



## 4Y B.Sc. (Honours) (Major in Mathematics) (2025 Pattern) Programme

### Minutes of the PAC Meeting held on 11.09.2024

Meeting No.: 02

Date: 11<sup>th</sup> September, 2024

Time: 01.00 pm to 3.00 pm

The PAC Meeting for 4Y B.Sc. (Honours) (Major in Mathematics) (2025 Pattern) Programme as per NEP 2020 of **School of Sciences** was held online on **Wednesday, 11-09-2024 at 1:00 PM**, School meeting hall. Following members and invitees were present in person,

|    |                               |                                                          |
|----|-------------------------------|----------------------------------------------------------|
| 01 | Dr. Chetana Kamlaskar         | (Chairperson) and Member                                 |
| 02 | Prof. Dr. J. N. Chaudhari     | Member                                                   |
| 03 | Prof. Dr. V. R. Nikam         | Member                                                   |
| 04 | Prof. Dr. Bhausaheb S. Desale | Member                                                   |
| 05 | Ms. Tejaswi Kadam             | Academic Coordinator (Mathematics Programme) and Invitee |
| 06 | Mr. Ravindra Bharsat          | Invitee                                                  |
| 07 | Dr. Jagruti Chavan            | Invitee                                                  |
| 08 | Ms. Minakshi Kadel            | Invitee                                                  |

Following members could not attend the meeting due to their other engagements.

|    |                          |         |
|----|--------------------------|---------|
| 01 | Dr. Sunanda More         | Member  |
| 02 | Dr. Dnyaneshwar Bhusanur | Invitee |

Dr. Chetana Kamlaskar, Chairperson and Member of the PAC first welcomed PAC members and introduced the members about the purpose of the meeting. During the meeting following items were discussed.

| SN  | Details of Items                                                                                                                                                                                                   | Resolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------|----|--------------------------------------------|--------------------------------------------------|----|---------------------------------------------|---------------------------------------------|----|--------------------------------|
| 1   | <b>Agenda Item 1:</b> To finalize and approve the detailed syllabus (semester 01 to 03) related to Open Elective (OE) courses under Mathematics programme for other faculty, as per NEP2020 guidelines.            | <p>The PAC members unanimously finalized and approved the proposed Open Elective (OE) Courses along with their syllabus in the Mathematics discipline for the learners other than Mathematics Major, in accordance with NEP2020 guidelines.</p> <p><b>The PAC members provided the following suggestions:</b></p> <ol style="list-style-type: none"><li>1. The PAC members have recommended that the proposed OE courses, which are designed to assist students in preparing for competitive exams, be renamed in order to enhance their appeal to students.</li><li>2. Additionally, upon consultation with the PAC members, it has been determined that Mathematical courses pertaining to Finance and Research will be included as OE courses. Finalized courses are as detailed below:</li></ol> <table><tr><td>Sem</td><td>As per Suggestion</td></tr><tr><td rowspan="2">01</td><td>OE101: Mathematics for Competitive Exam- I</td></tr><tr><td>OE102: Logical Reasoning and Data Interpretation</td></tr><tr><td rowspan="2">02</td><td>OE103: Mathematics for Competitive Exam- II</td></tr><tr><td>OE104: Statistical Foundations for Research</td></tr><tr><td>03</td><td>OE201: Mathematics for Finance</td></tr></table> <p>To finalize these courses at the university level, if required, the PAC members unanimously gave authority to the School Director to update the courses in accordance with the university decision as needed.</p> | Sem | As per Suggestion | 01 | OE101: Mathematics for Competitive Exam- I | OE102: Logical Reasoning and Data Interpretation | 02 | OE103: Mathematics for Competitive Exam- II | OE104: Statistical Foundations for Research | 03 | OE201: Mathematics for Finance |
| Sem | As per Suggestion                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |
| 01  | OE101: Mathematics for Competitive Exam- I                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |
|     | OE102: Logical Reasoning and Data Interpretation                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |
| 02  | OE103: Mathematics for Competitive Exam- II                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |
|     | OE104: Statistical Foundations for Research                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |
| 03  | OE201: Mathematics for Finance                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |
|     | <p><b>Action Taken:</b> The Programme structure and syllabus have been updated following the discussion in the PAC meeting.</p> <p>Refer <b>Appendix I</b> for the revised programme structure &amp; syllabus.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                   |    |                                            |                                                  |    |                                             |                                             |    |                                |

| 2                                                     | <p><b>Agenda Item 2:</b> To discuss &amp; finalize Discipline Specific Indian Knowledge System (IKS) course position within the Mathematics programme structure.</p> | <p>The PAC members unanimously finalized the position of the proposed Discipline Specific Indian Knowledge System (IKS) Course at semester 03, of the following proposed Mathematics programmes as per NEP2020 guidelines, with few suggestions about courses in programme structure of:</p> <div><div>i)</div><div>4 Year B.Sc. (Honours) (Major in Mathematics and Minor in Physics)</div></div> <div><div>ii)</div><div>4 Year B.Sc. (Honours) (Major in Mathematics and Minor in Chemistry)</div></div> <p><b>The Following suggestions were made by the PAC members:</b></p> <div><div>1.</div><div>Suggestions related to Major in Mathematics programme courses in proposed programme structure of ‘B.Sc. (Honours) {2025 Pattern}’:</div></div> <p><b>For the First year (Semester 01 and 02):</b></p> <table><tr><th>Sem &amp; Course</th><th>Suggestion</th></tr><tr><td><b>Sem 01:</b> Mathematical Statistics using MS Excel</td><td>Replace with the course ‘<b>Basics of Statistics</b>’.</td></tr><tr><td><b>Sem 02</b></td><td>Include the course on ‘<b>Python</b>’ as a Skill Enhancement Course (SEC).</td></tr></table> <p><b>For the Second year (Semester 03 and 04):</b></p> <table><tr><th>Sem &amp; Course</th><th>Suggestion</th></tr><tr><td><b>Sem 03: Linear Algebra</b></td><td>Replace with the course ‘<b>Calculus of Several Variables</b>’.</td></tr><tr><td><b>Sem 03: Calculus of Several Variables</b></td><td>Replace with the course ‘<b>Vedic Mathematics</b>’ - Discipline Specific Indian Knowledge System (IKS) Course.</td></tr><tr><td><b>Sem 03: Practical Based on MAT201 &amp; MAT202</b></td><td>Replace with the course ‘<b>R Programming</b>’.</td></tr><tr><td><b>Sem 04: Real Analysis</b></td><td>Replace with the course ‘<b>Linear Algebra</b>’.</td></tr><tr><td><b>Sem 04: Numerical Methods</b></td><td>Replace with the course ‘<b>Complex Variables</b>’.</td></tr></table> | Sem & Course | Suggestion | <b>Sem 01:</b> Mathematical Statistics using MS Excel | Replace with the course ‘ <b>Basics of Statistics</b> ’. | <b>Sem 02</b> | Include the course on ‘ <b>Python</b> ’ as a Skill Enhancement Course (SEC). | Sem & Course | Suggestion | <b>Sem 03: Linear Algebra</b> | Replace with the course ‘ <b>Calculus of Several Variables</b> ’. | <b>Sem 03: Calculus of Several Variables</b> | Replace with the course ‘ <b>Vedic Mathematics</b> ’ - Discipline Specific Indian Knowledge System (IKS) Course. | <b>Sem 03: Practical Based on MAT201 &amp; MAT202</b> | Replace with the course ‘ <b>R Programming</b> ’. | <b>Sem 04: Real Analysis</b> | Replace with the course ‘ <b>Linear Algebra</b> ’. | <b>Sem 04: Numerical Methods</b> | Replace with the course ‘ <b>Complex Variables</b> ’. |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|-------------------------------------------------------|----------------------------------------------------------|---------------|------------------------------------------------------------------------------|--------------|------------|-------------------------------|-------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|------------------------------|----------------------------------------------------|----------------------------------|-------------------------------------------------------|
| Sem & Course                                          | Suggestion                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| <b>Sem 01:</b> Mathematical Statistics using MS Excel | Replace with the course ‘ <b>Basics of Statistics</b> ’.                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| <b>Sem 02</b>                                         | Include the course on ‘ <b>Python</b> ’ as a Skill Enhancement Course (SEC).                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| Sem & Course                                          | Suggestion                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| <b>Sem 03: Linear Algebra</b>                         | Replace with the course ‘ <b>Calculus of Several Variables</b> ’.                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| <b>Sem 03: Calculus of Several Variables</b>          | Replace with the course ‘ <b>Vedic Mathematics</b> ’ - Discipline Specific Indian Knowledge System (IKS) Course.                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| <b>Sem 03: Practical Based on MAT201 &amp; MAT202</b> | Replace with the course ‘ <b>R Programming</b> ’.                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| <b>Sem 04: Real Analysis</b>                          | Replace with the course ‘ <b>Linear Algebra</b> ’.                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |
| <b>Sem 04: Numerical Methods</b>                      | Replace with the course ‘ <b>Complex Variables</b> ’.                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |            |                                                       |                                                          |               |                                                                              |              |            |                               |                                                                   |                                              |                                                                                                                  |                                                       |                                                   |                              |                                                    |                                  |                                                       |

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|   |                                                                                                                                                                                                                                   | <b>For the Third year (Semester 05 and 06):</b>                                                                                                                                                                                                                                                                                                                                                 |                                                                             |
|   |                                                                                                                                                                                                                                   | <b>Sem &amp; Course</b>                                                                                                                                                                                                                                                                                                                                                                         | <b>Suggestion</b>                                                           |
|   |                                                                                                                                                                                                                                   | <b>Sem 05: Discipline Specific IKS Course</b>                                                                                                                                                                                                                                                                                                                                                   | Replace with the course <b>‘Real Analysis’</b> .                            |
|   |                                                                                                                                                                                                                                   | <b>Sem 05: Lattice and Graph Theory - Discipline Specific Elective (DSE) Course</b>                                                                                                                                                                                                                                                                                                             | Replace with the course <b>‘Graph Theory’</b>                               |
|   |                                                                                                                                                                                                                                   | <b>Sem 05</b>                                                                                                                                                                                                                                                                                                                                                                                   | Add the course <b>‘Dynamical Systems’</b> as a DSE course.                  |
|   |                                                                                                                                                                                                                                   | <b>Sem 06</b>                                                                                                                                                                                                                                                                                                                                                                                   | Add the course <b>‘Lattice Theory and Boolean Algebra’</b> as a DSE course. |
|   |                                                                                                                                                                                                                                   | <b>Sem 06: Financial Mathematics</b>                                                                                                                                                                                                                                                                                                                                                            | Replace with the course <b>‘Numerical Methods’</b>                          |
|   |                                                                                                                                                                                                                                   | <p>Additionally, it has been agreed to finalize the syllabi for the newly proposed courses in due course of time.</p> <p>2. Suggestions related to Mathematics as Minor courses in proposed programme structure of ‘B.Sc. (Honours) {2025 Pattern}’:</p>                                                                                                                                        |                                                                             |
|   |                                                                                                                                                                                                                                   | <b>Sem &amp; Course</b>                                                                                                                                                                                                                                                                                                                                                                         | <b>Suggestion</b>                                                           |
|   |                                                                                                                                                                                                                                   | <b>Sem 02: Fundamentals of Mathematics</b>                                                                                                                                                                                                                                                                                                                                                      | Rename as <b>‘Foundation of Mathematics’</b>                                |
|   |                                                                                                                                                                                                                                   | <b>Sem 02: Practical Based on Fundamentals of Mathematics</b>                                                                                                                                                                                                                                                                                                                                   | Replace with the course <b>‘Basics of Statistics’</b>                       |
|   | <b>Action Taken:</b> The Programme structure and syllabus have been updated based on the discussions in the PAC meeting. Refer <b>Appendix I</b> for Programme structure and revised syllabus.                                    |                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                             |
| 3 | <b>Agenda Item 3:</b> To finalize the courses and syllabus from last verticals (VSC, SEC, AEC, VEC, generic IKS, OJT, FP, CEP, CC, RP) that will be offered common for all 4Y UG B.Sc. (Honours) programmes of School of Sciences | Few courses from the last verticals (SEC, AEC, VSC, IKS, CC, CEP etc.) that will be offered common for all programmes have been discussed and approved along with their syllabus. To finalize these courses at the university level, if required, the PAC members unanimously gave authority to the School Director to update the courses in accordance with the university decision as needed. |                                                                             |
|   | <b>Action Taken:</b> The syllabus has been updated as per the discussion in the PAC meeting. Refer <b>Appendix II</b> for updated syllabus.                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                             |

|   |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| 4 | <b>Agenda Item 4:</b> Identification of Writers/ Editors for SLM development task | <p>The PAC members unanimously gave their consent for the writing/editing of the Self Learning Material (SLM) for the proposed B.Sc. (Honours) (Major in Mathematics) programme.</p> <p>The PAC members have given their consent for SLM development. They also agreed to recommend experts for the new courses, in due course of time.</p> <p>It was also resolved to authorize the Director of this School to enrich and update the list of writers/editors for the Self Learning Material (SLM) development task from time to time as per the University Policy decisions/norms.</p> |
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Meeting ends with vote of thanks by **Ms. Tejaswi Kadam.**

Thanks...



**(Dr. Chetana Kamlaskar)**

**Chairperson, PAC 4Y. B.Sc. (Honours)**

**(Major in Mathematics)**

Appendix I: Credit Distribution: Mathematics: Major, Minor, OE, VSC and IKS Courses

| Level    | Sem      | Major                                          |    |           |    | Minor                                 | OE                                                   |                                                 | VSC, SEC (VSEC)                           |                                            | AEC, VEC, IKS                       |                                       | OJT, FP, CEP, CC, RP                    |                                     | Cum. Cr. / Sem |    |
|----------|----------|------------------------------------------------|----|-----------|----|---------------------------------------|------------------------------------------------------|-------------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------------|----------------|----|
|          |          | Mandatory                                      |    | Electives |    |                                       |                                                      |                                                 |                                           |                                            |                                     |                                       |                                         |                                     |                |    |
| 4.5      | I        | MAT101: Fundamentals of Mathematics (T)        | 4  | -         |    | -                                     | OE101:Mathematics for Competitive Exam- I (T)        | 2                                               | VSC101: Basic Instrumentation Skills (TW) | 2                                          | AEC101: English Communication-1 (T) | 2                                     | CC101: Photography & Bird Watching (TW) | 2                                   | 22             |    |
|          |          | MAT102: Basics of Statistics (P)               | 2  |           |    |                                       | OE102: Logical Reasoning and Data Interpretation (T) | 2                                               | SEC101: MS Excel with AI (TW)             | 2                                          | VEC101: Environmental Education (T) | 2                                     |                                         |                                     |                |    |
|          |          |                                                |    |           |    |                                       |                                                      |                                                 |                                           |                                            | IKS101:Generic IKS(T)               | 2                                     |                                         |                                     |                |    |
|          | II       | MAT103: Calculus (T)                           | 4  | -         |    | MAT105: Foundation of Mathematics (T) | 2                                                    | OE103: Mathematics for Competitive Exam- II (T) | 2                                         | VSC102: Basics of Statistics (P)           | 2                                   | AEC102: English Communication-2 (T)   | 2                                       | CC102: Yoga (TW)                    | 2              | 22 |
|          |          | MAT104: Practical Based on MAT103 (P)          | 2  |           |    |                                       |                                                      | OE104: Statistical Foundations for Research (T) | 2                                         | SEC102: Python (TW)                        | 2                                   | VEC102: Environmental Education(T)    | 2                                       |                                     |                |    |
|          | Cum. Cr. |                                                | 12 |           | 00 |                                       | 02                                                   |                                                 | 08                                        |                                            | 08                                  |                                       | 10                                      |                                     | 04             |    |
|          |          |                                                |    |           |    |                                       |                                                      |                                                 |                                           |                                            |                                     |                                       |                                         |                                     |                |    |
| 5.0      | III      | MAT201: Calculus of Several Variables (T)      | 4  | -         |    | MAT103: Calculus (T)                  | 4                                                    | OE201: Mathematics for Finance (T)              | 2                                         | VSC201:Practical Based on MAT103 (P)       | 2                                   | AEC201: Modern Indian Language- 1 (T) | 2                                       | MAT204: Field Project               | 2              | 22 |
|          |          | MAT202: Vedic Mathematics (IKS) (T)            | 2  |           |    |                                       |                                                      |                                                 |                                           |                                            |                                     |                                       |                                         | CC201: Applied Arts (TW)            | 2              |    |
|          |          | MAT203: R Programming (P)                      | 2  |           |    |                                       |                                                      |                                                 |                                           |                                            |                                     |                                       |                                         |                                     |                |    |
|          | IV       | MAT 205: Linear Algebra (T)                    | 4  | -         |    | MAT205: Linear Algebra (T)            | 4                                                    | IPR208: Intellectual Property Rights (T)        | 2                                         | SEC201: Financial & Investment Skills (TW) | 2                                   | AEC202:Modern Indian Language- 2 (T)  | 2                                       | CEP201: Bee Keeping(TW)             | 2              | 22 |
|          |          | MAT 206: Complex Variables (T)                 | 2  |           |    |                                       |                                                      |                                                 |                                           |                                            |                                     |                                       |                                         | CC202: Astronomy for Beginners (TW) | 2              |    |
|          |          | MAT207: Practical Based on MAT205 & MAT206 (P) | 2  |           |    |                                       |                                                      |                                                 |                                           |                                            |                                     |                                       |                                         |                                     |                |    |
| Cum. Cr. |          | 28                                             |    | 00        |    | 10                                    |                                                      | 12                                              |                                           | 12                                         |                                     | 14                                    |                                         | 12                                  |                | 88 |
|          |          |                                                |    |           |    |                                       |                                                      |                                                 |                                           |                                            |                                     |                                       |                                         |                                     |                |    |

| Level    | Sem | Major                             |   |                                                                                                                              |   | Minor                                        | OE |    | VSC, SEC (VSEC) | AEC, VEC, IKS                     |   | OJT, FP, CEP, CC, RP | Cum . Cr. / Sem |                                                                        |    |     |
|----------|-----|-----------------------------------|---|------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------|----|----|-----------------|-----------------------------------|---|----------------------|-----------------|------------------------------------------------------------------------|----|-----|
|          |     | Mandatory                         |   | Electives                                                                                                                    |   |                                              |    |    |                 |                                   |   |                      |                 |                                                                        |    |     |
| 5.5      | V   | MAT301:Differential Equations (T) | 4 | MAT304: Graph Theory (T)<br>OR<br>MAT305: Dynamical Systems (T)<br>OR<br>MAT306: Analytical Geometry (T)                     | 4 | MAT301:Differential Equations (T)            | 4  | -  | -               | VSC301: Programming in MATLAB (P) | 2 | -                    | -               | MAT307: FP<br>OR<br>CEP301: Awareness of Sustainable Development Goals | 2  | 22  |
|          |     | MAT302: Real Analysis (T)         | 2 |                                                                                                                              |   |                                              |    |    |                 |                                   |   |                      |                 |                                                                        |    |     |
|          |     | MAT303:Programming in MATLAB (P)  | 4 |                                                                                                                              |   |                                              |    |    |                 |                                   |   |                      |                 |                                                                        |    |     |
|          | VI  | MAT308: Metric Spaces (T)         | 4 | MAT311: LPP and Game Theory (T)<br>OR<br>MAT312: Numerical Methods (T)<br>OR<br>MAT313: Lattice Theory & Boolean Algebra (T) | 4 | MAT313: Lattice Theory & Boolean Algebra (T) | 4  | -  | -               | -                                 | - | -                    | MAT314: OJT     | 4                                                                      | 22 |     |
|          |     | MAT309: Group Theory (T)          | 2 |                                                                                                                              |   |                                              |    |    |                 |                                   |   |                      |                 |                                                                        |    |     |
|          |     | MAT 310:Mathematical Modelling(P) | 4 |                                                                                                                              |   |                                              |    |    |                 |                                   |   |                      |                 |                                                                        |    |     |
| Cum. Cr. |     | 48                                |   | 08                                                                                                                           |   | 18                                           |    | 12 |                 | 14                                |   | 14                   |                 | 18                                                                     |    | 132 |
|          |     |                                   |   |                                                                                                                              |   |                                              |    |    |                 |                                   |   |                      |                 |                                                                        |    |     |

| Level    | Sem  | Major                                       |  |           |                                 | Minor | OE |                                  | VSC, SEC (VSEC) |    | AEC, VEC, IKS |    | OJT, FP, CEP,CC, RP |    | Cum. Cr. / Sem |    |    |     |
|----------|------|---------------------------------------------|--|-----------|---------------------------------|-------|----|----------------------------------|-----------------|----|---------------|----|---------------------|----|----------------|----|----|-----|
|          |      | Mandatory                                   |  | Electives |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |    |     |
| 6.0      | VII  | MAT401: Real Analysis (T)                   |  | 4         | MAT406: Operations Research (T) |       | 4  | RES405: Research Methodology (T) |                 | 4  | -             | -  | -                   | -  | 2              | 22 |    |     |
|          |      | MAT402:Abstract Algebra (T)                 |  | 4         | OR                              |       |    |                                  |                 |    | -             | -  | -                   |    |                |    |    |     |
|          |      | MAT403: Ordinary Differential Equations (T) |  | 2         | MAT407: Numerical Analysis (T)  |       |    |                                  |                 |    |               |    |                     |    |                |    |    |     |
|          |      | MAT404:Programming in C and Scilab (P)      |  | 4         |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |    |     |
|          | VIII | MAT409: Topology (T)                        |  | 4         | MAT415: Number Theory (T)       |       | 4  | -                                |                 |    |               |    |                     |    | MAT413: OJT    | 4  | 22 |     |
|          |      | MAT410: Linear Algebra (T)                  |  | 4         | OR                              |       |    |                                  |                 |    |               |    |                     |    |                |    |    |     |
|          |      | MAT411: Partial Differential Equations (T)  |  | 2         | MAT416: Field Theory (T)        |       |    |                                  |                 |    |               |    |                     |    |                |    |    |     |
|          |      | MAT412:LaTeX and Programming in SageMath(P) |  | 4         |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |    |     |
| Cum. Cr. |      | 76                                          |  |           | 16                              |       |    | 22                               |                 | 12 |               | 14 |                     | 14 |                | 22 |    | 176 |
|          |      |                                             |  |           |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |    |     |

Appendix I: Programme Structure: 4 Year B.Sc. (Honours) (Major in Mathematics and Minor in Physics)

| Level                                                                                                                                                                                   | Sem      | Major                                          |    |           |    | Minor                                              | OE |                                  |                                            | VSC, SEC (VSEC)               |                                     |                                       | AEC, VEC, IKS                       |                  |                                         | OJT, FP, CEP, CC, RP |    | Cum. Cr. / Sem |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------|----|-----------|----|----------------------------------------------------|----|----------------------------------|--------------------------------------------|-------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|------------------|-----------------------------------------|----------------------|----|----------------|
|                                                                                                                                                                                         |          | Mandatory                                      |    | Electives |    |                                                    |    |                                  |                                            |                               |                                     |                                       |                                     |                  |                                         |                      |    |                |
| 4.5                                                                                                                                                                                     | I        | MAT101: Fundamentals of Mathematics (T)        |    | 4         | -  | -                                                  | -  | 2                                | VSC101: Basic Instrumentation Skills (TW)  |                               | 2                                   | AEC101: English Communication-1 (T)   |                                     | 2                | CC101: Photography & Bird Watching (TW) | 2                    | 22 |                |
|                                                                                                                                                                                         |          | MAT102: Basics of Statistics (P)               |    | 2         |    |                                                    |    |                                  | 2                                          | SEC101: MS Excel with AI (TW) |                                     | 2                                     | VEC101: Environmental Education (T) |                  |                                         |                      |    | 2              |
|                                                                                                                                                                                         |          |                                                |    |           |    |                                                    |    |                                  |                                            |                               |                                     |                                       | IKS101:Generic IKS(T)               |                  |                                         |                      |    | 2              |
|                                                                                                                                                                                         | II       | MAT103: Calculus (T)                           |    | 4         | -  | PHY103: Electricity & Magnetism (T)                | 2  | VSC102: Lab Activities on PHY103 |                                            | 2                             | AEC102: English Communication-2 (T) |                                       | 2                                   | CC102: Yoga (TW) | 2                                       | 22                   |    |                |
|                                                                                                                                                                                         |          | MAT104: Practical Based on MAT103 (P)          |    | 2         |    |                                                    |    | SEC102: Python (TW)              |                                            | 2                             | VEC102: Environmental Education(T)  |                                       | 2                                   |                  |                                         |                      |    |                |
|                                                                                                                                                                                         | Cum. Cr. |                                                | 12 |           | 00 |                                                    | 02 |                                  | 08                                         |                               | 08                                  |                                       | 10                                  |                  | 04                                      |                      | 44 |                |
| Exit option: Award of UG Certificate in MATHEMATICS as Major with 44 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor                  |          |                                                |    |           |    |                                                    |    |                                  |                                            |                               |                                     |                                       |                                     |                  |                                         |                      |    |                |
| 5.0                                                                                                                                                                                     | III      | MAT201: Calculus of Several Variables (T)      |    | 4         | -  | PHY201: Thermodynamics & Statistical Mechanics (T) | 4  | 2                                | VSC201: Lab Activities on PHY201 (P)       |                               | 2                                   | AEC201: Modern Indian Language- 1 (T) |                                     | 2                | MAT204: Field Project                   |                      | 2  | 22             |
|                                                                                                                                                                                         |          | MAT202: Vedic Mathematics (IKS) (T)            |    | 2         |    |                                                    |    |                                  |                                            |                               |                                     |                                       |                                     |                  | CC201: Applied Arts (TW)                |                      | 2  |                |
|                                                                                                                                                                                         |          | MAT203: R Programming (P)                      |    | 2         |    |                                                    |    |                                  |                                            |                               |                                     |                                       |                                     |                  |                                         |                      |    |                |
|                                                                                                                                                                                         | IV       | MAT 205: Linear Algebra (T)                    |    | 4         | -  | PHY 304: Optics (T)                                | 4  | 2                                | SEC201: Financial & Investment Skills (TW) |                               | 2                                   | AEC202:Modern Indian Language- 2 (T)  |                                     | 2                | CEP201: Bee Keeping(TW)                 |                      | 2  | 22             |
|                                                                                                                                                                                         |          | MAT 206: Complex Variables (T)                 |    | 2         |    |                                                    |    |                                  |                                            |                               |                                     |                                       |                                     |                  | CC202: Astronomy for Beginners (TW)     |                      | 2  |                |
|                                                                                                                                                                                         |          | MAT207: Practical Based on MAT205 & MAT206 (P) |    | 2         |    |                                                    |    |                                  |                                            |                               |                                     |                                       |                                     |                  |                                         |                      |    |                |
|                                                                                                                                                                                         | Cum. Cr. |                                                | 28 |           | 00 |                                                    | 10 |                                  | 12                                         |                               | 12                                  |                                       | 14                                  |                  | 12                                      |                      | 88 |                |
| Exit option: Award of UG Diploma in MATHEMATICS as Major and PHYSICS as Minor with 88 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor |          |                                                |    |           |    |                                                    |    |                                  |                                            |                               |                                     |                                       |                                     |                  |                                         |                      |    |                |

| Level                                                                                                    | Sem | Major                             |   |                                                                                                                              |   | Minor                                         | OE |    | VSC, SEC (VSEC) |                                     | AEC, VEC, IKS |    | OJT, FP, CEP, CC, RP |                                                                        | Cum . Cr. / Sem |     |
|----------------------------------------------------------------------------------------------------------|-----|-----------------------------------|---|------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------|----|----|-----------------|-------------------------------------|---------------|----|----------------------|------------------------------------------------------------------------|-----------------|-----|
|                                                                                                          |     | Mandatory                         |   | Electives                                                                                                                    |   |                                               |    |    |                 |                                     |               |    |                      |                                                                        |                 |     |
| 5.5                                                                                                      | V   | MAT301:Differential Equations (T) | 4 | MAT304: Graph Theory (T)<br>OR<br>MAT305: Dynamical Systems (T)<br>OR<br>MAT306: Analytical Geometry (T)                     | 4 | PHY301:Classical & Quantum Mechanics(T)       | 4  | -  | -               | VSC301: Lab Activities on PHY301(P) | 2             | -  | -                    | MAT307: FP<br>OR<br>CEP301: Awareness of Sustainable Development Goals | 2               | 22  |
|                                                                                                          |     | MAT302: Real Analysis (T)         | 2 |                                                                                                                              |   |                                               |    |    |                 |                                     |               |    |                      |                                                                        |                 |     |
|                                                                                                          |     | MAT303:Programming in MATLAB (P)  | 4 |                                                                                                                              |   |                                               |    |    |                 |                                     |               |    |                      |                                                                        |                 |     |
|                                                                                                          | VI  | MAT308: Metric Spaces (T)         | 4 | MAT311: LPP and Game Theory (T)<br>OR<br>MAT312: Numerical Methods (T)<br>OR<br>MAT313: Lattice Theory & Boolean Algebra (T) | 4 | PHY307:Nuclear Physics & Radiation Safety (T) | 4  | -  | -               | -                                   | -             | -  | MAT314: OJT          | 4                                                                      | 22              |     |
|                                                                                                          |     | MAT309: Group Theory (T)          | 2 |                                                                                                                              |   |                                               |    |    |                 |                                     |               |    |                      |                                                                        |                 |     |
|                                                                                                          |     | MAT 310:Mathematical Modelling(P) | 4 |                                                                                                                              |   |                                               |    |    |                 |                                     |               |    |                      |                                                                        |                 |     |
| Cum. Cr.                                                                                                 |     | 48                                |   | 08                                                                                                                           |   | 18                                            |    | 12 |                 | 14                                  |               | 14 |                      | 18                                                                     |                 | 132 |
| Exit option: Award of UG Degree in MATHEMATCS as Major with 132 credits OR Continue with Major and Minor |     |                                   |   |                                                                                                                              |   |                                               |    |    |                 |                                     |               |    |                      |                                                                        |                 |     |

| Level                                                                                     | Sem  | Major                                       |  |           |                                                                                 | Minor | OE                               |    | VSC, SEC (VSEC) |    | AEC, VEC, IKS |    | OJT, FP, CEP,CC, RP |    | Cum. Cr. / Sem |    |  |     |
|-------------------------------------------------------------------------------------------|------|---------------------------------------------|--|-----------|---------------------------------------------------------------------------------|-------|----------------------------------|----|-----------------|----|---------------|----|---------------------|----|----------------|----|--|-----|
|                                                                                           |      | Mandatory                                   |  | Electives |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |
| 6.0                                                                                       | VII  | MAT401: Real Analysis (T)                   |  | 4         | MAT406: Operations Research (T)<br><br>OR<br><br>MAT407: Numerical Analysis (T) | 4     | RES405: Research Methodology (T) | 4  | -               | -  | -             | -  | -                   | 2  | 22             |    |  |     |
|                                                                                           |      | MAT402:Abstract Algebra (T)                 |  | 4         |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                           |      | MAT403: Ordinary Differential Equations (T) |  | 2         |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                           |      | MAT404:Programming in C and Scilab (P)      |  | 4         |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                           | VIII | MAT409: Topology (T)                        |  | 4         | MAT415: Number Theory (T)<br><br>OR<br><br>MAT416: Field Theory (T)             | 4     | -                                |    |                 |    |               |    | MAT413: OJT         | 4  | 22             |    |  |     |
|                                                                                           |      | MAT410: Linear Algebra (T)                  |  | 4         |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                           |      | MAT411: Partial Differential Equations (T)  |  | 2         |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                           |      | MAT412:LaTeX and Programming in SageMath(P) |  | 4         |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |
| Cum. Cr.                                                                                  |      | 76                                          |  |           | 16                                                                              |       |                                  | 22 |                 | 12 |               | 14 |                     | 14 |                | 22 |  | 176 |
| Four Year UG Honours Degree in MATHEMATICS as Major and PHYSICS as Minor with 176 credits |      |                                             |  |           |                                                                                 |       |                                  |    |                 |    |               |    |                     |    |                |    |  |     |

## Appendix I: Programme Structure: 4 Year B.Sc. (Honours) (Major in Mathematics and Minor in Chemistry)

| Level                                                                                                                                                                                     | Sem                                   | Major                                          |    |                      | Minor               | OE                                          |                                            | VSC, SEC (VSEC)                           |                                    | AEC, VEC, IKS                               |    | OJT, FP, CEP, CC, RP                    |    | Cum. Cr. / Sem                      |                       |                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------|----|----------------------|---------------------|---------------------------------------------|--------------------------------------------|-------------------------------------------|------------------------------------|---------------------------------------------|----|-----------------------------------------|----|-------------------------------------|-----------------------|--------------------------------------------|
|                                                                                                                                                                                           |                                       | Mandatory                                      |    | Electives            |                     |                                             |                                            |                                           |                                    |                                             |    |                                         |    |                                     |                       |                                            |
| 4.5                                                                                                                                                                                       | I                                     | MAT101: Fundamentals of Mathematics (T)        | 4  | -                    | -                   |                                             | 2                                          | VSC101: Basic Instrumentation Skills (TW) | 2                                  | AEC101: English Communication-1 (T)         | 2  | CC101: Photography & Bird Watching (TW) | 2  | 22                                  |                       |                                            |
|                                                                                                                                                                                           |                                       | MAT102: Basics of Statistics (P)               | 2  |                      |                     |                                             |                                            | SEC101: MS Excel with AI (TW)             | 2                                  | VEC101: Environmental Education (T)         | 2  |                                         |    |                                     | IKS101:Generic IKS(T) | 2                                          |
|                                                                                                                                                                                           | II                                    |                                                |    | MAT103: Calculus (T) | 4                   | -                                           | CHE103: Physical & Organic Chemistry-I (T) |                                           |                                    | 2                                           |    |                                         |    |                                     | 2                     | VSC102: Physical & Organic Chemistry-I (P) |
|                                                                                                                                                                                           | MAT104: Practical Based on MAT103 (P) | 2                                              |    | 2                    | SEC102: Python (TW) |                                             |                                            | 2                                         | VEC102: Environmental Education(T) |                                             | 2  |                                         |    |                                     |                       |                                            |
|                                                                                                                                                                                           | Cum. Cr.                              |                                                | 12 |                      | 00                  |                                             | 02                                         |                                           | 08                                 |                                             | 08 |                                         | 10 |                                     | 04                    |                                            |
| Exit option: Award of UG Certificate in MATHEMATICS as Major with 44 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor                    |                                       |                                                |    |                      |                     |                                             |                                            |                                           |                                    |                                             |    |                                         |    |                                     |                       |                                            |
| 5.0                                                                                                                                                                                       | III                                   | MAT201: Calculus of Several Variables (T)      | 4  | -                    |                     | CHE201: Physical & Organic Chemistry-II (T) | 4                                          |                                           | 2                                  | VSC201: Physical & Organic Chemistry-II (P) | 2  | AEC201: Modern Indian Language- 1 (T)   | 2  | MAT204: Field Project               | 2                     | 22                                         |
|                                                                                                                                                                                           |                                       | MAT202: Vedic Mathematics (IKS) (T)            | 2  |                      |                     |                                             |                                            |                                           |                                    |                                             |    |                                         |    | CC201: Applied Arts (TW)            | 2                     |                                            |
|                                                                                                                                                                                           |                                       | MAT203: R Programming (P)                      | 2  |                      |                     |                                             |                                            |                                           |                                    |                                             |    |                                         |    |                                     |                       |                                            |
|                                                                                                                                                                                           | IV                                    | MAT 205: Linear Algebra (T)                    | 4  | -                    |                     | CHE204:Basic Analytical Chemistry (T)       | 4                                          | IPR208: Intellectual Property Rights (T)  | 2                                  | SEC201: Financial & Investment Skills (TW)  | 2  | AEC202:Modern Indian Language- 2 (T)    | 2  | CEP201: Bee Keeping(TW)             | 2                     | 22                                         |
|                                                                                                                                                                                           |                                       | MAT 206: Complex Variables (T)                 | 2  |                      |                     |                                             |                                            |                                           |                                    |                                             |    |                                         |    | CC202: Astronomy for Beginners (TW) | 2                     |                                            |
|                                                                                                                                                                                           |                                       | MAT207: Practical Based on MAT205 & MAT206 (P) | 2  |                      |                     |                                             |                                            |                                           |                                    |                                             |    |                                         |    |                                     |                       |                                            |
| Cum. Cr.                                                                                                                                                                                  |                                       | 28                                             |    | 00                   |                     | 10                                          |                                            | 12                                        |                                    | 12                                          |    | 14                                      |    | 12                                  |                       | 88                                         |
| Exit option: Award of UG Diploma in MATHEMATICS as Major and CHEMISTRY as Minor with 88 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor |                                       |                                                |    |                      |                     |                                             |                                            |                                           |                                    |                                             |    |                                         |    |                                     |                       |                                            |

| Level                                                                                                    | Sem | Major                               |   |                                                                                                                              |   | Minor                                           | OE |    | VSC, SEC (VSEC) | AEC<br>,<br>VEC<br>,<br>IKS                            |   | OJT, FP, CEP,<br>CC, RP | Cum<br>. Cr.<br>/<br>Sem |                                                                                    |    |     |
|----------------------------------------------------------------------------------------------------------|-----|-------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------|----|----|-----------------|--------------------------------------------------------|---|-------------------------|--------------------------|------------------------------------------------------------------------------------|----|-----|
|                                                                                                          |     | Mandatory                           |   | Electives                                                                                                                    |   |                                                 |    |    |                 |                                                        |   |                         |                          |                                                                                    |    |     |
| 5.5                                                                                                      | V   | MAT301:Differential Equations (T)   | 4 | MAT304: Graph Theory (T)<br>OR<br>MAT305: Dynamical Systems (T)<br>OR<br>MAT306: Analytical Geometry (T)                     | 4 | CHE206:Physic<br>al & Inorganic<br>Chemistry(T) | 4  | -  | -               | VSC301:<br>Physical &<br>Inorganic<br>Chemistry<br>(P) | 2 | -                       | -                        | MAT307: FP<br>OR<br>CEP301:<br>Awareness of<br>Sustainable<br>Development<br>Goals | 2  | 22  |
|                                                                                                          |     | MAT302: Real Analysis (T)           | 2 |                                                                                                                              |   |                                                 |    |    |                 |                                                        |   |                         |                          |                                                                                    |    |     |
|                                                                                                          |     | MAT303:Programming in MATLAB<br>(P) | 4 |                                                                                                                              |   |                                                 |    |    |                 |                                                        |   |                         |                          |                                                                                    |    |     |
|                                                                                                          | VI  | MAT308: Metric Spaces (T)           | 4 | MAT311: LPP and Game Theory (T)<br>OR<br>MAT312: Numerical Methods (T)<br>OR<br>MAT313: Lattice Theory & Boolean Algebra (T) | 4 | CHE306:<br>Green<br>Chemistry (T)               | 4  | -  | -               | -                                                      | - | -                       | MAT314: OJT              | 4                                                                                  | 22 |     |
|                                                                                                          |     | MAT309: Group Theory (T)            | 2 |                                                                                                                              |   |                                                 |    |    |                 |                                                        |   |                         |                          |                                                                                    |    |     |
|                                                                                                          |     | MAT 310:Mathematical Modelling(P)   | 4 |                                                                                                                              |   |                                                 |    |    |                 |                                                        |   |                         |                          |                                                                                    |    |     |
| Cum. Cr.                                                                                                 |     | 48                                  |   | 08                                                                                                                           |   | 18                                              |    | 12 |                 | 14                                                     |   | 14                      |                          | 18                                                                                 |    | 132 |
| Exit option: Award of UG Degree in MATHEMATCS as Major with 132 credits OR Continue with Major and Minor |     |                                     |   |                                                                                                                              |   |                                                 |    |    |                 |                                                        |   |                         |                          |                                                                                    |    |     |

| Level                                                                                       | Sem  | Major                                       |  |           |                                 | Minor | OE |                                  | VSC, SEC (VSEC) |    | AEC, VEC, IKS |    | OJT, FP, CEP,CC, RP |    | Cum. Cr. / Sem |    |  |     |
|---------------------------------------------------------------------------------------------|------|---------------------------------------------|--|-----------|---------------------------------|-------|----|----------------------------------|-----------------|----|---------------|----|---------------------|----|----------------|----|--|-----|
|                                                                                             |      | Mandatory                                   |  | Electives |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |
| 6.0                                                                                         | VII  | MAT401: Real Analysis (T)                   |  | 4         | MAT406: Operations Research (T) |       | 4  | RES405: Research Methodology (T) | 4               | -  | -             | -  | -                   | 2  | 22             |    |  |     |
|                                                                                             |      | MAT402:Abstract Algebra (T)                 |  | 4         | OR                              |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                             |      | MAT403: Ordinary Differential Equations (T) |  | 2         | MAT407: Numerical Analysis (T)  |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                             |      | MAT404:Programming in C and Scilab (P)      |  | 4         |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                             | VIII | MAT409: Topology (T)                        |  | 4         | MAT415: Number Theory (T)       |       | 4  | -                                |                 |    |               |    | MAT413: OJT         | 4  | 22             |    |  |     |
|                                                                                             |      | MAT410: Linear Algebra (T)                  |  | 4         | OR                              |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                             |      | MAT411: Partial Differential Equations (T)  |  | 2         | MAT416: Field Theory (T)        |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |
|                                                                                             |      | MAT412:LaTeX and Programming in SageMath(P) |  | 4         |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |
| Cum. Cr.                                                                                    |      | 76                                          |  |           | 16                              |       |    | 22                               |                 | 12 |               | 14 |                     | 14 |                | 22 |  | 176 |
| Four Year UG Honours Degree in MATHEMATICS as Major and CHEMISTRY as Minor with 176 credits |      |                                             |  |           |                                 |       |    |                                  |                 |    |               |    |                     |    |                |    |  |     |

## APPENDIX I:

### SYLLABUS OF B.Sc. (MATHEMATICS AS MAJOR, MINOR, OE COURSES) {2025 PATTERN}

Refer the syllabus file attached with this mail separate.

## APPENDIX II:

SYLLABUS OF LAST VERTICALS (VSC, SEC, AEC, VEC, GENERIC IKS, CEP, CC AND RP)  
that will be offered common for all 4Y UG B.Sc. (Honours) programmes of  
School of Sciences

Refer the syllabus file attached with this mail separate



