

INFORMATION BROCHURE

M.Sc. Admissions 2017
(Physics, Chemistry and Mathematics)

Through CCMN 2017



**VISVESVARAYA NATIONAL INSTITUTE OF
TECHNOLOGY NAGPUR-440010**

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Annexure

Scheme of Instructions for M.Sc. Programmes

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1.0 About the Institute:

Visvesvaraya National Institute of Technology (VNIT), Nagpur is one of the thirty one National Institutes of Technology in the country. National Institutes of Technology Act, 2007 (29 of 2007)) declared VNIT Nagpur as an Institute of National Importance along with all other NITs. The Act was brought into force from 15th August 2007. Earlier, the Institute was known as Visvesvaraya Regional College of Engineering (VRCE). It was established in the year 1960 under the scheme sponsored by Govt. of India and Govt. of Maharashtra. The Institute is named after the eminent engineer, planner and statesman of the country Bharat Ratna 'Sir M. Visvesvaraya'.

Institute offers B. Tech. degree in eight disciplines, B.Arch degree, M. Tech. degree in eighteen disciplines of Engineering and M.Sc degree in three disciplines. Admissions to UG and PG programmes are on the basis of JEE (Main) and GATE scores respectively. UG and PG programmes are credit based and a number of electives are offered to the students. About 3000 UG and 300 PG students are pursuing studies for the degrees. Institute offers Ph. D programs in various streams of Engineering, Science, Humanities and Architecture. Institute has highly qualified faculty strength of more than 200. Good testing, computing and consultancy facilities are also available. Institute has good Training & Placement Section and more than 90% students get the placement through campus interviews. Institute has collaboration with TIFR, IISc, NEERI, JNARDDC, IIT Kanpur, IIT Mumbai, BRNS, IGCAR etc. for research and other academic activities. VNIT has excellent residential facilities to cater the need of more than three thousand students. There are separate boys and girls hostels to cater the needs of UG, PG and Ph.D students.

2.0 About M.Sc. Programmes:

VNIT offers Two year full time M.Sc. Programmes in Physics, Chemistry and Mathematics.

Science is basic foundation of any technological and engineering creation. In view of the changing scenario at national and international level in field of Science and Technology, there is great demand for basic sciences with considerable knowledge of its applications. VNIT is committed to high academic standards. The M.Sc. courses are designed for four semesters (two years) in such a way that a good basic foundation of subjects is laid and applications along with recent developments are covered. Relative grading will be followed and credits will be allotted based on academic performance. Students will also get theoretical and practical knowledge of computer programming. These M.Sc. programmes provide opportunity to make career in R&D, industries and academic institutions. Opportunity for the placement may be provided by the Institute. For detailed scheme of M.Sc. Programmes, refer Annexure placed at the end of this brochure.

2.1 Achievements of M.Sc. Students:

M.Sc. students are qualifying National level Examinations such as CSIR (UGC)-NET, GATE/JEST as well as being awarded by various research fellowships by Indian and Foreign Universities for pursuing their Ph.D.

Students are also publishing research papers, based on their M.Sc. project work, in reputed international journals.

2.2 M.Sc. Physics Programme:

M.Sc. Physics programme imparts hands on training in theoretical as well as practical aspects of physics, so that student's ability to tackle physics problems is inculcated in them. This programme lays thrust on fundamentals of core and applied subjects of Physics and also provides knowledge on topics of current interest.

In the M.Sc. programme, total 15 theory courses will be taught over four semesters. In addition, there will be a project in two phases. The department has well equipped labs to provide practical skills to students.

Classical, Quantum and Statistical Mechanics and Solid State Physics lay a basic foundation in core subjects of Physics. Courses such as Electronics, Characterization techniques, Materials Science, Thin film techniques and Nanomaterials provide knowledge of applied topics and cover topics of recent interest also. Computer programming will also be taught. Students can look forward to a career in teaching, industry and research. To aid in teaching career, NET syllabus is covered.

2.3 M.Sc. Chemistry Programme:

The special feature of M.Sc. Chemistry is a good foundation of basics and research component through practical skills, which in turn will provide excellent job prospects in Academics, Industries and other field of interest. This programme will provide competence to tackle frontier area in Green chemistry, Supramolecular chemistry, Sensors, Advanced materials and Advanced organic chemistry.

Two years M.Sc. programme in Chemistry will be conducted in four semesters. Communication Skill has been included as audit course in first semester, which will help students to develop better presentation skills. In addition to the theory and practical courses, project phase-I and computational chemistry lab will be introduced in third semester. Fourth semester has two elective courses, in addition to a core course and project phase-II. Nine electives have been incorporated in the course considering variety of advanced interest.

2.4 M.Sc. Mathematics Programme:

The objective of the M.Sc. Mathematics is to develop highly qualified/trained mathematicians to cater to the needs of the industry, teaching and research institutions. Department of Mathematics has highly qualified, motivated, dynamic and experienced faculty members. The M.Sc. programme in Mathematics is intended to offer a balanced combination of core and applied courses of Mathematics. It also emphasizes advanced developments in the field of analysis, fluid mechanics, mathematical physics and scientific computing. This M.Sc. programme is designed for four semesters. In the first semester a course of Introduction to Computer Programming and another course of communication skill are included; this will be helpful to students in their professional career. In addition to the regular courses, there are elective courses in third and fourth semesters of the programme. There is provision for each student to give a seminar (on Project Phase I) in third semester and complete a dissertation (on Project Phase II) in fourth semester under the guidance of faculty members of the Department. In these activities, student explores a specific topic, surveys the available literature and submits a critical review in the form

of a report which may also include original theoretical results and/or results of experimental work. This process provides an initiation into mathematical research and also equips the student with the skills of presentation of research/technical report. This will be useful in developing awareness, aspiration and innovative ability to solve new scientific problems.

3.0 Admission Procedure:

The admissions for the M.Sc Programmes for the Academic Year 2017 will be through Centralized Counseling for M.Sc. Admissions (CCMN-2017) based on the IIT-JAM score.

The information of all participating institutes, Seat matrix, Fee structure, Special eligibility and registration procedure for CCMN-2017 is available in website: www.ccmn.in

The vacant seats after CCMN-2017 final round, if any, will be filled through the **Institute Written Test** conducted by VNIT on **Sunday, 28th May 2017**. *This test will be open for all the candidates irrespective of whether they have appeared for JAM or not.* Registration at CCMN-2017 website is not necessary to apply for the VNIT Institute Written Test.

The details about the Institute Written Test are given in a separate document.

3.1 Eligibility Criterion:

B.Sc./Bachelor degree with minimum 60% marks aggregate or equivalent grade [55% marks aggregate or equivalent grade in case of candidates from SC/ST/PWD category] with Physics/Chemistry/Mathematics as one of the main subject to be eligible for the respective M.Sc. Programme. In addition, the candidate is expected to meet the following eligibility requirement:

| Programme | Eligibility Requirement |
|---------------------------|---|
| M.Sc.(Physics) | Candidate should have Physics at B.Sc./Bachelor degree Level in all the three years along with Mathematics as one of the subjects |
| M.Sc.(Chemistry) | Candidate should have Chemistry at B.Sc./Bachelor degree Level in all the three years with any other combination + Mathematics at 10+2 level is essential |
| M.Sc.(Mathematics) | Candidate should have Mathematics at B.Sc. /Bachelor degree Level in all the three years with any other combination |

Candidate appearing in the final year of B.S./Bachelor degree programme may also apply. Such candidate, if selected for admission, should produce an authentication letter from the competent authority stating that his/ her result is awaited. However, the candidate will have to submit the mark sheet of the final year of B.Sc/ Bachelor degree programme by 15th September, 2017 failing which his/ her admission stands cancelled. It is hereby clarified that this facility is not available to candidates who have appeared for supplementary, backlog or any improvement paper.

3.2 Seat Matrix:

The seat matrix for the M.Sc. Programmes for the year 2017, as per the GoI reservation policy, will be

| Department | Program | | Number of Seats | | | | | | | | |
|-------------|---------|------------------|-----------------|----|----|----|--------|--------|--------|--------|-------|
| | Name | Duration (years) | OC | OB | SC | ST | OC-PWD | OB-PWD | SC-PWD | ST-PWD | Total |
| Physics | M.Sc. | 2 | 9 | 5 | 3 | 2 | 1 | - | - | - | 20 |
| Chemistry | M.Sc. | 2 | 10 | 4 | 3 | 2 | - | 1 | - | - | 20 |
| Mathematics | M.Sc. | 2 | 10 | 6 | 3 | 1 | - | - | - | - | 20 |

4.0 Category Rules

- Reservation is as per Government of India Rules.
- Candidates applying for admission against the seats reserved for OBC/SC/ST should note that, only those candidates who actually belong to the respective castes and communities will be eligible for admission under reserved category.
- Admission committee reserves the right to re-verify the eligibility for admission as per rules stipulated. If candidate is not eligible, the admission will not be offered.
- If a candidate is not able to produce required category certificate (OBC/SC/ST/PWD as applicable) or the certificate is found invalid, his/her admission will be cancelled, fees paid shall be forfeited.
- For Maharashtra candidates, caste validity certificate is essential to claim the category benefits.
- For **OBC** candidates, latest non-creamy layer (NCL) certification is mandatory without which they will not be considered for OBC category.
- For candidates coming under Persons with Disabilities (**PWD**) category, a minimum of 40% disability is required subject to the condition that the candidate is capable of carrying out activities related to theory and practical work as applicable to course. They are required to submit Physical disability certificate signed by three members of Medical Authority duly constituted by the State or Central Government under Persons with Disability Act. One of the doctors in the Medical Authority shall be a specialist in the particular field pertaining to the disability. The name, degree, and specialization of all the doctors, date of issue of the certificate shall be clearly visible in the certificate.

5.0 Institute fees:

Fee information for M.Sc. Admission 2017-18 [**Admission through CCMN 2017**] is as under:

a) Fees per Year

| Description | Amount (in Rs) |
|---|-----------------|
| Tuition Fee | 15000.00 |
| Registration Fee | 500.00 |
| Library Fee | 750.00 |
| Gym. Cultural Activity & Magazine Fee | 1000.00 |
| Sports Fee | 500.00 |
| Internet & Computer Maint. Fee | 750.00 |
| Training & Placement Fee | 400.00 |
| Industry Institute Interaction Fee | 300.00 |
| Development Fee | 2000.00 |
| End Semester Examination Fee (1 st / 2 nd Semester) | 1000.00 |
| Total Fees per year | 22200.00 |
| Above fees is to be paid semester wise Rs 11100.00 per semester | |

b) One Time Fees

| Description | Amount (in Rs) |
|---|-----------------|
| Identity Card | 200.00 |
| Medical Exam | 100.00 |
| Welfare Fund | 600.00 |
| Medical Aid Fund | 2000.00 |
| #Library Deposit | 5000.00 |
| #Caution Deposit | 5000.00 |
| Total One Time Fees | 12900.00 |
| # Deposits are <i>Refundable on completion of program</i> | |

Total Fees to be paid at the time of admission $11100 + 12900 = \text{Rs } 24000.00$

Admission fee collected by CCMN 2017 will be adjusted against this amount; hostel charges are separate & not part of above fees.

Note: In addition to above fees, Convocation fees of Rs 500/- and Thesis/Dissertation evaluation fees of Rs 1500/- shall be charged in 4th semester of M.Sc. Programme.

Candidates shall be required to pay all one time charges (b) in admission year only.

Revision in fees, if any, in future shall be applicable.

Aspirants are kindly requested to forward any queries regarding the Institute Fees to the Dy. Registrar - Academic (Email: dr_acd@vnit.ac.in, Phone: 0712-2801365 / 2801241).

5.1 Hostel charges

Hostel accommodation is available on first come first served basis.

For Hostel/Mess Fee information, please visit the website www.vnit.ac.in

Aspirants are kindly requested to forward any queries regarding the hostel to the Asst. Registrar-Hostel (Email: hostelmanager@vnit.ac.in, Phone: 0712-2801373 / 2801233).

6.0 Admission Schedule and Contact Details:

For the CCMN-2017 Admission Schedule and Important dates, candidates can see the website www.ccmn.in

Candidates are advised to regularly check website for updates.

Institute reserves the right to conduct further admission rounds or drop the rounds, as per the situation. These additional rounds, if conducted, will be subject to appropriate rules.

The Contact Details of CCMN-2017 can be obtained from the website www.ccmn.in

The Contact Details of VNIT – M.Sc. Admission Office are as follows:

Phone No: 0712-2801746, 2801407, 2801172

Fax No: 0712-2801747

Email-Id: mscadm@vnit.ac.in

6.1 Documents/Certificates Verification at the time of Institute Reporting:

The candidate will have to show all the following documents in original at the time of Institute Reporting:

- a) JAM score card.
- b) Photo ID proof (Aadhar/PAN/Driving license/passport etc.)
- c) Qualifying Examination Degree Certificates.
- d) Original Birth Certificate or Class X Board Certificate mentioning date-of-birth.
- e) Mark lists of all semesters of Qualifying degree of which results are declared.
- f) Transfer Certificate / Institute leaving certificate.
- g) Caste Certificate as applicable for reserved category. For OBC candidate, valid non-creamy layer (NCL) certificate issued on or after 01/04/2017 as per formats of certificates published by CCMN-2017 (in the Central Govt. format) is essential. Candidates not having this valid certificate will not be entertained for the admission process.
- h) Candidates having caste certificate (OBC/SC/ST) issued by Maharashtra State are required to produce original caste validity certificate issued by the competent authority of Maharashtra State, at the time of admission.

- i) University Migration Certificate.
- j) Course completion certificate from the Head of the University/Institute in case result is awaited. Such candidate shall submit the proof of final B.Sc./Bachelor degree results by 15th September, 2017 failing which his / her admission stands cancelled.
- k) Original Certificate for Persons with Disabilities (PWD), if applicable, issued by the competent authority.
- l) Demand Draft of required Institute Fees.
- m) Three color passport size photographs.
- n) Two sets of self-attested photocopies of all the above certificates (a - m) as applicable in the same order.

Note: In case Original Transfer / Migration certificate is not available during Institute Reporting, candidates can give an undertaking that they will submit the same by 15th September, 2017. If the candidate fails to submit the Original Transfer / Migration certificate by the specified date, his/her admission stands cancelled.

Please note that:

- The time duration for the Institute Reporting shall be notified later in the Institute website.
- **NO** individual communication shall be made through letter/email/phone. It is the responsibility of the candidate to regularly check the websites for updates.
- The candidate will have to be present personally for admission during Institute Reporting.
- The candidate shall be considered for admission only if he/she has all the relevant certificates mentioned in this brochure (see the points (a)-(m) above). **NO** extra time will be given for preparation of draft, photocopying of certificates etc.
- If there is a mismatch in the information/certificates provided by the candidate, the candidature shall be cancelled.
- Admission Committee reserves the right to re-verify the eligibility for admission as per rules stipulated. If candidate is not eligible, the admission will not be offered.
- Demand Draft, Original Transfer Certificate, and Photocopies of all certificates shall be retained by the Academic Section. The candidate has to sign the admission acceptance letter.
- Failure to comply with these terms will lead to cancellation of the admission.
- Admission Letter with instructions to be followed shall be issued to the candidate.
- Hostel accommodation is available on first come first served basis. The details of Hostel fees are included in Section 5.1 of this brochure.

7.0 Cancellation of admission and refund of fees

In case candidate withdrawing/cancelling the admission and **no further additional round of admission is conducted** to fill the vacant seats arising out of cancellation/non-filling of seats, candidate shall forfeit all tuition fees (TF).

Candidate **shall receive the refund of other fees only (excluding TF)**, if admission is withdrawn/**cancelled within 30 days** of joining the institute.

Candidate **shall not receive the refund of any fees** if admission is withdrawn/**cancelled after 30 days** of joining the institute.

In case candidate withdrawing/cancelling the admission and admission authority **conducts additional round(s)** to fill the vacant seats arising out of cancellation/non-filling of seats, candidate will **receive refund of tuition and other fees after deduction of Rs 1000/-** towards the processing charges. Such refunds, if any, shall be processed only after the receipt of initial fees of all candidates from the admission authority.

In case, candidate having allotted the seat in VNIT and **not reported** for admission (i.e. Institute reporting)/**not withdrawn** at any stage, he/she **will not receive the refund of initial fees** and will stand forfeited.

If any of the information supplied by the candidate in connection with his/her admission found to be false or incorrect at any stage, his/her admission will be cancelled, fees will be forfeited. He/she shall be expelled from the Institute and prosecuted, if deemed necessary.

8.0 Provisions of admission

Students while studying in the Institute, who are found indulging in anti-national activities contrary to the provisions of acts and laws enforced by Government or in any activity contrary to rules of discipline, will be liable to be expelled by the Director of the Institute from the institute without any notice.

If any dispute arises by interpreting any of the above provisions, the decision of the Director, VNIT shall be final and binding on all candidates.

The above Rules are subject to modifications whenever found necessary by the Institute.

The Admission Policy & Procedures are subject to the jurisdiction of Hon'ble Court of Nagpur.

**Director
VNIT, Nagpur**

Disclaimer: *Institute is not responsible for any inadvertent error that may have crept in the soft copy of the M.Sc. Admission information published on the website and reserves the right to correct/alter the information, if necessary, at any stage.*

Annexure

Scheme of Instructions for M.Sc. Programmes

(Detail Syllabus of the following schemes is available at www.vnit.ac.in)

A) Scheme for M.Sc. Physics: Two years (Four Semesters) Programme

| I Semester | | | | II Semester | | | |
|------------------------|-------------------------------|-------|-----------|------------------------------------|------------------------------|-------|-----------|
| Code | Course | L-T-P | Credits | Code | Course | L-T-P | Credits |
| Core | | | | Core | | | |
| PHL511 | Classical Mechanics | 3-0-0 | 3 | PHL521 | Quantum Mechanics | 3-0-0 | 3 |
| PHL512 | Electronics-1 | 3-0-0 | 3 | PHL522 | Electrodynamics | 3-0-0 | 3 |
| PHL514 | Communication skill | 2-0-0 | Audit | PHL523 | Electronics –II | 3-0-0 | 3 |
| PHP515 | General Physics Lab | 0-0-6 | 3 | PHL524 | Statistical Mechanics | 3-0-0 | 3 |
| PHL513 | Mathematical Physics | 3-0-0 | 3 | PHL525 | Thin Film Techniques | 3-0-0 | 3 |
| CSL501 | Computer Programming | 3-0-0 | 3 | PHP526 | Electronics Lab | 0-0-6 | 3 |
| CSP501 | Computer Programming | 0-0-2 | 1 | | | | |
| Total | | | 16 | Total | | | 18 |
| III Semester | | | | IV Semester | | | |
| Code | Course | L-T-P | Credits | Code | Course | L-T-P | Credits |
| Core | | | | Core | | | |
| PHL531 | Solid State Physics | 3-0-0 | 3 | PHL534 | Nuclear and Particle physics | 3-0-0 | 3 |
| PHL532 | Atomic and Molecular Physics | 3-0-0 | 3 | PHL537 | Nanomaterial's | 3-0-0 | 3 |
| PHL533 | Material Science | 3-0-0 | 3 | PHD502 | Project Phase- II | | 4 |
| PHP533 | Material Science Lab | 0-0-4 | 2 | | | | |
| PHD501 | Project Phase- I | | 3 | | | | |
| Total | | | 14 | Total | | | 10 |
| <i>Elective</i> | | | | Complete Course Credits: 63 | | | |
| PHL536 | Characterization of Materials | 3-0-0 | 3 | | | | |
| PHP536 | Characterization of Materials | 0-0-4 | 2 | | | | |
| Total | | | 5 | | | | |

B) Scheme for M.Sc. Chemistry: Two years (Four Semesters) Programme

| Sr. No | Semester | Subject Code | Name of the Subject | Course Category | L | T | P | Credits |
|--------------|----------|--------------|---|-----------------|---|---|---|-----------|
| 1 | I | CHL 511 | Molecular Thermodynamic | DC | 3 | - | - | 3 |
| 2 | I | CHL512 | Principle of Organic synthesis | DC | 3 | - | - | 3 |
| 3 | I | CHL513 | Quantum Chemistry and Atomic Structure | DC | 3 | - | - | 3 |
| 4 | I | CHL514 | Main group and Transition metal chemistry | DC | 3 | - | - | 3 |
| 5 | I | CHP526 | Physical Chemistry Lab | DC | - | - | 6 | 3 |
| 6 | I | CHP516 | Organic Chemistry Lab | DC | - | - | 6 | 3 |
| 7 | I | HUL605 | Communication Skill | Audit | 3 | - | - | Audit |
| 8 | I | CSL 101 | Computer Programming | Audit | 3 | - | - | Audit |
| | I | CSP 101 | Computer Programming | Audit | - | - | 2 | Audit |
| 9 | II | CHL521 | Electrochemistry and Dynamics of Chemical process | DC | 3 | - | - | 3 |
| 10 | II | CHL522 | Stereochemistry and Organic reaction mechanism | DC | 3 | - | - | 3 |
| 11 | II | CHL523 | Modern method of analysis | DC | 3 | - | - | 3 |
| 12 | II | CHL524 | Organometallics and Catalysis | DC | 3 | - | - | 3 |
| 13 | II | CHP525 | Analytical chemistry Lab | DC | - | - | 6 | 3 |
| 14 | II | CHP515 | Inorganic Chemistry Lab | DC | - | - | 6 | 3 |
| 15 | III | CHL531 | Application of Spectroscopic techniques for structure determination | DC | 3 | - | - | 3 |
| 16 | III | CHL532 | Solid state and surface chemistry | DC | 3 | - | - | 3 |
| 17 | III | CHL533 | Bioinorganic Chemistry | DC | 3 | - | - | 3 |
| 18 | III | CHP534 | Computational Chemistry lab | DC | - | - | 2 | 1 |
| 19 | III | CHP535 | Synthesis and Characterization lab | DC | - | - | 6 | 3 |
| 20 | III | CHD536 | Project Phase I | DC | - | - | 6 | 3 |
| 21 | IV | | Elective I | DE | 3 | - | - | 3 |
| 22 | IV | | Elective II | DE | 3 | - | - | 3 |
| 23 | IV | ECL243 | Introduction to Electronics and Instrumentation | DC | 1 | - | - | 1 |
| 24 | | CHD560 | Project Phase –II | DC | - | - | 8 | 4 |
| Total | | | | | | | | 63 |

Credit Requirements:

| Postgraduate Core (PC) | | Postgraduate Elective (PE) | |
|----------------------------|-----------|----------------------------|----------|
| Category | Credits | Category | Credits |
| Department Core (DC) | 56 | Department Elective (DE) | 6 |
| HM/ CP | Audit | Other Course (OC) | 00 |
| Electronics | 01 | | |
| Total | 57 | Total | 6 |
| Grand Total PC + PE | | 63 | |

C) Scheme for M.Sc. Mathematics: Two years (Four Semesters) Programme

| I Semester | | | | II Semester | | | |
|---------------------------|---|-------|-----------|---------------------------|---|-------|-----------|
| Code | Course | L-T-P | Credits | Code | Course | L-T-P | Credits |
| MAL511 | Linear Algebra | 3-0-0 | 3 | MAL521 | Complex Analysis | 3-0-0 | 3 |
| MAL512 | Real Analysis | 3-0-0 | 3 | MAL522 | Topology | 3-0-0 | 3 |
| MAL513 | Theory of Ordinary Differential Equations | 3-0-0 | 3 | MAL523 | Algebra | 3-0-0 | 3 |
| MAL514 | Discrete Mathematics | 3-0-0 | 3 | MAL524 | Partial Differential Equation | 3-0-0 | 3 |
| CSL501 | Introduction to Computer Programming | 3-0-0 | 3 | MAL525 | Numerical Analysis | 3-0-0 | 3 |
| HUL505 | Communication Skill | Audit | 0 | MAL526 | Numerical Computation laboratory | 0-0-2 | 1 |
| Total | | | 15 | Total | | | 16 |
| III Semester | | | | IV Semester | | | |
| MAL531 | Functional Analysis | 3-0-0 | 3 | MAL541 | Measure Theory and Integration | 3-0-0 | 3 |
| MAL532 | Operations Research | 3-0-0 | 3 | MAL542 | Integral Transform and Integral Equations | 3-0-0 | 3 |
| MAL533 | Fluid Dynamics | 3-0-0 | 3 | MAD502 | Project Phase II | 4-0-0 | 4 |
| MAL534 | Probability & Statistics | 3-0-0 | 3 | | | | |
| MAD501 | Project Phase I | 1-0-0 | 1 | | | | |
| ELECTIVE (Any one) | | | | ELECTIVE (Any Two) | | | |
| MAL535 | Relativity | 3-0-0 | 3 | MAL543 | Operator Theory | 3-0-0 | 3 |
| MAL536 | Numerical Solutions of Differential Equations | 3-0-0 | 3 | MAL544 | Finite Element Methods | 3-0-0 | 3 |
| MAL537 | Mathematical Modelling | 3-0-0 | 3 | MAL545 | Numerical methods for Hyperbolic problems | 3-0-0 | 3 |
| MAL538 | Algebraic Topology | 3-0-0 | 3 | MAL546 | Bio Mechanics | 3-0-0 | 3 |
| | | | | MAL547 | Multivariate Data Analysis | 3-0-0 | 3 |
| | | | | MAL548 | Financial Mathematics | 3-0-0 | 3 |
| | | | | MAL549 | Nonlinear Dynamical Systems | 3-0-0 | 3 |
| | | | | MAL550 | Numerical Linear Algebra | 3-0-0 | 3 |
| Total | | | 16 | Total | | | 16 |

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NAGPUR – 440 010**