ACADEMIC AUDIT

ST. EDMUND'S COLLEGE, SHILLONG

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Department of Biotechnology

Forwarded to

IQAC, SEC, SHILLONG

St. Edmund's College

Shillong

Academic Audit Report

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Vice Principal

(Signature)

IQAC Coordinator

(Signature)

Secretary

(Signature)

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1.0 Executive Summary

The Internal Quality Assurance Cell (IQAC) have organized an internal academic audit of St. Edmund's College in July 2022 in compliance with the NAAC norms, as stated in the Audit and Evaluation Plan of St. Edmund's College 2022. The audit's goal was to confirm that campus procedures followed had adhered to the academic policy issued by the organization. The audit's precise goals were to assess the management control framework's suitability as well as how closely the various stakeholders adhered to the relevant laws, rules, and standards.

An analysis of the academic policy's procedures was done during the audit's earliest planning stages. The research was founded on a review of the rules and manuals that served as benchmarks for the academic management in the college.

2.0 Statement of Assurance

The International Standards for the Professional Practice of Internal Auditing have been followed in conducting this audit. According to the professional judgement, sufficient and appropriate audit procedures were carried out, and data were acquired to verify the veracity of the judgments made and the findings presented in this report. The results are based on a comparison between the audit's situational data and the set criteria parameters.

3.0 Introduction

The Academic Audit is a peer evaluation-based procedure that includes a self-study, compilation of Academic data and interface meetings with the peers from outside the Institute. This process, unlike the usual approach to programme evaluation, prioritizes self-reflection and self-improvement above the established traditional standards. An academic audit is designed to encourage departments and programmes to assess their "education quality procedures" - the core faculty activities required to develop, ensure, and continuously enhance the quality of teaching and learning practice. An academic audit examines how teachers make educational models and organize their work, utilizing the resources at their disposal and working collaboratively to provide a high-quality education in the best interest of the discipline as well as for the students. The Academic Audit comprises of five distinctive areas on self-study:

(i) Determining Learning Objectives

(ii) Designing Curriculum and Co-curriculum

(iii) Designing Teaching and Learning Methods

(iv) Developing Student Learning Assessment

(v) Assuring Implementation of Quality Education

The self-study report was compiled taking into considerations the data available for the last 3 years [2019-2021] under the following subheads:

1. Profile of the College
2. Awards & Accolades
3. Courses Offered
4. Staff Profile
5. Student Details & Results
6. Teaching & Learning Initiatives
7. Research Facilities
8. Library Resources
9. Learning Outcomes

4.0 External Members of the Audit Committee

1. Dr A Srihari Krishna
   Registrar
   The Assam Kaziranga University
   Jorhat, Assam

2. Prof Arnab Sen
   Department of Botany
   North Bengal University
   Siliguri, West Bengal

3. Dr A Sinha
   Associate Professor
   Department of Basic Sciences & Social Sciences
   North Eastern Hill University
   Shillong, Meghalaya

4. Dr V R Rao
   Former Head
   Department of Physics
   St. Edmund's College
   Shillong, Meghalaya

5.0 Profile of the College

The Christian Brothers were invited to Shillong in 1915 and St. Edmund's College began in 1916. It was, however, in 1923 that the College was ready to start Inter-Arts and Inter-Science classes, and affiliation to Calcutta University, for these courses was received in 1923. The first classes of the University section of St. Edmund's College opened in 1924. Bro. J E McCann was the first Principal of the College (he was also the Principal of the School at the same time). Bro. I.O' Leary was the first Principal of the College (separate from the School).

St. Edmund's College, Shillong is one of the premier institutions of the North-East of India and Meghalaya in particular. Since 1924, till date, St. Edmund's College has maintained its excellence by regularly introducing new courses, updating its infrastructure, achieving the highest academic records and maintaining discipline among the students.

From 1924 to 1936, St. Edmund's College was a junior college for Intermediate Arts and Science. At that time, the college offered English, Alternative English, Latin, History and Maths, Geography, Physical Chemistry for Arts and Science respectively. Today, St. Edmund's College has made commendable progress and has opened up different departments of various disciplines including Electronics, Computer Science, Biochemistry, Biotechnology, Social Work, Environmental Science and Computer Applications. In 2010, the Higher Secondary Section has been segregated into a separate section within the College. In 2011, the college introduced Post Graduate course with admission to the Master's Degree in Social Work.

Along with academic excellence, the college has also worked towards the development of the personality and potential of the students. Many programmes have been introduced in the college to draw out the potential and prowess of students and to help them reach the forefront. St. Edmund's College is proud to have been the mold of several eminent personalities who have carved a name for themselves in the field of academics, medicine, engineering, bureaucracy, judiciary, and politics

The College celebrated its Platinum Jubilee in 1999. Over the period the College has endeavored to instill in its students a love for excellence, integrity, concern for one's fellow human beings and the preservation of the environment in an atmosphere conducive to the awareness of God. The College creates an environment where the all-round development of the individual is promoted with dignity, principally through right relationships with God, with others and with the whole creation.

6.0 Awards & Accolades

1. STAR STATUS- Physics, Chemistry, Botany, Zoology, Biochemistry & Biotechnology (Conferred by Department of Biotechnology, Govt. of India)
2. One District One Green Champion (MGNCRE, Govt. of India)
3. First 50 Green Campus Award (CSE, New Delhi)
4. One STAR – Institute Innovation Council (MIC, Govt. of India)
5. Band Beginner- ARIIA Ranking (MIC, Govt. of India)
6. Unnat Bharat Abhiyan [UBA]- (IIT, Delhi - Ministry of Education, Govt. of India)
7. Advanced Level Institutional Biotech Hub (Phase I) – (Department of Biotechnology, Govt. of India & NER BPMC)
8. Bioinformatics Facility (Department of Biotechnology, Govt. of India)
9. R & D in collaboration with Numaligarh Refinery Limited, Assam
10. R & D in collaboration with IIT, Guwahati
11. R & D in collaboration with Central University of Hyderabad, Telangana
12. NEC Sponsored Project at Department of Electronics.

7.0 Courses Offered- UG & PG

UG Honours in

- Biochemistry
- Biotechnology
- Botany
- Chemistry
- Commerce
- Computer Science
- Computer Application
- Environmental Science
- Electronics
- Economics
- English
- Geography
- History
- Khasi
- Sociology
- Social work
- Mathematics
- Political science
- Physics
- Zoology

PG in

- Social Work

Certificate/Value Added Courses offered by the following departments:

- Computer Application
- Chemistry
- Biotechnology
- Environmental Science

8.0 Staff Profile

SL	Department	No of Faculty	No of Faculty with PhD	No of Faculty with NET
1	Biochemistry	04	04	02
2	Biotechnology	05	02	03
3	Botany	04	04	03
4	Zoology	04	02	03
5	Environmental Science	06	01	05
6	Chemistry	06	03	03
7	Commerce	07	01	05
8	Computer Application	05	-	02
9	Computer Science	04	01	02
10	Economics	04	01	03
11	Electronics	05	02	02
12	English	06	03	03
13	Geography	05	-	03
14	History	04	01	01
15	Khasi	04	02	-
16	Mathematics	06	01	04
17	Physics	04	03	02
18	Political Science	02	01	01
19	Social Work – UG	06	-	05
20	Social Work – PG	06	02	06
21	Sociology	03	-	03
22	Education	02	-	02

9.0 Students Details & Results

Student Details

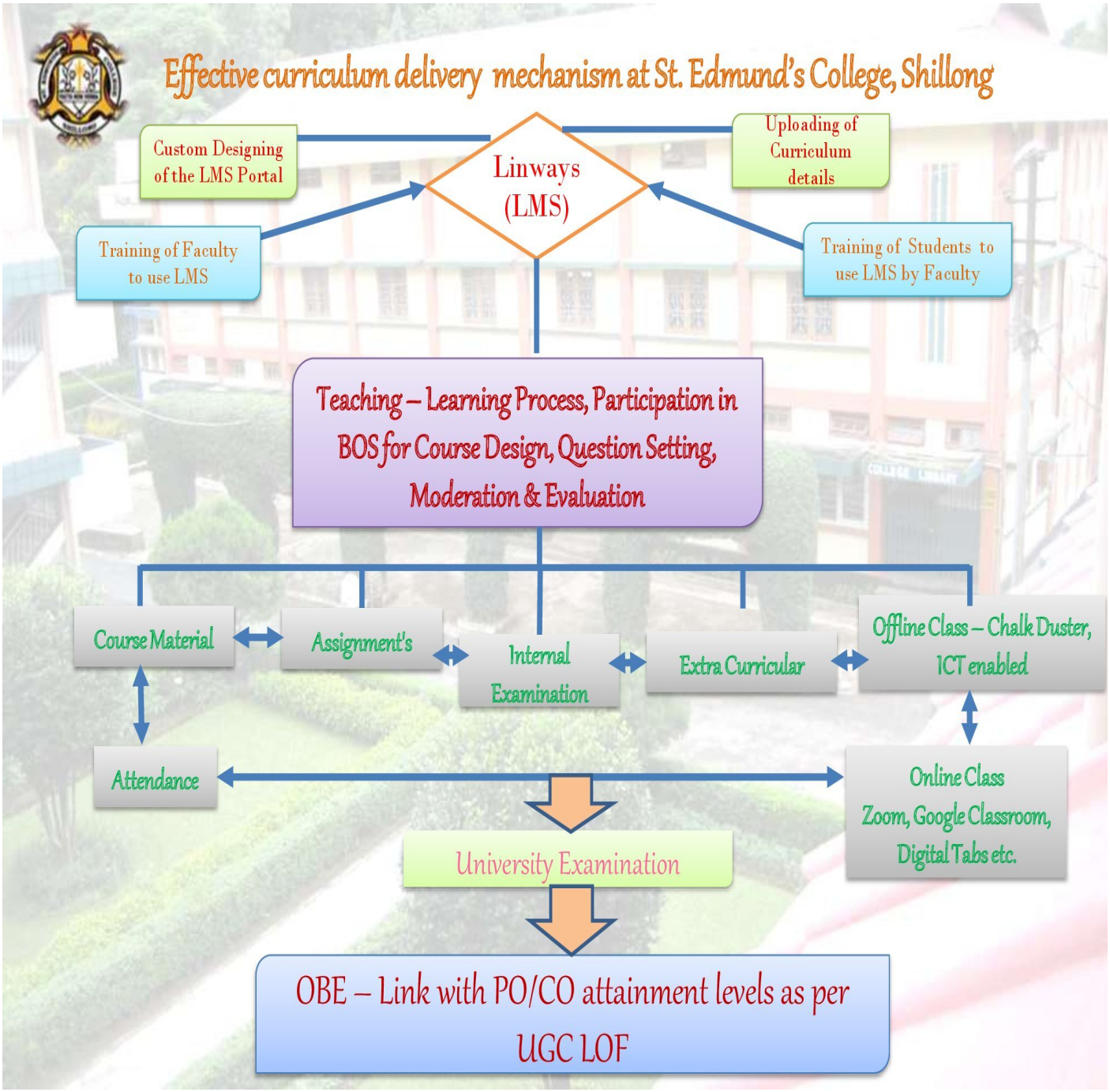
Particulars	*Academic Year		
	2021	2020	2019
1. *No of Students Admitted [UG]- First Semester*	1021	1105	1123
2. *No of Students Admitted [PG] -First Semester*	28	19	23
3. *Total Students [UG]*	2923	2950	3180
4. *Total Students [PG]*	47	43	41
5. *No of Student Receiving Scholarship [UG]*	859	894	1323
6. *No of Student Receiving Scholarship [PG]*	-	-	-

*** NIRF India Rankings 2022 & AISHE data**

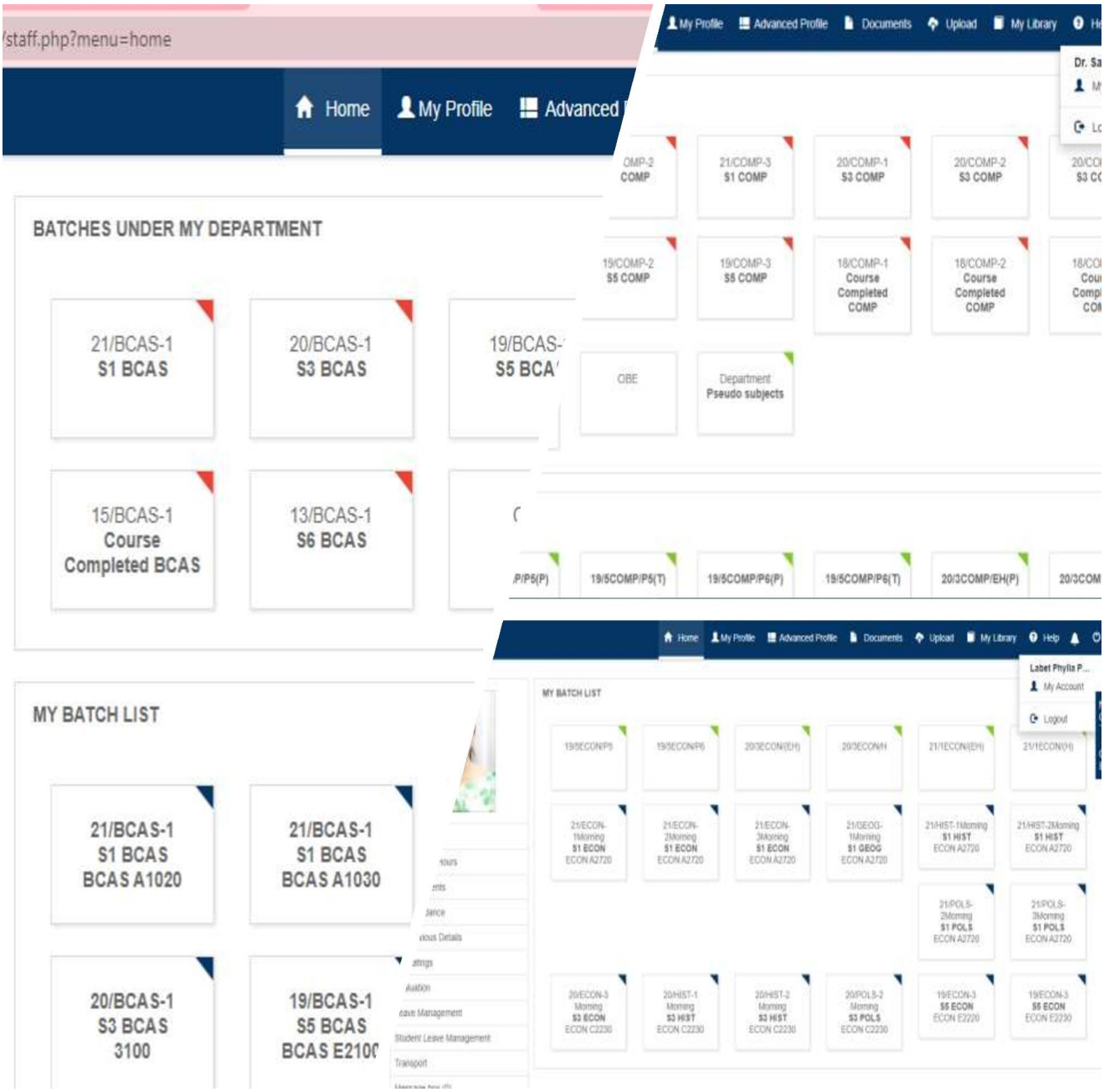
Results

Particulars	Year		
	2021	2020	2019
1. ***Appeared – sixth semester [UG]***	982	934	898
2. ***Total No of Students Passed- [UG]***	955	751	756
3. ***Total No of Students Passed- [PG]***	19	23	21
4. ***Pass Percentage –[UG]***	96.5 %	80.40 %	84.18 %
5. ***Pass Percentage –[PG]***	100 %	100 %	100 %

10.0 Teaching Learning Initiatives:



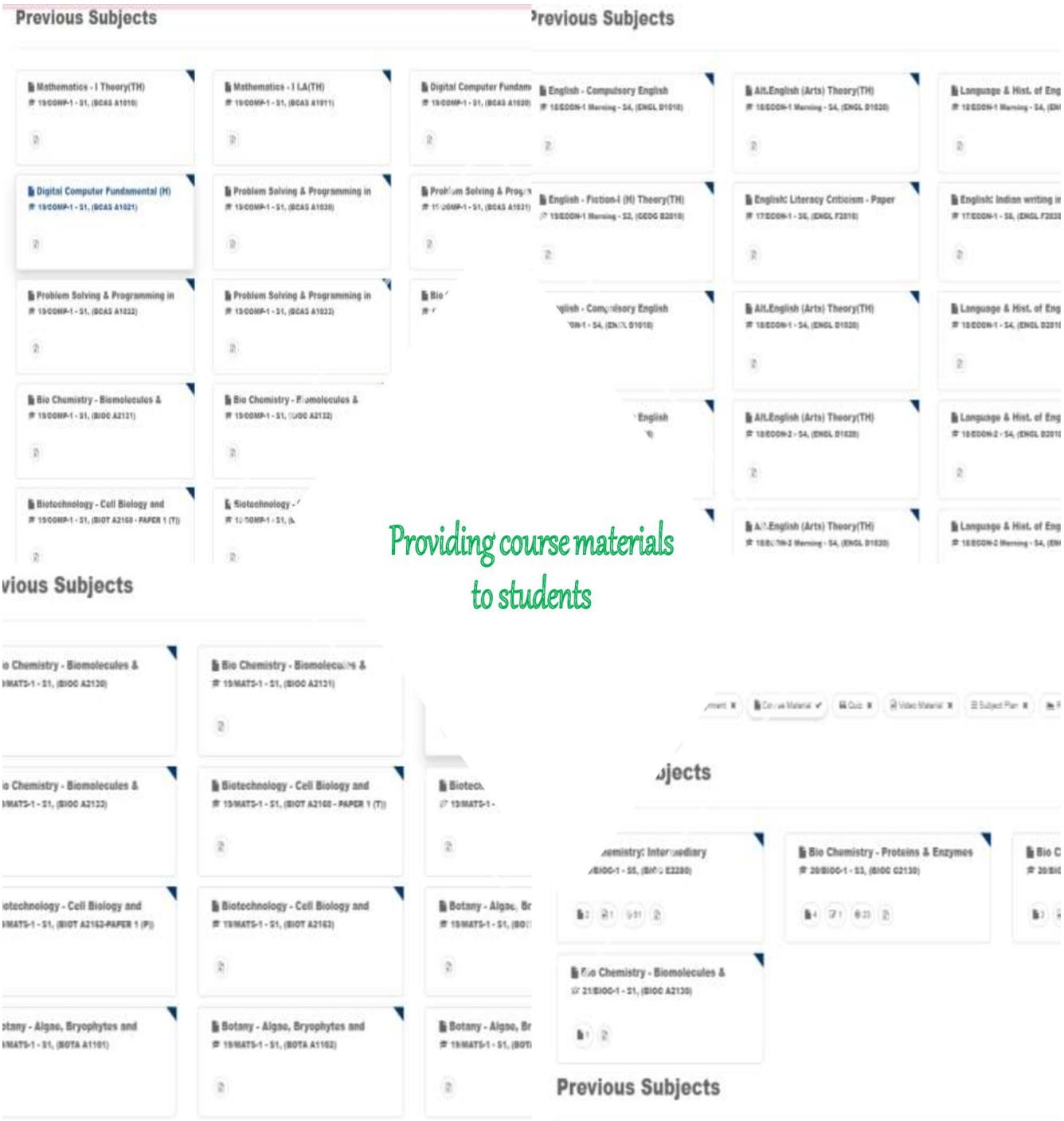
Custom Design of Linways Portal

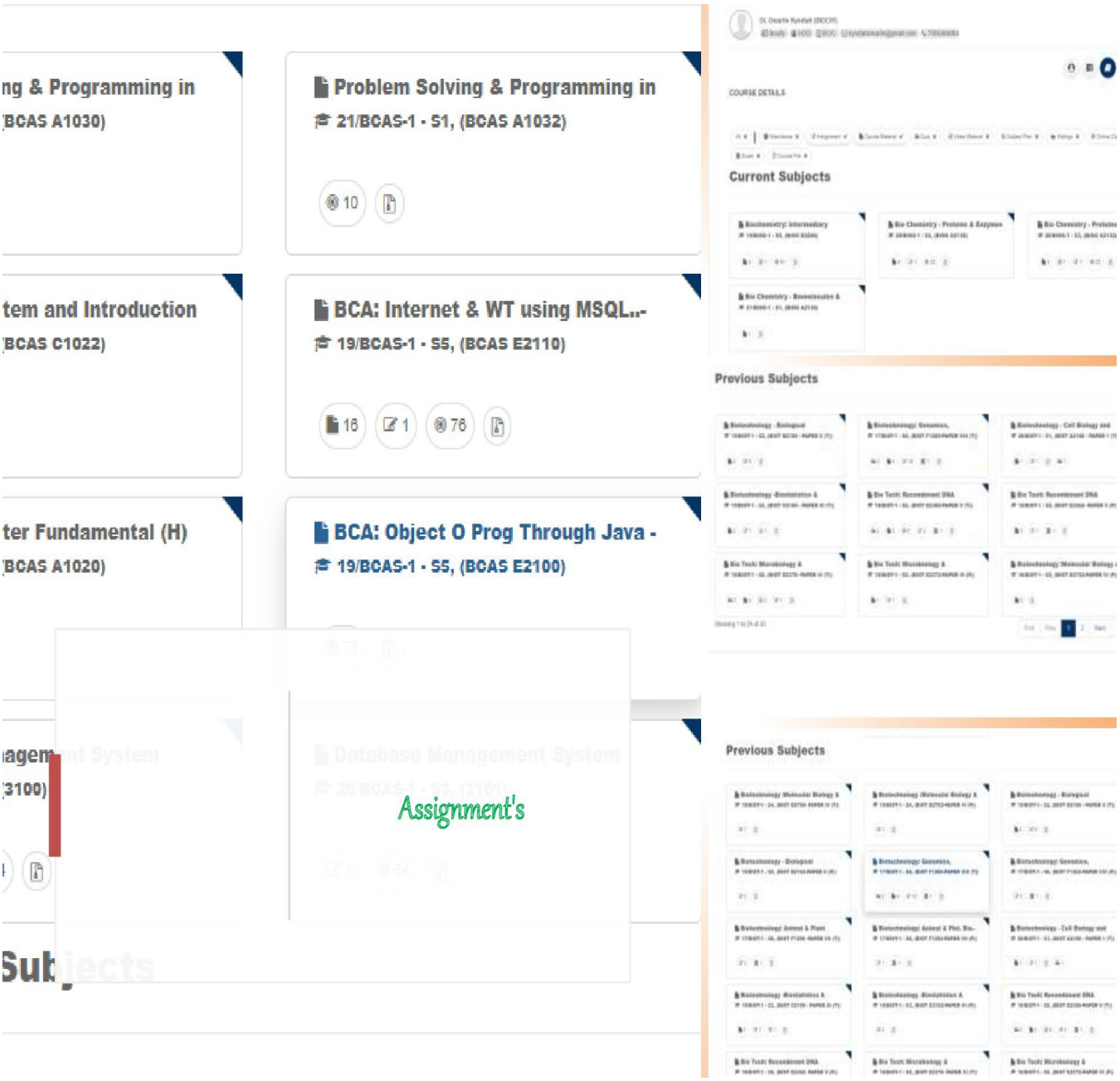

/staff.php?menu=home
Home
My Profile
Advanced
My Profile
Advanced Profile
Documents
Upload
My Library
BATCHES UNDER MY DEPARTMENT
21/BCAS-1
S1 BCAS
20/BCAS-1
S3 BCAS
15/BCAS-1
Course
Completed BCAS
13/BCAS-1
S6 BCAS
21/COMP-3
S1 COMP
20/COMP-1
S3 COMP
20/COMP-2
S3 COMP
19/COMP-2
S5 COMP
19/COMP-3
S5 COMP
18/COMP-1
Course
Completed
COMP
18/COMP-2
Course
Completed
COMP
CBE
Department
Pseudo subjects
MY BATCH LIST
21/BCAS-1
S1 BCAS
BCAS A1020
21/BCAS-1
S1 BCAS
BCAS A1030
20/BCAS-1
S3 BCAS
3100
19/BCAS-1
S5 BCAS
BCAS E210
Home
My Profile
Advanced Profile
Documents
Upload
My Library
Help
My Account
Logout
MY BATCH LIST

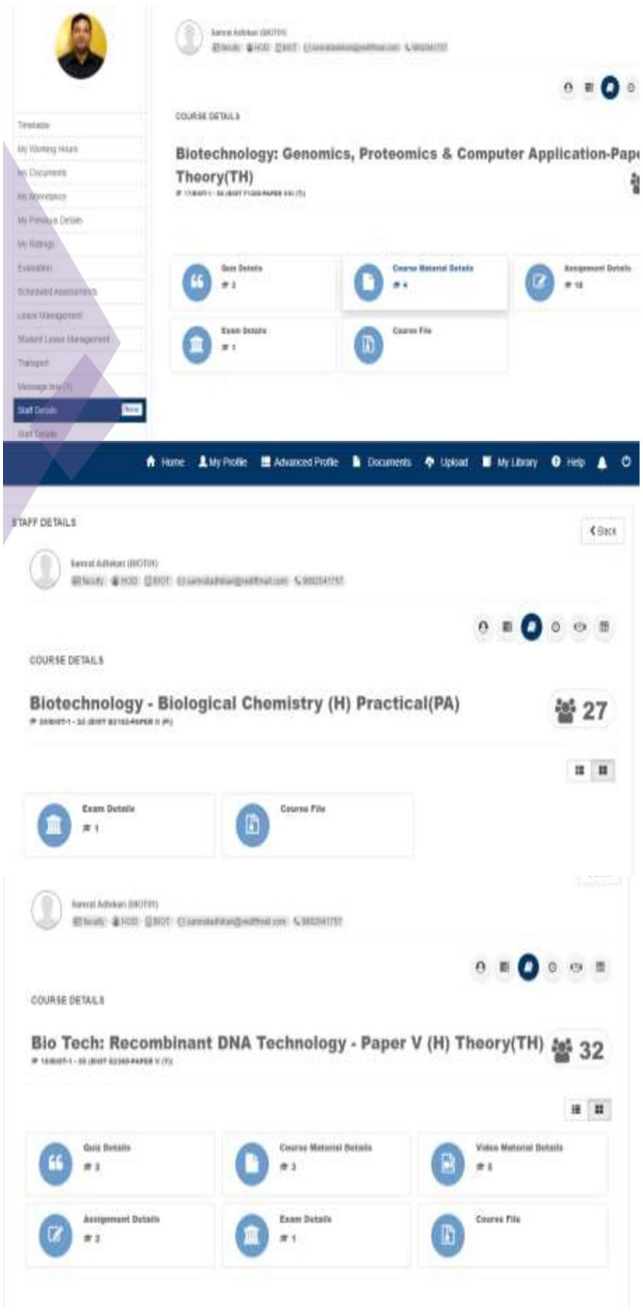
Passout Or Not	Department	With Subsidery Course	Current Sem	TC Issue Date	Edit
No	KHAS	KHASI-3 (Political Science & Sociology) [KHAS-3] with Political Science & Sociology	S3		
No	KHAS	KHASI-3 (Political Science & Sociology) [KHAS-3]	S3		
No	MATS	MATHEMATICS-1 (Physics & Chemistry) [MATS-1] with Physics & Chemistry	S3		
No	MSWS	M.S.W [MSWS-1]	S3		
No	PHYS	PHYSICS-1 (Mathematics & Chemistry) [PHYS-1] with Mathematics & Chemistry	S3		
No	PHYS	PHYSICS-2 (Mathematics & Electronics) [PHYS-2] with Mathematics & Electronics	S3		
No	PHYS	PHYSICS-3 (Mathematics & Computer Science) [PHYS-3] with Mathematics &	S3		

☐	11	POLITICAL SCIENCE-3 (History & Economics)	POLS-3
☐	12	POLITICAL SCIENCE-2 (Sociology & Economics)	POLS-2
☐	13	POLITICAL SCIENCE-1 (Sociology & History)	POLS-1
☐	14	KHASI-3 (Political Science & Sociology)	KHAS-3
☐	15	KHASI-2 (History & Political Science)	KHAS-2
☐	16	KHASI-1 (History & Sociology)	KHAS-1
☐	17	HISTORY-3 (Political Science & Sociology)	HIST-3
☐	18	HISTORY-2 (Economics & Sociology)	HIST-2
☐	19	HISTORY-1 (Economics & Political Science)	HIST-1
☐	20	GEOGRAPHY-2 (Sociology & Political Science)	GEOG-2
☐	21	GEOGRAPHY-1 (Economics & Sociology)	GEOG-1
☐	22	ENGLISH-1 (History & Sociology)	ENGL-1
☐	23	ECONOMICS-1 (Political Science & History)	ECON-1
☐	24	ECONOMICS-2 (Political Science & Sociology)	ECON-2
☐	25	ECONOMICS-3 (History & Sociology)	ECON-3
☐	26	ZOOLOGY-1 (Chemistry & Botany)	ZOOL-1
☐	27	PHYSICS-3 (Mathematics & Computer Science)	PHYS-3
☐	28	PHYSICS-2 (Mathematics &	PHYS-2

Curriculum design as per university syllabus, addition of batches, student profile, course index file, timetable, planner etc....

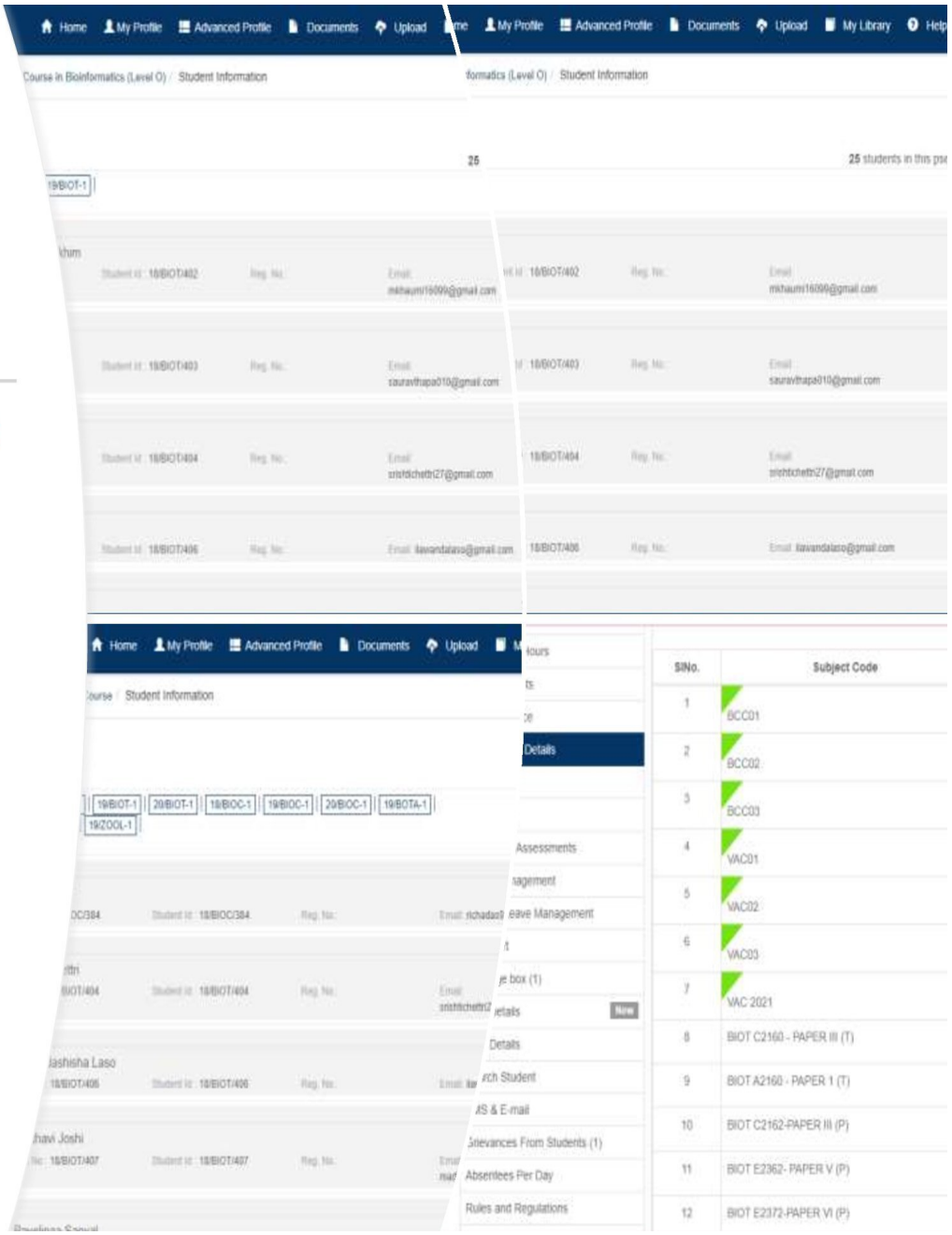

Previous Subjects
Mathematics - I Theory(TH)
Mathematics - I LA(TH)
Digital Computer Fundamental (H)
Problem Solving & Programming in
Bio Chemistry - Biomolecules &
Biotechnology - Cell Biology and
Previous Subjects
English - Compulsory English
Alt.English (Arts) Theory(TH)
English: Literacy Criticism - Paper
Providing course materials to students
Previous Subjects
Bio Chemistry - Biomolecules &
Biotechnology - Cell Biology and
Botany - Algae, Bryophytes and
Bio Chemistry - Proteins & Enzymes
Previous Subjects


ng & Programming in
BCAS A1030)
Problem Solving & Programming in
21/BCAS-1 - S1, (BCAS A1032)
10
tem and Introduction
BCAS C1022)
BCA: Internet & WT using MSQL..-
19/BCAS-1 - S5, (BCAS E2110)
16
1
76
ter Fundamental (H)
BCAS A1020)
BCA: Object O Prog Through Java -
19/BCAS-1 - S5, (BCAS E2100)
Assignment's
Current Subjects
Previous Subjects
Previous Subjects



Internal Asssement – Examination, Quiz etc...

Extra Curricular – Value Added Course, Certificate Course, Seminars etc.



11.0 Research Facilities:

Bioinformatics Centre:

The Centre was started in the year 2008 after receiving the funding from Department of Biotechnology, Govt. of India under the BTIS NET programme. The BTIS NET programme in India is a vast network oriented programme started in the year 1986 with its Apex Centre situated at the International Centre of Genetic Engineering & Biotechnology (ICGEB), New Delhi and has been spreaded all over the educational institution across the country. The Centre activities focused mostly on student-oriented programmes like use of internet facility, organizing workshop on Data mining and Digital based knowledge education etc. But after the sanctioning of Manpower in the Centre from 2012, the research-based activity started and continues till date with a good number of publications.

The core theme of the Centre has been on Environmental Bioinformatics, *in silico* screening of potent plant metabolites of pharmacological significance and microbial bioinformatics. The objective of the Centre:

- Infrastructure Support for ICT enabled learning
- Online certificate course using MOODLE
- Capacity building
- Research & Development
- Short term Training programme in the form of Workshop/Hands on session
- Long term training programme in terms of studentship & traineeship
- Development of e content for UG students
- Internet Facility for all stake holders of the parent Institution

Advanced Level Institutional Biotech Hub:

The Advanced Institutional Biotech Hub at St. Edmund's College has established a cyanobacteria culture facility having a wide collection of cyanobacteria isolated from a variety of habitat. The facility during the tenure as Institutional Biotech Hub (2011-2015) has successfully identified 40 cyanobacteria at the molecular level and the sequences were deposited at the gene Bank with Accession ID KR709104 to KR709142. During the Advanced level -Phase I (2016-2019) whole genome of cyanobacterium Anabaena YBS001 has been sequenced and submitted to the gene bank. Beside these, the Centre has tirelessly organized many hands-on trainings,

skill development programme, outreach programme and capacity building programmes.

St. Edmund's College having received the financial grant from Department of Biotechnology, Govt. of India has initiated various capacity building programmes on innovative teaching methodology for faculty of the colleges and the Higher Secondary Schools in and around Shillong. The demand is very encouraging as many teachers are interested on practical's-oriented sessions so that they can deliver the knowledge to their students and create interest to pursue higher studies in basic sciences. The objective of the Centre:

- Support to UG Skill based practical's & projects
- Faculty Development Programme
- R & D
- Outreach program,
- Capacity Building programmes
- Hands on specialized training for students and faculty
- Entrepreneurship development

Institute Innovation Council – St. Edmund's College, Shillong (IIC_SEC) - *ID202015433*

With the implementation of National Education Policy (NEP2020) in higher education institutions, colleges must invest in new fields/domains such as research, sanitation, and innovation, in addition to traditional teaching and learning procedures. The Ministry of Education Innovation Council (MIC) of the Government of India has mandated the formation of an Innovation Council. During the Pandemic lockdown, a group of employees and students joined together and founded the Innovation Council according to the MIC's guidelines, which was approved with ID202015433. In the current reality that the world is experiencing that is transforming the way we live, the college wishes to contribute to and accept responsibility for the notion of "Aatma Nirbhar Bharat."

"Innovate today for a better tomorrow"

To foster a thriving campus ecosystem for critical thinking, problem solving, innovation, and start-ups. Students are encouraged and motivated to think and dream outside of the classroom; to select and develop a proposal on an issue that is significant to the local and/or national level; and to build a model that can be verified and standardized for use in start-ups. The Council began its efforts by enlisting the help of the Alumni Network and local entrepreneurs, as well as hosting an online impact lecture series with notable entrepreneurs from throughout India. Students and faculty were introduced to the concept of entrepreneurship, inventions, and start-ups, as well as the obstacles and opportunities that such

endeavours present. The social media accounts (Facebook, Instagram, and Twitter) have been active, and there are currently 220 members posting content.

Students are eager to participate in self-directed and MIC-led activities, to express their views and ideas, and to identify a problem and its solution. The response to the online/offline model presentations has been overwhelmingly positive. Hands-on instruction in Candle Making, Herbal Soap, and Vermi Compost (Organic Manure) is provided, as well as the viability of initiatives such as "Pilot Start-ups" engaging local merchants and entrepreneurs. The MIC peer team members were given access to all the council's actions to evaluate them. The college's actions have been acknowledged, and the college is now eligible to participate in IIC 4.0 programmes. The college was recently awarded ONE STAR for its efforts, making it the first non-technical institution in Meghalaya to be recognized by the Ministry of Education, Government of India.

NRL Sponsored Research – Department of Biotechnology & Chemistry

On 10th September 2021, St. Edmund's College, Shillong has signed an MOU with Numaligarh Refinery Ltd, Golaghat, Assam for a R & D Project on "*A study on the utilization of cyanobacteria in the bioremediation of crude oil, hydrocarbon storage tank bottom sludge, and ETP hydrocarbon sludge and its environmental biotechnology implications"* with Dr Samrat Adhikari, Department of Biotechnology as the Principal Investigator and Prof Sumit Deb, Department of Chemistry as Co Principal Investigator. The scientific community all throughout the years have concentrated more on the chemical process line sludge dewatering, solvent extraction, thermochemical treatment, incineration, stabilization/solidification, oxidation treatment etc. but each of these processes has its own limitations of operational cost, efficiency, secondary pollutant, time management etc. Furthermore, Phyto remediation, bioaugmentation has been a promising method but incidentally these processes require time. Hence bioremediation using the bacteria /cyanobacteria has been Centre of active research for all these years with various parameters and methodologies been developed. The aim of the proposal is to find an effective, efficient and economically viable method for the disposal of crude oil/sludge. Further the proposal also aims to study the various parameters that are involved in the degradation of oily sludge.

Department of Botany Collaborative Research with IIT- Guwahati

A research group of the Department of Botany is exploring the effects of global overexpression of plant photoreceptors containing Light/Oxygen/Voltage (LOV) domains in tomato, in collaboration with Lingaraj Sahoo (Professor Department of Biosciences and Bioengineering) at IIT-Guwahati. This project is funded by North East Centre for Biological Sciences and Healthcare Engineering (NECBH) Twinning Outreach Programme hosted by

Indian Institute of Technology Guwahati (IITG), Assam funded by Department of Biotechnology (DBT), Government of India.

Another project that the Department of Botany is currently working on the understanding whether plant photoreceptors exert transcriptional regulation on starch metabolism and metabolite partitioning in Tomato. This project is funded by the Science and Engineering Board (SERB), Government of India.

NEC Sponsored Research – Department of Electronics

The main objective the project on DESIGN AND DEVELOPMENT OF LABORATORY INSTRUMENTS is to enhance the technical temper of the students in the electronics and Instrumentation domain. By developing different types of instruments, the barrier of electronic circuit design, testing etc. has been trying to cease from student's mind. The circuit is constructed using resistive plates e.g., phenolic material coated with copper or glassy poxy board. At the very beginning circuits must study properly. Then the diagrams should draw in computer using some software. After that the circuit should simulate using simulation software. After getting good simulation result the circuit lay out should develop using PCB design software. The outcome is the development of hardware module or instrument: A few instruments have developed as listed below

- Developed 100w solar inverter
- Developed Tesla coil
- Developed RF Receiver
- Developed, harvest electrical energy from living plants
- Developed High Voltage Power supply
- Developed low voltage power supply

Tinkering Laboratory:

With the changing scenario in the field of application of technology to solve problems related to daily living, the Internet of Things (IOT) holds a sure shot key to success. More importantly, preparing young learners in the College, for this vast and yet to be properly explored world of technology, it is important that students of St. Edmund's College be given such an opportunity to learn.

It is rather fortunate that Br. Stelljes Julius, an alumnus of the Electronics department of our College, has taken the initiative to foster talent in this area of activities. In view of this, the student volunteers from the departments of Electronics and Computer Application were approached to be part of the IOT Club. Noticing the energy level of such participants, the students of the Physics department, too, approached to be a part of it. Hence on the 14 th of March, 2022, the Principal, Dr. S. Lamare inaugurated the IOT Club. Since its inception, the students, girls and boys, have been regular in learning both the hardware or the electronic aspects as well as the programming that is entailed in it. It is heartening to note that the students are regular, and are currently involved in applying the knowledge and skills they have learnt to solve relevant day-to-day challenges with technology. Congratulations to ail involved on the efforts being put in, especially since the University hasn't yet introduced a system whereby Academic Credits can be gained for the time, skills and commitment.

12.0 Library Resources

Library is equipped with approx. Fourty Thousand books that provide a learning platform for the students and teachers. The study materials are supplemented by Journals, Newsletter, Periodicals etc. The library is automated, and e-resources are availed through KOHA, UGCINFLIBNET, British Council Library (Kolkata), and various others online platforms. The departments are equipped with reference books and text books procured through DBT STAR College grant which the student can use on need basis.

ONLINE RESOURCES AVAILIABLE

College Website: www.sec.edu.in

https://sec.edu.in/iqacdocs/2.3.2_ict_enabled_initiatives_2020_2021.pdf

https://sec.linways.com/student/

https://sec.linways.com/staff/

https://spoken-tutorial.org/

http://swayam.gov.in/

https://sec.edu.in/notices/UG_Course_List_SWAYAM08062021.pdf

https://sec.edu.in/notices/ICT_initiatives_MHRD_UGC.pdf

https://sec.edu.in/notices/onlinelearning15052020.pdf

https://sec.edu.in/notices/openaccessjournals28052020.pdf

13.0 Learning Outcomes

VISION:

St. Edmund's College, Shillong has a vision that is enshrined in the motto of the College: "**Facta Non Verba**" which translates "*Deeds Not Words*". It aims at imparting equitable quality education grounded on the core values of excellence, competition, and ideals. The College also stands on the principles advocated by Edmund Ignatius Rice, the Founder of the Institution.

MISSION:

The College endeavours to create a stimulating environment in the Campus through various academic programmes and co-curricular activities to develop character, shape personality and build a sense of social responsibility among our young men and women. As the college prioritizes learning, teaching, and sharing of knowledge, education is therefore perceived as a potent vehicle that works towards transforming attitudes and mind-sets for the good of one and all in the society and the world at large.

Program Educational Outcomes (PEOs)

The graduates will:

PEO1 Have the confidence and tenacity it takes to be life-long learners, keeping abreast with Knowledge and Skills.

PEO2 Be looked up to, as young women and men, who can be counted on to be agents for transformation.

PEO3 In keeping with the principles of Blessed Edmund Rice, be humble and at home with 'kings' and 'paupers.

PEO4 Be generous in being able to give back to Society what they have received, by participating in various Health Missions.

PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: COMPUTER APPLICATION (BCA)

Program Outcomes for Computer Applications

PO1	Domain Expertise: Apply knowledge of science and experiments at an appropriate level to the discipline
PO2	Skills and Ethics: Analyze a problem and define the scientific requirements, appropriate to its solution.
PO3	Lifelong Learning: Understand new concepts and be articulate while executing knowledge with peers.
PO4	Modern Tool Usage: Use current techniques, skills, and tools necessary for scientific research.
PO5	Social Contribution: Follow current thinking for implementing the technology for the larger benefit of the society.

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Course Outcomes for Paper Data warehouse and mining (CO BCA F1070)

CO BCA F1070.1	Analysis: The students can ANALYZE data and INFER new knowledge using logical and mathematical skills.
CO BCA F1070.2	Effective Maintenance: The students will be able to efficiently PLAN AND PREPARE large storehouses of data required by client applications, while ensuring data consistency and reliability.
CO BCA F1070.3	Planning: The students can TABULATE and SUMMARIZE big-data oriented projects, through requirements gathering, collection and cleaning of data, pattern analysis and deployment of meaningful patterns useful to decision-oriented applications like businesses, healthcare, cyber security and so on.
CO BCA F1070.4	SELECT, COMPARE, and carefully differentiate between situations to APPLY different data mining techniques like classification, prediction, clustering, frequent pattern mining, association, and outlier analysis.
CO BCA F1070.5	Evaluation: ASSESS and RANK the performance of different data-mining algorithms and enable the students to PLAN and PREPARE for further research and innovation in the field of data mining.

Course Outcomes for Paper BCA 603 (CO BCA F1060)

CO BCA F1060.1	Recognition: The students can DESCRIBE and IDENTIFY problems pertaining to technology.
CO BCA F1060.2	Interpretation: The ability of a student to ASSOCIATE and CONTRAST traditional methods with modern tools and technology.
CO BCA F1060.3	Ideas: The students can obtain new findings through EXPERIMENT and DEMONSTRATION.
CO BCA F1060.4	Positive impact: The students can COMPARE the positive impact of technology in the society
CO BCA F1060.5	Innovators: The students can CREATE and FORMULATE plans and solutions that will help solve modern days' problems.

SUBJECT: BIOCHEMISTRY (BIOCHEM)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

PROGRAMME OUTCOME FOR BIOCHEMISTRY		
PO1	Domain Expertise	1.1 Outline the major biomolecules, their structures, and roles in biological systems. 1.2 Relate to the importance of physical laws and parameters that centres around energy flow and other parameters that governs the biochemical reactions. 1.3 Demonstrate an experiential learning and critical thinking of the cells as the basic unit of life, their component's structure and function of both prokaryotic and eukaryotic cells; balances in growth and multiplication and their behavior and interaction with the environment. 1.4 Outline enzymes per se and as biocatalysts that govern all biochemical pathways. 1.5 Microorganisms as life form that contributes directly or indirectly to health and diseases and human progression. 1.6 Relate to the application of statistical principles to questions and problems in biology, medicine, or public health. 1.7 Outline of biochemical data analyses (e.g. in enzyme kinetics, molecular structure analysis and biological databases. 1.8 Outline the various aspects of human physiology 1.9 Relate to the significance of the various aspects of the immune system in terms of components and functions in health and diseases. 1.9.1 Relate to the larger aspects of molecular biology through knowledge of the DNA per se, how information is processed via replication, transcription and translation in both prokaryotes and eukaryotes. Get a glimpse of how the information is processed and regulated. 1.9.2. Relate to the various molecular biology techniques that helps in the understanding of the DNA and associated functions.
PO2	Skills	2.1 Carry out laboratory-orientated numerical calculations (e.g. inter-conversion of masses, moles, and molarity, preparation of solutions and accurate dilutions). 2.2 Relate to data visualization and analysis, including the application of data transformations (e.g. logarithmic, exponential). 2.3 Demonstrate an understanding of the principles, and have practical experience of, a wide range of biochemical techniques (e.g. basic molecular biology, cell biology and microbiology methods, spectrophotometry, the use of standards for quantification, enzyme kinetics; macromolecular purification, chromatography, electrophoresis, etc. 2.4 Develop basic professional skills pertaining to biochemical analysis, carrying out clinical diagnostic tests that may have applications in clinical, health, agriculture, community development, etc. 2.5 Develop conversational competence including communication and effective interaction with others, listening, speaking, and observational skills.
PO3	Personal Competence	3.1 Develop curiosity and ability to formulate biochemistry related problems and using appropriate concepts and methods to solve them. 3.2 Develop articulation of ideas, scientific writing and authentic reporting, effective presentation skills. 3.3. Relate and articulate with clarity and critical thinking of one's position as a biochemistry graduate as a citizen of the country and the world. 3.4 Demonstrate creativity, innovation, and risk-taking ability.
PO4	Effective	4.1 Demonstrate the ability to use various e-resources to solve challenges related to biochemistry.

	Tool Usage	4.2 Demonstrate an understanding of the principles, and have practical experience of, a wide range of biochemical techniques (e.g., basic molecular biology, cell biology and microbiology methods, spectrophotometry, the use of standards for quantification, enzyme kinetics; macromolecular purification, chromatography, electrophoresis, etc.).
PO5	Entrepreneur-ial and Social Contribution	5.1 Demonstrate basic professional skills pertaining to biochemical analysis, carrying out clinical diagnostic tests and to contribute in specific areas related to biochemistry such as industrial production, clinical, health, agriculture, community development, etc. 5.2 Grasp ideas and to turn ideas into action related to biochemical mechanisms and processes related to industries, industrial production, health, agriculture, etc. 5.3 Extend collaboration, cooperation and realizing the power of groups and community, ability to work in a group, community

Course Outcomes: CO BCHEM-6 01 (Microbiology Section)	
COBCHEM-601.1	1.1 Classify the types of microorganisms: and their general characteristics. 1.2 Understand the criteria used in the classification of bacteria.
COBCHEM-601.2	Understand growth curve and use of selection media in bacterial cultivation.
COBCHEM-601.3	3.1 Outline the role of microorganisms: in food spoilage and food-borne infections.
COBCHEM-601.4	4.1 Explain the process of transformation, conjugation transduction and transfection in microbial genetics with added emphasis on plasmids.
COBCHEM-601.5	5.1 Experiment with the isolation of microbes from water and soil using selective media. This experiment provides one with both qualitative and quantitative information on microbial content in the sample source(s). 5.2 Determine kinetics of bacterial growth to obtain information on the type of microbes and media characteristics. 5.3 Examine the effect of antibiotic on bacterial growth, to gain an insight into the significances of antibiotics in disease control.

COURSE OUTCOMES: CO601B (IMMUNOLOGY SECTION)

COBCHEM-601.1	1.1 Outline the basic concept of innate and adaptive immunity 1.2 Outline the cells and organs associated with the immune system
COBCHEM-601.2	2.1 Relate to the structure and functions of different classes of immunoglobulins, the genetic basis of antibody diversity and the importance of humoral, cell-mediated, and innate immune responses in combating pathogens 2.2 Describe the classes of antibodies; Antigens- Nature of antigens; Antigen-antibody interactions; Immunogens; Haptens; Adjuvants
COBCHEM-601.3	3.1 Outline the hematopoietic stem cells, and relate to the clonal selection theory 3.2 Outline the structure and function of MHC molecules 3.3 Outline the basis of genetic diversity
COBCHEM-601.4	4.1 Outline complement fixation and also relate to hypersensitivity, allergy and types of autoimmune diseases; 4.2 Associate monoclonal antibody and its application in biology and development of vaccines.
COBCHEM-601.5	5.1 Determine antigen-antibody interaction through Ouchterlony Double Immunodiffusion (ODD) method, a visibly indispensable tool in immunology 5.2 Determine assays base on agglutination reaction especially blood typing (ABO and Rh blood groups), an important tool in determining phenotypic differences between individuals.

COURSE OUTCOMES: CO602 (MOLECULAR BIOLOGY)

CO BCHEM-602.1	1.1 Relate to Nucleic acids as genetic material backed by experimental evidence (bacterial genetic transformation and Hershey-Chase Experiment); 1.2 Outline the salient features of viral, prokaryotic, and eukaryotic genomes 1.3 Outline Repetitive DNA sequences.
CO BCHEM-602.2	2.1 Outline DNA replication in prokaryotes with evidence of semi conservative, semi-discontinuous mode and contrast it with that of eukaryotes. Illustrate the effect of inhibitors of DNA replication.

CO BCHEM-602.3	3.1 Outline the mechanism of transcription in prokaryotes and relate to the effect of inhibitors of transcription. 3.2 Explain regulatory RNA (miRNA), Catalytic RNAs; and compare the salient differences in eukaryotes.
CO BCHEM-602.4	4.1 Outline the basic features of the genetic code and explain the Wobble hypothesis. 4.2 Outline the mechanism of prokaryotic translation and compare the salient differences in eukaryotes with emphasis on signal sequences. 4.3 Explain the regulation of gene expression in prokaryotes and outline the Operon concept using lac operon and trp operon as classic examples 4.4 Outline the general approach of molecular cloning through the application of recombinant DNA technology such as PCR, RT-PCR and qPCR. 4.5 Outline an introduction to bioinformatics with due emphasis on gene & protein databases.
CO BCHEM-602.5	5.1 Experiment with isolation of DNA from animal tissue to gain insight into the significances of this technique in molecular biology experiments 5.2 Analyze qualitatively and quantitatively DNA sample(s) using agarose gel electrophoresis, an indispensable tool in molecular biology. 5.3 Measure the melting temperature (Tm) of commercial DNA sample and hence distinguish DNA on GC=AT content. 5.4 Determine the amplification of DNA using PCR technique and relate the potential of this technique in various scientific advancements in medical and related sciences.

SUBJECT: BIOTECHNOLOGY (BT)

Program Outcomes (POs)

At the end of the Biotechnology honours Programme, the graduates will be able to:

Program Outcomes for Biotechnology	
PO1	**Domain Expertise:** Apply knowledge of Bio-techniques and experiments at an appropriate level to the discipline
PO2	**Skills and Ethics:** Analyse a problem and define the Biological requirements, appropriate to its solution
PO3	**Lifelong learning:** Understand new concepts and be articulate while executing knowledge with peers
PO4	**Social Contribution:** Follow passionate thinking for implementing the technology for the larger benefit of the society
PO5	**Ethics:** Recognise social and ethical responsibilities of a professional working in the discipline

Course Outcomes for Paper VII-Animal and Plant Biotechnology (COBT1250.1)	
COBT1250.1	Rank the information gathered to assist in Critical Thinking
COBT1250.2	Reason Step by step and have the ability to solve problems
COCT1250.3	Differentiate various types of practical skills and need based applications
COBT1250.4	Grasp the concept and create new fields for research
COBT1250.5	Compare and contrast the results of various analysis

Course Outcomes for Paper VIII- Genomics, Proteomics and Computer Applications (COBT1260.1)	
CO BT1260.1	Apply skills required for a particular problem
CO1BT260.2	Reason out a problem and have the ability to solve it
COBT1260.3	Design tools to justify the robustness in analysing the results
COBT1260.4	Ability to troubleshoot when faced with a challenge and act ethically
COBT1260.5	Measure and select the suitable parameters for solving a problem

SUBJECT: BOTANY (BOTA)

Program Outcomes for Botany

PO1	**Core competency:** Acquire core competency in the subject Botany, and in allied subject areas.
PO2	**Application:** Apply the knowledge they have learned and understood, for their higher studies, competitive examinations and in discipline-related jobs.
PO3	**Value addition:** Apply their additional skills acquired from this programme through extra-curricular vocational and value-added courses.
PO4	**Personality development:** Manifest social traits such as public speaking, teamwork, leadership skills, ethical and moral values.
PO5	**Knowledge sharing:** Share and propagate their knowledge and experiences with others.

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Course Outcomes for Paper Genetics, Plant Breeding and Molecular Biology (CO BOTA 601)

CO BOTA 601.1	Have conceptual understanding of the laws of inheritance at the genetic, chromosomal, and cellular level
CO BOTA 601.2	Comprehend the effect of chromosomal abnormalities in numerical as well as structural changes leading to genetic disorders
CO BOTA 601.3	Understand the various concepts and methods used in crop improvement
CO BOTA 601.4	Understand the structure, function and synthesis of DNA, RNA, and proteins
CO BOTA 601.5	Have a conceptual understanding of regulation of gene expression and genetic recombination in prokaryotes

Course Outcomes for Paper Plant Reproductive Biology and Plant Biotechnology (CO BOTA 602)

CO BOTA 602.1	Understand the development of gametophytes and embryos in angiosperms
CO BOTA 602.2	Understand the role of pollen grains in pollination, sexual reproduction, taxonomy, and allergies
CO BOTA 602.3	Conceptually understand and perform plant tissue culture techniques
CO BOTA 602.4	Conceptually understand the technique of genetic engineering and its applications
CO BOTA 602.5	Analyze nucleic acid and amino acid sequences using online public databases

SUBJECT: SOCIAL WORK - UG (BSW)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Social Work - UG

PO1	Identify and Reproduce knowledge and skills related to their professional development.
PO2	Articulate skills, tools and techniques in areas related to one's specialization and current developments in the academic field of study.
PO3	Use of ethical code of conduct for social work practice
PO4	To apply the different methods of social work practice in the context of problem identification and evaluation
PO5	Accepting criticism about self (positive and negative comments) and taking responsibility for learning

Course Outcomes for Paper on Integrated Social Work Practices 602 (CO SW 602)

CO SW602.1	**Trace and Review** on the generalist perspective of Social Work Practice.
CO SW602.2	**Discover and explore** different approaches and strategies of Social Work Intervention.
CO SW602.3	**Correlate, Diagnose and Document** the micro, mezzo, and macro levels of intervention
CO SW602.4	**Assess and interpret** the social workers' role at each phase of social work practice.
CO SW602.5	**Design and explain** the different approaches of social work practice

Course Outcomes for Paper Field Work 603 (CO SW 603)

CO SW603.1	**Study** the problems and **draw** an understanding on social work interventions.
CO SW603.2	**Apply and Exercise** problem solving skills.
CO SW603.3	**Identify and examine** the professional development and commitment in the field
CO SW603.4	**Train** students in utilizing field instructions.
CO SW603.5	**Assess and evaluate** about self-development

SUBJECT: CHEMISTRY (CHEM)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Chemistry

PO1	Demonstrate in-depth knowledge and understand about the fundamental concepts, principles and processes underlying the chemistry and its different subfields (analytical, inorganic, organic and physical) and its linkages with related disciplinary areas/subjects.
PO2	Use of IR, NMR, and other spectroscopic techniques in the identification of inorganic and organic compounds at semi-micro level.
PO3	Employ chemical techniques relevant to academia, industry and government and generic skills and global competencies, including relevant disciplinary knowledge and skill that enable students to undertake further studies in the field of chemistry or multi-disciplinary areas involving chemistry.
PO4	Undertake hands on lab work and activities that help develop in students' practical knowledge and skills for working safely and competently in the laboratory.
PO5	Recognize and appreciate the importance of the chemical sciences and its application in academic, industrial, economic, environmental, and social contexts.

Course Outcomes for Paper Chemistry 601 (CO CHEM 601)

CO CHEM 601.1	Assess the bioinorganic chemistry of metals in biological systems.
CO CHEM 601.2	Recognize the role played by transition metal complexes in Inorganic Chemistry.
CO CHEM 601.3	Interpretation of FTIR, NMR and UV-Vis data of given material.
CO CHEM 601.4	Discuss the method of preparation of nanomaterials and its applications.
CO CHEM 601.5	Formulate the synthesis of different natural products.

Course Outcomes for Paper Chemistry 602 (CO CHEM 601)

CO CHEM 602.1	Derive the relationships between thermodynamic quantities.
CO CHEM 602.2	Use of Maxwell equations and other thermodynamic relations to compute thermodynamic quantities from thermodynamic data tables.
CO CHEM 602.3	Elucidate the atomic structure and the application of the concept of quantization of energy of different orbitals.
CO CHEM 602.4	Reveal the basic principle of chemical cells and its function.
CO CHEM 602.5	Demonstrate analytical skills to deal with the detection, identification, separation, and estimation of atomic, molecular, and ionic species.

SUBJECT: COMMERCE (COM)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Commerce

PO1	Domain Expertise: Demonstrate a fundamental comprehension of business opportunity.
PO2	Skills and Ethics: Demonstrate extemporaneous speaking skill developed through in class discussion of text materials, case study and analysis, and current entrepreneurship related issues.
PO3	Lifelong Learning: Assess their own personal work products and critique those of their colleagues about thoroughness and creativity; and, how those could be applied in their real life and future business ventures.
PO4	Modern Tool Usage: Demonstrate basic computer proficiency including the use of word processing, presentation, and spreadsheet software packages; as well as basic facility with the internet and other research tools.
PO5	Social Contribution: Evaluate the business opportunity from perspective of a prospective investor.

Course Outcomes for Paper on Direct Taxes Law & Practice 603 (CO BC 603)

CO BC 603.1	Introduce themselves to the basic concepts of Income Tax.
CO BC 603.2	Build an idea about Income from House Property and Salaries as a concept.
CO BC 603.3	Familiarize on the different know how and heads of income along with their components
CO BC 603.4	Gain knowledge about the computation of total income for different categories of assesses and deliberate on the various deductions and rebates.
CO BC 603.5	Apprehend the hierarchy of Income-tax Authorities along with and their powers and functions.

Course Outcomes for Paper on Entrepreneurship Development 602 (CO BC 602)

CO BC 602.1	Explain the concept of entrepreneurship and its start-up process.
CO BC 602.2	Understand the concept of Micro, Small and Medium Enterprises (MSMEs) and also the environment surrounding them.
CO BC 602.3	Develop an entrepreneurial culture among them as well as spark innovation and creativity in their minds so that they become problem solving agents in the society.
CO BC 602.4	Explain the process of project identification, formulation, and evaluation; and assist others in formulation of the same.
CO BC 602.5	Describe special institutions for entrepreneurial development in India as well as assistance provided by them.

Course Outcomes for Paper on Small Enterprise Management 604 (CO BC 604)

CO BC 604.1	Understand the various sources of funding and financing business start-ups and /or business expansion.
CO BC 604.2	Acquire the knowledge about employer-employee relation in organization and its significance in smooth running of the organization; along with all the other related aspects of human resource.
CO BC 604.3	Acquire the knowledge about production process in organization and all other related aspects.
CO BC 604.4	Understand the importance of selling and distribution function in an organization.
CO BC 604.5	Acquire knowledge on maintenance of books of accounts, analysis of ratios from the accounts prepared and interpretation of results to understand the short-term and long-term position of business.

SUBJECT: COMPUTER SCIENCE (CS)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Computer Science

PO1	**Domain Expertise:** Display the knowledge of appropriate theory, practices and tools for the specification, design, implementation
PO2	**Skills and Ethics:** Demonstrate the aptitude of Computer Programming and Computer based problem solving skills
PO3	**Lifelong Learning:** Ability to pursue higher studies of specialization and to take up technical employment
PO4	**Modern Tool Usage:** Ability to formulate, to model, to design solutions, procedure and to use software tools to solve real world problems and evaluate
PO5	**Social Contribution:** Ability to operate, manage, deploy, configure computer network, hardware, software operation of an organization

Course Outcomes for Paper on Software Engineering 601 (CO CS 601)

CO CS601.1	Basic knowledge and understanding of the analysis and design of complex systems.
CO CS601.2	Ability to apply software engineering principles and techniques.
CO CS601.3	To produce efficient, reliable, robust, and cost-effective software solutions.
CO CS601.4	To manage time, processes, and resources effectively by prioritizing competing demands to achieve personal and team goals Identify and analyses the common threats in each domain.
CO CS601.5	Ability to work as an effective member or leader of software engineering teams.

Course Outcomes for Paper Data Mining 602 (CO CS 602)

CO CS602.1	Demonstrate advanced knowledge of data mining concepts and techniques
CO CS602.2	Apply the techniques of clustering, classification, association finding, feature selection and visualization on real world data
CO CS602.3	Determine whether a real-world problem has a data mining solution and apply data mining software and toolkits in a range of applications
CO CS602.4	Set up a data mining process for an application, including data preparation, modelling, and evaluation
CO CS602.5	Demonstrate knowledge of the ethical considerations involved in data mining

SUBJECT: ECONOMICS (ECO)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Economics

PO1	Domain Expertise: Students will have the ability to EXPLAIN core economic terms, concepts, and theories and key indicators.
PO2	Skills and Ethics: Use critical thinking skills on economic matters by applying economic theories to ANALYZE economic problems
PO3	Lifelong Learning: DEMONSTRATE the ability to collect, process, and interpret data, including statistical inference of real situations in the economy.
PO4	Modern Tool Usage: Students learn the techniques of preparation of a questionnaire to collect primary and secondary data and disseminate information using EQUATIONS AND GRAPHS. They can demonstrate quantitative reasoning skills.
PO5	Social Contribution: Students will be able to assess economic situations using appropriate analytical tools, PROVIDE ALTERNATIVE SOLUTIONS and defend their solutions.

Course Outcomes for Paper on Public Economics F2230 (CO ECO F2230)

CO ECO F2230.1	Students will be able to DEFINE concepts, identify different types of data, describe the process needed and tabulate problems
CO ECO F2230.2	They will be able to DIFFERENTIATE as well as do comparative studies involving different series of data and interpret the results
CO ECO F2230.3	Students will be able to APPLY their knowledge to incomplete data, modify and calculate
CO ECO F2230.4	Students should be able to explain the reason/s for selecting or rejecting a tool for analysis and INFER generalized or conclusions
CO ECO F2230.5	Students should be able to TEST/support/reject real life situations and explain the reasons for their occurrence

Course Outcomes for Paper on Public Economics F2220 (CO ECO F2220)

CO ECO F2220.1	Students will be able to DESCRIBE issues related to public policy. They will be able to DIFFERNTIATE between types of goods; problems associated with their usage and provide solutions to arising in their usage.
CO ECO F2220.2	Students will be able to CLASSIFY taxes and differentiate between the canons of taxation and discover the ongoing tax reforms.
CO ECO F2220.3	They will be able to COMPARE various theories related to public expenditure and ANALYSE the trends of public expenditure in India
CO ECO F2220.4	They will be able to EXPLAIN the objectives of fiscal policy and nature of fiscal federalism in India and how resources are transferred between the Centre and States
CO ECO F2220.5	About Public Debt, students will be able to FORMULATE the reasons behind India's growing public debt, suggest ways to lessen the burden. They will be able to prepare different types of budgets and compare them.

SUBJECT: ELECTRONICS (ELEC)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Electronics

PO1	Domain Expertise: Apply mathematics and science in solving electronics related problems.
PO2	Skills and Ethics: Design, conduct electronics experiment & manage electronics systems or processes that conforms to a given specification within ethical and economic constrains.
PO3	Lifelong Learning: Recognize the need for, and have the preparation and ability to engage in lifelong learning independently, with commitment to improve knowledge and competence continuously
PO4	Modern Tool Usage: Learn and apply appropriate techniques, resources, modern engineering, and IT tools to study/analyze complex scientific/technological activities.
PO5	Social Contribution: Acquire professional and intellectual integrity and an understanding of responsibility to contribute to the community for sustainable development of the society.

Course Outcomes for Paper on Antenna, transmission line, wave guides & controlled system 601 (CO EC 601)

CO EC601.1	Understand different types of antennas & their radiation pattern.
CO EC601.2	Explain the phenomenon of transmission line and its types. & Understand the modes of propagation in waveguides.
CO EC601.3	Calculate the reflection and transmission coefficients, finding out performance parameters of transmission lines, input impedance and reflection coefficient of a transmission line.
CO EC601.4	Understand the concepts of closed loop control systems and analyze the stability of closed loop systems.
CO EC601.5	Apply the control techniques to any electrical systems and design a control system for an electrical/electronic system.

Course Outcomes for Paper on Vector analysis, electro dynamics & quantum mechanics 602 (CO EC 602)

CO EC602.1	Understand the fundamentals of Electromagnetic Theory and could apply Vector Differential and Integral operators in Electromagnetic Theory problems.
CO EC602.2	Interpret & differentiate Maxwell's equations in differential and integral forms, both in time and frequency domains.
CO EC602.3	Explain where the limitations of Classical Physics are and understand basic concepts of Quantum Physics.
CO EC602.4	Formulate Equation of motion of matter wave and application on specific problems.
CO EC602.5	Survey and study of published literature on the assigned topic and prepare a written report on the study conducted for presentation.

SUBJECT: ENGLISH (ENG)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for English

PO1	Demonstrate a coherent and systematic knowledge and understanding of the field of literary and theoretical developments in the field of English Studies. This would also include the student's ability to identify, speak and write about genres, forms, periods, movements, and conventions of writing as well as the ability to understand and engage with literary-critical concepts, theories, and categories
PO2	Demonstrate the ability to understand the role of literature in a changing world from the disciplinary perspective as well as in relation to its professional and everyday use.
PO3	Estimate the scope of English studies in terms of career opportunities, employment and lifelong engagement in teaching, publishing, translation, communication, media, soft skills, and other allied fields
PO4	Interpret the impact of the major texts and traditions of literature written in English in their social, cultural, and historical context.
PO5	Identify and explain the historical, cultural, and literary connections between texts, analyze, interpret, and describe the critical ideas, values and themes that appear in literary and cultural texts and understand the way these ideas, values and themes inform and impact culture and society, both now and in the past

Course Outcomes for Paper on LITERARY CRITICISM F2010 (CO ENG G2010)

CO ENG F2010.1	To be able to understand and to explain the meaning, elements, and characteristic of literature.
CO ENG F2010.2	To demonstrate a knowledge of the techniques of early literary criticism
CO ENG F2010.3	To assess the relations among culture, history, and the text.
CO ENG F2010.4	To identify the principles and steps in writing a well-organized literary analysis.
CO ENG F2010.5	To be able to summarize major literary works, genre, period etc.

Course Outcomes for Paper on INDIAN WRITING IN ENGLISH F 2030 (CO ENG 2030)

CO ENG F2030.1	Identifying and recognizing the autobiographical aspects reflected in the selected novels.
CO ENG F2030.2	Assessing the depicted Indian tradition.
CO ENG F2030.3	Demonstrating and understanding that boundaries do not restrict the people, it is only a demarcation to proclaim the political n geographical power.
CO ENG F2030.4	Explaining migration in the context of globalization and the twenty first century dynamics between the global and the local/ and vice versa.
CO ENG F2030.5	Illustrate A.K. Ramanujan's structured poetic style; Mahapatra's use of romantic images and themes of selected poets

SUBJECT: ENVIRONMENTAL SCIENCE (EVS)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Environmental Science

PO1	Domain Expertise: Apply knowledge of science and experiments at an appropriate level to the discipline
PO2	Skills and Ethics: Analyze a problem and define the scientific requirements, appropriate to its solution.
PO3	Lifelong Learning: Understand new concepts and be articulate while executing knowledge with peers.
PO4	Modern Tool Usage: Use current techniques, skills, and tools necessary for scientific research.
PO5	Social Contribution: Follow current thinking for implementing the technology for the larger benefit of the society.

Course Outcomes for Paper on Environmental Chemistry 611 (CO EVS 611)

CO EVS611.1	Examine the role of Microorganisms as catalysts in chemical reaction.
CO EVS611.2	Give a schematic classification of pesticides.
CO EVS611.3	Assess the impact of photochemical smog in environment.
CO EVS611.4	Recommend an appropriate method of treatment of wastewater.
CO EVS611.5	Classify the different elements of the earth.

Course Outcomes for Paper on Environment Economics & Laws 613 (CO EVS 613)

CO EVS613.1	Discuss the concept and principles of Environmental Impact assessment (EIA).
CO EVS613.2	Compare the EIA Notification of 1994 and 2006.
CO EVS613.3	Prepare the different steps of carrying out Environmental Impact Assessment of a project.
CO EVS613.4	Examine the process and implementation of Environmental Audit.
CO EVS613.5	Illustrate the steps involved in registration and certification process of ISO.

SUBJECT: GEOGRAPHY (GEOG)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Geography

PO1	Domain Expertise: Formulate knowledge and ideas on how to carry out experiments at an appropriate level to the discipline.
PO2	Skills and Ethics: To connect to a problem and finding appropriate solutions.
PO3	Lifelong Learning: To discover new concepts and to enhance the knowledge with peers.
PO4	Modern Tool Usage: Use the latest tools and techniques for any scientific research.
PO5	Social Contribution: To support the society with the knowledge acquired from research analysis.

Course Outcomes for Paper on Geography of Resources 601 (CO GE 601)

CO GE 601.1	Relation between population and natural resource
CO GE 601.2	Identify the global availability and distribution of natural resource
CO GE 601.3	Resource consumption and environmental consequences
CO GE 601.4	Global Human Resource Development
CO GE 601.5	Principles of Resource Conservation

Course Outcomes for Paper on Biogeography 602 (CO GE 602)

CO GE 602.1	Scope and significance of Biogeography
CO GE 602.2	Geographical Distribution of Plants and Animals
CO GE 602.3	Concept and types of Ecosystems
CO GE 602.4	Status of Biodiversity of the world with special reference to NE India
CO GE 602.5	Conservation and Management of Ecological Regions

SUBJECT: HISTORY (HIS)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for History

PO1	To learn a basic narrative of historical events in a specific region of the world in a specific time frame.
PO2	The ability to use bibliographical tools for the advanced study of history.
PO3	To understand & evaluate different historical ideas, various arguments, and point of view
PO4	To develop an appreciation of themselves & of other through the study of the past in local, regional, national, and global context.
PO5	To articulate factual & contextual knowledge of specific places & times, to make careful comparisons (across time, space & culture).

Course Outcomes for Paper on History of China & Japan 2240 (CO HIS 2240)

CO HIS 2240.1	After the completion of this paper, students are expected to:
CO HIS 2240.2	Identify the beginning and growth of modernization in China and Japan during the period 1839-1949.
CO HIS 2240.3	Describe and to estimate the significance of historical changes taking place in China and Japan during the period of study.
CO HIS 2240.4	Explain the pattern of contributions made by China and Japan to history.
CO HIS 2240.5	Formulate a critical approach to the area of study.

Course Outcomes for Paper on North East India 2290 (CO HIS 2290)

CO HIS 2290.1	Identify the major trends of the political, social, and economic developments in North East India from 1824 to 1972.
CO HIS 2290.2	Discuss the contributions of North East India to the development of Indian history, an area which is usually unknown to many.
CO HIS 2290.3	Illustrate the different personalities who took active part in the historical events, which throw light to many undiscovered facts.
CO HIS 2290.4	Explain the contribution of Northeast India into Indian history.
CO HIS 2290.5	Formulate a certain area of research in the future and an assessment of this paper on northeast India will test the knowledge of the student on the same.

SUBJECT: KHASI (KH)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Khasi

PO1	Domain Expertise: Understand the different aspects of the society such as culture, language, literature, and current trends
PO2	Skills and Ethics: Acquire the methods of well-structured, well-argued prose, using sound argumentation, effective supporting evidence, and strong synthesis of points
PO3	Lifelong Learning: Critically analyze research processes, products, and practices with a view to strategic use of data in social change
PO4	Modern Tools Usage: There is an evaluation based on additional experiences (e.g., placements, internships, events, thesis, research work)
PO5	Social Contribution: Formulate an understanding of various performing arts and addressing technical and aesthetic elements in a balanced, accurate and effective manner

Course Outcomes for Paper on Translation in Khasi Literature 2050 (CO KH 2050)

CO KH 2050.1	Understand the basic concepts of culture and its dimensions, the concept of translation and how important of translation
CO KH 2050.2	Describe the characteristics of various characters in the fiction, drama, and Poetry
CO KH 2050.3	Define the genre of Khasi Literature in relevant with other western literature
CO KH 2050.4	Discuss the major theories and concept of the field
CO KH 2050.5	Analyze and understand the role of prominent Khasi Authors and their works

Course Outcomes for Paper on Khasi poetry 2060 (CO KH 2060)

CO KH 2060.1	Understand the basic concepts of the genre of Poetry like lyrics, ballad, sonnet, epic, elegy, allegory etc.
CO KH 2060.2	Analyze the hidden meaning of the poems, its structure, and themes
CO KH 2060.3	Compare the style of Khasi Poetry with other western poetry
CO KH 2060.4	Explain the dictions or the language of the poem, and enrich the language by using a coined term of a poem
CO KH 2060.5	Apply the theories and concepts in the field and to extract a poem with relevant to the current trends

SUBJECT: MATHEMATICS (MATH)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Mathematics

PO1	Bachelor's degree in Mathematics is the culmination of depth knowledge algebra, calculus geometry, differential equations and several other branches of Mathematics. This also leads to study of related areas like computer science and statistics. Thus, this programme helps learners in building a solid foundation for higher studies in Mathematics.
PO2	The skills and knowledge gained has intrinsic beauty, which also leads to proficiency in analytical reasoning. This can be utilized in modeling and solving real life problem.
PO3	Students undergoing this programme learn to logically question assertions, to recognize patterns and to distinguish between essential and irrelevant aspects of problems. They also share ideas and insights while seeking and benefitting from knowledge and insight of others. This helps them to learn behave responsibly in a rapidly changing interdependent society.
PO4	Completion of this programme will also enable the learners to join teaching profession in primary and secondary schools.
PO5	This programme will also help students to enhance their employability for government jobs, jobs in banking, insurance and investment sectors, data analyst jobs and jobs in various other public and private enterprises

Course Outcomes for Paper on Advanced Calculus H61 (CO MATH H61)

CO MATH H61.1	Understand the foundation of the set of real numbers and functions defined on them.
CO MATH H61.2	Describe and communicate the concepts of Riemann integration, multivariable calculus and the Euclidean space.
CO MATH H61.3	Calculate and compute the line integral and the Jacobian matrix.
CO MATH H61.4	Generalize the theorems and results from a two-dimensional space to an n-dimensional space, and the continuity & uniform continuity property from the set of real numbers to the Euclidean space.
CO MATH H61.5	To conclude and summarize the results geometrically.

Course Outcomes for Paper on Programming in C & Computer Oriented numerical analysis HOPT62 (CO HOPT 62)

CO MATH HOPT62.1	Understand the basic concepts of C Programming Language.
CO MATH HOPT62.2	Describe the fundamental tools of C language like conditional statements, loops, arrays, pointers, and functions.
CO MATH HOPT62.3	Compute and calculate the roots of equations using various methods like Bisection, Newton-Raphson and others.
CO MATH HOPT62.4	Generalize the programs to work in a more broad setting.
CO MATH HOPT62.5	Summarize the outputs of programs visually in a well-formatted manner.

SUBJECT: PHYSICS (PHY)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Physics

PO1	Domain Expertise: Apply knowledge of science and experiments at an appropriate level to the discipline
PO2	Skills and Ethics: Analyze a problem and define the scientific requirements, appropriate to its solution.
PO3	Lifelong Learning: Understand new concepts and be articulate while executing knowledge with peers.
PO4	Modern Tool Usage: Use current techniques, skills, and tools necessary for scientific research.
PO5	Social Contribution: Follow current thinking for implementing the technology for the larger benefit of the society.

Course Outcomes for Paper on Condensed Matter Physics F1040 (CO PH F1040)

CO PH F1040.1	The students can design a method for attaining low temperatures by applying/using Joule Thomson effect.
CO PH F1040.2	The students will be able to formulate an expression for the most probable velocity using Maxwell-Boltzmann distribution in a molecular system and evaluate it at any given temperature.
CO PH F1040.3	The students can design and construct a 3D model for any given crystal structure (sc, fcc, bcc) and hence evaluate the packing fraction for it.
CO PH F1040.4	The students will be able to evaluate the value of electrical conductivity (σ) for a given metal, when the thermal conductivity is supplied to them, using Weidemann-Franz law.
CO PH F1040.5	The students will be able to explain the formation of bands & band gap besides evaluating several parameters (such as intrinsic mobility, impurity, conductivity etc.,) for an extrinsic semiconductor.

Course Outcomes for Paper on Atomic, Molecular & Nuclear Physics F1050 (CO PH F1050)

CO PH F1050.1	The students can compare between Normal and Anomalous Zeeman effect and apply it in designing a method to study the characteristics of the system as well as to determine the unknown wavelength of a source.
CO PH F1050.2	The students will be able to apply the knowledge of spectral analysis in fields, such as synthesis of satellite imagery etc.
CO PH F1050.3	The students can use the acquired ideas of UV, IR, AE & AA Spectroscopy in investigating varied sample characteristics.
CO PH F1050.4	The students will be able to use the knowledge in artificial radioactivity in the design and construction of nuclear reactor.
CO PH F1050.5	The students can use the concepts of elementary particles to investigate experimental high energy physics data.

SUBJECT: POLITICAL SCIENCE (PSC)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Political Science

PO1	Domain Expertise: Understand and Analyze key concepts and theories, political systems and institutions which would help sharpen their understanding of political discourses.
PO2	Skills and Ethics: Will be able to possess skills like critical thinking and innovation which could be applied in their reflections and articulations on political issues and public policies.
PO3	Lifelong Learning: Further learn and explore new concepts which would help in the scientific enquiry in the political phenomenon and in a broader context of inter-disciplinary approach
PO4	Modern Tool Usage: Use techniques and tools like interactive discussions as well as interview schedules necessary for solving socio-political issues and problems
PO5	Social Contribution: To engage with relevant ethical and normative questions towards building a better society that is just, free, fair and equitable which would produce an active participatory and responsible citizen strengthening the democratic system.

Course Outcomes for Paper on Government & Politics in North East India PSC 07 (CO PSC 01)

CO PSC 07.1	Gain knowledge on the constitutional and political developments that had taken place in the Northeastern region and on what is going on politically in and around the different states in the region.
CO PSC 07.2	Understand the constitution and working of Autonomous District Councils as system of Local Self Governments (LSGs) in the Northeastern region where there are no Panchayati Raj Institutions (PRIs)
CO PSC 07.3	Acquire historical knowledge on State formation in Northeast India
CO PSC 07.4	Establish a connection between traditional political institutions with modern day governance.
CO PSC 07.5	Prepare groundwork for further research work

Course Outcomes for Paper on Political Sociology PSC 08 (CO PSC 08)

CO PSC 08.1	Demonstrate how social trends affect the political processes and how various social forces work together to impact policies and decisions
CO PSC 08.2	Infer that in every political system, political power tends to be concentrated at the hands of a few called the elites which work as key agents of political and social developments.
CO PSC 08.3	Explain how power holders legitimize authority
CO PSC 08.4	Connect the social environment with the working of the political system.
CO PSC 08.5	Assess the stratification of the society based on caste and class

SUBJECT: SOCIOLOGY (SOC)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Sociology

PO1	Domain Expertise: Understand the different aspects of society such as economy, polity, religion, culture, research methodology, family and kinship.
PO2	Skills and Ethics: Acquire the methods and techniques involved in understanding society
PO3	Lifelong Learning: Identify issues and problems in society
PO4	Modern Tool Usage: Learn the tools and techniques necessary for scientific research such as interviews, questionnaires, schedules, observation etc.
PO5	Social Contribution: Recognize the social responsibilities that an actor must perform as a member of the society

Course Outcomes for Paper on Sociology of Religion 601 (CO SOC 601)

CO SOC 601.1	Understand the basic concepts of religion such as magic, beliefs, rituals, totem, and taboo
CO SOC 601.2	Aware of the different approaches to the study of religion such as Durkheimian, Weberian and Marxian perspectives
CO SOC 601.3	Understand the emergence of different religious organizations such as sect, cult, church, and denominations
CO SOC 601.4	Appreciate the significance of secular principles and identity the problems of communalism
CO SOC 601.5	Analyze and understand the role of religious movements in India such as Brahmo Samaj, Seng Khasi and Haraka Zeliangrong in bringing about social change

Course Outcomes for Paper on Research Methodology SOC 603 (CO SOC 603)

CO SOC 603.1	Understand social research specific to Sociology as a science
CO SOC 603.2	Understand the meanings and importance of social research
CO SOC 603.3	Identify the different methods and techniques employed in social research such as comparative method, ethno-methodology, and case study
CO SOC 603.4	Learnt the different sources of data such as primary and secondary sources
CO SOC 603.5	Analyse data collected through field work and applied it in understanding the various social phenomena

SUBJECT: ZOOLOGY (ZOO)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Zoology

PO1	Core competency: Acquire core competency in the subject Zoology, and in allied subject areas.
PO2	Application: Apply the knowledge they have learned and understood, for their higher studies, competitive examinations and in discipline-related jobs.
PO3	Value addition: Apply their additional skills acquired from this programme through extra-curricular vocational and value-added courses.
PO4	Personality development: Develop social traits such as public speaking, teamwork, leadership skills, ethical and moral values.
PO5	Knowledge sharing: Share and propagate their knowledge and experiences with others.

Course Outcomes for Paper on Biochemistry, Animal Physiology & Endocrinology ZOO 601 (CO ZOO601)

CO ZOOH601.1	Have conceptual understanding on the chemical foundations of physiology such as normal, molar and molal solutions, Acids, Bases, pH and buffers.
CO ZOOH601.2	Have a conceptual understanding on Enzyme kinetics such as Michaelis-Menten equation, importance of K_m and V_{max}, enzyme inhibition.
CO ZOOH601.3	Understand the structure and functions of the linear and ring forms of monosaccharides and polysaccharides.
CO ZOOH601.4	Understand amino acids metabolism and the biochemical reactions involved in glycogenesis and glycogenolysis.
CO ZOOH601.5	Understand the functions of blood and its regulation and to have a conceptual understanding on the mechanisms of gaseous exchange through gills and lungs and osmoregulation ion fishes. Students will have conceptual understanding on the different types of hormones and the cells/tissues that are associated with their release. The students will also be able to acquire knowledge on the mechanism of hormone actions and the disorders associated with hormonal imbalances. Reproductive cycles in mammals and the process of spermatogenesis and oogenesis will be learnt as well. Various methods, limitations, and advantages of In vitro fertilization (IVF) and the contraceptive methods for males and females will also be explained.

Course Outcomes for Paper on Developmental Biology, Environmental Biology & Biotechnology 602 (CO ZOO 602)

CO ZOOH602.1	Understand the concepts of developmental biology including the series of sequential events that takes place in the development of multicellular organisms from fertilization till organogenesis.
CO ZOOH602.2	Understand regeneration in both vertebrates and invertebrates and developmental birth defects, concepts of ageing and teratogenesis.
CO ZOOH602.3	Acquire knowledge on the salient features of the diversified ecosystems and the ecological laws (The law of limiting factors and the law of tolerance) that are associated with the success and survival of the organisms.
CO ZOOH602.4	Understand Nutrient cycling, ecological succession and acquire knowledge on the characteristics/ salient features of the different types of Biomes.
CO ZOOH602.5	Understand and spread awareness on various environmental issues and concerns that are currently of crucial importance such as pollution, biomagnification, ozone depletion, greenhouse effect and global warming and acid rains. In situ and ex situ conservation strategies for wildlife and the technique of genetic engineering and its applications will also be learnt.