Chowgule Education Society's

Parvatibai Chowgule College of Arts and Science
Autonomous

Accredited by NAAC with Grade 'A+'
Best Affiliated College-Goa University Silver Jubilee Year Award

PROSPECTUS

BACHELOR OF SCIENCE (B.Sc.)

2024-25

Contents

I

ABOUT THE COLLEGE

INTRODUCTION

Parvatibai Chowgule College of Arts and Science is a premier educational institution in the State of Goa, offering courses at the Graduate and Postgraduate levels as well as Ph.D. programmes. Parvatibai Chowgule College is accredited by NAAC with Grade 'A+' (CGPA of 3.27 on a 4-point scale in the 4th cycle). The college was adjudged by Goa University as the "Best Affiliated College", at the time of its Silver Jubilee celebrations in the year 2009. It was also conferred with the "Best Educational Institute" award by Business Goa in 2014.

Having been conferred with autonomous status by University Grants Commission in June2014, this college became the first autonomous college in the State of Goa. In the National Institutional Ranking Framework conducted by the Ministry of Human Resource Development (MHRD), Govt. of India for colleges across the country, our college was ranked in the Rank Band of 101-150 in the year 2018, followed subsequently by being in the Rank Band of 151-200 in the years 2019 and 2021. In 2017, the college was awarded 'DBT Star College Scheme' by Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India, being the first college in Goa to receive grants under this prestigious scheme. Our college is honoured with the 'Best Internship Partner' award by Goa Rugby Union at the Goa Rugby Awards 2018.Our College is categorized as 'Band A' institution (Rank between 06-25) in category of "Institutes and Colleges (Govt. and Govt. Aided)" in Atal Ranking of Institutions on Innovation Achievement (ARIIA) 2020 announced by MHRD, Government of India, in 2020.

Our College has also been rated at '4.5 Star' for undertaking various activities prescribed by Innovation Cell, Ministry of Education, Government of India to promote innovation and start-ups in campus during the IIC Calendar Year, 2019-20 and accordingly selected as a Mentor Institute under the Mentor-Mentee Program 2021-22 of IIC, MIC.

Since its inception, the College has always been at the forefront in educational innovation. Presently the college offers undergraduate, postgraduate, postgraduate diploma, certificate courses and Ph.D. programmes in the Arts, Science and the Vocational streams. Today, the

College offers twenty-three undergraduate and seven postgraduate programmes, some of these courses are unique in Goa.

The various programmes offered at the undergraduate level in the Arts Stream are: *English, French, Hindi, Konkani, Marathi, Economics, Geography, History, Philosophy, Psychology, and Sociology.* Programmes in the Science Stream are: *Biotechnology, Botany, Chemistry, Computer Science,, Environment Science and Impact Assessment, Geology, Mathematics, Physics, and Zoology.* The Programme in Vocational stream is: B.Voc. in *Software Development.*

The various Post Graduate degree programmes offered are *M.Sc. in Information Technology, M.Sc. in Analytical Chemistry, M.Sc. in Geoinformatics, M. Sc. in Life Science, M.A. in Geography, M.A. in Child Psychology and Child Development, and M.A. in English.*

The various Post Graduate diploma programmes offered are *Post Graduate Diploma in Computer Applications (PGDCA), Post Graduate Diploma in Geoinformatics (PGDGIS) and Post Graduate Diploma in Clinical Genetics and Medical Laboratory Techniques (PGCGMLT).*

The College has state-of-the-art infrastructure. Science laboratories with facilities for research, multimedia-equipped auditoriums, classrooms, conference room, campus-wide Wi-Fi network, computer labs, web-based virtual infrastructure for teaching-learning (LMS-CLAAP/Google Classrooms, C-mail, Online Library), computerized library, well equipped faculty offices, FIFA accredited football ground with field turf, multipurpose ground, gymnasium and fitness centre, sports medicine and physiotherapy centre, open-air seating arrangements, cafeteria, well maintained rest-rooms, spacious well-laid four-wheeler and two-wheeler parking grounds and offices for accounts and administration.

This institution also renders various support services that seek to provide motivation for students to excel. These support services include the Office of Information Technology, Estate Office and Student Support Services.

Two prominent student guidance facilities are available at the College: Staff Advisory Programme (mentoring) and Student Support Services. Mentoring students is an integral part of our educational system, providing guidance and encouragement. Mentors play a key role in this college as they nurture students and help them remain connected and engaged, thus strengthening student's performance. Under Student Support Services the College has Personal Counseling and a writing center for academic support.

The college is the first in the State of Goa to establish a Centre for Teaching and Learning (CTL) in the year 2017. This Centre aims to educate faculty and students on effective integration of ICT in regular teaching- learning and provide them with hands-on experience/training.

The college has Memorandum of Understanding and collaborations with many foreign and Indian educational institutes. Under this, regular faculty and student exchange programmes are regularly initiated wherein the students can pursue their programme at a foreign University for a semester or for an academic year and can avail transfer of credits.

The College steadfastly upholds its mission as a catalyst for change, extending support not only to its stakeholders but also, by extension, to the broader community and nation. The College actively seeks to groom students who possess a diverse range of skills and qualities, aiming to create individuals with a broad spectrum of capabilities and attributes.

PROGRAMMES OFFERED BY THE COLLEGE

UNDERGRADUATE PROGRAMMES

(a) Bachelor of Arts (B.A.)

Programmes in the Arts Stream: *English, French, Hindi, Konkani, Marathi, Economics, Geography, History, Philosophy, Psychology, and Sociology.*

(b) Bachelor of Science (B.Sc.)

Programmes in the Science Stream: *Biotechnology, Botany, Chemistry, Computer Science, Environment Science and Impact Assessment, Geology, Mathematics, Physics and Zoology.*

(c) Bachelor of Vocational (B.Voc)

Programme in B.Voc. Stream: *Software Development*

POSTGRADUATE DEGREE PROGRAMMES (Self Finance)

(a) Masters of Science: Information Technology
(b) Masters of Science: Analytical Chemistry
(c) Masters of Science: Geoinformatics
(d) Masters of Science: Life Science
(e) Masters of Arts: Geography
(f) Masters of Arts: Child Psychology and Child Development
(g) Masters of Arts: English

POSTGRADUATE DIPLOMA PROGRAMMES

(a) Post Graduate Diploma in Computer Application (P.G.D.C.A) - Govt. Aided

(b) Post Graduate Diploma in Geoinformatics (P.G.D.G.I.S.)

(c) Post Graduate Diploma in Clinical Genetics and Medical Laboratory Techniques (P.G.D.C.G.M.L.T.)

Ph.D. PROGRAMMES

Geography

PROGRAMMES IN BACHELOR OF SCIENCE (B.Sc.)

The following B.Sc. programmes are offered:

- Biotechnology (Self finance)
- Botany
- Chemistry
- Computer Science
- Environment Science and Impact Assessment (Self finance)
- Geology
- Mathematics
- Physics
- Zoology

1. **Degree to be awarded:**

Though autonomous status is conferred by UGC, the College continues to be **affiliated to Goa University and degrees are awarded by the Goa University** indicating the name of the College.

2. **Duration of Programmes:**

Undergraduate degree programmes of either three or *four-year duration, with multiple entry and exit points and re-entry options, with appropriate certifications such as:

- UG Certificate after completing one year (two semesters) of study in the chosen fields of study.
- UG Diploma after two years (four semesters) of study.
- Bachelor's degree after a three-year (six semesters) programme of study.
- *Four-year Bachelor's degree (Honours) after eight semesters programme of study. If the student completes a rigorous research project in their major area(s) of study in the fourth year of a Bachelor's degree (Honours with research).

*Subject to approval from the DHE, Goa.

3. **Eligibility for admission:**

The College follows the ordinance of Goa University and that adopted by the college under autonomy.

Eligibility for admission to Undergraduate Programme

Eligibility for admission to the undergraduate programme leading to the degrees of Bachelor of Science shall be as follows.

Eligibility for admission to Semester - I and Semester - II (in the first year) B.Sc. Programme

A. To be eligible for admission to the Semester-I of the Three Year or *Four Year Programme leading to the degree of Bachelor of Science, the candidate should have passed:

(i) the Higher Secondary School Certificate (Std. XII) examination conducted by the Goa Board of Secondary and Higher Secondary Education in the Science stream,

<div align="center">**OR**</div>

(ii) the Higher Secondary School Certificate (Std. XII) examination conducted by the Goa Board of Secondary and Higher Secondary Education in the Vocational stream in the subjects notified by the University under this clause from time to time,

<div align="center">**OR**</div>

(iii) Std XII (Science) or similar examination of any other body, equivalent to Goa Board of Secondary and Higher Secondary Education, Goa, and recognized as such by Goa University.

B. A candidate satisfying the conditions laid down by the University for admission to the Semester-I course in B. Sc. shall also be eligible for admission to the Semester-I of B. A. course.

C. A candidate not covered under any of the above categories but desirous of seeking admission to the said course may apply to the college. However, the Principal along with the Dean of concerned Faculty and the Chairperson(s) of Board(s) of Studies of concerned subjects shall decide the eligibility.

D. A candidate admitted for Semester-I shall be deemed eligible for admission to Semester-II.

Subject to approval from DHE.

4. Awarding UG Certificate, UG Diploma, and Degrees:

UG Certificate: Students who opt to exit after completion of the first year and have secured 40 credits will be awarded a UG certificate if, in addition, they complete one vocational course or internship of 4 credits during the summer vacation of the first year. These students are allowed to re-enter the degree programme within a period of three years and complete the degree programme within the stipulated maximum period of seven years.

UG Diploma: Students who opt to exit after completion of the second year and have secured 80 credits will be awarded the UG diploma if, in addition, they complete one vocational course or Internship of 4 credits during the summer vacation of the second year. These students are allowed to re-enter within a period of three years and complete the degree programme within the stipulated maximum period of seven years.

Three-year UG Degree: Students who wish to undergo a three-year UG programme will be awarded UG Degree in the Major discipline after successful completion of three years, securing 120 credits and satisfying the minimum credit requirement.

Four-year UG Degree (Honours): A four-year UG Honours degree in the major discipline will be awarded to those who complete a four-year degree programme with 160 credits and have satisfied the credit requirements.

Four-year UG Degree (Honours with Research): Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year. They should do a research project or dissertation under the guidance of a faculty member of the University/College. The research project/dissertation will be in the major discipline. The students, who secure 160 credits, including 12 credits from a research project/dissertation, are awarded UG Degree (Honours with Research).

Table 1: Award of Certificate, Diploma, Degree

Certificate/ Diploma/Degree	Credits	Additional Requirement	Re-entry option
UG Certificate	40	One vocational / internship course of 04 credits during the summer vacation of the first year.	Re-entry within 3 years
UG Diploma	80	One vocational / internship course of 04 credits during the summer vacation of the second year.	Re-entry within 3 years
Three-year UG Degree	120		Completion within 7 years
Four-year UG Degree (Honours)	160		Completion within 7 years
Four-year UG Degree (Honours with Research)	160 (12 credits of Project/ Dissertation)		Completion within 7 years

5. Maximum Duration of the programme

The duration of the UG programme is three years or six semesters and four years or eight semesters. Students may be permitted to take a break during the period of study but the total duration for completing the programme shall not exceed seven years.

6. UG Degree Programmes

NEP 2020 allows students to avail any one of the following options for the UG degree programme:

UG Degree Programmes with Single Major: Major discipline is the discipline or subject of main focus and the degree will be awarded in that discipline. A student has to secure a minimum of 50% credits from the major discipline for the three-year/four-year UG degree to be awarded in a single major.

UG Degree Programmes - Single Major with Minor: A student has to secure a minimum of 50% credits from the major discipline for the three-year/four-year UG degree to be awarded a single major and a minimum of 12 credits from the minor discipline, then the student will obtain a minor in that subject/discipline.

Minor discipline helps a student to gain a broader understanding beyond the major discipline.

UG Degree Programmes with Double Major:
A student must secure a minimum of 40% of the total number of credits for the programme from the first major discipline and 30% of the total number of credits for the programme from the second major discipline for the three-year/four-year UG degree to be awarded a double major. These students will not have the opportunity to obtain a minor in any subject/discipline.

7. Curricular components of the undergraduate programme
The curriculum consists of Major Discipline Courses, Minor stream courses and courses from other disciplines, language courses, skill courses, and a set of courses on value education.

At the end of the second semester, students can decide either to continue with the chosen major or request a change of major within the selected Major-minor. In the case of Double Major, a student can only request for a change between the First Major and Second Major. The above changes are applicable on the basis of CGPA of the first year and the availability of the seats. These changes shall be allowed up to fifteen days from the commencement of the third semester. The minor stream courses include vocational courses which will help the students to equip with job-oriented skills.

Disciplinary Major: The major would provide the opportunity for a student to pursue in-depth study of a particular subject or discipline. Students may be allowed to change the Major within the broad discipline at the end of the second semester by giving her/him sufficient time to explore interdisciplinary courses during the first year. Advanced-level disciplinary/interdisciplinary courses, a course in research methodology, and a project/dissertation will be conducted in the seventh semester. The eighth semester will be devoted to seminar presentation, preparation, and

submission of the report on the Research Project/Dissertation. The Research Project/Dissertation will be on a topic in the disciplinary programme of study or an interdisciplinary topic.

Disciplinary/Interdisciplinary Minors: Students will have the option to choose courses from disciplinary/interdisciplinary minors and skill-based courses relating to a chosen vocational education. Students who take a sufficient number of courses (at least 12 credits) in a subject/discipline will qualify for a minor in that subject/discipline**.**

Vocational Education and Training (VOC - 12 credits): Vocational Education and Training will form an integral part of the undergraduate programme to impart skills along with theory and practical. A minimum of 12 credits will be allotted to the 'Minor' stream relating to Vocational Education and Training and these can be related to the major or minor discipline or choice of the student.

In the case of the three years Double Major UG programme, these courses are to be related to the First / Second Major discipline.

These courses will be useful to find a job for those students who exit before completing the programme.

Courses from other Disciplines - Multidisciplinary (MDC - 09 credits):

All UG students are required to undergo 3 introductory-level courses in a discipline other than the discipline of the major(s) relating to any of the broad disciplines given below. These courses are intended to broaden the intellectual experience and form part of liberal arts and science education.

Students are not allowed to choose or repeat courses already undergone at the higher secondary level (12th class) or in the proposed major and minor stream under this category.

The broad disciplines are:

i. Natural and Physical Sciences
ii. Mathematics, Statistics, and Computer Applications
iii. Humanities and Social Sciences

Ability Enhancement Courses (AEC- 08 credits):

Students are required to achieve competency in a Modern Indian Language (MIL) and in the English language with special emphasis on language and communication skills.

Skills Enhancement Courses (SEC - 09 credits):

These courses are aimed at imparting practical skills, hands-on training, soft skills, etc., to enhance the employability of students.

Value-Added Courses (VAC- 06 credits)

These courses would be offered in the following areas:

   i.   Understanding India

   ii.   Environmental science/education

   iii.   Digital and technological solutions

   iv.   Health and Wellness, Yoga education, sports, and fitness

   v.   Innovation

   vi.   Ethics

Internship (04 credits):

A key aspect of the new UG programme is induction into actual work situations. All students will mandatorily undergo internships in a firm, industry, or organization or training in labs with faculty and researchers in their own or other HEIs/research institutions during the term end.

Research Project / Dissertation

Students choosing a four-Year Bachelor's degree (Honours with Research) are required to take up research projects under the guidance of a faculty member. The students are expected to complete the Research Project in the eighth semester.

Other Activities: Includes National Cadet Corp (NCC)/ National Service Scheme (NSS)/Sports Activities /Club Activities:A student can earn 05 credits cumulatively across these activities which shall be non-Evaluative and optional in nature. These credits shall be over and above the regular year wise credits earned.

8. Number of credits by type of course:

(Refer table 2a and 2b)

    a. **Major and Minor Courses:** All discipline-specific courses (major or minor) are of 4 credits. These courses shall be offered with 04 credits of the theory component or with a combination of 03 credits of the theory component and 01 credit of the practical or tutorial component.

    b. **Other Courses:** The Multi-Disciplinary Course and Skill Enhancement Course categories shall be of 3-credits. These courses shall be offered with 03 credits of the theory component or with a combination of 02 credits of the theory component and 01 credit of the practical component. Ability Enhancement Course shall be of 2 to 4 credits.

    c. **Common Value-Added Courses:** Courses under Value-Added shall be of 2 credits; Internship will be of 4 credits.

    d. **Research project / Dissertation**: The fourth year Research Project/Dissertation will be of 12 credits.

Minimum Credit Requirement of the 3-year and *4-year Undergraduate Programme (Honours) or Undergraduate (Honours with Research) Programmes:

The UG programme will consist of the following categories of courses and the minimum credit requirements for three-year UG and four-year UG (Honours) or UG (Honours with Research) programmes are given in the Tables 2a and 2b:

Table 2a: Minimum Credit Requirements to Award Degree under Each Category (Single Major)

Sr No.	Broad Category of Course	Minimum Credit Requirement	
		Three-year UG	**Four-year UG**
1	Major (Core)	60	80
2	Minor Stream	24 *(Minimum 12 credits in Vocational Education and Training and 12 credits in a Minor shall*	32 *(Minimum 12 credits in Vocational Education and Training and 12 credits in a Minor shall*

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		earn a Minor in that Discipline/Subject)	*earn a Minor in that Discipline/Subject)*
3	Multi-Disciplinary Course (MDC)	09	09
4	Ability Enhancement Course (AEC)	08	08
5	Skill Enhancement Course (SEC)	09	09
6	Value Added Course (VAC)	06	06
7	Internship	04	04
8	Research Project/Dissertation	-	12*
	Total	**120**	**160**

*Honours students' not undertaking research will do 3 core courses in the Major discipline for 12 credits in lieu of the Research Project / Dissertation.

Table 2b: Minimum Credit Requirements to Award Degree under Each Category (Double Major)

Sr No.	Broad Category of Course	Minimum Credit Requirement	
		Three-year UG	**Four-year UG**
1	First Major (Core)	40	52
2	Second Major (Core)	32	48
2	Vocational Education and Training	12 *(08 credits related to the First Major and 04 credits related to the Second Major)*	12
3	Multi-Disciplinary Course (MDC)	09	09
4	Ability Enhancement Course (AEC)	08	08

5	Skill Enhancement Course (SEC)	09	09
6	Value Added Course (VAC)	06	06
7	Internship	04	04
8	Research Project/Dissertation	-	12* (from the First Major)
	Total	**120**	**160**

*Honours students' not undertaking research will do three core courses in the First major discipline for 12 credits in lieu of the Research Project /Dissertation.

9. Major- Minor Combinations

The selection of major and minor combinations will adhere to the groups given below. Students selecting a particular major subject are not permitted to choose a minor subject within the same group, but they are free to select a minor subject from any other group. For instance, a student choosing a major in Computer Science can select any minor subject except Chemistry.

Group 1	**Group 2**	**Group 3**	**Group 4**
Geology Geography	Physics Botany	Computer Science Chemistry	Mathematics Zoology

10. Double Major Combinations

Students opting for a specific major-minor combination in their first year also have the option to pursue a double major, which they may choose in Semester III. Below are the double major combinations available for students to choose from.

Sr. No.	Major 1	Major 2
1	Botany	Chemistry
2	Botany	Zoology
3	Chemistry	Zoology
5	Geology	Chemistry
5	Geology	Physics
6	Mathematics	Computer Science
7	Physics	Chemistry
8	Physics	Computer Science
9	Physics	Mathematics

NOTE:

1. Computer Science can be only Major 2

2. All other science combinations can be swapped.

IV

CREDITS FOR EXTRA CURRICULAR COMPONENT

The following categories of extra-curricular activities are available to students under the undergraduate curriculum of Parvatibai Chowgule College of Arts and Science (Autonomous) These are:

1. Music, Dance Programme
2. Sports Programme
3. NCC Programme
4. NSS Programme
5. Life-skills Programmes
6. Exchange Programme
7. Outreach Programme (initiated by Academic Departments of the College.

ADMISSION

1. **How to apply:**

To apply for admission, please visit the college website www.chowgules.ac.in and for further details and queries contact:

Email Id : admission@chowgules.ac.in

Phone No. (0832) 2722222 during working hours (9.00 a.m. to 1.00 p.m. and 2.00 p.m. to 4.30 p.m.)

2. **Documents required:**

Students are required to bring two photocopies (self-attested) of each of the following documents along with the originals at the time of admission.

a. For Goa Board students:

1. Original + Two photocopies of qualifying examination mark sheet (XIIth).

2. Original + Two photocopies of Leaving Certificate.

3. Three passport size photographs.

4. Original + One photocopy of Aadhar Card.

5. Photocopy of Birth Certificate.

6. Caste Certificate approved by Government of Goa (if applicable).

7. EWS Certificate approved by Government of Goa (if applicable).

b. For other Board/Universities students:

1. Two photocopies of qualifying examination mark sheets (XIIth).

2. Original as well as two photocopies of Transfer/Leaving certificate.

3. Original as well as two photocopies of Migration certificate.

4. Provisional Eligibility Certificate from Chowgule college.

5. Three recent photographs.

6. Original + One photocopy of Aadhar Card.

7. Photocopy of Birth Certificate.

8. Caste Certificate approved by Government of Goa (if applicable).

9. EWS Certificate approved by Government of Goa (if applicable).

c. For International students:

International students applying directly for admission need to submit an application to the Principal stating their desire to seek admission along with their Passing Certificate, Transcript of records, copy of syllabus containing details of course of studies pursued in various courses in the examination passed by the applicant (duly countersigned by High Commissioner of India in the country). If the student is found eligible, prima facie letter will be sent to the student for carrying out further necessary formalities. Following documents are required to be submitted:

1. Four photocopies of qualifying examination mark sheets /XIIth.

2. Three Photographs.

3. Two photocopies of Student Visa.

4. Two photocopies of Passport.

5. Original AIDS Test Report.

6. Certificate of proficiency in English.

7. Equivalence Certificate.

8. Resident Permit and 'C' Form.

Once the student's admission is confirmed, he/she is required to attend the Counselling session organized by the faculty of the department, the date of which will be intimated to students by the college authorities.

VI

STUDENT RESOURCES

1. LIBRARY:

The College has an impressive library building with a built-up area of 1200 sq.mtrs. The library has worldwide links, giving end users easy access to scholarly material that is relevant and regularly updated. A vast collection of 65,000 items covering every field of knowledge serves to make resources available to faculty and students.

Contact Person: Mrs. Poonam Joshi   Email: pmj001@chowgules.ac.in

2. LABORATORIES:

Department Labs: Physics, Botany, Biotechnology , Biochemistry, Computer Science, Zoology, Chemistry, Geography, Geology & Psychology departments are equipped with modern laboratories that have provision for research facilities.

Computer Labs: The college has well equipped Computer Labs for the use of staff and students. The college has its own server for these computers, ensuring continuous and reliable access and networking.

Research Laboratory: The college houses a centralized research laboratory equipped with modern equipment.

3. STUDENT SUPPORT SERVICES

This college extends support to students with regards to various activities required for a well-developed academic life. The Student Support Services department ensures that students receive friendly and easily accessible guidance and support.

The Student Support Services provides a host of specialized services to students, which are aimed at developing a well-rounded personality of the students, offering them counseling on academic and non-academic concerns.

a. International Student and Teachers Exchange Programmes

The College has an ongoing international student-teacher exchange programme with institutions of higher learning in Sweden, Japan and Portugal. Under these exchange programmes, students from the College visit these institutes to learn about the education, culture and experience the unique hospitality that the families of students there have to offer. Similarly, students from these institutes visit our college and undergo a similar programme in India.

Contact Person: Dr. Rupali Tamuly   Email: international_exchange@chowgules.ac.in

b. Writing Centre

The Writing Centre at Parvatibai Chowgule College was founded with the help of International experts to teach, develop and improve the writing skills of the students. The writing centre aims

to develop the academic writing skills of the students and provides assistance and help with other forms of writing required by students and faculty in the general academic atmosphere.

Email: writingcentre@chowgules.ac.in

c. Personal Counseling Centre

Personal counseling with a personal counselor is available to tide over personal issues and concerns.

Email: counseling@chowgules.ac.in

d. Foreign Language study

The College promotes foreign language learning and culture. The college conducts the following foreign language course for the students and public at large.

- Portuguese language courses for basic, elementary and intermediate levels are conducted and certificates are issued by Instituto Camoes, Portugal.

Contact Person: Ms. Trupti Faldessai   Email: portuguese@chowgules.ac.in

4. STUDENT CLUBS

We have Student-governed clubs on campus which is an opportunity for students to take the lead in organizing, planning, and executing activities that resonate with their passions and interests. These clubs provide a platform for creative expression, leadership development, and community engagement. Whether your passion lies in the arts, sciences, social justice, or anything in between, there's a place for you to thrive and make a difference. We have four broad categories of clubs:

Departmental Clubs: The Beret Bunch, English tygers' club, Chowgule's Birders club, Sophia Forum, Club Cerebro, Club Nebulites, Ignite, Human Dosto, Biochrome, Firebits, Club Botanica, Sherlock Ohms, Club Econ, Cos Yo, SYNERGY, GLOBE.

Student Govrened Clubs: Goychi Sonskrutai, Filmmakers' Club, Tiger Adventure club, Haneul club, Kpop Club, Club Acoustica, Paw club, Click club, Fashion club, Dance club.

Sports and health lifestyle Clubs: Tiger Table Tennis Club, Tigers Chess Club, Tigers Handball Club, Tigers Cricket Club, Tiger Tennikoit Club, Tiger Basketball Club, Tigers E-Sports Club,

Tigers Cricket Club, Tiger Football Club, Fit Tigers Club, Tiger Badminton Club, Tiger Volleyball Club, Tiger Tennis Club, Tiger Multi Sports Club.

College Governed Clubs: Samatvam (Gender Champion Club), Red Ribbon Club, Yuva Travel Club, Standard Club.

Contact Person: Dr. Devashish Bagchi   Email: dvb001@chowgules.ac.in

5. TRANSLATION CENTRE

The Translation Centre was inaugurated in 2017 and is the first of its kind in Goa. The objective of the centre is to promote the growth of indigenous literature and knowledge, thereby inducting the students into the field of translation and assignment of translation work.

Contact Person: Dr. Gunaji Desai   Email: translationcenter@chowgules.ac.in

6. TEACHING LEARNING AND EDUCATIONAL TECHNOLOGY CELL

The Teaching Learning and Educational Technology Cell (TLET) was inaugurated in November 2017 and is the first in the State of Goa and one of the few Centres in the country.

This TLET aims to educate faculty on how to go about integrating ICT in Higher Education effectively by conducting workshops, seminars and provide them with hands-on experience/training, innovation, implementation and sharing of different ICT tools in teaching like Simulation, Gamification, LMS, Mobile Applications, etc. and develop E-content for the various courses offered by the college and other educational institutions, conduct research related to use of ICT, Learning Analytics, Mobiles, LMS, etc. and provide Assessment/Evaluation strategies to track student progression until graduation.

Contact Person: Dr. (Ms). Sameena Fernandes e Falleiro   Email: ctl@chowgules.ac.in

CODE OF CONDUCT

Students are required to take note of the following and to adhere to the requirements:

Classroom Attendance:

The College runs full time programmes and requires the students to attend classroom sessions. Minimum attendance for eligibility to appear for Examinations as per Goa University ordinance OA-17

- A student registered in a Semester / Term / Year, for any Programme (Degree or Diploma), shall ordinarily be required to have a minimum cumulative attendance of 75% of the total lectures and practicals engaged during that Semester / Term / Year and a minimum of 50% attendance of the total lectures and practicals engaged in any individual paper / course.

- A student, not fulfilling the minimum attendance requirements mentioned above, shall not be eligible to appear for that Semester / Term / Annual Examination. Such students shall have to seek re-admission to the Course/Programme during the subsequent Academic Year /Term / Semester by paying the requisite fees.

- For a student registered for a subject / subjects having practical component, attendance for both theory and practical component shall be treated separately for the requisite attendance mentioned above.

Wearing of Identity Cards:

While on the College Campus the student must compulsorily wear their Identity Cards in order to seek entry in the college campus and must produce the same when any staff member of the College asks for identification. Library cards are not substitutes for official Identity Cards.

Please note the following fines as applicable:

- If a student is found to be not wearing ID card – Rs 500/-
- If students have swapped cards – Rs. 1000/- per defaulter
- Crossing over Library flowerbeds or Behind animal house –Rs. 500/-
- Damage to College property – Estimated cost of damage payable at full cost
- If a card is lost, a new one can be procured at a cost of Rs. 350/- The cost of lanyard is an additional Rs 20/-

Campus Discipline and Conducive Environment

The College is making concerted efforts to provide relevant education of global standards in a disciplined and conducive environment. The following regulations are some building blocks of this environment and all students are required to take note of them.

Computers Usage Rules

College encourages students to use laptops and to bring their personal laptops to the class. Students may also use computers available in the Computer Lab I. Users must be fully aware of the usage rules and the IT protocol of the College. Disciplinary action will be taken against violators.

Vehicle Parking Rules

The College is not responsible for the safety of vehicles parked at the vehicle parking area of the college. Persons must vacate the parking space after parking the vehicles. There are parking slots marked and the college is NOT responsible if the vehicle is towed away if parked in 'No Parking Area'. The parking zone has a speed limit and all those who intend to park their vehicles are expected to follow the speed limit. Misusing the parking ground in any way is an offence and would invite a fine of Rs. 5000/- and disciplinary action.

Stand against Ragging

The college recognizes the criminality of ragging and strictly prohibits it within the institution. Whoever directly or indirectly commits, participates in, abets or instigates it shall be suspended/expelled/rusticated and shall be liable to pay a fine. Ragging includes display of noise, disorderly conduct, teasing, rough or rude treatment, indulging in rowdy, undisciplined and obscene activities which cause or are likely to cause annoyance, undue hardship, physical or psychological harm or mental trauma or raise apprehension or fear on a fresher, other students or other persons, or forcing students to do any act which such a student or person is not willing to do or which cause him/her harm, shame, embarrassment or danger to his/her life or limb or indulging in eve teasing or sexual harassment or instigating others to do so. Thus, college has zero tolerance policy towards ragging.

The college will abide by "UGC Regulations on curbing the menace of Ragging in Higher Educational Institutions, 2009"

In case of any grievance related to sexual harassment on the campus students can directly write a letter addressed to Presiding Officer, Internal Committee, Chowgule College. For further details refer to college policy on prevention, prohibition and redressal of sexual harassment at workplace.

Students can also send an email to icc@chowgules.ac.in

GREEN AND CLEAN CAMPUS

The college is committed to maintaining a clean, safe, and sustainable environment on its campus. As part of this commitment, the college recognizes the importance of addressing issues related to littering and environmental conservation. As such it is expected from all students that they follow the below mentioned rules/ guidelines on the campus to provide a clean and green environment to all.

Prohibition of Littering: Littering is strictly prohibited on campus premises and classroom and corridors. All members of the college community, including students, faculty, staff, and visitors, are expected to dispose of their waste responsibly in designated receptacles. Violations of the littering policy may result in disciplinary action in accordance with the college's code of conduct. Enforcement measures may include warnings, fines, or community service requirements, depending on the severity and frequency of the offense.

Waste Reduction and Recycling: The college is committed to reduce waste generation and promote recycling initiatives on campus. Recycling bins are strategically placed throughout the campus, and efforts are made to minimize the use of single-use plastics and other non-recyclable materials in campus operations.

VIII

ADMINISTRATION

THE COLLEGE OFFICE

Office Hours for Students: 10.00 am to 1.00 pm

1. Request for certificates, testimonials and other documents requiring the Principal's signature should be addressed to the Principal and submitted to the College Office.
2. The Principal will take into consideration the reports of the departments when issuing academic/ conduct / attendance / other certificates.
3. A student desiring to obtain a certificate (transfer / conduct / age etc) shall apply for it in the prescribed form available in the College office. The application should be submitted along with a processing fee.
4. Minimum 48 hours are required for processing the request .

IX

SCHOLARSHIPS AND PRIZES

The college offers a wide range of scholarships to cater to the needs of students from diverse socio-economic backgrounds. Four types of scholarships are provided: Government schemes/ scholarship; Merit scholarship; Student Aid fund assistance and Private scholarship. For more details refer to the College Handbook 2024-25.

CONTACT DETAILS

Name	Designation	Department	Email ID
Prof. (Dr.) Sangeeta Sankhalkar	Principal	Botany	principal@chowgules.ac.in
Mr. Kumaresh V. C.	Vice-Principal	Computer Science	vp@chowgules.ac.in
Dr. Meghana Devli	Academic Dean	Geology	msd001@chowgules.ac.in
Mr. D. Prabakaran	Controller of Examination	Computer Science	vdp001@chowgules.ac.in
Dr. Uma Masur	Head of the Department	Botany	uam001@chowgules.ac.in
Dr. Starlaine Mascarenhas	Incharge of the Department	Biotechnology	scm008@chowgules.ac.in
Ms. Sarah Mesquita	Incharge of the Department	Biochemistry	stm009@chowgules.ac.in
Dr. G. K. Naik	Head of the Department	Chemistry	gkn001@chowgules.ac.in
Dr. Sameena Falleiro	Head of the Department	Computer Science	ssf001@chowgules.ac.in
Ms. Danielle Monteiro	Incharge of the Department	Mathematics	dcm001@chowgules.ac.in
Dr. Ashish Desai	Incharge of the Department	Physics	amd006@chowgules.ac.in
Prof (Dr.) Nandini Vaz Fernandes	Head of the Department	Zoology	nvf001@chowgules.ac.in
Prof. (Dr.) Nandkumar N. Sawant	Head of the Department	Geography	nns001@chowgules.ac.in
Dr Rupali Tamuly	Head of the Department	Economics	rmt001@chowgules.ac.in
Mrs. Sarita S. Naik Tari	Head of the Department	History	sst001@chowgules.ac.in
Dr. Sobita V. Kirtani	Incharge of the Department	Psychology	svk004@chowgules.ac.in
Ms. Saroj Usgaonkar	Incharge of the Department	Philosophy	sau002@chowgules.ac.in
Dr. Sachin S. Moraes	Incharge of the Department	Sociology	ssm005@chowgules.ac.in

Dr. Sonia Fernandes Da Costa	Incharge of the Department	English	sof002@chowgules.ac.in
Dr. Gunaji Desai	Head of the Department	Konkani	gsd001@chowgules.ac.in
Dr. Pradeep Jatal	Incharge of the Department	Hindi	prj002@chowgules.ac.in
Ms. Carol Barreto Miranda	Incharge of the Department	French	cpb002@chowgules.ac.in
Ms. Trupti Fal Dessai	Incharge of the Department	Marathi	tfd000@chowgules.ac.in
Dr. Devashish Bagchi	Director	Physical Education and Sports	dvb001@chowgules.ac.in
Mrs. Poonam Joshi	Librarian	Library	pmj001@chowgules.ac.in

Important Note

The Principal may amend the admission rules at his/her discretion. The Principal's decision in all matters related to admission shall be final.

DEPARTMENT WISE LIST OF COURSES

Bachelor of Science - B. Sc.

BIOTECHNOLOGY (Self Finance)

SEMESTER	MAJOR CORE	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEMENT COURSE (SEC)
I	UG-BIO-101: Biomolecules	UG-BIO-102: Cell biology	UG-BIO-MDC1: Food and Fermentation technology	UG-BIO-VAC-1: Nutrition and Dietetics	UG-BIO- SEC1: Mushroom cultivation
II	UG-BIO-103: Basic Microbiology	UG-BIO-104: Fundamental Genetics	UG-BIO- MDC2: Basics of Biodiversity	UG-BIO-VAC-2: Intellectual Property Rights and Patents	UG-BIO- SEC2: Elementary tools for visualization of biological data
III	UG-BIO-201: Molecular Biology	UG-BIO-203: Metabolism of Biomolecules	UG-BIO- MDC3: Composting technology		UG-BIO- SEC3: Biostatistics
	UG-BIO-202: Enzymology				
IV	UG-BIO-204: Immunology	UG-BIO-VOC1: Evolution and Anthropology			
	UG-BIO-205: Molecular Genetics				
	UG-BIO-206: Basics of Plant and Animal Sciences				
	UG-BIO-207: Tools and Techniques in Biotechnology				
V	UG-BIO-301: Concepts in Genetic Engineering	UG-BIO-VOC2: Bioethics and Biosafety			

	UG-BIO-302: Environmental Biotechnology				
	UG-BIO-303: Plant Biotechnology				
VI	**UG-BIO-304:** Industrial Biotechnology	**UG-BIO-VOC3:** Advanced Cell Biology			
	UG-BIO-305: Bioinformatics				
	UG-BIO-306: Animal Cell culture				
	PROJECT (from Major discipline): 04 credits				
VII	**UG-BIO-401:** Plant and Animal Physiology	**UG-BIO-308:** Human Physiology			
	UG-BIO-402: Genomics and Proteomics				
	UG-BIO-403: Forensic Sciences				
	UG-BIO-404: Molecular medicine				
VIII	**UG-BIO-405:** Medical Biotechnology	**UG-BIO-309:** Advanced Microbiology			
	UG-BIO-406: Basics of Pharmacology				
	UG-BIO-407: Food Biotechnology				
	UG-BIO-408: Basics of Marine Biotechnology				

BOTANY

SEMESTER	MAJOR	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEMENT COURSE (SEC)
I	**UG-BOT-101:** Diversity of Lower Plants (Microbes, Algae, Fungi)	**UG-BOT-101:** Diversity of Lower Plants (Microbes, Algae, Fungi)-(Minor same as major)	**UG-BOT-MDC 1:** Plant Animal Interaction	**UG-BOT-VAC 1:** Medicinal Plants	**UG-BOT-SEC 1:** Basics in Horticulture
II	**UG-BOT-201:** Diversity of Lower Plants II (Bryophytes, Pteridophytes, Gymnosperms)	**UG-BOT-201:** Diversity of Lower Plants II (Bryophytes, Pteridophytes, Gymnosperms)	**UG-BOT-MDC 2:** Kitchen Gardening	**UG -BOT-VAC 2:** Introduction to Aquaponics and Vertical Gardening	**UG-BOT-SEC 2:** Algal Biotechnology
III	**UG-BOT-201:** Diversity of Lower Plants II (Bryophytes, Pteridophytes, Gymnosperms) **UG-BOT-202:** Economic Botany	**UG-BOT-203:** Plant pathology	**UG-BOT-MDC 3:** Evolutionary biology		**UG-BOT-SEC 3:** Microbiology
IV	**UG-BOT-204:** Plant Anatomy **UG-BOT-205:** Cytogenetics **UG-BOT-206:** Plant breeding and Biostatistics **UG-BOT-207:** Ecology and conservation	**UG-BOT-VOC1:** Horticulture, Floriculture & Landscaping			
V	**UG-BOT-301:** Plant Molecular biology **UG-BOT-302:** Bioinformatics **UG-BOT-303** Plant Drug Technology	**UG-BOT-VOC 2:** Organic Farming			

VI	**UG-BOT-305:** Plant Genetic engineering	**UG-BOT-VOC 3:** Applied Mycology			
	UG-BOT-306: Plant tissue Culture				
	UG-BOT-307: Economic Botany				
	UG-BOT-PRJ: Minor Project				
VII	**UG-BOT-401:** Plant Drug Technology and Pharmacognosy	**UG-BOT-405:** Ethno botanical Concept			
	UG-BOT-402: Bioinformatics				
	UG-BOT-403: Enzymes and Molecular pathways				
	UG-BOT-404: Organic Farming				
VIII	**UG-BOT-406:** Plant Biotechnology	**UG-BOT-410:** Bioresource Management			
	UG-BOT-407: Plant Embryology				
	UG-BOT-408: Plant Biochemistry				
	UG-BOT-409: Industrial Botany				

CHEMISTRY

SEMESTER	MAJOR CORE	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEMENT COURSE (SEC)
I	**UG-CHE-101:** General Chemistry-I	**UG-CHE-101:** General Chemistry-I	**UG-CHE-MDC1:** Basics in Chemistry **UG-CHE-MDC2 :** Selected Topics in Organic and Inorganic Chemistry	**UG-CHE-VAC1:** Environmental Monitoring	**UG-CHE-SEC1:** Skill Development in Chemistry **UG-CHE-SEC2:** Basic Laboratory Methods and Safety in Chemistry
II	**UG-CHE-102:** General Chemistry-II	**UG-CHE-102:** General Chemistry-II	**UG-CHE-MDC3:** **UG-CHE-MDC4:**	**UG-CHE-VAC2:** Ethics in Science	**UG-CHE-SEC3:** Chemistry of Water and Soil
III	**UG-CHE-201:** Concepts in Chemistry-I	**UG-CHE-207:** Concepts in Chemistry -III	**UG-CHE-MDC5:** Fundamentals of Chemistry		**UG-CHE-SEC4:** Basics of Analytical Chemistry
	UG-CHE-202: Concepts in Chemistry-II				
IV	**UG-CHE-203:** Selected Topics in Physical Chemistry	**UG-CHE – VOC1:** Spectroscopic Techniques			
	UG-CHE-204: Selected Topics in Organic Chemistry				
	UG-CHE-205: Selected Topics in Inorganic Chemistry				
	UG-CHE-206: Introduction to Pharmaceutical Chemistry				
V	**UG-CHE-301:** Advanced Physical Chemistry -I	**UG-CHE - VOC2:** Electroplating and Corrosion			

	UG-CHE-302: Advanced Organic Chemistry -I				
	UG-CHE-303: Advanced Inorganic Chemistry -I				
	UG-CHE-304: Applied Chemistry-III				
VI	**UG-CHE-305:** Advanced Physical Chemistry -II	**UG-CHE -VOC3:** Industrial Process			
	UG-CHE-306: Advanced Organic Chemistry -II				
	UG-CHE-307: Advanced Inorganic Chemistry -II				
	UG-CHE-PRJ Project **UG-CHE-308:** Applied Chemistry-IV				
VII	**UG-CHE-401:** Bio-Inorganic Chemistry/ Coordination Chemistry	**UG-CHE-409:** Selected Topics in Inorganic and Organic Chemistry			
	UG-CHE-402: Surface Chemistry and Catalysis				
	UG-CHE-403: Stereochemistry and Name Reaction				
	UG-CHE-404: Research Methodology				
VIII	**UG-CHE-405:** Organometallic Chemistry	**UG-CHE-410:** Selected Topics in Analytical and Physical Chemistry			
	UG-CHE-406: Electrochemistry				

	UG-CHE-407: Heterocyclic Chemistry **OR** Synthetic Organic Chemistry				
	UG-CHE-408: Nanomaterials and Solid State Reactions				

COMPUTER SCIENCE

SEMESTER	MAJOR CORE	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEMENT COURSE (SEC)
I	UG-COM-101: Introduction to Programming	UG-COM-101: Introduction to Programming	UG-COM-MDC1: Office Automation UG-COM-MDC2: Introduction to Python Programming	UG-COM-VAC 1: Cyber Security UG-COM-VAC 2: Design Thinking	UG-COM-SEC3: UI/UX Design
			UG-COM-MDC2: Introduction to Python Programming		
II	UG-COM-102: Database Management	UG-COM-102: Database Management	UG-COM-MDC2: Introduction to Python Programming	UG-COM-VAC 1: Cyber Security UG-COM-VAC 2: Design Thinking	UG-COM-SEC2: Programming in Python
			UG-COM-MDC3: E-learning		
III	UG-COM-201: Data Structures	UG-COM-207 : Foundations of Data Science with Python	UG-COM-MDC4: Fundamentals of Data Analysis		UG-COM-SE C6 : Front End Web Development
	UG-COM-202: Object Oriented Programming				
IV	UG-COM-203: Computer Architecture and Operating System	UG-COM-VOC-1: Mobile Application Development			
	UG-COM-204: Mathematical Foundations for Computer Science				
	UG-COM-205: Web Development with PHP				
	UG-COM-206: Software Engineering				
V	UG-COM-301: Full Stack Development	UG-COM-VOC-2: Digital Marketing			

	UG-COM-302: IOT				
	UG-COM-303: Computer Networks				
VI	**UG-COM-304:** Data Science	**UG-COM-VOC-3:** Software Testing			
	UG-COM-305: Cloud Computing				
	UG-COM-306: AI				
	UG-COM-PRJ: Project				
VII	**UG-COM-401:** Design and Analysis of Algorithms	**UG-COM-405:** Image Processing			
	UG-COM-402: Software Architecture, Design Patterns and Frameworks				
	UG-COM-403: Advanced DBMS				
	UG-COM-404: Machine Learning and Deep Learning				
VIII	**UG-COM-406:** Compiler Design	**UG-COM-410:** Network Security			
	UG-COM-407: Advanced Operating System	**UG-COM-411:** Educational Technology			
	UG-COM-408: NLP				
	UG-COM-409: Parallel Computing				

Environment Science and Impact Assessment (Self finance)

SEMESTER	DISCIPLINE SPECIFIC CORE COURSES (4 credits/course)	MINOR/ VOCATIONAL (4 credits/course)	SKILL ENHANCEMENT COURSES (3 credits/course)
I	Ecology, Ecosystem and Biodiversity	Ecology, Ecosystem and Biodiversity	Ecology and Society
II	Environment Issues, Perspectives and Policies	Environment Issues, Perspectives and Policies	Basics of GIS and Remote Sensing
III	Conservation Biology		Anthropogenic Impact on Food Resources
	Physics and Chemistry of Environment		
IV	Climate change and Sustainability	Biostatistics	
	Water Resources and Management		
	Mineral Resources and Management		
	Environmental Evaluation		
V	Introduction to Sustainable Development	Instrumentation Techniques	
	Wildlife Biology and Conservation		
	Environment Impact Assessment (EIA) I		
VI	Natural and Man-made Hazards	Bioentrepreneurship	
	Environment Microbiology		

	Marine Science		
	Minor Project		
VII	Environment Chemistry		
	Waste Treatment Technology		
	Environment Impact Assessment (EIA) II		
	Green Chemistry		
VIII	Environmental Restoration and Remediation		
	Land Oceans and Atmospheric Interactions		
	Advanced Remote Sensing and GIS		
	Forestry and Conservation		

In addition to the above courses *Ability Enhancement courses*, *Multidisciplinary courses* from the Group of Humanities and Social Sciences, Mathematics and Computer Science (for first 3 semesters) and *Value Added courses* (for first 2 semesters) will be offered.

GEOLOGY

SEMESTER	MAJOR	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEMENT COURSE (SEC)
I	**UG-GEL-101:** Fundamentals of Geology	**UG-GEL-101:** Fundamentals of Geology	**UG-GEL-MDC1:** Natural Hazard Management **UG-GEL-MDC2:** Historical Geology	**UG-GEL-VAC1:** Resource Management and Sustainable Practices **UG-GEL-VAC2:** Geo-Indicators and Climate Change	**UG-GEL-SEC1:** Exploratory Drilling and Drillhole Data Management
II	**UG-GEL-102:** Earth Dynamics and Tectonism	**UG-GEL-102:** Earth Dynamics and Tectonism		**UG-GEL-VAC2:** Geo-Indicators and Climate Change	**UG-GEL-SEC2:** Field Techniques for Geological Mapping
III	**UG-GEL-201:** Optical Mineralogy **UG-GEL-202:** Stratigraphy and Paleontology	**UG-GEL-203:** Earth Processes and Landforms	**UG-GEL-MDC3:** Physical Geology		**UG-GEL-SEC3:** Gemmology
IV	**UG-GEL-203:** Mineralogy **UG-GEL-204:** Ore Genesis **UG-GEL-205:** Geotectonics **UG-GEL-206:** Sedimentary Petrology	**UG-GEL-VOC1:** Occupational Health and Safety			
V	**UG-GEL-301:** Magma Evolution and Igneous Rock Formation **UG-GEL-302:** Metamorphic Petrology **UG-GEL-303:** Precambrian Stratigraphy of India	**UG-GEL-VOC2:** Groundwater Exploration Techniques			

VI	**UG-GEL-304:** Phanerozoic Stratigraphy of India	**UG-GEL-VOC3:** Petroleum Exploration and Techniques			
	UG-GEL-305: Rock Mechanics and Structures				
	UG-GEL-306: Surveying and Field Geology				
	UG-GEL-PRJ: Minor Project				
VII	**UG-GEL-401:** Geochemistry				
	UG-GEL-402: Engineering Geology and Geotechnology				
	UG-GEL-403: Rock Microstructures and Deformation				
	UG-GEL-404: Geophysical Exploration and Mining Methods				
VIII	**UG-GEL-405:** Remote Sensing and Digital Image Processing				
	UG-GEL-406: Advanced Igneous Petrology				
	UG-GEL-407: Geological Field Training				
	UG-GEL-408: Ocean Sciences				

MATHEMATICS

SEMESTER	MAJOR CORE	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEMENT COURSE (SEC)
I	UG-MAT-101: Basic Algebra	UG-MAT-101: Basic Algebra	UG-MAT-MDC1: Statistics I		UG-MAT-SEC1: Differential Equations I
II	UG-MAT-103: Basic Real Analysis	UG-MAT-103: Basic Real Analysis	UG-MAT-MDC2: Mathematics for Competitive Exams		UG-MAT-SEC2: Operations Research I
III	UG-MAT-201: Mathematical Analysis I	UG-MAT-203: Combinatorics	UG-MAT-MDC3: Statistics II		UG-MAT-SEC3: Numerical Methods
	UG-MAT-202: Algebra I				
IV	UG-MAT-204: Mathematical Analysis II	UG-MAT-VOC1: Pedagogy of Mathematics			
	UG-MAT-205: Linear Algebra				
	UG-MAT-206: Number Theory I				
	UG-MAT-207: Coordinate Geometry				
V	UG-MAT-301: Functions of Several Variables	UG-MAT-VOC2: Probability			
	UG-MAT-302: Graph Theory				
	UG-MAT-303: Advanced Analysis				
	UG-MAT-304: Operations Research II				
VI	UG-MAT-305: Functions of Several Variables				
	UG-MAT-306: Complex				

	Analysis				
	UG-MAT-307: Metric Spaces				
	UG-MAT-308: Differential Equations II				
VII	**UG-MAT-401:** Algebra II				
	UG-MAT-402: Advanced Analysis II				
	UG-MAT-403: Topology				
	UG-MAT-404: Functional Analysis				
	UG-MAT-405: Computational Linear Algebra				
VIII	**UG-MAT-406:** Measure Theory				
	UG-MAT-407: Partial Differential Equations				
	UG-MAT-408: Rings and Modules				
	UG-MAT-409: Number Theory II				
	UG-MAT-410: Cryptography				

PHYSICS

SEMESTER	MAJOR CORE	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEMENT COURSE (SEC)
I	**UG-PHY-101:** Mechanics-I	**UG-PHY-102:** Mechanics, Sound and Properties of Matter	**UG-PHY- MDC1:** General Physics: Fluids and Heat	**UG-PHY-VAC2:** Environmental Physics	**UG-PHY-SEC1:** Introduction to Mathematical Physics-I **or** **UG-PHY-SEC4:** Python programming fundamentals and mathematical techniques
II	**UG-PHY-103:** Electricity and Magnetism	**UG-PHY-104:** Electricity, Magnetism and Electronics	**UG-PHY- MDC2:** General Physics: Light and atoms	**UG-PHY-VAC1** Eminent Indian physicists and their contribution	**UG-PHY-SEC2:** Introduction to Mathematical Physics-II **or** **UG-PHY-SEC5:** Matrices and Differential Equations
III	**UG-PHY-201:** Electromagnetic Theory-I	**UG-PHY-205:** Elementary Modern Physics	**UG-PHY- MDC3:** General Physics: Nucleus, Relativity and Beyond		**UG-PHY-SEC3:** Introduction to Error Analysis **Or** **UG-PHY-SEC6:** Numerical Techniques
	UG-PHY-202: Optics				
	UG-PHY-204: Oscillation, Waves and Sound				
IV	**UG-PHY-203:** Modern Physics	**UG-PHY-VOC1:** Computational Physics			
	UG-PHY-206: Quantum Mechanics				
	UG-PHY-207: Heat and Thermodynamics				
	UG-PHY-208: Electronics-I				
	UG-PHY-209: Properties of Matter and Acoustics				

	UG-PHY-210: Introduction to Astronomy and Astrophysics				
V	UG-PHY-301: Electromagnetic Theory- II	UG-PHY-VOC2: Basics of Visualization and Scientific word Processing			
	UG-PHY-302: Solid State Physics				
	UG-PHY-303: Thermodynamics and Statistical Mechanics*				
	UG-PHY-304: Solid State Devices				
VI	UG-PHY-306: Atomic and Molecular Physics	UG-PHY-VOC3: Instrumentation			
	UG-PHY-307: Mechanics II				
	UG-PHY-308: Nuclear and Elementary Particle Physics				
	UG-PHY-PRJ: Project				
	UG-PHY-309: Introduction to Material Science				
VII	UG-PHY-401: Mathematical Physics*				
	UG-PHY-402: Classical Mechanics*				
	UG-PHY-403: Electronics-II				
	UG-PHY-404: Laboratory (Electronics and Computer Programming)				

VIII	UG-PHY-405: Advanced Electromagnetic Theory				
	UG-PHY-406: Introduction to Special Theory of Relativity*				
	UG-PHY-407: Quantum Mechanics II				
	UG-PHY-408: Laboratory (General Physics)				
	UG-PHY-409: Advanced Solid State Physics				

* Courses maybe offered to the minor students

ZOOLOGY

SEMESTER	MAJOR CORE	MINOR/ VOCATIONAL	MULTI-DISCIPLINARY COURSE (MDC)	VALUE ADDED COURSE (VAC)	SKILL ENHANCEM ENT COURSE (SEC)
I	**UG-ZOO-101:** Animal Diversity: Non Chordates & Chordates	**UG-ZOO-102:** Introduction to Animal Diversity	**UG-ZOO-MDC 1:** Nutrition and Diet Plans	**UG-ZOO-VAC 1:** Environment Protection Practices	**UG-ZOO-SEC 1:** Waste Management Techniques
II	**UG-ZOO-103:** Cell and Molecular Biology	**UG-ZOO-104:** Techniques Of Cell Study & Chemistry	**UG-ZOO-MDC2:** Techniques of Fish Preservation and Processing		**UG-ZOO-SEC 2:** Bio Entrepreneurship
III	**UG-ZOO-201:** Fundamentals of Animal and Human Genetics	**UG-ZOO-203:** Inheritance Pattern of Genetic Traits and Diseases	**UG-ZOO-MDC3:** Aquarium maintenance: Freshwater and Marine fishes		**UG-ZOO-SEC 3:** Biological Data Analysis
	UG-ZOO-202: Biochemistry and Metabolic Regulation				
IV	**UG-ZOO-204:** Endocrinology & assisted reproductive technologies	**UG-ZOO-VOC1:** Aquaculture and Fisheries			
	UG-ZOO-205: Basic Microbiology and Fundamentals of Animal Biotechnology				
	UG-ZOO-206: Immunology				
	UG-ZOO-207: Aquaculture, Fish preservation and fish processing				
V	**UG-ZOO-301:** Health & Nutrition	**UG-ZOO-VOC2:** Nutrition and Dietetics			
	UG-ZOO-302: Developmental Biology				

	UG-ZOO-303: Environment Toxicology and Evolutionary Biology				
	UG-ZOO-PRJ Project(a)				
VI	**UG-ZOO-304:** Molecular genetics and Basics of Forensic Science	**UG-ZOO-VOC3:** Application of techniques in wildlife monitoring			
	UG-ZOO-305: Wildlife Biology and Ethology				
	UG-ZOO-306: Human Physiology				
	UG-ZOO-PRJ Project (b)				
VII	**UG-ZOO-401:** Research Methodology – Biological Sciences	**UG-ZOO-VOC4:** Computation of Biological data			
	UG-ZOO-402: Ornamental Fisheries				
	UG-ZOO-403: Techniques in Biological Research				
	UG-ZOO-404: Wildlife Enumeration technique				
VIII	**UG-ZOO-405:** Transgenic Animal Technology	**UG-ZOO-VOC5:** Learner centric T-L-E pedagogies			
	UG-ZOO-406: Ecotourism				

	UG-ZOO-407: Learner centric T-L-E pedagogies for Biological sciences				
	UG-ZOO-408: Tissue Engineering				

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