



# Programme Specifications

M.Pharm. Programme

Programme:  
Pharmaceutical Chemistry

Department:  
Pharmaceutical Chemistry

Faculty of Pharmacy  
M.S. Ramaiah University of Applied Sciences

**PROGRAMME SPECIFICATIONS: PHARMACEUTICAL CHEMISTRY**

|                 |  |
|-----------------|--|
| Faculty         | Faculty of Pharmacy (FPH)              |
| Department      | Department of Pharmaceutical Chemistry |
| Programme       | M.Pharm. in Pharmaceutical Chemistry   |
| Dean of Faculty | Dr. V.Madhavan                         |
| HOD             | Prof. C H S Venkataramana              |

**1. Title of the Award**

M. Pharm. in Pharmaceutical Chemistry

**2. Modes of Study**

Full-Time  Part-Time

**3. Awarding Institution /Body**

M.S.Ramaiah University of Applied Sciences – Bangalore, India

**4. Joint Award**

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**5. Teaching Institution**

Faculty of Pharmacy (FPH)

M.S.Ramaiah University of Applied Sciences – Bangalore, India

**6. Month of Creation of Programme Specifications**

February 2017

**7. Programme Approval Month by the Academic Council of MSRUAS**

April 2017

**8. Next Review**

March 2019

**9. Programme Approving Regulatory Bodies and Date of Approval**

Pharmacy Council of India (PCI), New Delhi

**10. Programme Accrediting Body and Date of Accreditation**

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**11. Grade Awarded by the Accreditation Body**

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**12. Programme Accreditation Validity**

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**13. Programme Benchmark**

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**14. Rationale for the Programme**

In the post GATT era, there is a need for vast and speedy research to obtain new drug molecules for clinical use and a post graduate course in Pharmaceutical Chemistry provides the requisite man-power towards the same. Further, the indiscriminate use medicinal agents will have deleterious effects on the health of human population. Anti-microbial agents for instance are becoming ineffective due to the development of resistance by the microbes and this in-turn requires the development of large number of new drug molecules. This situation augments the requirement of trained professionals in rational drug design. The new drugs developed need standardization by quality control procedures which in turn are fulfilled by the trained post graduates to develop newer methods of analysis. These Post graduates also play a major role in academics to train the students in developing them as future pharmacists.

The M. S. Ramaiah College of Pharmacy, now a constituent of MSRUAS as Faculty of Pharmacy has been in existence for more than two decades. Over the years, Faculty of Pharmacy of MSRUAS has grown and evolved as one of the Premier Institutions in the state of Karnataka. It has very good infrastructure, noteworthy laboratory facilities, experienced and competent faculty members. During the last two decades it has produced over 1000 graduates and 120 Post graduates. The presence of other Faculties of applied sciences in the University will facilitate the students to have a better experience and exposure in comparison to the conventional training procedures.

Faculty of Pharmacy of MSRUAS offers M. Pharm degree programme in Pharmaceutical Chemistry which is featured with semester pattern curriculum is aimed to emphasize critical thinking, analytical and problem solving skills, outcome based curriculum. Importance will be given to research projects based on rational drug design. The curriculum is structured to develop the students for taking up independent professional responsibilities and acquire necessary skills to compete with their global counterparts.

**15. Programme Aim**

The aim of the programme is to produce proficient postgraduates with advanced knowledge and skills in designing, synthesizing and analysis of medicinal agents and pharmaceuticals.

## 16. Programme Objectives

The objectives of the programme are:

1. To impart training in achieving high degree of proficiency and competence required for molecular modifications for enhanced activity and low toxicity
2. To enhance the capability of students in applying mechanisms of different chemical reactions for the synthesis of new drug entities
3. To facilitate the students to grasp the structural features of natural products of medicinal interest in order to search lead molecules for drug discovery
4. To discuss the principles of different analytical techniques and train the students to apply them in day to day practice
5. To provide hands on training on the use of various analytical instruments for analysis of drugs and pharmaceuticals
6. To develop a general perspective and opportunities for a career in Pharmaceutical Chemistry
7. To train the students in teamwork, lifelong learning and continuous improvement

## 17. Intended Learning Outcomes of the Programme

The intended learning outcomes are listed under four headings:

1. Knowledge and Understanding, 2. Cognitive Skills 3. Practical Skills
4. Capability/ Transferable Skills.

### 17.1 Knowledge and Understanding

After undergoing this programme, a student will be able to:

- KU1: Discuss the principle involved in modern techniques to Identify, analyze and estimate the drugs and pharmaceuticals to ensure their quality
- KU2: Summarize the concepts of QSAR and CADD in rational drug design
- KU3: Develop strategies for the synthesis of various drugs
- KU4: Elucidate structures of natural products of medicinal interest

### 17.2 Cognitive Skills

After undergoing this programme, a student will be able to:

- CS1: Analyse the molecules by qualitative and quantitative methods to predict their structures
- CS2: Interpret experimental data to establish the content or identity of pharmaceuticals
- CS3: Predict the activity with respect to the structures of drug molecules
- CS4: Design new drugs targeted to act at specific sites

### 17.3 Practical Skills

After undergoing this programme, a student will be able to:

- PS1: Draw structures of new drug entities using various software such as ISIS and Chem – sketch
- PS2: Synthesize and analyze new drug molecular entities by different chemical processes
- PS3: Isolate and identify chemical constituents from synthetic and natural sources
- PS4: Predict the pharmacological activity and toxicity of new drugs using drug design software

### 17.4 Capability/Transferable Skills

After undergoing the programme, a student will be able to:

- TS1: Develop technical report after analysis of data and the process or procedure
- TS2: Perform under constraints to meet the given targets
- TS3: Work as a team and team leader to enhance the productivity of the group and the organization
- TS4: Communicate the concepts, ideas and viewpoints through effective oral and written communication skills

### 18. Programme Structure

The following are the courses a student is required to successfully complete for the award of the degree. The course is delivered as per the Time-Table for every batch.

| <b>SEMESTER – I</b>                     |  |                |                   |
|---|--|----------------|-------------------|
| <b>Course Code</b>                      | <b>Courses</b>   | <b>Credits</b> | <b>Hours/Week</b> |
| <b>DEPARTMENT COMMON COURSE</b>         |  |                |                   |
| <b>MPC101T</b>                          | 1.Modern Pharmaceutical Analytical Techniques  | 4              | 4                 |
| <b>PROGRAMME SPECIALIZATION COURSES</b> |  |                |                   |
| <b>MPC102T</b>                          | 1. Advanced Organic Chemistry -I   | 4              | 4                 |
| <b>MPC103T</b>                          | 2. Advanced Medicinal Chemistry  | 4              | 4                 |
| <b>MPC104T</b>                          | 3. Chemistry of Natural Products   | 4              | 4                 |
| <b>MPC105P</b>                          | 4. Pharmaceutical Chemistry Practical I  | 6              | 12                |
| <b>MPC106</b>                           | 5.Seminar / Assignment   | 4              | 7                 |
|   | <b>Total</b>   | <b>26</b>      | <b>35</b>         |
| <b>SEMESTER – II</b>                    |  |                |                   |
| <b>PROGRAMME SPECIALIZATION COURSES</b> |  |                |                   |
| <b>MPC201T</b>                          | 1. Advanced Spectral Analysis  | 4              | 4                 |
| <b>MPC202T</b>                          | 2. Advanced Organic Chemistry -II  | 4              | 4                 |
| <b>MPC203T</b>                          | 3. Computer Aided Drug Design  | 4              | 4                 |
| <b>MPC204T</b>                          | 4. Pharmaceutical Process Chemistry  | 4              | 4                 |
| <b>MPC205P</b>                          | 5. Pharmaceutical Chemistry Practical - II   | 6              | 12                |
| <b>MPC206</b>                           | 6. Seminar / Assignment  | 4              | 7                 |
|   | <b>Total</b>   | <b>26</b>      | <b>35</b>         |
| <b>SEMESTER – III</b>                   |  |                |                   |
| <b>FACULTY COMMON SPECIALIZATION</b>    |  |                |                   |
| <b>MRM301T</b>                          | 1.Research Methodology and Biostatistics   | 4              | 4                 |
| <b>MPJ302</b>                           | 2.Journal Club   | 1              | 1                 |
| <b>MMC301</b>                           | 3.Group Project  | 4              | -                 |
| <b>MPR301</b>                           | 4.Discussion /Synopsis Presentation (Proposal Presentation)  | 2              | 2                 |
| <b>MPR302</b>                           | 5.Research Work  | 14             | 28                |
|   | <b>Total</b>   | <b>25</b>      | <b>35</b>         |
| <b>SEMESTER – IV</b>                    |  |                |                   |
| <b>PROGRAMME SPECIALIZATION COURSES</b> |  |                |                   |
| <b>MPJ402</b>                           | 1.Journal Club   | 1              | 1                 |
| <b>MPR403</b>                           | 2. Research Work   | 16             | 31                |
| <b>MPR404</b>                           | 3. Discussion/Final Presentation   | 3              | 3                 |
|   | <b>Total</b>   | <b>20</b>      | <b>35</b>         |
| <b>MANDATORY COURSE/S</b>               |  |                |                   |
| <b>MMC501</b>                           | 1. Participation /Presentation in research forum: National / International Seminar, Conferences, Workshops | 1- 3           | -                 |
| <b>MMC502</b>                           | 2. Publication : National / International Journals   |                | -                 |
| <b>MMC503</b>                           | 3. Academic/Research award: State/National/International Agencies  |                | -                 |
|   | <b>Grand Total</b>   | <b>Minimum</b> | <b>98</b>         |
|   |  | <b>Maximum</b> | <b>100</b>        |

**19. Programme Delivery Structure- Full-Time**

The programme is delivered from Monday to Saturday of the week.

Normally from 9 AM to 1PM and 2 PM -5PM from Monday to Friday and 9AM to 1PM on Saturday

**20. Teaching and Learning Methods**

The programme delivery comprises of :

1. Face to Face Lectures using Audio-Visuals
2. Group Discussions, Presentations
3. Demonstrations
4. Guest Lectures
5. Laboratory/Field work/Workshops
6. Industry Visit
7. Seminars
8. Project Exhibitions
9. Case studies
10. Concept mapping

**21. Mandatory Courses**

Mandatory course/s can be any one or more of the following –

**MMC501 Participation /Presentation in Research Forum**

A student can participate /submit a paper and make a presentation in a conference, seminar, workshop, training programme or symposium related to the programme specialization which is approved by the department.

**MMC502 Publication in National /International Journal (Referred & Abstracted)**

A student can publish a review or research paper in a reputed scientific journal. The proof of submission and a copy of the paper shall be submitted to the department.

**MMC503 Academic/Research award from State/National/International Agencies**

A student with extraordinary accomplishment can participate and get academic excellence /research excellence awards from conferences/competitions/recognized affiliated bodies and agencies.

**MMC301 Group Project**

A group project shall have up to 5 interdepartmental students within the faculty. The purpose of group project is that the group should be able to design/develop/evaluate a drug moiety, dosage form, product, data or process in their area of specializations. The students are required to develop a report for assessment and also need to demonstrate the final outcome. The IPR rights of all such work lies with the University only. The students are required to sign an agreement before the commencement of the project. The project should be approved by a committee of examiners before the start of the project. Students can choose a project from the database of projects available with the concerned department. The detailed procedure and evaluation procedure is available in the Operation Manual /I- portal.

22.

**MPH106 Seminar/ Assignment****&  
MPH206**

**Assignment:** Every candidate shall submit a word processed assignment for individual theory courses in their first and second semester specialization.

**Seminar:** Every candidate shall present on the submitted assignment topic for individual theory courses in their first and second semester specialization.

The detailed procedure and evaluation procedure is available in the Operation Manual /I- portal.

23. **MPJ302  
&  
MPJ402****Journal Club**

Every student shall critically appraise the research article of their specialization published in reputed journals. Students are trained for inquiry based learning and critical thinking skills. Students shall access journals adopting search engines and made to collect relevant data, analyze and comment on the findings with the submission of the document evidence and present on the same for assessment. The detailed procedure and evaluation procedure is available in the Operation Manual /I- portal.



**24. MPR302 & MPR403****Dissertation /Project Work**

Every candidate shall carry out work on an assigned research project under the guidance of a recognized Postgraduate teacher in the third and fourth semester, the result of which shall be written up and submitted in the form of a dissertation.

Work for writing the dissertation is aimed at contributing to the development of a spirit of enquiry, besides exposing the candidate to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.

The dissertation shall be examined by a minimum of two examiners; one internal (Mentor) and one external examiner (outside the University).

## 25. Assessment and Grading

## SEMESTER I

| Course Code     | Course                                      | Internal Assessment |                       |          |       | Semester End Examination |          | Total Marks |
|-----------------|---|---------------------|-----------------------|----------|-------|--------------------------|----------|-------------|
|                 |   | Continuous Mode     | Sessional Examination |          | Total | Marks                    | Duration |             |
|                 |   |                     | Marks                 | Duration |       |                          |          |             |
| <b>MPC 101T</b> | Modern Pharmaceutical Analytical Techniques | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 102T</b> | Advanced Organic Chemistry –I               | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 103T</b> | Advanced Medicinal Chemistry                | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 104T</b> | Chemistry of Natural Products               | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 105P</b> | Pharmaceutical Chemistry Practical I        | 20                  | 30                    | 6h.      | 50    | 100                      | 6h.      | 150         |
| <b>MPC 106</b>  | Seminar/ Assignment                         | -                   | -                     | -        | -     | -                        | -        | 100         |
| <b>Total</b>    |   |                     |                       |          |       |                          |          | <b>650</b>  |

## SEMESTER II

| Course Code     | Course                           | Internal Assessment |                       |          |       | Semester End Examination |          | Total Marks |
|-----------------|----------------------------------|---------------------|-----------------------|----------|-------|--------------------------|----------|-------------|
|                 |                                  | Continuous Mode     | Sessional Examination |          | Total | Marks                    | Duration |             |
|                 |                                  |                     | Marks                 | Duration |       |                          |          |             |
| <b>MPC 201T</b> | Advanced Spectral Analysis       | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 202T</b> | Advanced Organic Chemistry -II   | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 203T</b> | Computer Aided Drug Design       | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 204T</b> | Pharmaceutical Process Chemistry | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPC 205P</b> | Pharmaceutical Practical II      | 20                  | 30                    | 6h       | 50    | 100                      | 6h.      | 150         |
| <b>MPC 206</b>  | Seminar/ Assignment              | -                   | -                     | -        | -     | -                        | -        | 100         |
| <b>Total</b>    |                                  |                     |                       |          |       |                          |          | <b>650</b>  |

## SEMESTER III

| Course code     | Course   | Internal Assessment |                       |          |       | Semester End Examination |          | Total Marks |
|-----------------|--|---------------------|-----------------------|----------|-------|--------------------------|----------|-------------|
|                 |  | Continuous Mode     | Sessional Examination |          | Total | Marks                    | Duration |             |
|                 |  |                     | Marks                 | Duration |       |                          |          |             |
| <b>MRM 301T</b> | Research Methodology and Biostatistics                   | 10                  | 15                    | 1h.      | 25    | 75                       | 3h.      | 100         |
| <b>MPJ 302</b>  | Journal Club   | -                   | -                     | -        | 25    | -                        | -        | 25          |
| <b>MPR 301</b>  | Discussion/Synopsis Presentation (Proposal Presentation) | -                   | -                     | -        | 50    | -                        | -        | 50          |
| <b>MPR 302</b>  | Research Work  | -                   | -                     | -        | -     | 350                      | 1h.      | 350         |
| <b>Total</b>    |  |                     |                       |          |       |                          |          | <b>525</b>  |

## SEMESTER IV

| Course code    | Course                                 | Internal Assessment |                       |          |       | Semester End Examination |          | Total Marks |
|----------------|--|---------------------|-----------------------|----------|-------|--------------------------|----------|-------------|
|                |  | Continuous Mode     | Sessional Examination |          | Total | Marks                    | Duration |             |
|                |  |                     | Marks                 | Duration |       |                          |          |             |
| <b>MPJ 402</b> | Journal Club                           | -                   | -                     | -        | 25    | -                        | -        | 25          |
| <b>MPR 403</b> | Research Work                          | -                   | -                     | -        |       | 400                      | -        | 400         |
| <b>MPR 404</b> | Discussion/ Interim-Final Presentation | -                   | -                     | -        | 75    |                          | 1h.      | 75          |
| <b>Total</b>   |  |                     |                       |          |       |                          |          | <b>500</b>  |

**Theory:100 Marks**

**(Component -1 : 25 Marks + Component-2: 75Marks)**

**Component - 1: - 25 Marks**

It has two sub-components (Part A & B)

**Part – A: Continuous Evaluation : 10 Marks**

The marks allocated for Continuous mode of internal assessment shall be awarded as per the scheme given below:

**Scheme for awarding Continuous Evaluation -Theory**

| Criteria                       | Maximum marks |
|--------------------------------|---------------|
| Attendance *                   | 8             |
| Student –Teacher Interaction** | 2             |
| <b>Total</b>                   | <b>10</b>     |

**Guidelines for allotment of marks for attendance\***

| Percentage of Attendance | Theory |
|--------------------------|--------|
| <b>95-100</b>            | 8      |
| <b>90-94</b>             | 6      |
| <b>85-89</b>             | 4      |
| <b>80-84</b>             | 2      |
| <b>Less than 80</b>      | 0      |

\*\* student will be continuously assessed during theory and practical sessions

**Part – B: Sessional Examination: 15 Marks**

Two sessional examinations (each for 15 Marks with one hour duration) will be conducted.

Average marks of the two sessionals will be computed for sessional examination marks.

**Component -2 Semester End Theory Examination : 75 Marks**

**Theory Examination :** A theory exam shall be conducted for maximum marks 75 Marks with three hours of duration

**Practical : 150 Marks**

**(Component -1 : 50 Marks + Component-2:100Marks)**

**Component - 1: 50 Marks**

It has two sub-components (Part A & B)

**Part – A: Continuous Evaluation: 20 Marks**

The marks allocated for Continuous mode of internal assessment shall be awarded as per the scheme given below:

**Scheme for awarding Continuous Evaluation -Practical**

| Criteria                             | Maximum marks |
|--------------------------------------|---------------|
| Attendance *                         | 10            |
| Practical Records, Regular viva-voce | 10            |
| Total                                | 20            |

**Guidelines for allotment of marks for attendance\***

| Percentage of Attendance | Practical |
|--------------------------|-----------|
| 95-100                   | 10        |
| 90-94                    | 7.5       |
| 85-89                    | 5         |
| 80-84                    | 2.5       |
| Less than 80             | 0         |

**Part – B: Sessional Examination : 30 Marks**

Two sessional examinations (each for 30 Marks with six hour duration) will be conducted. Average marks of the two sessionals will be computed for sessional examination marks.

**Component -2 Semester End Practical Examination : 100Marks**

**Practical Examination:** 100 Marks with six hours of duration. Practical examination shall also consist of a viva –voce (Oral) examination.

The assessment questions are set to test the learning outcomes. In each component a certain learning outcome is assessed.

Note: For more details on the break-ups, please refer to the Course Specifications

A student is required to score an overall 50% for successful completion of a course and earn the credits.

Note: Final marks awarded in each of the courses will be confirmed only after SAB/PAB as explained in Academic Regulations of M. Pharm. Programme.

**Assignment & Seminar**

The detailed procedure and evaluation procedure is available in the Operation Manual / Student Handbook/Academic Regulations.

**Journal Club**

The detailed procedure and evaluation procedure is available in the Operation Manual / Student Handbook/Academic Regulations.

**Group Project**

The detailed procedure and evaluation procedure is available in the Operation Manual / Student Handbook/Academic Regulations

**Mandatory Courses**

The credit points assigned for extracurricular and/or co-curricular activities shall be given by the Dean of the Faculty and the same shall be submitted to the University.

| <b>Name of the activity</b>  | <b>Maximum credit points Eligible/Activity</b> |
|--|--|
| Participation in National Level Seminar/Conference/Workshop/Symposium/ Training  | 01   |
| Participation in International Level outside India Seminar/Conference/Workshop/Symposium/ Training Programs (related to the specialization of the student) | 02   |
| Academic Award/Research Award from State Level/National Agencies   | 01   |
| Academic Award/Research Award from International Agencies  | 02   |
| Research / Review Publication in National Journals (Indexed in Scopus / Web of Science)  | 01   |
| Research / Review Publication in International Journals (Indexed in Scopus / Web of Science)   | 02   |

**Dissertation/Research Work**

1. Every candidate shall carry out work on an assigned research project under the guidance of a recognized Postgraduate Teacher, the result of which shall be written up and submitted in the form of a dissertation.

2. Work for writing the Dissertation is aimed at contributing to the development of spirit of enquiry, besides exposing the candidate to the techniques of research, critical analysis, acquaintance with the latest advances in pharmaceutical/medical sciences and the manner of identifying and consulting available literature. Dissertation shall be submitted as per the notified time schedule mentioned in the Academic calendar /student hand book.



3. The Dissertation and viva-voce shall be evaluated by two examiners, one Internal and one External examiner appointed by the University.

**Scheme of Evaluation of Dissertation book:**

|                               |             |
|-------------------------------|-------------|
| Objective(s) of the work done | : 50 Marks  |
| Methodology adopted           | : 150 Marks |
| Results and Discussions       | : 250 Marks |
| Conclusions and Outcomes      | : 50 Marks  |

**Total** : **500 Marks**

**Scheme of Evaluation of Presentation:**

|                            |             |
|----------------------------|-------------|
| Presentation of work       | : 100 Marks |
| Communication skills       | : 50 Marks  |
| Question and answer skills | : 100 Marks |

**Total** : **250 Marks**

A student is required to score a minimum of 50% overall for successful completion of Dissertation and earn the corresponding credits.

**Supplementary/Re-registration examination and improvement of sessional marks**

The eligibility criteria and procedures for supplementary examination and improvement of sessional marks are as per the Pharmacy Council of India (PCI) norms and as indicated in the Academic Regulations governing this programme.

**26. Attendance**

A student is required to have a minimum of 85% attendance to be eligible to appear for the examination. Any condoning is as per the Academic regulations of M. Pharm. programme.

**27. Award of Class**

As per the Academic Regulations for M. Pharm. Programme

**28. Student Support for Learning**

Students are given the following support:

1. Course Notes
2. Reference Books in the Library
3. Magazines and Journals
4. Internet Facility
5. Computing Facility
6. Laboratory Facility
7. Workshop Facility
8. Staff Support
9. Lounges for Discussions
10. Any other support that enhances their learning

## **29. Quality Control Measures**

The following are the Quality Control Measures:

1. Review of Course Notes
2. Review of Question Papers and Assignment
3. Student Feedback
4. Moderation of Assessed work
5. Opportunities for the students to see their assessed work
6. Review by External Examiners and External Examiners Reports
7. Staff Student Consultative Committee Meetings
8. Student Exit Feedback
9. Subject Assessment Board
10. Programme Assessment Board

## 30. Curriculum Map

| Course Code | Intended Learning Outcomes  |     |     |     |  |     |     |     |                  |     |     |     |
|-------------|-----------------------------|-----|-----|-----|--|-----|-----|-----|------------------|-----|-----|-----|
|             | Knowledge and Understanding |     |     |     | Cognitive (Thinking)<br>Skills Critical, Analytical,<br>Problem solving,<br>Innovation |     |     |     | Practical Skills |     |     |     |
|             | KU1                         | KU2 | KU3 | KU4 | CS1  | CS2 | CS3 | CS4 | PS1              | PS2 | PS3 | PS4 |
| MPC101T     | x                           |     |     |     | X  |     |     |     |                  |     |     |     |
| MPC102T     |                             |     | X   |     |  |     |     |     |                  |     |     |     |
| MPC103T     |                             | X   |     |     |  |     | X   | X   |                  |     |     |     |
| MPC104T     |                             |     |     | X   |  |     |     |     |                  |     |     |     |
| MPC105P     | x                           |     |     |     | X  | X   |     |     | X                | X   | X   |     |
| MPC106      | X                           | X   | X   | X   | x  | X   | X   | X   | X                |     |     |     |
| MPC201T     | X                           |     |     |     | X  |     |     |     |                  |     |     |     |
| MPC202T     |                             |     | X   |     |  |     |     |     |                  |     |     |     |
| MPC203T     |                             | X   |     |     |  |     | X   | X   |                  |     |     |     |
| MPC204T     |                             |     | X   |     |  |     |     |     |                  |     |     |     |
| MPC205P     | x                           |     |     |     | X  | X   |     |     | X                | X   | X   | X   |
| MPC206      | X                           | X   | X   | X   | x  | X   | X   | X   | X                |     |     | X   |
| MRM301T     |                             |     |     |     |  | X   |     |     |                  |     |     |     |
| MPJ302      |                             |     |     |     |  |     |     |     |                  | X   |     |     |
| MMC301      |                             | X   | X   |     | X  |     |     |     | X                | X   | X   |     |
| MPR301      |                             |     |     |     |  |     | X   |     |                  |     |     |     |
| MPR302      |                             |     |     |     |  |     | X   |     | X                | X   |     | X   |
| MPJ402      |                             |     |     |     |  |     |     |     |                  | X   |     |     |
| MPR403      |                             |     |     |     |  |     | X   |     | X                | X   |     | X   |
| MPR404      |                             |     |     |     |  |     |     | X   |                  |     |     |     |
| MMC501      |                             |     |     |     |  |     |     |     |                  |     |     |     |
| MMC502      |                             |     |     |     |  |     |     |     |                  |     |     |     |
| MMC503      |                             |     |     |     |  |     |     |     |                  |     |     |     |

## 31. Capability / Transferable Skills Map

| Course Code | Group work | Self-learning | Research Skills | Written Communication Skills | Verbal Communication Skills | Presentation Skills | Behavioral Skills | Information Management | Personal management/ Leadership Skills |
|-------------|------------|---------------|-----------------|------------------------------|-----------------------------|---------------------|-------------------|------------------------|--|
| MPC101T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC102T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC103T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC104T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC105P     |            | X             |                 | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC106      | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC201T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC202T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC203T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC204T     | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC205P     |            | X             |                 | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPC206      | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MRM301T     |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPJ302      | X          | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MMC301      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPR301      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPR302      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPJ402      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPR403      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MPR404      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MMC501      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MMC502      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |
| MMC503      |            | X             | X               | X                            | X                           | X                   | X                 | X                      | X                                      |

**32. Co-curricular Activities**

Students are encouraged to take part in co-curricular activities like seminars, conferences, symposium, paper writing, attending industry exhibitions, project competitions and related activities to enhance their knowledge and network.

**33. Cultural and Literary Activities**

To remind and ignite the creative endeavors annual cultural festivals are held and the students are made to plan and organize the activities

**34. Sports and Athletics**

Students are encouraged to develop a habit of playing games on daily basis and also take part in annual sports and athletic events.

