

MVJ College of Engineering, Whitefield, Bangalore  
 An Autonomous Institution, Affiliated to VTU, Belagavi  
 Scheme of Teaching and Examination 2020-21  
 Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
 Effective from the Academic Year 2020-21

DEPARTMENT OF CHEMICAL ENGINEERING

III SEMESTER B.E.

| S No  | Course |                | Course Title  | Teaching Department | Teaching hours/week |          |                    | Examination       |           |           |             | Credits |
|-------|--------|----------------|---|---------------------|---------------------|----------|--------------------|-------------------|-----------|-----------|-------------|---------|
|       |        |                |   |                     | Theory Lecture      | Tutorial | Practical/Dr awing | Duration in Hours | CIE Marks | SEE Marks | Total marks |         |
|       | Type   | Code           |   |                     | L                   | T        | P                  |                   |           |           |             |         |
| 1     | BSC    | MVJ19MCH31     | Fourier Series, Transforms ,Numerical & Optimization Techniques | Mathematics         | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 2     | PCC    | MVJ19CH32      | Chemical Process Calculations                                   | Chemical            | 2                   | 4        | --                 | 3                 | 50        | 50        | 100         | 4       |
| 3     | PCC    | MVJ19CH33      | Momentum Transfer   | Chemical            | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 4     | PCC    | MVJ19CH34      | Mechanical Operations   | Chemical            | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 5     | PCC    | MVJ19CH35      | Materials Science for Chemical Engineers                        | Chemical            | 3                   | 0        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 6     | PCC    | MVJ19CH36      | Technical Chemistry   | Chemistry           | 3                   | 0        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 7     | PCC    | MVJ19CHL37     | Momentum Transfer Lab   | Chemical            | --                  | 1        | 3                  | 3                 | 50        | 50        | 100         | 2       |
| 8     | PCC    | MVJ19CHL38     | Technical Chemistry Lab   | Chemistry           | --                  | 1        | 3                  | 3                 | 50        | 50        | 100         | 2       |
| 9     | HSMC   | MVJ19SK/BK39   | Samskruthika Kannada/Balake Kannada                             | Humanities          | 1                   | --       | --                 | 3                 | 50        | 50        | 100         | 1       |
|       |        | MVJ19CPH39     | CPH   |                     | 1                   | --       | --                 | 3                 | 50        | 50        |             |         |
| 10    | BSC    | MVJ19MCHDIP301 | Additional Mathematics-1  | Mathematics         | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | -       |
| Total |        |                |   |                     | 19                  | 12       | 6                  | 30                | 500       | 500       | 1000        | 24      |

Note: BSC: Basic Science, PCC: Professional Core Course , HSMC: Humanity and Social Science  
 MVJ19MXXDIP301- Mandatory non-credit course

IV SEMESTER B.E.

| S No  | Course |                | Course Title                                      | Teaching Department | Teaching hours/week |          |                    | Examination       |           |           |             | Credits |
|-------|--------|----------------|---|---------------------|---------------------|----------|--------------------|-------------------|-----------|-----------|-------------|---------|
|       |        |                |   |                     | Theory Lecture      | Tutorial | Practical/Draw ing | Duration in Hours | CIE Marks | SEE Marks | Total marks |         |
|       | L      | T              |   |                     | P                   |          |                    |                   |           |           |             |         |
| 1     | BSC    | MVJ19MCH41     | Complex Analysis, Probability and Sampling Theory | Mathematics         | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 2     | PCC    | MVJ19CH42      | Chemical Engineering Thermodynamics               | Chemical            | 3                   | 2        | --                 | 3                 | 50        | 50        | 100         | 4       |
| 3     | PCC    | MVJ19CH43      | Chemical Reaction Engineering- 1                  | Chemical            | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 4     | PCC    | MVJ19CH44      | Chemical Technology                               | Chemical            | 3                   | 0        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 5     | PCC    | MVJ19CH45      | Process Heat Transfer                             | Chemical            | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 6     | PCC    | MVJ19CH46      | Instrumental Analysis                             | Chemistry           | 3                   | 0        | --                 | 3                 | 50        | 50        | 100         | 3       |
| 7     | PCC    | MVJ19CHL47     | Chemical Engg. Drawing Lab                        | Chemical            | -                   | 1        | 3                  | 3                 | 50        | 50        | 100         | 2       |
| 8     | PCC    | MVJ19CHL48     | Mechanical Operations Lab                         | Chemical            | --                  | 1        | 3                  | 3                 | 50        | 50        | 100         | 2       |
| 9     | HSMC   | MVJ19SK/BK49   | Samskruthika Kannada/Balake Kannada               | Humanities          | 1                   |          |                    | 3                 | 50        | 50        | 100         | 1       |
|       |        | MVJ19CPH49     | CPH   |                     | 1                   |          |                    | 3                 | 50        | 50        |             |         |
| 10    | BSC    | MVJ19MCHDIP401 | Additional Mathematics-2                          | Mathematics         | 2                   | 2        | --                 | 3                 | 50        | 50        | 100         | -       |
| Total |        |                |   |                     | 20                  | 10       | 6                  | 30                | 500       | 500       | 1000        | 24      |

Note: BSC: Basic Science, PCC: Professional Core Course , HSMC: Humanity and Social Science

V SEMESTER B.E.

| S No   | Course |            | Course Title                                  | Teaching Department | Teaching hours/week |          |                       | Examination       |           |           |             | Credits |
|--|--------|------------|---|---------------------|---------------------|----------|-----------------------|-------------------|-----------|-----------|-------------|---------|
|  |        |            |   |                     | Theory Lecture      | Tutorial | Practical/Drawi<br>ng | Duration in Hours | CIE Marks | SEE Marks | Total marks |         |
|  | L      | T          |   |                     | P                   |          |                       |                   |           |           |             |         |
| 1  | HSMC   | MVJ19TEM51 | Technical Management & Entrepreneurship       | Any Branch/MBA      | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 2  | PCC    | MVJ19CH52  | Chemical Reaction Engineering-II              | Chemical            | 2                   | 2        | --                    | 3                 | 50        | 50        | 100         | 4       |
| 3  | PCC    | MVJ19CH53  | Mass Transfer I                               | Chemical            | 2                   | 2        | --                    | 3                 | 50        | 50        | 100         | 4       |
| 4  | PCC    | MVJ19CH54  | Industrial Pollution control                  | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 5  | PE     | MVJ19CH55X | Professional Elective-1                       | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 6  | PCC    | MVJ19CHL56 | Chemical Reaction Engineering Lab             | Chemical            | --                  | 1        | 3                     | 3                 | 50        | 50        | 100         | 2       |
| 7  | PCC    | MVJ19CHL57 | Heat Transfer Lab                             | Chemical            | --                  | 1        | 3                     | 3                 | 50        | 50        | 100         | 2       |
| 8  | PCC    | MVJ19CHL58 | Pollution Control & Instrumental Analysis Lab | Chemical            | --                  | 1        | 3                     | 3                 | 50        | 50        | 100         | 2       |
| 9  | HSMC   | MVJ19ENV59 | Environmental Studies                         | Humanities          | 1                   | --       | --                    | 3                 | 50        | 50        | 100         | 1       |
| Total  |        |            |   |                     | 14                  | 7        | 9                     | 27                | 450       | 450       | 900         | 24      |
| Note: PCC: Professional Core Course , PE: Professional Elective, HSMC: Humanity and Social Science |        |            |   |                     |                     |          |                       |                   |           |           |             |         |

V<sup>th</sup> Semester Elective

| Professional Elective -1     |                                 |
|------------------------------|---------------------------------|
| Course code under MVJ19CH55X | Course Title                    |
| MVJ19CH551                   | Petroleum Refining Engineering  |
| MVJ19CH552                   | Pilot Plant & Scale up Studies  |
| MVJ19CH553                   | Colloid and Interfacial Science |
| MVJ19CH554                   | Fermentation Technology         |

## VI SEMESTER B.E

| S No   | Course |            | Course Title                                      | Teaching Department | Teaching hours/week |          |                       | Examination       |           |           |             | Credits |
|--|--------|------------|---|---------------------|---------------------|----------|-----------------------|-------------------|-----------|-----------|-------------|---------|
|  |        |            |   |                     | Theory Lecture      | Tutorial | Practical/Drawi<br>ng | Duration in Hours | CIE Marks | SEE Marks | Total marks |         |
|  | L      | T          |   |                     | P                   |          |                       |                   |           |           |             |         |
| 1  | PCC    | MVJ19CH61  | Mass Transfer II                                  | Chemical            | 2                   | 2        | --                    | 3                 | 50        | 50        | 100         | 4       |
| 2  | PCC    | MVJ19CH62  | Process Equipment Design & Drawing                | Chemical            | 2                   | -        | 2                     | 4                 | 50        | 50        | 100         | 4       |
| 3  | PE     | MVJ19CH63X | Professional Elective-2                           | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 4  | PE     | MVJ19CH64X | Professional Elective-3                           | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 5  | OE     | MVJ19CH65X | Open Elective-1                                   | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 6  | PCC    | MVJ19CHL66 | Mass Transfer Lab                                 | Chemical            | --                  | 1        | 3                     | 3                 | 50        | 50        | 100         | 2       |
| 7  | PCC    | MVJ19CHL67 | Computer Applications in Chemical Engg Laboratory | Chemical            | --                  | 1        | 3                     | 3                 | 50        | 50        | 100         | 2       |
| 8  | Proj   | MVJ19CHP68 | Mini-Project                                      | Chemical            | --                  | --       | 6                     | 3                 | 100       | -         | 100         | 3       |
| Total  |        |            |   |                     | 13                  | 6        | 12                    | 25                | 450       | 350       | 800         | 24      |
| Note: PCC: Professional Core Course , PE: Professional Elective, OE: Open Elective, Proj: Project Work |        |            |   |                     |                     |          |                       |                   |           |           |             |         |

VI<sup>th</sup> Semester Elective

| Professional Elective -2     |                                | Professional Elective -3     |                              | Open Elective –1             |                               |
|------------------------------|--------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|
| Course code under MVJ19CH63X | Course Title                   | Course code under MVJ19CH64X | Course Title                 | Course code under MVJ19CH65X | Course Title                  |
| MVJ19CH631                   | Petrochemicals                 | MVJ19CH641                   | Biochemical Engineering      | MVJ19CH651                   | Waste Water Treatment         |
| MVJ19CH632                   | Process Modelling & Simulation | MVJ19CH642                   | Chemical Process Integration | MVJ19CH652                   | Composite materials           |
| MVJ19CH633                   | Polymer Technology             | MVJ19CH643                   | Process Instrumentation      | MVJ19CH653                   | Introduction to Biotechnology |
| MVJ19CH634                   | Nano Technology                | MVJ19CH644                   | Piping Engineering & Design  | MVJ19CH654                   | Industrial Safety             |

## VII SEMESTER B.E.

| S No   | Course |            | Course Title                    | Teaching Department | Teaching hours/week |          |                       | Examination       |           |           |             | Credits |
|--|--------|------------|---------------------------------|---------------------|---------------------|----------|-----------------------|-------------------|-----------|-----------|-------------|---------|
|  |        |            |                                 |                     | Theory Lecture      | Tutorial | Practical/Drawi<br>ng | Duration in Hours | CIE Marks | SEE Marks | Total marks |         |
|  | L      | T          |                                 |                     | P                   |          |                       |                   |           |           |             |         |
| 1  | PCC    | MVJ19CH71  | Transport Phenomena             | Chemical            | 2                   | 2        | --                    | 3                 | 50        | 50        | 100         | 4       |
| 2  | PCC    | MVJ19CH72  | Process Control                 | Chemical            | 2                   | 2        | --                    | 3                 | 50        | 50        | 100         | 4       |
| 3  | PE     | MVJ19CH73X | Professional Elective-4         | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 4  | PE     | MVJ19CH74X | Professional Elective-5         | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 5  | OE     | MVJ19CH75X | Open Elective-2                 | Chemical            | 3                   | 0        | --                    | 3                 | 50        | 50        | 100         | 3       |
| 6  | PCC    | MVJ19CHL76 | Process Control Lab             | Chemical            | --                  | 1        | 3                     | 3                 | 50        | 50        | 100         | 2       |
| 7  | PCC    | MVJ19CHL77 | Chemical Process Simulation Lab | Chemical            | --                  | 1        | 3                     | 3                 | 50        | 50        | 100         | 2       |
| 8  | Proj   | MVJ19CHP78 | Project Phase-1                 | Chemical            | --                  | --       | 4                     | -                 | 50        | -         | 50          | 2       |
| Total  |        |            |                                 |                     | 14                  | 6        | 8                     | 21                | 400       | 350       | 750         | 23      |
| Note: PCC: Professional Core Course , PE: Professional Elective, OE: Open Elective, Proj: Project Work |        |            |                                 |                     |                     |          |                       |                   |           |           |             |         |

VII<sup>th</sup> Semester Elective

| Professional Elective -4     |                               | Professional Elective -5     |                              | Open Elective –2             |  |
|------------------------------|-------------------------------|------------------------------|------------------------------|------------------------------|--|
| Course code under MVJ19CH73X | Course Title                  | Course code under MVJ19CH74X | Course Title                 | Course code under MVJ19CH75X | Course Title                                 |
| MVJ19CH731                   | CFD for Chemical Engineers    | MVJ19CH741                   | Novel Separation Techniques  | MVJ19CH751                   | Green Technology                             |
| MVJ19CH732                   | Advanced Membrane Separations | MVJ19CH742                   | Process Intensification      | MVJ19CH752                   | Air Pollution and Control                    |
| MVJ19CH733                   | Process Engineering Economics | MVJ19CH743                   | Multi component Distillation | MVJ19CH753                   | Introduction to Nanoscience & NanoTechnology |
| MVJ19CH734                   | Pharmaceutical Technology     | MVJ19CH744                   | Nano fabrication             | MVJ19CH754                   | Solid Waste Management                       |



## VIII SEMESTER B.E

| S No  | Course |            | Course Title    | Teaching Department | Teaching hours/week |          |                   | Examination       |           |           |             | Credits |
|---|--------|------------|-----------------|---------------------|---------------------|----------|-------------------|-------------------|-----------|-----------|-------------|---------|
|   | Type   | Code       |                 |                     | Theory Lecture      | Tutorial | Practical/Drawing | Duration in Hours | CIE Marks | SEE Marks | Total marks |         |
|   |        |            |                 |                     | L                   | T        | P                 |                   |           |           |             |         |
| 1   | Proj   | MVJ19CHP83 | Project Phase-2 | Chemical            | -                   | -        | 20                | 3                 | 50        | 50        | 100         | 10      |
| 2   | Int    | MVJ19CHI84 | Internship      | Chemical            | -                   | -        | -                 | 3                 | 50        | 50        | 100         | 3       |
| 3   | Sem    | MVJ19CHS85 | Seminar         | Chemical            | -                   | -        | 2                 | 3                 | 50        | 50        | 100         | 1       |
| 4   | CRT    | MVJ19CHC86 | Certification   | Industry/Institute  | -                   | -        | -                 | -                 | -         | -         | -           | 2       |
| Total   |        |            |                 |                     | -                   | -        | 22                | 9                 | 150       | 150       | 300         | 16      |
| Note: Proj: Project Work, Int: Internship, Sem : Seminar, CRT: Certification Course (Can be carried out during the program period but same will reflect in the final semester grade card) |        |            |                 |                     |                     |          |                   |                   |           |           |             |         |