| 3                                                                                                      | ELX304             | Electrical Network Analysis and Synthesis   | ELC304                                    | Electrical Network Analysis and Synthesis                              | 3           |
| 3                                                                                                      | ELX305             | Electronics Instruments and Measurement     | ELC305                                    | Electronics Instruments and Measurement                                | 3           |
| 4                                                                                                      | ELX401             | Applied Mathematics IV                      | ELC401                                    | Engineering Mathematics IV                                             | 4           |
| 4                                                                                                      | ELX402             | Electronic Devices and Circuits II          | ELC402                                    | Electronic Devices and Circuits II                                     | 4           |
| 4                                                                                                      | ELX 403            | Microprocessors and Applications            | ELC403                                    | Microcontroller Applications                                           | 4           |
| 4                                                                                                      | ELX 404            | Digital System Design                       | ELDO 601-4                                | Digital Design with Reconfigurable Architecture                        | 6           |
| 4                                                                                                      | ELX 405            | Principles of Communication Engineering     | ELC404                                    | Analog Communication                                                   | 4           |
| 4                                                                                                      | ELX 406            | Linear Control Systems                      | ELC501                                    | Principles of Control System                                           | 5           |
| 5                                                                                                      | ELX501             | Micro-controllers and Applications          | ELC403                                    | Microcontroller Applications                                           | 4           |
| 5                                                                                                      | ELX 502            | Digital Communication                       | ELC504                                    | Digital Communication                                                  | 5           |
| 5                                                                                                      | ELX 503            | Engineering Electromagnetics                | ELC602                                    | Electromagnetic Engineering                                            | 6           |
| 5                                                                                                      | ELX 504            | Design with Linear Integrated Circuits      | ELC503                                    | Linear Integrated Circuits                                             | 5           |
|                                                                                                        |                    | <b>Department Level optional courses I</b>  |                                           |                                                                        |             |
| 5                                                                                                      | ELXDLO5011         | Data Base and Management System             | ELDO702-4                                 | Department Level Optional Course –IV:<br>Data Science and applications | 7           |
| 5                                                                                                      | ELXDLO5012         | Digital Control system                      | ELDO 601-1                                | Department Level Optional Course - II: Digital<br>Control System       | 6           |
| 5                                                                                                      | ELXDLO5013         | ASIC Verification                           | ELDO802-3                                 | Department Level Optional Course -VI: System on<br>Chip                | 8           |
| 5                                                                                                      | ELXDLO5014         | Biomedical Instrumentation                  | ELDO 501-2                                | Department Level Optional Course - I : Biomedical<br>Instrumentation   | 5           |
| 6                                                                                                      | ELX601             | Embedded System and RTOS                    | ELC604                                    | Embedded Systems and Real Time Operating<br>Systems                    | 6           |
| 6                                                                                                      | ELX602             | Computer Communication Network              | ELC603                                    | Computer Communication Networks                                        | 6           |
| 6                                                                                                      | ELX 603            | VLSI Design                                 | ELC601                                    | Basic VLSI Design                                                      | 6           |
| 6                                                                                                      | ELX 604            | Signals and systems                         | ELC405                                    | Signals and Systems                                                    | 4           |
|                                                                                                        |                    | <b>Department Level optional courses II</b> |                                           |                                                                        |             |

|   |            |                                              |             |                                                                                    |   |
|---|------------|----------------------------------------------|-------------|------------------------------------------------------------------------------------|---|
| 6 | ELXDLO6021 | Microwave Engineering                        | ELDO702-1   | Department Level Optional Course –IV: Wireless Communication                       | 7 |
| 6 | ELXDLO6022 | Electronics Product Design                   | ELDO 801 -1 | Department Level Optional Course -II: Web Design                                   | 8 |
| 6 | ELXDLO6023 | Wireless Communication                       | ELDO702-1   | Department Level Optional Course –IV: Wireless Communication                       | 7 |
| 6 | ELXDLO6024 | Computer Organization and Architecture       | ELDO 501-4  | Department Level Optional Course - I : Computer Organization Architecture          | 5 |
| 7 | ELX701     | Instrumentation System Design                | ELC801      | Industrial Automation                                                              | 8 |
| 7 | ELX702     | Power Electronics                            | ELC701      | Power Electronics                                                                  | 8 |
| 7 | ELX703     | Digital signal processing                    | ELC502      | Digital Signal Processing                                                          | 5 |
|   |            | <b>Department Level optional courses III</b> |             |                                                                                    |   |
| 7 | ELXDLO7031 | Neural Network and Fuzzy Logic               | ELDO 501-3  | Department Level Optional Course - I: Neural Network and Fuzzy Logic               | 5 |
| 7 | ELXDLO7032 | Advance Networking Technologies              | ELDO701-4   | Department Level Optional Course –III: Advanced Networking Technologies            | 7 |
| 7 | ELXDLO7033 | Robotics                                     | ELDO702-3   | Department Level Optional Course -IV: Robotics                                     | 7 |
| 7 | ELXDLO7034 | Integrated Circuit Technology                | ELDO802-4   | Department Level Optional Course –VI: Integrated Circuit Technology                | 8 |
| 8 | ELX801     | Internet of Things                           | ELC702      | Internet of Things                                                                 | 7 |
| 8 | ELX 802    | Analog and Mixed VLSI Design                 | ELDO701-1   | Department Level Optional Course –III: Mixed Signal VLSI Design                    | 7 |
| 8 |            | <b>Department Level optional courses IV</b>  |             |                                                                                    |   |
| 8 | ELXDLO8041 | Advanced Power Electronics                   | ELDO801-3   | Department Level Optional Course –V: Advanced Power Electronics                    | 8 |
| 8 | ELXDLO8042 | MEMS Technology                              | ELDO801-1   | Department Level Optional Course –V: Microelectromechanical Systems (MEMS          | 8 |
| 8 | ELXDLO8043 | Virtual Instrumentation                      | ELDO801-4   | Department Level Optional Course –V: Virtual Instrumentation                       | 8 |
| 8 | ELXDLO8044 | Digital Image Processing                     | ELDO 601-2  | Department Level Optional Course – II: Digital Image Processing and Machine Vision | 6 |

## **INFORMATION TECHNOLOGY**

Equivalence of Rev-2016 Scheme to Rev 2019 Scheme

| Sr. No.        | Rev-2016 Scheme |     |                                          | Rev-2019 'C' Scheme |     |                                        |
|----------------|-----------------|-----|------------------------------------------|---------------------|-----|----------------------------------------|
|                | Course Code     | Sem | Course Name                              | Course Code         | Sem | Course Name                            |
| <b>SEM-III</b> |                 |     |                                          |                     |     |                                        |
| 1              | ITC301          | III | Applied Mathematics III                  | ITC301              | III | Engineering Mathematics-III            |
| 2              | ITC302          | III | Logic Design                             | ITC405              | IV  | Computer Organization and Architecture |
| 3              | ITC303          | III | Data Structures & Analysis               | ITC302              | III | Data Structure and Analysis            |
| 4              | ITC304          | III | Database Management System               | ITC303              | III | Database Management System             |
| 5              | ITC305          | III | Principle of Communications              | ITC304              | III | Principle of Communication             |
| 6              | ITL301          | III | Digital Design Lab                       | ITL403              | IV  | Microprocessor Lab                     |
| 7              | ITL302          | III | Data Structures Lab                      | ITL301              | III | Data Structure Lab                     |
| 8              | ITL303          | III | SQL Lab                                  | ITL302              | III | SQL Lab                                |
| 9              | ITL304          | III | Java Programming Lab                     | ITL304              | III | Java Lab (SBL)                         |
| <b>SEM-IV</b>  |                 |     |                                          |                     |     |                                        |
| 10             | ITC401          | IV  | Applied Mathematics-IV                   | ITC401              | IV  | Engineering Mathematics-IV             |
| 11             | ITC402          | IV  | Computer Networks                        | ITC402              | IV  | Computer Network and Network Design    |
| 12             | ITC403          | IV  | Operating Systems                        | ITC403              | IV  | Operating System                       |
| 13             | ITC404          | IV  | Computer Organization and Architecture   | ITC405              | IV  | Computer Organization and Architecture |
| 14             | ITC405          | IV  | Automata Theory                          | ITC404              | IV  | Automata Theory                        |
| 15             | ITL401          | IV  | Networking Lab                           | ITL401              | IV  | Network Lab                            |
| 16             | ITL402          | IV  | Unix Lab                                 | ITL402              | IV  | Unix Lab                               |
| 17             | ITL403          | IV  | Microprocessor Programming Lab           | ITL403              | IV  | Microprocessor Lab                     |
| 18             | ITL404          | IV  | Python Lab                               | ITL404              | IV  | Python Lab (SBL)                       |
| <b>SEM-V</b>   |                 |     |                                          |                     |     |                                        |
| 19             | ITC501          | V   | Microcontroller and Embedded Programming | ITDO5011            | V   | Microcontroller Embedded Programming   |
| 20             | ITC502          | V   | Internet Programming                     | ITC501              | V   | Internet Programming                   |
| 21             | ITC503          | V   | Advanced Data Management Technology      | ITDO5012            | V   | Advance Data Management Technologies   |
| 22             | ITC504          | V   | Cryptography & Network Security          | ITC502              | V   | Computer Network Security              |
| 23             | ITL501          | V   | Internet Programming Lab                 | ITL501              | V   | IP Lab                                 |
| 24             | ITL502          | V   | Security Lab                             | ITL502              | V   | Security Lab                           |

|                |           |     |                                                   |          |      |                                                 |
|----------------|-----------|-----|---------------------------------------------------|----------|------|-------------------------------------------------|
| 25             | ITL503    | V   | OLAP Lab                                          | ITL601   | VI   | Business Intelligence Lab                       |
| 26             | ITL504    | V   | IOT (Mini Project) Lab                            | ITL702   | VII  | IOE Lab                                         |
| 27             | ITL505    | V   | Business Communication and Ethics                 | ITL505   | V    | Professional Communication & Ethics-II (PCE-II) |
| 28             | ITDLO5011 | V   | Advanced Data Structures & Analysis of Algorithms | ITDO5014 | V    | Advanced Data structure and Analysis            |
| 29             | ITDLO5012 | V   | Image Processing                                  | ITDO6012 | VI   | Image Processing                                |
| 30             | ITDLO5013 | V   | E-Commerce & E-Business                           | ITC503   | V    | Entrepreneurship and E- business                |
| 31             | ITDLO5014 | V   | IT Enabled Services                               | ITDO6013 | VI   | Green IT                                        |
| 32             | ITDLO5015 | V   | Computer Graphics & Virtual Reality               | ITDO5013 | V    | Computer Graphics & Multimedia System           |
| <b>SEM-VI</b>  |           |     |                                                   |          |      |                                                 |
| 33             | ITC601    | VI  | Software Engineering with Project Management      | ITC504   | V    | Software Engineering                            |
| 34             | ITC602    | VI  | Data Mining and Business Intelligence             | ITC601   | VI   | Data Mining & Business Intelligence             |
| 35             | ITC603    | VI  | Cloud Computing & Services                        | ITDO8024 | VIII | Cloud computing and Services                    |
| 36             | ITC604    | VI  | Wireless Networks                                 | ITC603   | VI   | Wireless Technology                             |
| 37             | ITL601    | VI  | Software Design Lab                               | ITL503   | V    | DevOps Lab                                      |
| 38             | ITL602    | VI  | Business Intelligence Lab                         | ITL601   | VI   | BI Lab                                          |
| 39             | ITL603    | VI  | Cloud Service Design Lab                          | ITL802   | VIII | Cloud computing                                 |
| 40             | ITL604    | VI  | Sensor Network Lab                                | ITL603   | VI   | Sensor Lab                                      |
| 41             | ITM605    | VI  | Mini-project                                      | ITM601   | VI   | Mini Project – 2 B Based on ML                  |
| 42             | ITDLO6021 | VI  | Advance Internet Programming                      | ITC602   | VI   | Web X.0                                         |
| 43             | ITDLO6022 | VI  | Software Architecture                             | ITDO6011 |      | Software Architecture                           |
| 44             | ITDLO6023 | VI  | Digital Forensics                                 | ITDO6014 |      | Ethical Hacking and Forensic                    |
| 45             | ITDLO6024 | VI  | Multimedia Systems                                | ITDO5013 | V    | Computer Graphics & Multimedia System           |
| 46             | ITDLO6025 | VI  | Green IT                                          | ITDO6013 | VI   | Green IT                                        |
| <b>SEM-VII</b> |           |     |                                                   |          |      |                                                 |
| 47             | ITC701    | VII | Enterprise Network Design                         | ITC502   | V    | Computer Network Security                       |
| 48             | ITC702    | VII | Infrastructure Security                           | ITDO7013 | VII  | Infrastructure Security                         |
| 49             | ITC703    | VII | Artificial Intelligence                           | ITC604   | VI   | AI and DS – 1                                   |
| 50             | ITL701    | VII | Network Design Lab                                | ITL502   | V    | Security Lab                                    |
| 51             | ITL702    | VII | Advanced Security Lab                             | ITL502   | V    | Security Lab                                    |

|    |           |      |                                        |          |      |                                 |
|----|-----------|------|----------------------------------------|----------|------|---------------------------------|
| 52 | ITL703    | VII  | Intelligence System Lab                | ITL605   | VI   | DS using Python Skill based Lab |
| 53 | ITL704    | VII  | Android Apps Development Lab           | ITL604   | VI   | MAD & PWA Lab                   |
| 54 | ITM705    | VII  | Project-I                              | ITP701   | VII  | Major Project I                 |
| 55 | ITDLO7031 | VII  | Storage Area Networks                  | ITDO7011 | VII  | Storage Area Network            |
| 56 | ITDLO7032 | VII  | Mobile Application Development         | ITDO7021 | VII  | MANET                           |
| 57 | ITDLO7033 | VII  | High Performance Computing             | ITDO7012 | VII  | High Performance computing      |
| 58 | ITDLO7034 | VII  | Software Testing and Quality Assurance | ITDO7014 | VII  | Software Testing and QA         |
| 59 | ITDLO7035 |      | Soft Computing                         | ITDO7023 | VII  | Quantum Computing               |
| 60 | ITC801    | VIII | Big Data Analytics                     | ITDO8011 | VIII | Big Data Analytics              |
| 61 | ITC802    | VIII | Internet of Everything                 | ITC702   | VII  | Internet of Everything          |
| 62 | ITL803    | VIII | DevOps Lab                             | ITL503   | V    | DevOPs Lab                      |
| 63 | ITL804    | VIII | R Programming Lab                      | ITL601   | VI   | Business Intelligence Lab       |
| 64 | ITL805    | VIII | Project-II                             | ITP801   | VIII | Major Project II                |
| 65 | ITDLO8041 | VIII | User Interaction Design                | ITDO8021 | VIII | User Interface Design           |
| 66 | ITDLO8042 | VIII | Information Retrieval Systems          | ITDO7024 | VII  | Information Retrieval System    |
| 67 | ITDLO8043 | VIII | Knowledge Management                   | ITDO8014 | VIII | Knowledge management            |
| 68 | ITDLO8044 | VIII | Robotics                               | ITDO8022 | VIII | Robotics                        |
| 69 | ITDLO8045 | VIII | Enterprise Resource Planning           | ITDO8023 | VIII | ERP                             |

**AUTOMOBILE ENGINEERING**  
Equivalent Subjects (Rev-2016 to Rev 2019)

| Sr No           | Scheme R 2016 CBCGS |                                         | Scheme R 2019 CBCS |                                       |     |
|-----------------|---------------------|-----------------------------------------|--------------------|---------------------------------------|-----|
|                 | Subject code        | Subject Name                            | Subject code       | Subject Name                          | Sem |
| <b>Sem VIII</b> |                     |                                         |                    |                                       |     |
|                 | AEC801              | Vehicle Maintenance                     | AEL701             | Vehicle Maintenance Lab               | 7   |
|                 | AEC802              | Vehicle Dynamics                        | AEC702             | Vehicle dynamics                      | 7   |
|                 | AEC803              | Vehicle Safety                          | AEC603             | Vehicle Body Engineering and Safety   | 6   |
|                 | AEDLO8041           | Hybrid Electric and Fuel cell Vehicles  | AEC801             | Hybrid and Electric Vehicles          | 8   |
|                 | AEDLO8042           | Rapid Prototyping                       | AEDLO8061          | Product Design and Development        | 8   |
|                 | AEDLO8043           | Product Design and Development          | AEDLO8061          | Product Design and Development        | 8   |
|                 | AEDLO8044           | Transport Management and Motor Industry | AEDLO7041          | Transport Management Systems          | 7   |
| <b>Sem VII</b>  |                     |                                         |                    |                                       |     |
|                 | AEC701              | Automotive Design                       | AEC 601            | Automotive Systems & Design           | 6   |
|                 | AEC702              | CAD/CAM/CAE                             | AEC 404            | CAD/CAM/                              | 4   |
|                 | AEC702              | Autotronics                             | AEC 701            | Autotronics                           | 7   |
|                 | AEDLO7031           | Automotive NVH                          | PEDLO8014          | Plant Engineering (Plant Engineering) | 8   |
|                 | AEDLO7032           | Automotive Embedded Systems             | AEDLO8052          | Automotive Embedded Systems           | 8   |

|               |           |                                        |           |                                        |   |
|---------------|-----------|----------------------------------------|-----------|----------------------------------------|---|
|               | AEDLO7033 | Automotive Aerodynamics and Aesthetics | AEDLO7033 | Automotive Aerodynamics and Aesthetics | 7 |
|               | AEDLO7034 | Computational Fluid Dynamics           | AEDLO7033 | Automotive Aerodynamics and Aesthetics | 7 |
| <b>Sem VI</b> |           |                                        |           |                                        |   |
|               | AEC601    | Chassis and Body Engineering           | AEC603    | Vehicle Body Engineering and Safety    | 6 |
|               | AEC602    | Machine Design                         | AEC503    | Machine Design                         | 5 |
|               | AEC603    | Finite Element Analysis                | AEC504    | Finite Element Analysis                | 5 |
|               | AEC604    | Mechanical Vibrations                  | AEC602    | Mechanical Vibrations                  | 6 |
|               | AEDLO6021 | Mechatronics                           | AEC604    | Automation and AI                      | 6 |
|               | AEDLO6022 | Robotics                               | AEC604    | Automation and AI                      | 6 |
|               | AEDLO6023 | Automotive Materials                   | AEDLO8051 | Automotive Materials                   | 8 |
| <b>Sem V</b>  |           |                                        |           |                                        |   |
|               | AEC501    | Internal Combustion Engines            | AEC502    | Internal Combustion Engines            | 5 |
|               | AEC502    | Mechanical Measurements and Control    | AEC501    | Mechanical Measurements and Control    | 5 |
|               | AEC503    | Heat Transfer                          | AEDLO7043 | Automotive Sensors and Control Systems |   |
|               | AEC504    | Automotive Systems                     | AEC 601   | Automotive Systems & Design            | 6 |
|               | AEDLO5011 | Press Tool Design                      | AEDLO6021 | Press Tool Design                      | 6 |
|               | AEDLO5012 | Machining Sciences and Tool Design     | AEDLO6022 | Tool Engineering                       | 6 |
|               | AEDLO5013 | Design of Jigs and Fixtures            | MEDLO8063 | Total Quality Management               | 8 |
| <b>Sem IV</b> |           |                                        |           |                                        |   |

|                |        |                         |         |                          |   |
|----------------|--------|-------------------------|---------|--------------------------|---|
|                | AEC401 | Applied Mathematics IV  | AEC404  | Applied Mathematics IV   | 4 |
|                | AEC402 | Fluid Mechanics         | AEC402  | Fluid Mechanics          | 4 |
|                | AEC403 | Industrial Electronics  | AEC 405 | Industrial Electronics   | 4 |
|                | AEC404 | Production Process II   | AEC 303 | Production Processes     | 3 |
|                | AEC405 | Kinematics of Machinery | AEC403  | Kinematics of Machinery  | 4 |
| <b>Sem III</b> |        |                         |         |                          |   |
|                | AEC301 | Applied Mathematics III | AEC301  | Applied Mathematics III  | 3 |
|                | AEC302 | Thermodynamics          | AEC 305 | Thermodynamics           | 3 |
|                | AEC303 | Strength of Materials   | AEC302  | Strength of Materials    | 3 |
|                | AEC304 | Production Process I    | AEC 303 | Production Processes     | 3 |
|                | AEC305 | Material Technology     | AEC 304 | Materials and Metallurgy | 3 |
|                |        |                         |         |                          |   |

**MECHATRONICS ENGINEERING**  
Equivalent Subjects (Rev-2012 to Rev 2019)

| Sr No           | Scheme R 2012 CBCGS |                                    | Scheme R 2019 CBCS |                                           |      |
|-----------------|---------------------|------------------------------------|--------------------|-------------------------------------------|------|
|                 | Subject code        | Subject Name                       | Subject code       | Subject Name                              | Sem  |
| <b>Sem VIII</b> |                     |                                    |                    |                                           |      |
|                 | MTC801              | Design of Mechatronic Systems      | MTC702             | Design of Mechatronic Systems             | VII  |
|                 | MTC802              | Engineering Management & Economics | MTDLO8063          | Engineering Management & Economics        | VIII |
|                 | MTC803              | Modelling & Simulation             | MTC503             | Mechatronic Systems Modelling And Control | V    |
|                 | MTE8044             | Robotics & Machine Vision          | MTDLO8061          | Robotics & Machine Vision                 | VIII |
| <b>Sem VII</b>  |                     |                                    |                    |                                           |      |
|                 | MTC701              | CAD/CAM/CAE                        | MTC501             | CAD/CAE                                   | V    |
|                 | MTC702              | Manufacturing Planning & Control   | ILO7015            | Operation Research                        | VII  |
|                 | MTC703              | Communication Systems              | MTDLO8052          | Communications Systems                    | VIII |
|                 | MTC704              | Automotive Electronics             | MTC701             | Automotive Mechatronics                   | VII  |
|                 | MTE7052             | Neural Networks and Fuzzy Logic    | MTDLO7.032         | Neural Networks and Fuzzy Logic           | VII  |
|                 | MTE7053             | Micro Electro Mechanical System    | MTC7043            | Micro Electro Mechanical System           | VII  |

|               |        |                                   |           |                                        |    |
|---------------|--------|-----------------------------------|-----------|----------------------------------------|----|
| <b>Sem VI</b> |        |                                   |           |                                        |    |
|               | MTC601 | CNC technology                    | MTC601    | Digital Manufacturing                  | VI |
|               | MTC602 | Metrology and Quality Engineering | MTDLO7041 | Product Design and Development         |    |
|               | MTC603 | Dynamics of Machinery             | MTDLO8062 | UAV Systems                            |    |
|               | MTC604 | Power Electronics and Drive       | MTC602    | Power Electronics and Drive            | VI |
|               | MTC605 | Instrumentation and Control       | MTC603    | Instrumentation and Control            | VI |
|               | MTC606 | Applied Hydraulics & Pneumatic    | MTC604    | Applied Hydraulics & Pneumatic         | VI |
| <b>Sem V</b>  |        |                                   |           |                                        |    |
|               | MTC501 | Manufacturing Processes           | MTDO504.2 | Production Processes                   | V  |
|               | MTC502 | Machine Design                    | MTC501    | CAD and CAE                            | V  |
|               | MTC503 | Sensors & Actuators               | MTC502    | Sensors & Actuators                    | V  |
|               | MTC504 | Control Systems                   | MTC503    | Mechatronic Systems Modeling & Control | V  |
|               | MTC505 | Embedded Systems                  | MTC504    | Embedded Systems                       | V  |
|               | MTC506 | Operating Systems                 | MTDO501.3 | Operating Systems                      | V  |
|               | MTC507 | Business Communications & Ethics  | MTL504    | Professional Communications & Ethics   | V  |
| <b>Sem IV</b> |        |                                   |           |                                        |    |
|               | MTC401 | Applied Mathematics -IV           | MTC401    | Engineering Mathematics - IV           | IV |
|               | MTC402 | Kinematics of Machinery           | MTC402    | Kinematics of Machinery                | IV |
|               | MTC403 | Fluid Mechanics & Machinery       | MTC403    | Thermal and Fluid Engineering          | IV |

|                |        |                                              |           |                                            |     |
|----------------|--------|----------------------------------------------|-----------|--------------------------------------------|-----|
|                | MTC404 | Strength of Materials                        | MTC404    | Strength of Materials                      | IV  |
|                | MTC405 | Applications of Integrated Circuits          | MTC405    | Applications of Integrated Circuits        | IV  |
|                | MTC406 | Signals & Systems                            | MTDO501.1 | Signal & Systems                           | V   |
| <b>Sem III</b> |        |                                              |           |                                            |     |
|                | MTC301 | Applied Mathematics-III                      | MTC301    | Engineering Mathematics-III                | III |
|                | MTC302 | Thermodynamics & Heat Transfer               | MTC403    | Thermal and Fluid Engineering              | IV  |
|                | MTC303 | Engineering Materials and Metallurgy         | MTC303    | Engineering Materials and Metallurgy       | III |
|                | MTC304 | Digital Electronics                          | MTC304    | Basic Electronics & Digital Circuit Design | III |
|                | MTC305 | Applied Electrical & Electronics Engineering | MTC305    | Electrical Circuits and Machines           | III |

**BIOMEDICAL ENGINEERING**  
Sem III to Sem VIII R2016 to R2019 equivalence

| SEM | Course Code | R2016                                            | Course Code | R2019                                      |
|-----|-------------|--------------------------------------------------|-------------|--------------------------------------------|
| III | BMC301      | Applied Mathematics III                          | BMC301      | Engineering Mathematics - III              |
|     | BMC302      | Basics of Human Physiology                       | BMC302      | Human Anatomy and Physiology for Engineers |
|     | BMC303      | Electrical Network Analysis and Synthesis        | ECC304      | Network Theory- III (EXTC)                 |
|     | BMC304      | Electronic Circuit Analysis and Design           | BMC304      | Electronic Circuit Analysis and Design     |
|     | BMC305      | Biomaterials, Prosthetics and Orthotics          | BMC405      | Biomaterials and Artificial Organs         |
|     |             |                                                  |             |                                            |
| IV  | BMC401      | Applied Mathematics IV                           | BMC401      | Engineering Mathematics - IV               |
|     | BMC402      | Biomedical Transducers and Measuring Instruments | BMC303      | Medical Sensors                            |
|     | BMC403      | Linear Integrated Circuits                       | BMC402      | Integrated Circuit Design                  |
|     | BMC404      | Digital Electronics                              | BMC305      | Digital Electronics                        |
|     | BMC405      | Signals and Control Systems                      | BMC403      | Principles of Control Systems              |
|     |             |                                                  |             |                                            |
| V   | BMC501      | Diagnostic & Therapeutic Instruments             | BMC501      | Biomedical Instrumentation – I             |
|     | BMC502      | Analog and Digital Circuit Design                | BMC402      | Integrated Circuit Design                  |
|     | BMC503      | Principles of Communication Engineering          | BMD05011    | Principles of Communication Engineering    |
|     | BMC504      | Biomedical Digital Signal Processing             | BMC502      | Digital Signal Processing                  |
|     |             | Department Level Optional Course – I             |             |                                            |
|     | BMD05011    | Healthcare Database Management                   | BMC603      | Data Analysis in Healthcare                |
|     | BMD05012    | Biostatistics                                    | BMC603      | Data Analysis in Health Care               |

|             |                 |                                                     |                 |                                                       |
|-------------|-----------------|-----------------------------------------------------|-----------------|-------------------------------------------------------|
|             | <b>BMDO5013</b> | <b>Rehabilitation Engineering</b>                   | <b>BMDO7021</b> | <b>Rehabilitation Engineering</b>                     |
| <b>VI</b>   | <b>BMC601</b>   | <b>Biomedical Monitoring Equipment</b>              | <b>BMC601</b>   | <b>Biomedical Instrumentation – II</b>                |
|             | <b>BMC602</b>   | <b>Microprocessors and Microcontrollers</b>         | <b>BMC503</b>   | <b>Microcontrollers and Embedded Systems</b>          |
|             | <b>BMC603</b>   | <b>Digital Image Processing</b>                     | <b>BMC602</b>   | <b>Biomedical Digital Image Processing</b>            |
|             | <b>BMC604</b>   | <b>Medical Imaging-I</b>                            | <b>BMC404</b>   | <b>Medical Imaging – I</b>                            |
|             |                 | <b>Department level Optional Course - II</b>        |                 |                                                       |
|             | <b>BMDO6021</b> | <b>Healthcare Software</b>                          | <b>BMDO8012</b> | <b>Healthcare Informatics</b>                         |
|             | <b>BMDO6022</b> | <b>Lasers and Fibre Optics</b>                      | <b>BMDO7022</b> | <b>Lasers and Fibre Optics</b>                        |
|             | <b>BMDO6023</b> | <b>Biological Modelling and Simulation</b>          | <b>BMDO7011</b> | <b>Biological Modeling and Simulation</b>             |
| <b>VII</b>  | <b>BMC701</b>   | <b>Life saving and surgical Equipment</b>           | <b>BMC701</b>   | <b>Biomedical Instrumentation – III</b>               |
|             | <b>BMC702</b>   | <b>Basics of VLSI</b>                               | <b>BMDO5012</b> | <b>Very Large Scale Integration</b>                   |
|             | <b>BMC703</b>   | <b>Medical Imaging-II</b>                           | <b>BMC504</b>   | <b>Medical Imaging – II</b>                           |
|             |                 | <b>Department level Optional Course – III</b>       |                 |                                                       |
|             | <b>BMDO7031</b> | <b>Networking and Information in Medical System</b> | <b>BMDO7023</b> | <b>Networking and Information Systems in Medicine</b> |
|             | <b>BMDO7032</b> | <b>Advanced Image Processing</b>                    | <b>BMC504</b>   | <b>Medical Imaging – II</b>                           |
|             | <b>BMDO7033</b> | <b>Embedded Systems</b>                             | <b>BMDO6012</b> | <b>Advanced Embedded Systems</b>                      |
| <b>VIII</b> | <b>BMC801</b>   | <b>Biomedical Microsystems</b>                      | <b>BMDO8021</b> | <b>Biomedical Microsystems</b>                        |
|             | <b>BMC802</b>   | <b>Hospital Management</b>                          | <b>BMC801</b>   | <b>Hospital Management</b>                            |
|             |                 | <b>Department Level Optional Course – IV</b>        |                 |                                                       |
|             | <b>BMDO8041</b> | <b>Health Care Informatics</b>                      | <b>BMDO8012</b> | <b>Health Care Informatics</b>                        |
|             | <b>BMDO8042</b> | <b>Robotics in Medicine</b>                         | <b>BMDO8011</b> | <b>Robotics in Medicine</b>                           |
|             | <b>BMDO8043</b> | <b>Nuclear Medicine</b>                             | <b>BMDO6011</b> | <b>Nuclear Medicine</b>                               |

## INSTRUMENTATION ENGINEERING

### Equivalence of Rev 2016 syllabus to Rev- 2019 'C' Scheme

| Sem/<br>year | Rev-2016     |                                     | R-2019 (C-scheme) |                                        |
|--------------|--------------|-------------------------------------|-------------------|----------------------------------------|
|              | Subject code | Subject name                        | Subject code      | Subject name                           |
| S.E.<br>III  | ISC301       | Applied Mathematics –III            | ISC301            | Engineering Mathematics-III            |
|              | ISC302       | Analog Electronics                  | ISC303            | Analog Electronics                     |
|              | ISC303       | Transducers – I                     | ISC302            | Transducers-I                          |
|              | ISC304       | Digital Electronics                 | ISC304            | Digital Electronics                    |
|              | ISC305       | Electrical Networks and Measurement | ISC305            | Electrical Networks and Measurements   |
| SE.<br>IV    | ISC401       | Applied Mathematics –IV             | ISC401            | Engineering Mathematics -IV            |
|              | ISC402       | Transducer – II                     | ISC402            | Transducers-II                         |
|              | ISC403       | Feedback Control System             | ISC404            | Feedback Control System                |
|              | ISC404       | Analytical Instrumentation          | ISDOC5011         | Analytical Instrumentation             |
|              | ISC405       | Signal Conditioning Circuit Design  | ISC403            | Signal Conditioning and Circuit Design |
| TE -<br>V    | ISC501       | Signals and Systems                 | ISC403            | Signal Conditioning and Circuit Design |
|              | ISC502       | Applications of Microcontroller     | ISC502            | Applications of Microcontroller        |
|              | ISC503       | Control System Design               | ISC503            | Control System Design                  |
|              | ISC504       | Control System Components           | ISC405            | Control System Components              |
|              | ISDLO5011    | Advanced Sensors                    | ISDOC5014         | Advanced Sensors                       |
|              | ISDLO5012    | Optimization Techniques             | ISDOC6012         | Optimization Techniques                |
|              | ISDL05013    | Database Management System          | ISDOC6013         | Database Management Systems            |

|        |            |                                        |            |                                                           |
|--------|------------|----------------------------------------|------------|-----------------------------------------------------------|
|        | ISDLO5014  | Fiber Optic Instrumentation            |            |                                                           |
| TE-VI  | ISC 601    | Process Instrumentation System         | ISC504     | Process Instrumentation System                            |
|        | ISC602     | Industrial Data Communication          | ISC603     | Industrial Data Communication                             |
|        | ISC603     | Electrical Machines and Drives         | ISC501     | Electrical Machines and Drives                            |
|        | ISC604     | Digital Signal Processing              | ISC602     | Digital Signal Processing                                 |
|        | ISC605     | Advanced Control System                | ISDOC 7013 | Advanced Control System                                   |
|        | ISDLO6021  | Material Science                       | PEDO8012   | Product Design and Industrial Marketing (Production Engg) |
|        | ISDL06022  | Computer Organization and Architecture | ISC502     | Applications of Microcontroller                           |
|        | ISDLO6023  | Bio-Sensors and Signal Processing      | ISDOC6014  | Biosensors and Signal Processing                          |
|        | ISDL06024  | Nuclear Instrumentation                | ISDOC5011  | Analytical Instrumentation                                |
| BE-VII | ISC701     | Industrial Process Control             | ISC601     | Industrial Process Control                                |
|        | ISC702     | Biomedical Instrumentation             | ISDOC 8015 | Advanced Biomedical Instrumentation                       |
|        | ISC703     | Industrial Automation                  | ISC702     | Process Automation                                        |
|        | ISDLO7031  | Image Processing                       | ISDOC 8013 | Digital Image Processing                                  |
|        | ISDLO7032  | Digital Control System                 | ISDOC 8011 | Digital Control System                                    |
|        | ISDLO7033  | Advanced Microcontroller Systems       | ISDOC 7014 | Advanced Microcontroller                                  |
|        | ISDLO7034  | Mechatronics                           | ISDOC5013  | Mechatronics                                              |
|        | ISDLO 7035 | Building Automation                    | ISDOC8022  | Building Automation                                       |
|        | ILO7011    | Product Lifecycle Management           | IOC7011    | Product Lifecycle Management                              |
|        | ILO7012    | Reliability Engineering                | IOC7012    | Reliability Engineering                                   |
|        | ILO7014    | Design of Experiments                  | IOC7014    | Design of Experiments                                     |

|            |           |                                                         |            |                                                         |
|------------|-----------|---------------------------------------------------------|------------|---------------------------------------------------------|
|            | ILO7013   | Management Information System                           | IOC7013    | Management Information System                           |
|            | ILO7015   | Operation Research                                      | IOC7015    | Operation Research                                      |
|            | ILO7016   | Cyber Security and Laws                                 | IOC7016    | Cyber Security and Laws                                 |
|            | ILO7017   | Disaster Management and Mitigation Measures             | IOC7017    | Disaster Management and Mitigation Measures             |
|            | ILO7018   | Energy Audit and Management                             | IOC7018    | Energy Audit and Management                             |
|            | ILO7019   | Development Engineering                                 | IOC7019    | Development Engineering                                 |
| BE<br>VIII | ISC801    | Instrumentation Project Documentation and Execution     | ISC701     | Instrumentation Project Documentation & Execution       |
|            | ISC802    | Instrument and System design                            | ISC801     | Instrument and System Design                            |
|            | ISDLO8041 | Expert System                                           | ISDOC8012  | Expert System                                           |
|            | ISDLO8042 | Optimal Control System                                  | ISDOC 8025 | Optimal Control System                                  |
|            | ISDLO8043 | Internet of Things                                      | ISDOC8014  | Internet of Things                                      |
|            | ISDLO8045 | Functional Safety                                       | ISDOC 8023 | Functional Safety                                       |
|            | ILO8021   | Project Management                                      | IOC8022    | Finance Management                                      |
|            | ILO8022   | Finance Management                                      | IOC8022    | Finance Management                                      |
|            | ILO8023   | Entrepreneurship Development and                        | IOC8023    | Entrepreneurship Development and Management             |
|            | ILO8024   | Human Resource Management                               | IOC8024    | Human Resource Management                               |
|            | ILO8025   | Professional Ethics and Corporate Social Responsibility | IOC8025    | Professional Ethics and Corporate Social Responsibility |
|            | ILO8026   | Research Methodology                                    | IOC8026    | Research Methodology                                    |
|            | ILO8027   | IPR and Patenting                                       | IOC8027    | IPR and Patenting                                       |

|  |         |                             |         |                             |
|--|---------|-----------------------------|---------|-----------------------------|
|  | ILO8028 | Digital Business Management | IOC8028 | Digital Business Management |
|  | ILO8029 | Environmental Management    | IOC8029 | Environmental Management    |

## Computer Engineering

### Equivalence of Rev 2016 syllabus to Rev- 2019 'C' Scheme

| Semester | Rev 2016                                                                                                                               | Rev 2019                                                                                                                                                                     |
|----------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sem: III | Applied Mathematics -III                                                                                                               | Engineering Mathematics-III                                                                                                                                                  |
|          | Digital Logic Design and Analysis                                                                                                      | Digital Logic & Computer Architecture                                                                                                                                        |
|          | Discrete Mathematics                                                                                                                   | Discrete Structures and Graph Theory                                                                                                                                         |
|          | Electronic Circuits and Communication Fundamentals                                                                                     | CSC304 Digital Logic & Computer Architecture                                                                                                                                 |
|          | Data Structures                                                                                                                        | Data Structure                                                                                                                                                               |
| Sem: IV  | Applied Mathematics- IV                                                                                                                | Applied Mathematics- IV                                                                                                                                                      |
|          | Analysis of Algorithms                                                                                                                 | Analysis of Algorithms                                                                                                                                                       |
|          | Computer Organization and Architecture                                                                                                 | Digital Logic & Computer Architecture                                                                                                                                        |
|          | Computer Graphics                                                                                                                      | CSC305: Computer Graphics                                                                                                                                                    |
|          | Operating System                                                                                                                       | CSC404: Operating System                                                                                                                                                     |
| Sem:V    | Microprocessor                                                                                                                         | CSC405 Microprocessor                                                                                                                                                        |
|          | Database Management System                                                                                                             | CSC403 Database Management System                                                                                                                                            |
|          | Computer Network                                                                                                                       | CSC503 Computer Network                                                                                                                                                      |
|          | Theory of Computer Science                                                                                                             | CSC501 Theoretical Computer Science                                                                                                                                          |
|          | <ul style="list-style-type: none"> <li>• Multimedia System</li> <li>• Advance Operating System</li> <li>• Advance Algorithm</li> </ul> | <ul style="list-style-type: none"> <li>• CSDLO5012: Internet Programming</li> <li>• CSC404: Operating System</li> <li>• CSDLO5011: Probabilistic Graphical Models</li> </ul> |
| Sem: VI  | Software Engineering                                                                                                                   | CSC502 Software Engineering                                                                                                                                                  |
|          | System Programming & Compiler Construction                                                                                             | CSC601 System Programming & Compiler Construction                                                                                                                            |

|           |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                            |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | Data Warehousing & Mining                                                                                                                                                                                                                                                                                                                              | CSC504 Data Warehousing & Mining                                                                                                                                                                                                                                                                                                                           |
|           | Cryptography & System Security                                                                                                                                                                                                                                                                                                                         | CSC602 Cryptography & System Security                                                                                                                                                                                                                                                                                                                      |
|           | <ul style="list-style-type: none"> <li>Machine Learning</li> <li>Advance Database System</li> <li>Enterprise Resource Planning</li> <li>Advance Computer Network</li> </ul>                                                                                                                                                                            | <ul style="list-style-type: none"> <li>CSC 701: Machine Learning</li> <li>CSDLO5013: Adv. Database Management System</li> <li>ERP – (Information Technology)</li> <li>CSC503 Computer Network</li> </ul>                                                                                                                                                   |
|           |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                            |
| Sem: VII  | Digital Signal & Image Processing                                                                                                                                                                                                                                                                                                                      | CSDLO6012: Digital Signal & Image Processing                                                                                                                                                                                                                                                                                                               |
|           | Mobile Communication & Computing                                                                                                                                                                                                                                                                                                                       | CSC603 Mobile Computing                                                                                                                                                                                                                                                                                                                                    |
|           | Artificial Intelligence & Soft Computing                                                                                                                                                                                                                                                                                                               | CSC604 Artificial Intelligence                                                                                                                                                                                                                                                                                                                             |
|           | <ul style="list-style-type: none"> <li>Adv. Security &amp; Digital Forensics</li> <li>Big Data &amp; Analytics</li> <li>Robotics</li> </ul>                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>CSDC8012: Digital Forensic</li> <li>CSC 702 Big Data Analytics</li> <li>Robotics – (Information Technology Branch)</li> </ul>                                                                                                                                                                                       |
|           | ILO7011. Product Lifecycle Management<br>ILO7012. Reliability Engineering<br>ILO7013. Management Information System<br>ILO7014. Design of Experiments ILO7015 Operation Research<br>ILO7016. Cyber Security and Laws<br>ILO7017. Disaster Management & Mitigation Measures<br>ILO7018. Energy Audit and Management<br>ILO7019. Development Engineering | ILO7011. Product Lifecycle Management<br>ILO7012. Reliability Engineering<br>ILO7013. Management Information System<br>ILO7014. Design of Experiments<br>ILO7015. Operation Research<br>ILO7016. Cyber Security and Laws<br>ILO7017. Disaster Management & Mitigation Measures<br>ILO7018. Energy Audit and Management<br>ILO7019. Development Engineering |
| Sem: VIII | Human Machine Interaction                                                                                                                                                                                                                                                                                                                              | ARVR                                                                                                                                                                                                                                                                                                                                                       |
|           | Distributed Computing                                                                                                                                                                                                                                                                                                                                  | Distributed Computing                                                                                                                                                                                                                                                                                                                                      |

|  |                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                               |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>• Adv. System Security &amp; Digital Forensics</li> <li>• Big Data &amp; Analytics</li> <li>• Robotics</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• CSDC8012 : Digital Forensic</li> <li>• CSDC8013 : Applied Data Science</li> <li>• Robotics – (Information Technology Branch)</li> </ul>                                                                                                                                                                              |
|  | <p>ILO7011. Product Lifecycle Management</p> <p>ILO7012. Reliability Engineering</p> <p>ILO7013. Management Information System</p> <p>ILO7014. Design of Experiments</p> <p>ILO7015. Operation Research</p> <p>ILO7016. Cyber Security and Laws</p> <p>ILO7017. Disaster Management &amp; Mitigation Measures</p> <p>ILO7018. Energy Audit and Management</p> <p>ILO7019. Development Engineering</p> | <p>ILO7011. Product Lifecycle Management</p> <p>ILO7012. Reliability Engineering</p> <p>ILO7013. Management Information System</p> <p>ILO7014. Design of Experiments</p> <p>ILO7015. Operation Research</p> <p>ILO7016. Cyber Security and Laws</p> <p>ILO7017. Disaster Management &amp; Mitigation Measures</p> <p>ILO7018. Energy Audit and Management</p> |

## CHEMICAL ENGINEERING

Equivalence of Rev-2016 Scheme to Rev 2019 Scheme

| Sr. No. | Rev-2016 Scheme |     |                                            | Rev-2019 'C' Scheme |     |                                                                    |
|---------|-----------------|-----|--------------------------------------------|---------------------|-----|--------------------------------------------------------------------|
|         | Course Code     | Sem | Course Name                                | Course Code         | Sem | Course Name                                                        |
| 1       | CHC301          | III | Applied Mathematics-III                    | CHC301              | III | Engineering Mathematics-III                                        |
| 2       | CHC302          | III | Engineering Chemistry I                    | CHC302              | III | Industrial and Engineering Chemistry I                             |
| 3       | CHC303          | III | Fluid Flow Operations (FFO)                | CHC303              | III | Fluid Flow Operations                                              |
| 4       | CHC304          | III | Chemical Engineering Thermodynamics I      | CHC304              | III | Chemical Engineering Thermodynamics I                              |
| 5       | CHC305          | III | Process Calculations                       | CHC305              | III | Process Calculations                                               |
| 6       | CHC306          | III | Chemical Technology                        | CHC304              | III | Chemical Engineering Thermodynamics I                              |
| 7       | CHL301          | III | Engineering Chemistry-I Lab                | CHL301              | III | Industrial and Engineering Chemistry I Lab                         |
| 8       | CHL302          | III | Chemical Engineering Lab I (FFO)           | CHL302              | III | Fluid Flow Operation Lab                                           |
| 9       | CHL303          | III | Chemical Engineering Lab II (Synthesis )   | CHL303              | III | Basic Chemical Engineering Lab                                     |
| 10      | CHC401          | IV  | Applied Mathematics-IV                     | CHC401              | IV  | Engineering Mathematics-IV                                         |
| 11      | CHC402          | IV  | Engineering Chemistry II                   | CHC402              | IV  | Industrial and Engineering Chemistry II                            |
| 12      | CHC403          | IV  | Chemical Engineering Thermodynamics II     | CHC405              | IV  | Chemical Engineering Thermodynamics II                             |
| 13      | CHC404          | IV  | Solid Fluid Mechanical Operations (SFMO)   | CHC404              | IV  | Solid Fluid Mechanical Operations                                  |
| 14      | CHC405          | IV  | Mechanical Equipment Design (MED)          | CHC503              | V   | Chemical Reaction Engineering -                                    |
| 15      | CHC406          | IV  | Chemical Engineering Economics             | CHC604              | VI  | Process Engineering and Economics                                  |
| 16      | CHL401          | IV  | Engineering Chemistry-II Lab               | CHL401              | IV  | Industrial and Engineering Chemistry II Lab                        |
| 17      | CHL402          | IV  | Chemical Engineering Lab III (SFMO)        | CHL403              |     | Solid Fluid Mechanical Operation Lab                               |
| 18      | CHL403          | IV  | MED Lab                                    | CHL404              | IV  | Skilled based lab: Design Calculation of Auxiliary Plant Equipment |
| 19      | CHC501          | V   | Computer programming and Numerical Methods | CHC403              | IV  | Numerical Method in Chemical Engineering                           |
| 20      | CHC502          | V   | Mass transfer Operations-I (MTO- I)        | CHC501              | V   | Mass transfer Operations-I                                         |
| 21      | CHC503          | V   | Heat transfer Operations (HTO)             | CHC502              | V   | Heat transfer Operations                                           |

|    |          |     |                                                |          |      |                                                                 |
|----|----------|-----|------------------------------------------------|----------|------|-----------------------------------------------------------------|
| 22 | CHC504   | V   | Chemical Reaction Engineering-I (CRE I)        | CHC503   | V    | Chemical Reaction Engineering-I                                 |
| 23 | CHC505   | V   | Business Communication & Ethics                | CHL504   | V    | Skilled Based Lab: Professional Communication and Ethics II Lab |
| 24 | CHDE501X | V   | Department Elective I                          |          |      |                                                                 |
| 25 | CHDE5011 | V   | Piping Engineering                             | CHDO6021 | VI   | Piping Engineering                                              |
| 26 | CHDE5012 | V   | Colloids and Interfaces                        | CHDO7032 | VII  | Fundamental of Colloids and Interface Science and Technology    |
| 27 | CHDE5013 | V   | Advanced Material Sciences                     | CHDO5012 | V    | Advanced Material Sciences                                      |
| 28 | CHDE5014 | V   | Instrumentation                                | CHC402   | IV   | Industrial and Engineering Chemistry II                         |
| 29 | CHL501   | V   | Computer programming and Numerical Methods Lab | CHL402   | IV   | Numerical Methods in Chemical Engineering lab                   |
| 30 | CHL502   | V   | Chemical Engineering Lab IV (MTO-I)            | CHL501   | V    | Mass transfer Operations-I Lab                                  |
| 31 | CHL503   | V   | Chemical Engineering Lab V (HTO)               | CHL502   | V    | Heat transfer Operations Lab                                    |
| 32 | CHL504   | V   | Chemical Engineering Lab VI (CRE-I)            | CHL503   | V    | Chemical Reaction Engineering-I Lab                             |
| 33 | CHC601   | VI  | Environmental Engineering (EE)                 | CHC603   | VI   | Pollution Control Technology                                    |
| 34 | CHC602   | VI  | Mass transfer Operations –II (MTO-II)          | CHC601   | VI   | Mass Transfer Operation II                                      |
| 35 | CHC603   | VI  | Transport Phenomenon                           | CHC504   | V    | Transport Phenomena                                             |
| 36 | CHC604   | VI  | Chemical Reaction Engineering –II (CRE- II)    | CHC602   | VI   | Chemical Reaction Engineering II                                |
| 37 | CHC605   | VI  | Plant Engineering & Industrial Safety          | CHDO7041 | VII  | Chemical Plant Safety and Hazards                               |
| 38 | CHDE602X | VI  | Department Elective II                         |          |      |                                                                 |
| 39 | CHDE6021 | VI  | Computational Fluid Dynamics                   | CHC504   | V    | Transport Phenomena                                             |
| 40 | CHDE6022 | VI  | Operation Research                             | CHDO7043 | VII  | Operation Research                                              |
| 41 | CHDE6023 | VI  | Biotechnology                                  | CHDO8062 | VIII | Biotechnology                                                   |
| 42 | CHL601   | VI  | Chemical Engineering Lab VII (EE)              | CHL603   | VI   | Pollution Control Technology Lab                                |
| 43 | CHL602   | VI  | Chemical Engineering Lab VIII (MTO-II)         | CHL601   | VI   | Mass Transfer Operation II Lab                                  |
| 44 | CHL603   | VI  | Chemical Engineering Lab IX CRE-II)            | CHL602   | VI   | Chemical Reaction Engineering II Lab                            |
| 45 | CHC701   | VII | Process Equipment Design. (PED)                | CHC502   | V    | Heat Transfer Operations                                        |
| 46 | CHC702   | VII | Process Engineering                            | CHC604   | VI   | Process Engineering and Economics                               |
| 47 | CHC703   | VII | Process Dynamics and Control (PDC)             | CHC701   | VII  | Instrumentation Process Dynamics and Control                    |

|    |          |      |                                                   |          |      |                                                    |
|----|----------|------|---------------------------------------------------|----------|------|----------------------------------------------------|
| 48 | CHDE703X |      | Department Elective III                           |          |      |                                                    |
| 49 | CHDE7031 | VII  | Corrosion Engineering                             | CHDO7031 | VII  | Corrosion Engineering                              |
| 50 | CHDE7032 | VII  | Industrial organization and Management            | CHDO6023 | VI   | Industrial Organization and Management             |
| 51 | CHDE7033 | VII  | Petroleum Refining Technology                     | CHDO7042 | VII  | Petroleum Refining Technology                      |
| 52 | CHDE7034 | VII  | Food Technology                                   | CHDO5011 | V    | Food Engineering                                   |
| 53 | CHP701   | VII  | Project A                                         | CHP701   | VII  | Major Project I                                    |
| 54 | CHS701   | VII  | Seminar                                           | CHM501   | V    | Mini Project-2A                                    |
| 55 | CHL701   | VII  | PED Lab                                           | CHL702   | VII  | Chemical Engineering Equipment Design Lab          |
| 56 | CHL702   | VII  | Chemical Engineering Lab X (PDC)                  | CHL701   | VII  | Instrumentation Process Dynamics and Control Lab   |
| 57 | CHC801   | VIII | Modeling, Simulation & Optimization (MSO)         | CHC801   | VIII | Modelling Simulation and Optimization              |
| 58 | CHC802   | VIII | Project Engineering & Entrepreneurship Management | CHDO7033 | VII  | Project Management for Chemical Process Industries |
| 59 | CHC803   | VIII | Energy System Design                              | CHDO8051 | VIII | Energy System Design                               |
| 60 | CHDE804X | VIII | Department Elective IV                            |          |      |                                                    |
| 61 | CHDE8041 | VIII | Advanced Process Control                          | CHC701   | VII  | Instrumentation Process Dynamics and Control       |
| 62 | CHDE8042 | VIII | Total Quality Management                          | CHDO5013 | V    | Total Quality Management                           |
| 63 | CHDE8043 | VIII | Advanced Separation Technology                    | CHDO8052 | VIII | Advanced Separation Technology                     |
| 64 | CHDE8044 | VIII | Polymer Technology                                | CHDO6022 | VI   | Polymer Technology                                 |
| 65 | CHP801   | VIII | Project B                                         | CHP801   | VIII | Major Project II                                   |
| 66 | CHL801   | VIII | Chemical Engineering Lab XI (MSO)                 | CHL801   | VIII | Modelling Simulation and Optimization Lab          |

**Offg. Associate Dean**  
**Faculty of Science and Technology**

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