Criterion 1- Curricular Aspects

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global healthcare needs which are visible in Programme Outcomes (POs), and Course Outcomes (COs) offered by the University,as per the norms of the Regulatory Bodies

Y B N UNIVERSITY

RAJAULATU, NAMKUM, RANCHI (Jharkhand)

Established by the Act. of Government of Jharkhand Act 15, 2017

Gazzate Notification No 505, Dated 17 July 2017

As per Section 2(f) of UGC Act. 1956

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global health care needs which are visible in Programme Outcomes (POs), and Course Outcomes (COs) offered by the University, as per the norms of the Regulatory Bodies.

Response:

Y.B.N. University, Ranchi, excels in developing and implementing a well-structured and comprehensive curriculum that aligns with local, national, regional, and global healthcare needs. The curriculum reflects the university's commitment to fostering academic excellence while addressing societal and industry specific challenges.
The university's curriculum is designed with a focus on relevance, applicability, and innovation, ensuring that its Program Outcomes (POs) and Course Outcomes (COs) meet healthcare and other domain specific needs.

Local Relevance

Y.B.N. University acknowledges the unique socio-economic and healthcare challenges faced by the region of Jharkhand. The curricula in fields such as nursing, paramedical sciences, physiotherapy, and teacher education are tailored to address these localized challenges. For example, programs in nursing and paramedical sciences incorporate modules that emphasize healthcare delivery in rural and tribal areas, which constitute a significant portion of the state's population.

National Integration

The curriculum incorporates elements that cater to the broader national needs of India. In line with national health priorities, programs such as pharmacy, nursing, and allied health sciences focus on issues like non-communicable diseases, maternal and child health, and public health awareness. Teacher education programs are aligned with NCTE guidelines and emphasize inclusivity and the development of pedagogical skills for a diverse Indian classroom.

Regional and Global Context

The curriculum at Y.B.N. University transcends local and national boundaries, encompassing regional and global health and development priorities. Programs like those under AYUSH reflect the growing global interest in traditional medicine systems, while also promoting India's heritage in healthcare.

Curriculum Development

Process Y.B.N. University adopts a participatory and iterative approach to curriculum design. Academic experts, industry professionals, alumni, and other stakeholders are actively involved in the process to ensure that the curriculum remains dynamic and relevant.

Focus on Interdisciplinarity

To meet the diverse demands of the modern world, Y.B.N. University promotes interdisciplinary learning across its programs. For example, the integration of health informatics into nursing and paramedical programs bridges the gap between healthcare and technology.

Experiential Learning and Skill Development

The university places a strong emphasis on experiential learning, ensuring that students acquire practical skills alongside theoretical knowledge. Programs include internships, field visits, lab-based research, and community engagement activities to enhance hands-on learning. For instance, nursing and paramedical students undergo clinical training in affiliated hospitals, while students of education engage in teaching practice in real classroom settings.

Outcome-Based Education (OBE)

Y.B.N. University has adopted the Outcome-Based Education (OBE) model, wherein every program is defined by clear and measurable Program Outcomes (POs) and Course Outcomes (COs).

Capacity Building for Faculty

The university invests in continuous professional development for its faculty members to ensure effective curriculum delivery. Faculty members are encouraged to attend workshops, conferences, and training programs to stay updated on the latest pedagogical and disciplinary advancements.

Alignment with Sustainable Development Goals (SDGs)

Y.B.N. University's curriculum is designed to align with the United Nations Sustainable Development Goals (SDGs)

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Proceedings/Minutes of the 23rd Academic Council Meeting -2nd May, 2025

YBN University Ranchi, Jharkhand

The 23rd Academic Council Meeting of the YBN University, Ranchi Jharkhand was held on 2nd May 2025 at 02:15 PM through blended mode platform in the council room of the University with Prof. (Dr.) Satyadeo Poddar, Hon'ble Vice-Chancellor in the chair.

Agenda of the meeting was as Annexure-I as attached.

The following members are present in the meeting:

S. No.	Name, Designation and address of the Member	Member Category
1.	Prof.(Dr.) Satyadeo Poddar, Hon'ble Vice- Chancellor YBNU	Chairperson
2.	Prof.(Dr.) S.P.Yadav, Pro-Vice-Chancellor, YBNU	Member
3.	Dr. Arvind Yadav Director-HR, YBNU	Member
4.	Prof.(Dr.) Shree Raman Dubey, Registrar, YBNU, Ranchi	Member Secretary
5.	Dr. Subhash Chandra Yadav Prof. & Head Professor & Head , Department of Computer Science and Engineering, Central University of Jharkhand	External Expert
6.	Dr. Deepak Kumar Aakrti Biotech Pvt. Ltd. Ranchi	External Expert
7.	Dr. Mahesh Kumar Gupta , Principal, Jharkhand Govt. Tool Room	External Expert
8.	Dr. Arpana Sharma, Dean Academics YBNU	Convener
9.	Dr. Shrawan Kumar Singh, COE	Member
10.	Dr. Arti Gupta, DSW	Member
11.	Dr. Ashish Sarkar, IR. IQAC, Dean School of Pharmacy	Member
12.	Dr. Shammikesh Roy, Dean School of Legal Studies	Member
13.	Dr. Asha Mishra, Dean School of Science	Member

Satyadeo Poddar

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14.	Dr. Susmita Mohapatra, Dean School of Arts & Humanity	Member
15.	Dr. Anjani Kumar Singh, Dean School of Engineering & Technology	Member
16.	Dr. Gholam Mursaline Ansari, Dean School of Computer Science &IT	Member
17.	Dr. Kamal kant Patra Asst. Registrar (Academics)	Member
18.	Dr. Soniya Rani, T&P officer	Member
19.	Dr. Suhash Yadav, Principal YBNCTE	Member
20.	Dr. Shyam deo Gond Chief Librarian	Member

-- Continued..

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At the very outset, the Vice-Chancellor extended a warm welcome to all the Members of the Academic Council and highlighted the importance of their academic body.

Thereafter, the Dean Academics, convener had presented the agenda items before the Council for deliberation' After extensive discussions and deliberations, the following decisions were taken by the Academic Council:

A. Reporting Items

AGENDA No. 1.1.	To confirm the minutes of 22nd Academic Council Meeting held on 9th September 2024
Discussion	The proceedings of the 22nd Academic council meeting were circulated to all members for information and comments, a copy is enclosed at Annexure – I. No comments have been received.
Resolution	Confirmed
AGENDA No. -1.2.	To consider the Action Taken Reports on the 22nd meeting of the Academic Council to be held on 9th September 2024
Discussion	The status of Action Taken Report (ATR) on the decisions of the 22nd Academic Council meeting is enclosed as Annexure – II.
Resolution	Noted

AGENDA No. 1.3.	Confirmation of the minutes of 1st Research council meeting held on 24th April 2025
Discussion	The 1st Research Council meeting of the year 2025 was held on 24th April 2025 and the proceedings were circulated to all members for information and comments, a copy is enclosed at Annexure – III. No comments have been received.
Resolution	The Academic Council had considered the above and approved the same.

Satyabrata Poddar

AGENDA No. 1.4	Confirmation of the courses offered with seat intake in YBN University Ranchi for Academic year. 2025-26
Discussion	The 1st meeting of Admission committee of the year 2025 was held on 12/03/2025. A detailed report of the current seat intake for each course was presented by the Admission head. Trends from past years regarding application volume and admissions were discussed. Each department provided input on faculty strength, infrastructure, and other resource availability. The feasibility of increasing/decreasing intake in specific programs was evaluated and after discussion the committee had recommended to increase the intake capacity, a copy is enclosed at Annexure – IV.
Resolutions	The Academic Council had considered the above and approved the same.
AGENDA No. 1.5	Confirmation of the Academic calendar for the Academic year 2025-26
Discussion	The proposed Academic Calendar for the academic year 2025-26 was presented to the Academic Council for review. After a detailed discussion and consideration of academic, administrative, and statutory requirements, the Council unanimously approved the Academic Calendar.
Resolution	The Academic Council approves the Academic Calendar for the academic year 2025-26 as presented in Annexure - V
AGENDA NO. 1.6	Confirmation of the minutes of Fee fixation committee for the academic year 2025-26
Discussion	The 1st meeting of the Fee Fixation Committee of the year 2025 was held on 17/02/2025 ,were placed before the Academic Council for consideration. After reviewing the proceedings and recommendations of the committee, the Council resolved to approve the minutes as presented in Annexure-VI
Resolution	The Academic Council approves the minutes of the 1st Fee Fixation Committee meeting of the year 2025 held on 17/02/2025.
AGENDA NO. 1.7	Confirmation of the minutes of committees under students welfare
Discussion	By the order of the Chairperson, The Dean Students Welfare presented the minutes of the meetings of the following committees functioning under the Students' Welfare division, MOU signed with Paras HEC Hospital , Signed letter to consent with Mahindra pride classroom (Naandi foundation) for review and approval: ☐ Cultural Committee-03 in Nos. ☐ Sports Committee- 02 (2025) & 01 (2024)

YBN UNIVERSITY ESTD-2017

	□ Transportation Committee-01 □ Training and Placement committee- 01 □ Internal Complain Committee (Students)- 04 in Nos. □ Student Scholarships Committee- 03 The Council noted the proceedings and recommendations contained in the minutes
Resolution	After due deliberation, the minutes were accepted and approved as presented
AGENDA NO.1.8	Confirmation of the minutes of 1st examination committee meeting 2025
Discussion	The 1st meeting of the Examination Committee of the yr. 2025 was held on 14/02/2025, minutes were placed before the Academic Council for consideration. After reviewing the proceedings and recommendations of the committee, the Council resolved to approve the minutes as presented in Annexure-VII
Resolution	The Academic Council approves the minutes of the 1st examination Committee meeting of the year 2025 held on 14/02/2025
AGENDA No. 1.9	Confirmation of the Policy framework for retention and disposal of examination records.
Discussion	After discussion with the members, Chairperson had suggested that the retention and disposal of the university examination records can be destroyed by constituting a committee including an external member from security section and as per the examination ordinance of YBNU.
Resolution	The Academic Council noted and approved the same..
AGENDA No.1. 10	Confirmation of the issuance of degrees to all eligible pass-out students till the date of the 23rd Academic Council meeting (02/05/2025)
Discussion	The Academic council had considered the degrees awarded to the students including UG,PG and Ph.D till the date of the 23rd Academic Council Meeting. attached in Annexure-VIII and allowed to issue the degree certificates of concern passed out students.
Resolutions	The Academic Council had considered the above and approved the same
AGENDA No. 1.11	Confirmation of the students code of conduct for the Academic year 2025-26

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Discussion	The students code of conduct for the Academic year 2025-26 were circulated to all members for information and comments, a copy is enclosed at Annexure – IX. No comments have been received.
Resolutions	The Academic Council had considered the above and approved the same.

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Continued....

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B. Items to be Considered

AGENDA No. 2.1	Consideration of the proposals of Laboratory/Library requirements from various departments of the University.
Discussion	The said agenda require a review of the demand for necessary laboratory/library resources for their respective departments by respective Schools of the university before the meeting members. In this context, the meeting convener had presented the proposal before the members as attached in Annexure- X
Resolution	The Academic Council had considered the above and the proposals be accepted subjected to the approval of the Finance committee as per the availability of funds.
AGENDA No. 2.2	Consideration of the proposal for academic excellence
	a) IIC (Incubational Innovation and Incubation Centre)
	Discussion: In this context, the meeting convener Dean Academics Dr. Arpana Sharma had presented the proposal before the members as attached in Annexure- XI.
	Resolution: The Academic Council had considered the above and approved the same.
	b) IPR (Intellectual Property Rights)
	Discussion: In this context, the meeting convener Dean Academics Dr. Arpana Sharma had presented the proposal before the members as attached in Annexure- XI
	Resolution: The Academic Council had considered the above and approved the same.
	c) International Multidisciplinary journal METTAINNOVATE (IMJM)
	Discussion: In this context, the meeting convener Dean Academics Dr. Arpana Sharma had presented the proposal before the members as attached in Annexure- XII.
	Resolution: The Academic Council had considered the above and approved the same.
AGENDA No. 2.3	Consideration of the proposals of new courses:
	a) PGDGC (Post Graduate Diploma in Guidance and Counselling) in School of Arts & Humanity
	Discussion: In this context, the meeting convener Dean Academics Dr. Arpana Sharma had presented the proposal before the members as attached in Annexure- XIII.

	Resolution: After discussion on the seat intake, Fee structure and course credits ,the Academic Council had considered the above and approved the same.
	b) M.Sc. in Industrial Chemistry in School of Science
	Discussion: In this context, the meeting convener Dean Academics Dr. Arpana Sharma had presented the proposal before the members as attached in Annexure- XIV.
	Resolution: After discussion on the seat intake, fee structure and course credits , the Academic Council had considered the above and approved the same.
AGENDA NO. 2.4	Consideration of the proposal for establishment of Animal Ethical Committee (AEC) under (CPCSEA) committee for the purpose of control and supervision of experiments on Animals and procurement of HPTLC (High performance thin layer chromatography) and (HPLC) High performance liquid chromatography system for school of pharmacy
Discussion	In this context the Dean School of pharmacy had presented that Institutional animal ethical committee is crucial for the purpose of control and supervision of the experiments on animals. All research involving animals requires AEC approval before initiation. HPTLC and HPLC are one of the important laboratory equipment for the basic practical's in pharmacy, science biotechnology etc. the proposals had circulated before the members as attached in Annexure- XV for consideration.
Resolution	The Academic Council had considered the above and approved the same.
AGENDA No. 2.5	Consideration of the proposals for centres:
	a) Centre for excellence for Tribal Rights/Human Rights
	Discussion: In this context Assistant Registrar (Academics) had presented the proposal focusing on the objective of providing more focused approach on the integrated socio-economic development of the scheduled tribes (STs) of Jharkhand state, the proposals had circulated before the members as attached in Annexure- XVI for consideration.
	Resolution: The Academic Council had considered the above and approved the same.
	b) Centre for Indian Knowledge System
	Discussion: In this context Assistant Registrar (Academics) had presented the proposal focusing on the guidelines issued by the UGC. UGC mandates Indian Knowledge systems in higher education, UG & PG students are encouraged to undertake IKS credit courses constituting at

YBN UNIVERSITY ESTD-2017 RANCHI

	least 05% of their total required credits , the proposals had circulated before the members as attached in Annexure- XVII for consideration.
	Resolution: The Academic Council had considered the above and approved the same.
	c) Proposal for department of Tourism
	Discussion: In this context Assistant Registrar (Academics) had presented the proposal focusing on the demand for tourism and how the department will benefit the local area, especially Ulatu Jharkhand, by training tourism professionals, conducting research relevant to the and potentially attracting more tourist. the proposals had circulated before the members as attached in Annexure- XVIII for consideration.
	d) Centre for foreign language
	Discussion: In this context Assistant Registrar (Academics) had presented the proposal focusing on the objective to enhance the global employability of candidates by equipping them with in demand foreign language skill. The proposal had circulated before the members as attached in Annexure- XIX for consideration.
	Resolution: The Academic Council had considered the above and approved the same.
	e) Birsa Munda Chair
	Discussion: In this context the chairperson had suggested that Bhgwan Birsa Munda, the great freedom fighter of Jharkhand, the name of the chair will be a devote to him and intended to enhance support for improving the health of the tribal people in the adopted villages of the University. the proposals had circulated before the members as attached in Annexure- XX for consideration.
	Resolution: The Academic Council had considered the above and approved the same.

AGENDA NO. 2.6.	Establishment of Clubs:- Literary club, Movie and Photography club, Eco-club, Coffee Table, Adventure club, Dance club, Sports club
Discussion	The chairperson had focused on the objectives of the establishment of the above clubs for students to foster student engagement, develop skills and promote a positive learning environment. These clubs provide platforms to explore their interests, connect with peers, and develop valuable life skills, the proposals had circulated before the members as attached in Annexure- XVI for consideration.
Resolution	The Academic Council had considered the above and approved the same.

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AGENDA NO. 2.7.	Introduction of M.Sc. Nursing and Ph. D. Nursing program
Discussion	The chairperson had suggested to follow the guidelines of Nursing council and discussing with the management for taking any initiatives in this matter.
Resolution	The Academic Council had considered the above and approved the same
AGENDA NO. 2.8.	MoU with other academics and professional Institutions
Discussion	The chairperson had focused that primary objectives of these MoUs will be to facilitate practical training and clinical experience, enhancing the skills and preparing the students of Nursing, Pharmacy, Paramedical for work force. The proposals had circulated before the members as attached in Annexure- XXI for consideration.
Resolution	The Academic Council had considered the above and proposals will be initiated as per discussion.
AGENDA NO. 03	Any other Agenda by the permission of the Chair
Discussion	The convener of the meeting had presented the Casual Leave format for both the teaching and non-teaching staffs of the University. In this context the chairperson had suggested to follow the SoP of the leave rules as recommended to initiate at first by the Dept. Head-Dean-HR-Registrar and final approval will be given by the Hon'ble Vice-Chancellor. as attached in Annexure- XXII for consideration.
Resolution	The Academic Council had considered the above and approved the same.

The meeting ended with a Vote of Thanks to the Chair.

20/may/2025

Registrar

Member Secretary of the Academic Council

YBN University Ranchi

Registrar
YBN University
Ranchi

Satyadeo Poddar 20/5/2025

Chairperson

Academic Council

YBN University Ranchi

Vice-Chancellor
YBN University-Ranchi

YBN UNIVERSITY ESTD-2017 RANCHI

Date: 02/05/2025

23rd Academic Council Meeting (2nd May 2025) Agenda for Discussion

Sl.No.	Main Category Agenda	Sub-category Agenda
01		1.1. Confirmation of the minutes of 22nd Academic Council Meeting September -2024
		1.2. Action taken report on agendas of 22nd academic council meeting
	Reporting Items	1.3. Confirmation of the minutes of 1st research council meeting April 2025
		1.4. Confirmation of the courses offered with seat intake in Y.B.N. University for Academic year 2025-26
		1.5. Confirmation of the Academic Calendar for the Academic yr. 2025-26
		1.6. Confirmation of the minutes of Fee Fixation committee for the Academic yr. 2025-26.
		1.7. Confirmation of the minutes of various committees under students welfare
		1.8. Consideration of minutes of 1st Examination committee meeting 2025
		1.9.Confirmation of policy framework for retention and disposal of Examination records
		1.10. Confirmation of issuance of degrees to all eligible pass-out students up to 31st July 2025
		1.11. Confirmation of Students code of conduct for the Academic .yr. 2025-26
02	Items to be Considered	2.1. Consideration of proposals of Laboratory/Library Requirements from various Departments of the University
		2.2. Consideration of proposals : a) IIC (Incubational Innovation and Incubation Centre) b) IPR (Intellectual Property Right) Cell c)International Multidisciplinary Journal- METAINNOVATE (IMJM)
		2.3. Consideration of proposals of new courses: a) Post Graduate Diploma Program in Guidance and Counselling (PGDGC) in School of Arts & Humanity b) M.Sc. Industrial Chemistry in School of Science
		2.4. Consideration of the proposal for Establishment of Animal Ethical Committee (AEC) under (CPCSEA) Committee for the purpose of control and supervision of experiments on Animals) and procurement of HPTLC (High performance thin layer chromatography) and (HPLC) High performance Liquid chromatography system for school of pharmacy
		2.5. Consideration of proposals for: a) Centre for Excellence for Tribal Rights / Human Rights b) Centre for Indian Knowledge System c) Proposal for Department of Tourism d) Centre for Foreign Language e) Birsa Munda Chair
		2.6 Establishment of Clubs:-Literary Club, Movie & Photography, Eco-club, Coffee Table, Adventure Club, Dance Club, Sport club
		2.7.Introduction of M.Sc. Nursing and Ph.D. Program
		2.8. MoU with other nearby private hospitals
03	Any other agenda by the permission of the Chair	

Ashama

Dean Academics
University Ranchi

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As per Section 2(f) of UGC Act. 1956

Ref. No.: YBN/UNIV/R / 4300 /2025 Date: 30/April/2025

OFFICE OF THE REGISTRAR

NOTIFICATION

This is to notify that the re-scheduled 23rd meeting of Academic Council of Y.B.N. University-Ranchi is to be held as per following. All Members of the Academic Council are invited to make it convenient to attend the meeting. The agenda of the meeting will be placed during the meeting.

ACADEMIC COUNCIL SCHEDULE		
SN	CRITERIA	DETAILS
01	Date	02/05/2025
02	Time	02:15 PM
03	Venue	Board Room, Ground Floor, YBN University, Block- A

By the order of Hon'ble Vice-chancellor

30/04/2025

Prof. (Dr.) Shree Raman Dubey
Registrar
Y.B.N. University, Ranchi

Registrar
YBN University
Ranchi

Copy for information to:
Hon'ble Chancellor/Pro-Chancellor
Hon'ble Vice-Chancellor/Pro-Vice-Chancellor
The Dean- Academics/Students Welfare/Chief Librarian
The CF&AO/Director-HR/IQAC/NAAC/NEP
The Deans/Principals/Directors/Section Heads/TPO
All the Constituent Units-Schools/Colleges/Depts
Sections- Admission/Examination/Research/Incubation
All the Members of the Academic Council
Registrar Office/CoE/Notice Board
Mr. Prem Prakash for Website Upload

Campus: YBN University, Rajaulatu, Power Grid Road, Namkum, Ranchi-834010(Jharkhand)
Ph : 9431104112 , 9709500400
Email:ybnuniversity2017@gmail.com|Website : www.ybnu.ac.in

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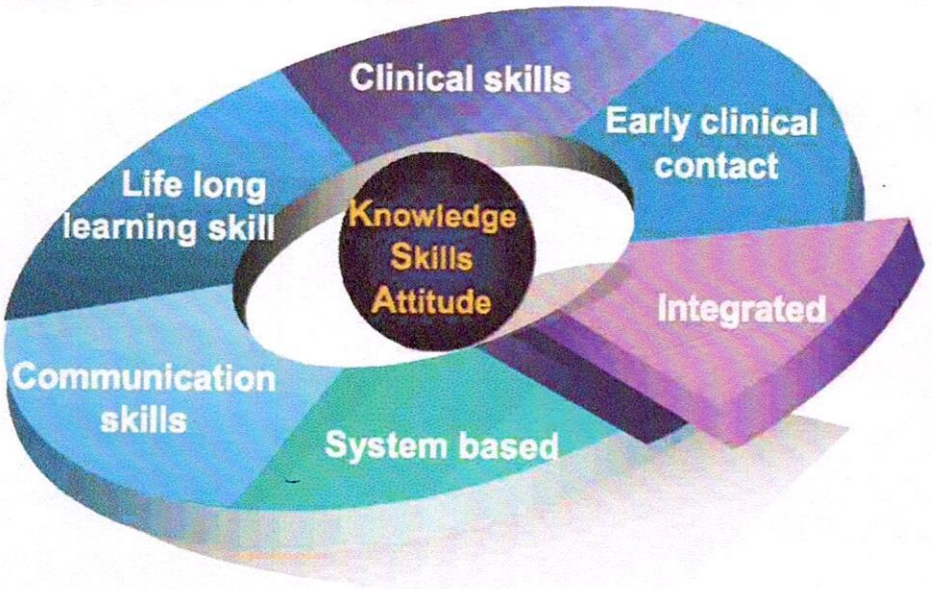
STANDARD OPERATING PROCEDURE (SOP)

FOR

CURRICULUM DESIGN, DEVELOPMENT

AND

IMPLEMENTATION



Campus: YBN University, Rajaulatu, Power Grid Road, Namkum, Ranchi-834010(Jharkhand)
Ph : 9431104112 , 9709500400
Email:ybnuniversity2017@gmail.com|Website : www.ybnu.ac.in

YBN University Ranchi Jharkhand has played a very vital role in structuring the educational future of many students. Therefore, with the objective to offer high quality programs with outstanding curricula and to ensure a rich and vibrant teaching – learning environment that enables students to take degree as competent and confident professionals the SOP for curriculum has decided to introduce the **Standard Operating Procedure for Curriculum Design, Development and Implementation for all Schools/ Colleges and Constituent Units.** It will ensure continuous quality improvement of curricular processes with focus on attainment of learning outcomes at the Programs as well as Course level.

GOAL AND PURPOSE

- This SOP shall ensure inclusive, uniform and standardised processes across all Schools/ Colleges and Constituent Units of YBNU with regard to Curriculum Design, Development and Implementation.

- Curricular input processes must include all relevant stakeholders and follow a systematic and dynamic approach in accordance with local, regional, national and global health needs (in alignment with Regulatory requirements).

- Curriculum implementation must include best practices for teaching-learning & continuous assessment.

- Uniformity and standardised processes are key to enable successful curricular alignment and hence achievement of defined Programme and Course Outcomes.

- Outcome analysis of student performance and attainment must be regularly carried out for all programmes and courses be used for curricular improvement. Curriculum revision must include content and process analysis that is need-based, relevant innovative and dynamics.

OBJECTIVES

- To define a standard procedure for curriculum design, development and to implementation for monitoring curriculum teaching-learning-assessment in a uniform manner while make improvements/revisions as necessary, including faculty development to ensure teacher quality

- Although all constituent units follow the directives of respective regulatory councils, this SOP will help to ensure that in all constituent units, curriculum processes are uniformly implemented and monitored in a student-centred manner, towards attainment of Programme Outcomes and Course Outcomes.

CURRENT BEST PRACTICES

- The Outcome-Based Education Approach has been adopted, with outcomes defined as Programme Outcomes (POs), and Course Outcomes (COs) for all Programmes and Courses offered by the University which are implemented through a systematic and dynamic approach.

- Course content, mapped to the POs and COs for all programs and courses along with the learning outcome competencies for cognitive, psychomotor as well as affective domains, written and aligned with teaching-learning and assessment methods

- Curriculum implementation has a student-centred focus and is well informed by global practices in health professional education.

- Faculty development in newer methods of teaching-learning, development of e-content and newer assessment methods is designed for successful curricular implementation which is planned and conducted regularly.

- Both curricular implementation & monitoring are well documented and periodically analysed to derive inputs for continuous improvement of curriculum, its implementation and outcome attainment.

METHODOLOGY FOR IMPLEMENTATION OF SOP

THE SOP CONSISTS OF THE FOLLOWING FOUR COMPONENTS

A. CURRICULUM PLANNING

B. CURRICULAR IMPLEMENTATION (TEACHING – LEARNING SOP)

C. OUTCOME ATTAINMENT (OUTCOME ANALYSIS)

D. CURRICULAR REVISION

A. CURRICULUM PLANNING

- Curriculum Planning shall be initiated at the School/Departmental Level

- For new programs as well as existing programs, the HOD with inputs from faculty, alumni, external subject experts shall prepare the curriculum focusing on and justifying relevance of curricular content to
  - local, regional, national and global needs
  - student aspirations and career goals

- Course content shall be mapped to the POs and COs for all programs and courses and the learning outcome competencies (LOCs) for cognitive, psychomotor as well as affective domains, written and aligned with teaching-learning and assessment methods:

  - Curricular implementation strategies should include multiple methods, aligned to Learning Outcome Competencies (LOCs) and that are student centric, participatory, actively engaging the learners, promoting problem solving and critical thinking, enabling experiential learning and development of skills, values and ethics.

  - Integrated (intra- and trans-disciplinary) learning with special reference to cross-cutting issues, communication skills, environment and sustainability, health determinants using horizontal and vertical integration, problem-based learning, team-based learning, etc.

- The above shall be submitted to the concerned Board of Studies through the Curriculum Committee and Dean/Principal.

- The Board of Studies shall review the same and modify/accept the changes, after thorough discussion, deliberation. The Board shall recommend the same to the concerned Faculty and Academic Council.

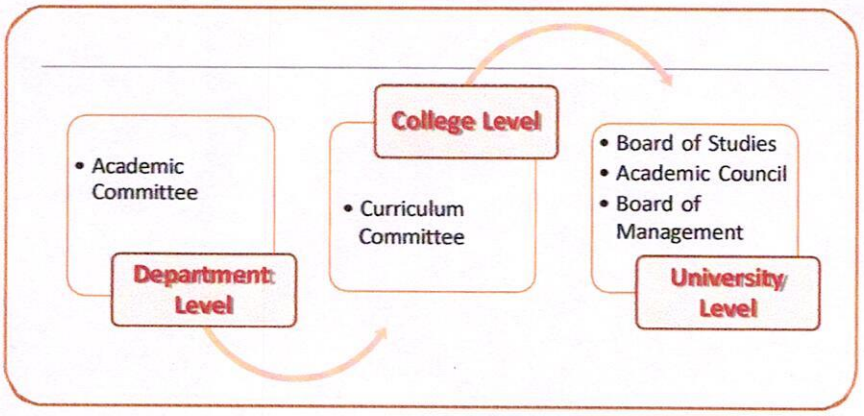
- Modification if any of Program Outcomes (PO's) and Course Outcomes (CO's) for Programmes / Courses, shall include:
  - Curricular enrichment
  - Innovations
  - Holistic student development and
  - Continuous progression of learning
  - Newer assessment methods

- The concerned Faculties and Academic Council shall examine the curriculum proposals of the various Boards of Studies and Faculties and approve with suggested changes or refer back the curriculum to BOS with suggestions for modification

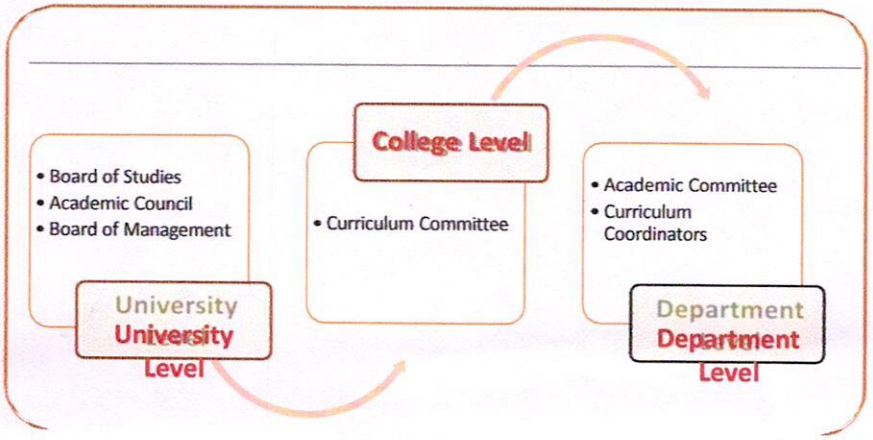
- The Board of Management shall examine the curriculum proposed by the Academic Council and approve with suggested changes or refer back the curriculum to Academic Council for modification

- The curricula / curricular changes approved by the University shall be communicated to the concerned Constituent Unit for implementation.

CURRICULUM PLANNING - INPUT



CURRICULUM PLANNING – OUTPUT



B. CURRICULAR IMPLEMENTATION

- The institutional curriculum committee shall develop the Curricular Implementation Plan and Schedule (Including content mapping, innovative T-L and Assessment Methods and new topics) for implementation by the Departments

CURRICULAR IMPLEMENTATION AT THE DEPARTMENT LEVEL SHALL INCLUDE:

- Course-wise Curriculum Content mapping to POs and COs
- Topic / Unit-wise - Specific Learning Objectives (SLO's) by Department including all three domains – cognitive, psychomotor and affective
- Resources uploading by Faculty of respective colleges and departments to DPU-LMS-ERP system for students
- Development of lesson plans for all assigned teaching sessions.
- Student Feedback and a Continuous Assessment Plan followed by all Departments
- Support to students with special reference to advanced learners and slow performers

- Necessary infrastructure, resource materials and facilities shall be provided to all departments as per Regulatory norms and as per specific requirements of the course
- Teaching-Learning and Assessment following contemporary educational approaches
- Process manual for documentation of all teaching-learning, formative and continuous assessment processes shall be developed and followed by every department for every course and program
- Responsibility of the Department to conduct Outcome Analysis and prepare a report for each academic year.
- Regular training of all faculty so that they are updated to ensure quality of implementation

GUIDING FRAMEWORK FOR TEACHING-LEARNING-ASSESSMENT

To ensure that every student at YBNU receives best teaching-learning experiences and support, to reach their fullest potential and the desired proficiency benchmark for attainment of expected course and programme outcomes SPICES Model shall be used.

SPICES MODEL is a well-known for implementation of teaching-learning in outcome- based education that has been globally accepted in health professional education. It can also be applied to other professional education programs.

It provides framework to shift the teaching-learning to a more active, analytical and participatory approach which is more student centred, as opposed to traditional method which is teacher-centric with lesser opportunity for active participation for students.

Fig.1. The SPICES Model of Educational Strategies [1,2]

S– Student Centred	**Teacher Centred**
P - Problem based	**Didactic**
I - Integrated	**Discipline-based**
C - Community Oriented	**Hospital-based**
E – Electives	**Compulsory / Standard Program**
S – Systematic.	**Apprenticeship Based/Opportunistic**

1. Harden RM, Sowden S, Dunn WR. Educational strategies in curriculum development: the SPICES model. Med Educ 1984; 18: 284-297.
2. Quirk M.E., Harden R. M. (2017). Curriculum planning and development. In Dent, J., Harden, R. M., & Hunt, D. (Eds.). A practical guide for medical teachers. (pp. 7) Elsevier Health Sciences.

RESPONSIBILITIES

The Dean/Principal is responsible for ensuring effective implementation of the SOP at their respective Schools/Colleges.

IMPLEMENTATION OF STUDENT-CENTRED TEACHING - LEARNING

1. The plan for implementation of T-L for all Programs will be finalised by the respective Schools/Colleges taking into consideration the respective Council norms and feedback analysis from various stakeholders well before commencement of the academic term. The same will be submitted to the BOS for inputs followed by Academic Council and Board of Management for approval

2. The final plan as approved by Academic Council and Board of Management will be communicated to the Dean/Principal for implementation

3. The academic calendar will be prepared by the University taking inputs from the for scheduling the T-L activities and continuous assessment dates.

4. The College Council/Dean will direct its implementation and assign responsibility to academic co-ordinators.

5. Every HOD will ensure the implementation at the Departmental level

6. Feedback will be taken from students regarding the T-L Process as per Feedback SOP which will be informed to the HODs for making necessary changes/ addressing the concerns of the students.

7. The HODs shall be responsible to ensure training of faculty in education technology and assign teaching responsibility according to the capability and content expertise of the teachers.

8. The HODs will conduct regular meetings with departmental faculty to gather curricular inputs, obtain feedback and address their concerns.

9. The HODs will schedule and monitor the continuous internal assessment process

10. The HODs will assign responsibility to the teachers to support advanced learners and slow performers

11. The faculty members will be nominated / granted permission for attending training / workshops in newer methods of T-L and assessment both within the institution and outside including workshops, seminars and conferences

12. Particular emphasis will be laid on innovative methods to enable the faculty to shift from teacher-centred to student centred methodologies – interactive lectures, use of smart boards, effective group discussions, community and industrial visits, to enable students to critically analyse information and its practical application.

13. Experiential learning, patient-centric learning, evidence-based learning, integrated and interdisciplinary learning and participatory approach will be adopted during the faculty development workshops and implemented.

14. Faculty will be encouraged to learn educational research methodology and undertake education innovation and research projects

15. The NAAC Core Values will be emphasised for being taught as part of all T-L processes i.e.

- Contributing to National Development
- Fostering Global Competencies among Students
- Inculcating a Value System among Students
- Promoting the Use of Technology
- Quest for Excellence

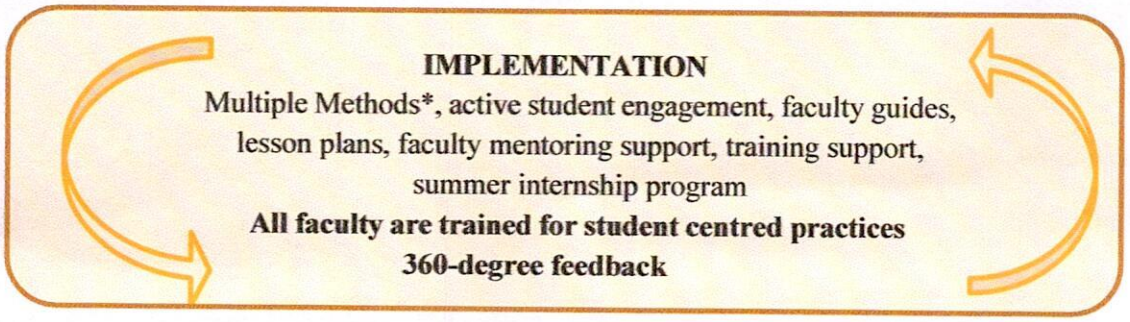
16. Student and faculty feedback will be taken to assess the effectiveness of implementation, including newer methods.

17. Teaching effectiveness will be reflected in students' continuous internal assessment performance and class attendance.

18. The Dean/Principal will discuss progress and address difficulties faced during implementation through periodic meetings

19. Departments and University administration will maintain records strictly, which must be up to date at all times

20. Every School /College will give a yearly report of its teaching-learning methodologies and innovations to UCPE & FD.



***MULTIPLE METHODS**

- Experiential Learning
- Integrated / Interdisciplinary Learning
- Participatory Learning
- Problem Solving Methodologies
- Self-Directed Learning
- Patient Centric and Evidence Based Learning
- The Humanities
- Project Based Learning
- Role Play

C. OUTCOME ANALYSIS

1. The Outcome Analysis reflects the extent to which the Program Outcomes (PO's) and Course Outcomes (CO's) are attained and whether the attainment levels are of the desired standards.

2. Outcome Attainment for each batch of students is reflected in:
   A. Programme Outcomes - Percentage of students passing the University Annual / Semester exam for each Program

B. Course Outcomes - For every Course in a Program - Course-wise Pass Percentage in University Exam

C. Attainment Level (Level 1, Level 2 and Level 3) *which is determined for all Programmes and Courses

3. The Performance Levels provide valuable information to guide the Faculty, Department, Institution and University regarding areas in which students are demonstrating outstanding performance, optimum performance as well as areas for improvement and remediation

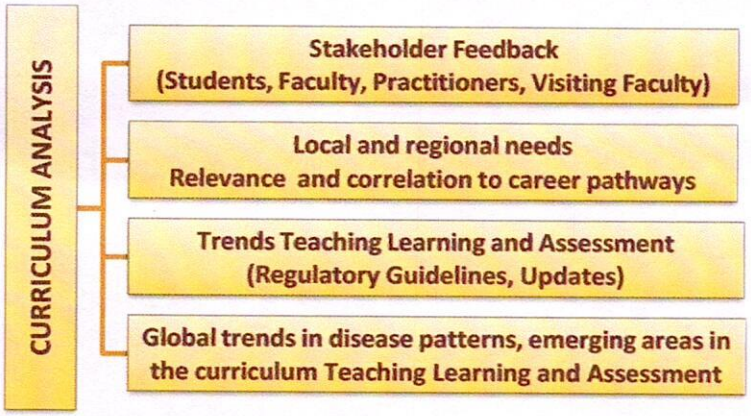
The following levels will be used to define the performance of the students

*Level 0 - <50%/40%	Fail - Not meeting minimum level - Needs remediation
Level 1 - 40/50 - <60	Minimum Level of attainment – Needs improvement
Level 2 - 60 - <70	Above Minimum Level of attainment - Can do better
Level 3 - 70% and above	Attained desired level of performance

*** As per regulatory norms**

The findings of outcome analysis will be used to enhance curricular output and make improvements in attainment level of the students

D. CURRICULUM ANALYSIS FOR REVIEW AND REVISION



THE CURRICULUM ANALYSIS FOR EACH PROGRAM AND COURSE SHALL INCLUDE

1. Need-based identification of changes.
2. Review of national trends (regulatory guidelines, updates, guidelines) in disease patterns, Teaching Learning and Assessment / Evaluation Methods.
3. Review of global trends in disease patterns, emerging areas in the curriculum Teaching Learning and Assessment / Evaluation Methods.
4. Review of Local and regional needs and relevance and correlation to available and possible career pathways.
5. Review of stakeholder feedback (Students, Faculty, Practitioners and Visiting faculty experts).
6. Outcome Analysis Data for concerned Academic Year.

The cycle of curricular analysis, planning, implementation, and outcome analysis will be followed throughout the academic year.

Y B N UNIVERSITY
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As per Section 2(f) of UGC Act. 1956

Salient Features of the Curriculum

1. Multidisciplinary and Interdisciplinary Approach
2. Outcome-Based Education (OBE) and Competency-Based Learning
3. Alignment with Regulatory Bodies and Standards
4. Flexible Credit System and Choice-Based Credit System (CBCS)
5. Integration of Technology and Digital Learning
6. Research, Innovation, and Project-Based Learning
7. Emphasis on Ethics, Professionalism, and Holistic Development
8. Community Engagement and Extension Activities
9. Skill-Based and Experiential Learning
10. Focus on National and Global Employability
11. Continuous Evaluation and Quality Assurance Mechanisms
12. Value Education, Indian Knowledge Systems (IKS), and Environmental Sustainability

Explanation of Each Feature

1. Multidisciplinary and Interdisciplinary Approach

- The curriculum allows students to explore courses beyond their core domains.
- A B.Pharm student may choose an elective in humanities or public health; a B.Sc. student may take a bioethics or communication course.
- This approach promotes critical thinking, collaboration, and a holistic understanding of real-world issues.

2. Outcome-Based Education (OBE) and Competency-Based Learning

- Each course and program are designed with Program Educational Objectives (PEOs) and Program Outcomes (POs).
- Competency-based learning is vital for health sciences, ensuring that graduates acquire clinical, analytical, and ethical competencies.

- Ensures that a nursing graduate, for example, is not only knowledgeable but also clinically competent and patient-centered.

3. Alignment with Regulatory Bodies and Standards

- Curriculum aligns with:
  - Pharmacy Council of India (PCI)
  - Indian Nursing Council (INC)
  - Central Council of Homeopathy (CCH)
  - UGC guidelines for Arts, Science, and Humanities
  - National Education Policy (NEP) 2020
- Regular updates are incorporated based on guidelines and advancements in respective fields.

4. Flexible Credit System and Choice-Based Credit System (CBCS)

- Offers students flexibility in choosing core, elective, interdisciplinary, and value-added courses.
- Encourages student mobility and customization of learning as per individual interests and career goals.
- Example: A physiotherapy student might choose electives in sports nutrition or psychological counseling.

5. Integration of Technology and Digital Learning

- Use of Learning Management Systems (LMS), virtual labs, telemedicine modules, and simulations.
- Encourages blended and hybrid modes of delivery, as recommended by NEP 2020.

- Promotes digital literacy and access to global knowledge resources.

6. Research, Innovation, and Project-Based Learning

- Encourages students to undertake mini-research projects, dissertations, or innovative prototypes.
- Integration of scientific temper and evidence-based practice across disciplines.
- Pharmacy, Science, and Homeopathy students can collaborate on herbal drug development, while nursing and paramedical students can work on clinical audit projects.

7. Emphasis on Ethics, Professionalism, and Holistic Development

- Courses include training in bioethics, communication skills, legal responsibilities, and interpersonal relationships.
- Soft skills, personality development, and emotional intelligence are emphasized.
- Reflects the humanistic aspect of healthcare and humanities education.

8. Community Engagement and Extension Activities

- Curricula are aligned with social accountability—students participate in rural health camps, awareness drives, and community surveys.
- Promotes learning through service and enhances understanding of local health and social challenges.

9. Skill-Based and Experiential Learning

- Emphasis on laboratory sessions, clinical postings, hospital internships, field visits, and practical demonstrations.
- Use of skill labs, OSCE/OSPE evaluations, and real-life simulations.
- Promotes hands-on learning and work-readiness in all professional programs.

10. Focus on National and Global Employability

- Incorporates modules on entrepreneurship, start-up incubation, job-readiness training, and foreign language skills.
- Students are trained for national licensing exams (like GPAT, NCLEX) and international placements.
- Career counseling and placement cells are integrated into the curriculum structure.

11. Continuous Evaluation and Quality Assurance Mechanisms

- Assessments are carried out via:
    - Continuous Internal Evaluation (CIE)
    - Formative and summative assessments
    - Rubrics for practical and project evaluations
- Institutional mechanisms like IQAC ensure academic audits, feedback systems, and curriculum benchmarking.

12. Value Education, Indian Knowledge Systems (IKS), and Environmental Sustainability

- Introduction of value-added courses on Indian ethics, cultural heritage, and yoga.
- Environmental studies, climate change awareness, and green pharmacy/science practices.

- Supports development of ethically responsible and environmentally conscious graduates.

Conclusion

The curriculum of a university offering such a wide spectrum of courses must be holistic, integrated, student-friendly, and professionally relevant. It should foster innovation, interdisciplinary collaboration, and lifelong learning, while staying culturally rooted and globally competent. By embedding both academic excellence and societal responsibility, such a curriculum can shape well-rounded, ethical professionals ready to contribute to national development and global health.

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List of Courses relevant to Social

SCHOOL OF PHARMACY

Program Name	Course Code	Course Name
B. Pharm	BP703T	Pharmacy Practice
	BP706PS	Practice School
	BP802T	Social & Preventive Pharmacy

SCHOOL OF NURSING

Program Name	Course Code	Course Name
B.Sc (Nursing)	**Soci-115**	Applied Sociology
	N-COMH(I) 310	Community Health Nursing-I
	N-COMH(II) 401	Community Health Nursing-II

YBN COLLEGE FOR TEACHER EDUCATION

Program Name	Course Code	Course Name
B.Ed	Course 1	Childhood and Growing Up
	Course 2	Contemporary India and Education
	Course 3	Learning and Teaching
		Contemporary India and Education
	Course 8	Knowledge and Curriculum
	Course 9	Assessment of Learning

SCHOOL OF PARAMEDICAL

Program Name	Course Code	Course Name
B. Optometry	YBOPTM101	General Anatomy
	YBOPTM102	General Physiology
	YBOPTM205	Microbiology and Pathology
	YBOPTM303	Basic and Ocular Pharmacology
	YBOPTM401	Ocular disease (anterior segment disease)

	YBOPTM 404	Optometric Investigation
	YBOPTM 405	Medical Psychology
	YBOPTM 501	Low Vision Aids & Visual Rehabilitation
	YBOPTM 503	Ocular Disease II (Posterior & Neuro eye Disease)
	YBOPTM 504	Public Health & Community Optometry
	YBOPTM 603	Professional Practice Management
	YBOPTM 604	Systemic disease
BMLT	YBMLT101	Human Anatomy-I
	YBMLT102	Human Physiology-I
	YBMLT105	Health Education & Health Communication
	YBMLT201	Human Anatomy-II
	YBMLT202	Human Physiology-II
	YBMLT204	Biomedical Waste Management
	YBMLT301	Pathology
	YBMLT303	Microbiology
	YBMLT503	Parasitology & virology
MMLT	YMMLT- 102	Immunohaematology & Blood Banking Techniques-I
	YMMLT- 103	Principles of Immunology
	YMMLT- 202	Immunohaematology & Blood Banking Techniques-II
	YMMLT- 303	General Pathology
BMRIT	YBMRIT101	Introduction to National Healthcare System
	YBMR IT 103	Introduction to Quality and patient safety
	YBMR IT 104	Human Anatomy and Physiology Part 1
	YBMR IT 301	Human Anatomy and Physiology including Pathology Part-2
	YBMR IT 302	Clinical Radiography-Positioning Part 1
	YBMR IT 403	Newer Modalities Imaging Techniques including patient Care
	YBMR IT 404	Quality Control in Radiology and Radiation Safety
	YBMR IT 601	Quality Assurance & Radiation Safety (AERB Guidelines) in Diagnostic Radiology Part 2
	YBMR IT 603	Hospital Practice & Care of Patients
BOT	YBOT101	Human Anatomy Part I

	YBOT102	Human Physiology Part I
	YBOT103	General Biochemistry &Nutrition
	YBOT104	Introduction to National HealthCare System
	YBOT 201	Human Anatomy Part II
	YBOT 202	Human Physiology Part II
	YBOT 203	General Microbiology
	YBOT 204	Basic Pathology & Hematology
	YBOT 205	Introduction to Quality and Patient safety
	YBOT 301	Introduction To Operation Theatre Technology (OT)
	YBOT 302	Introduction To Anesthesia Technology (AT)
	YBOT 401	Basic Techniques of Anesthesia
	YBOT 402	Medical diseases influencing choice of Anesthesia
	YBOT 501	Basics of surgical procedures
	YBOT 502	CSSD procedures
	YBOT 601	Basic Intensive care
	YBOT 602	Specialized Surgery and Anesthesia anesthesia
MPH	MPH 101	Concept of Public Health & Basic Epidemiology
	MPH 102	Introduction to Demography & Basic Biostatistics
	MPH 103	Introduction to Health System, Policy and Programs
	MPH 104	Introduction to Health Economics
	MPH 201	Health Management: Principles and Practices
	MPH 202	Reproductive, Maternal Health, Child Health and Adolescent Health
	MPH 203	Communicable and Non-Communicable Diseases & Nutrition
	MPH 301	Environment and Occupational Health and Public Health Laws
	MPH 303	Medical Sociology & Effective Communication in Health Care
	MPH403	Disaster Management and Mitigation Resources
	MPH404	Human Rights

SCHOOL OF PHYSIOTHERAPY

Program Name	Course Code	Course Name
BPT	YBPT101	Anatomy –I
	YBPT102	Physiology –I
	YBPT104	Sociology
	YBPT301	Pathology
	YBPT302	Introduction to Pharmacology
	YBPT303	Introduction to General Medicine
	YBPT304	Microbiology
	YBPT305	Psychology
	YBPT401	General Medicine
	YBPT502	General Surgery including Gynaecology & Obstetrics
	YBPT504	Psychiatry
	YBPT602	General Surgery including Eye & ENT
	YBPT701	Physical assessment &manipulative skill
	YBPT702	Physiotherapy in Neurological Conditions-I
	YBPT704	PT in cardiothoracic
MPT in Cardiology	YMMPT101	Basic Health Sciences
	YMMPT104	Exercise Testing & Prescrimption
	YMMPT201	Medical & Surgical Condition (C,)
MPT in Musculoskeletal	YMMPT101	Basic Health Sciences
	YMMPT104	Exercise Testing & Prescrimption
	YMMPT201	Medical & Surgical Condition (M,N,C,S)

SCHOOL OF LEGAL STUDIES

Programme Name	Course Code	Name of the Course
LLB	LLB101	Jurisprudence
	LLB102	Constitutional Law- I
	LLB201	Law of Crime (Indian Penal Code)
	LLB202	Constitutional Law- ii
	LLB204	Women and Criminal Law (Optional Paper)
	LLB404	Humanitarian & Refugee Law (Optional Paper)

	LLB604	Land Tenure (Optional Paper)
	LLB504	Intellectual Property Rights Law and I.P.R. Litigation (Optional Paper)
	LLB505	Drafting, Pleading and Conveyance (Clinical Paper)
BBA LLB	BBALLB503	Jurisprudence
	BBALLB403	Constitutional Law- I
	BBALLB603	Law of Crime (Indian Penal Code)
	BBALLB504	Constitutional Law- ii
	BBALLB404	Women and Criminal Law (Optional Paper)
	BBALLB804	Humanitarian & Refugee Law (Optional Paper)
	BBALLB1004	Land Tenure (Optional Paper)
	BBALLB904	Intellectual Property Rights Law and I.P.R. Litigation (Optional Paper)
	BBALLB905	Drafting, Pleading and Conveyance (Clinical Paper)

SCHOOL OF COMMERCE & MANAGEMENT

Name of the Programme	Course Code	Course Name
BBA	1Y4CC-2	UNDERSTANDING INDIA
	2Y4MKGTMJ-2	SERVICES MARKETING
MBA (PG)	1Y2MBA 203	Marketing Management
	1Y2MBA342	Basic Concept of Health
	1Y2MBA344	Hospital Support Services
	1Y2MBA405	Services Marketing
	1Y2MBA445	OT & Ward Management
	1Y2MBA449	Rural Development and Theories and Approaches
B.COM	1Y4CC-2	UNDERSTANDING INDIA
	IRC 2	PRINCIPLES OF MARKETING
	RC-1	Research Methodology

SCHOOL OF ENGINEERING & TECHNOLOGY

Name of the Programme	Course Code	Course Name
B. Tech (Mech.)	YBE202	Energy, Environment, Ecology & Society
B. Tech (EE)	YBE103	Communication Skills
	YBEE303	Electrical Instrumentation

	YBEE505	Principles of Management & Managerial Economics
B. Tech (Civil)	YBE202	Energy, Environment, Ecology & Society
	YBCE302	Transportation, Bridges and Tunnels
	YBCE501	Transportation Engineering
	YBCE603	Environmental Engineering I
	YBCE703	Environmental Engineering II

SCHOOL OF SCIENCE

Name of the Programme	Course Code	Name of the Course
B.Sc. (H) Physics	1Y3PHY101	Communications English - I/Environment al Science-I
	1Y3PHY201	English Communications- II/Environmental Science-II
	3Y4EVS CC-7	Environmental Studies/EVS
M.Sc.(H) Physics	1Y2PHY101	Environmental Studies
B.Sc (H) Bio-Tech	1Y3BT104	Biotechnology and Human Welfare
	1Y3BT203	Environmental Science
	1Y3BT301	Genetics
	1Y3BT306	Bioethics and Bio-safety
	1Y3BT406	Developmental Biology
	1Y4CC-2	Understanding India
	3Y4CC-9	Community Engagement & Service (NSS/NCC/Adult education)
	VS-2	Mushroom Cultivation
	6Y4BTMN-3	Agricultural Biotechnology
	6Y4BS-3	Indian Banking System (6Y4BS-3
B. Sc (H)Zoology	1Y4CC-1	Language and Communication Skills (Modern Indian Language including TRL)
	1Y3ZOO101	English Communications-I/Environmental Science-I

	1Y3ZOO201	English Communications-II/Environmental Science-II
	1Y3 ZOO405	Environment and Public Health
	1Y3 ZOO504	Animal Behaviour and Chronobiology
	1Y3 ZOO602	Evolutionary Biology
M. Sc Zoology	1Y2ZOO103	Methods in Biology
	1Y2ZOO 201	Cellular Organization and fundamental processes
	1Y2ZOO 203	System physiology
	1Y2ZOO302	Biochemistry and Immunology
	1Y2ZOO303	Fish and Fisheries
B.Sc. Maths.	1Y4CC-2	Understanding India.
	2Y4CC-9	Community Engagement & Service (NSS/NCC/Adult education)

SCHOOL OF ARTS & HUMANITIES

Name of the Programme	Course Code	Course Name
B.A (H) Political Science	1Y4CC	Health& Wellness, Yoga Education, Sports and Fitness.
	1Y4POLMJ-1	An Introduction Of Political Theory
M.A (H) Political Science	1Y2POL(C9)	Political Sociology.
	1Y2POL(EC3)-B	Contemporary Political Issues.
B.A (H) Home Science	IRC-I	Health Care, Dietetics, Maternal and Child Nutrition
	MJ1	Basics Of Food Science And Nutrition
	MN-I	Introductory Home Science
	MJ-8	Family Finance and Consumer Behavior.
	AMJ-2	Interpersonal Relationships and Family Dynamics.
M.A (H) Home Science	C2	Food Science And Public Nutrition.
B.A (H) Hindi	1Y4CC	Health & Wellness, Yoga Education, Sports and Fitness.
	1Y4HINMJ-1	हिंदी साहित्य का इतिहास (आदिकाल एवं पूर्वमध्यकाल)
M.A (H) Hindi	1Y2**HIN**(C9)	हिंदी कथा साहित्य
	1Y2**HIN**(EC3)-B	हिंदी साहित्य अन्य विधाएं
B.A (H) Library Science	BLIS-101	Foundation of Library and Information Sciences
	BLIS-202	Information Sources, Systems and Services
M.A (H) Library Science	MLIS-102	Marketing of Library and Information Products and Services

	MLIS-202	Information Literacy Applications in LIS
B.A (H) English	5Y4ENGMN-2	English Prose
	6Y4ENGMN-3	English Drama
B.A (H) Psychology	3Y4PSYMJ-3	Foundation of Social Psychology
M.A. (H) Psychology	1Y2PSYEC401A	Applied Social Psychology
B.A. (H) History	1Y4CC- 3	Health& Wellness, Yoga Education, Sports and Fitness
	3Y4CC-9	Community Engagement & Service
M.A. (H) History	1Y2HIS(C10)	Political Thought
B.A. (H) Philosophy	4Y4PHIMJ-5	Social and Political Philosophy
B.A. (H) Economics	MJ-11	Programmes and Polices of Indian Economics
	MJ-14	Demography

SCHOOL OF AGRICULTURAL SCIENCE

Program Name	Course Code	Course Name
B.Sc Agriculture (Hons.)	1Y4AGR106	Rural Sociology and Educational Psychology
	1Y4AGR206	Fundamentals of Agricultural Extension Education
	1Y4AGR410	Human Values and Ethics
	1Y4AGR420A	Agribusiness Management
	1Y4AGR506	Entrepreneurship Development and Business Communication
M.Sc. (Ag.) Agronomy	1Y2AGRON 511	Cropping System and Sustainable Agriculture
	1Y2AGRON 512	Dryland Farming and Watershed Management
	1Y2AGRON 513	Principles and Practices of Organic Farming
	1Y2AGRON 505	Conservation Agriculture
	1Y2AGRON 510	Agrostology and Agro-Forestry
	1Y2AGRON 508	Agronomy of Medicinal, Aromatic & Underutilized Crops
	1Y2AGRON 509	Agronomy of Fodder and Forage Crops

School of Engineering & Technology
Department of Mechanical Engineering

Program Outcomes(POs)

Program Outcomes

PO1: Engineering Knowledge

PO2: Problem Analysis

PO3: Development of Solutions

PO4: Investigation of Complex Problems

POS: Modern Tool Usage

PO6: The Engineer and Society.

PO7: Environment and Sustainability

PO8: Ethics

PO9: Individual and Team work

PO10: Communication.

PO11: Project Management and Finance

PO12: Life-long learningProgramme Specific Objectives

PSO 1. Ability to pursue careers in industry/ research and development, teaching and allied areas related to Mechanical Engineering.

PSO 2. outline the specific skills and knowledge a graduate should possess beyond basic engineering principles, focusing on areas like design, analysis, and manufacturing

Course Outcomes (COs):

Semester I

YBE101-Engineering Chemistry

After studying this course, students will be able to

CO1.develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
CO2.Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution.
CO3. Design economically and new methods of synthesis nano materials.
CO4.Apply their knowledge for protection of different metals from corrosion .
CO5.Have the knowledge of converting solar energy into most needy electrical energy efficiently and economically to reduce the environmental pollution.

YBE102-Engineering Mathematics -I

CO1:Apply the concept of Laplace transform to solve the real integrals in engineering problems. (Blooms Level L1, L2)

CO2:Apply the concept of inverse Laplace transform of various functions in engineering problems. (Blooms Level L1, L2)

CO3:Expand the periodic function by using Fourier series for real life problems and complex engineering problems. (Blooms Level L1, L2, L3)

CO4:Find orthogonal trajectories and analytic function by using basic concepts of complex variable theory. (Blooms Level L1, L2, L3)

CO5:Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning and AI. (Blooms Level: L2, L3)

CO6:Illustrate understanding of the concepts of probability and expectation for getting the spread of the data and distribution of probabilities. (Blooms Level L1, L2)

YBE103-Communication Skills

CO1. Develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively with others.

CO2. Understand and practice different techniques of communication.

CO3. Practice and adhere to the 7Cs of Communication.

CO4. Familiarize with different types of Communication.

CO5. Understand and practice Interview Etiquettes.

YBE104-Basic Electricals & Electronics Engg.

CO1:Understand and analyze basic electric and magnetic circuits.

CO2:Study the working principles of electrical machines and power converters.

CO3:Introduce the components of low voltage electrical installations.

CO4:Understand the general structure of electrical power system.

CO5:Understand the construction and operation of single-phase transformer.

CO6:Explain the working principle of power converters.

YBE105-Engineering Graphics

CO1:Understand the applications of hand tools and machine tools.

CO2:Comprehend the safety measures required to be taken while using the tools.

CO3:Select the appropriate tools required to manufacture an object of predetermined shape and size considering least wastage and cost.

CO4:Fabricate components with their own hands.

CO5:Confident on practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.

CO6:Produce small devices of their interest by assembling different components.

Semester-II

YBE201-Engineering Physics

CO1:Apply basic concepts of mechanics

CO2:Discuss Physical optics and analyze principles of lasers with applications

CO3:Categorize di electric and magnetic properties of materials leading to Electromagnetic laws

CO4:Differentiate between Classical Physics and Quantum Physics by introducing Planck's law

CO5:Apply wave particle duality in real life problems followed by simple quantum mechanics calculations

CO6:Classify ensembles and differentiate between classical and Quantum statistical mechanics

YBE202-Energy, Environment, Ecology & Society

CO1: Explain classifications of energy sources, energy consumption and environmental impacts due to energy use

CO2: Use of energy conversion principles in renewable energy systems for supplementing human energy need

CO3: Analyse energy consumption pattern for energy conservation opportunities.

YBE203- Basic Mechanical Engg.

CO1:Demonstrate the principles of thermal engineering in power producing fields.
CO2:Explain the working of various power transmission devices.
CO3:Understand the basic components of robots, differentiate types of robots and robot grippers.
CO4:Working of various instruments used for measuring temperature and pressure.
CO5:Working of various instruments used for measuring for flow, speed, stress, strain.

YBE204-Basic Civil Engg. &Engg. Mechanics

CO1:Distinguish the centroids of composite plane figure and curves.
CO2:Apply the Principles of Dynamics.
CO3:Differentiate Momentum and impulse.
CO4:Differentiate Momentum and impulse.
CO5:Explain Brick as a construction material and its importance, qualities of a good brick.
CO6:Categorize planning and design aspects of transportation engineering, different modes of transport

YBE205-Basic Computer Engg.

1. Understanding the concept of input and output devices of Computers.
2. Learn the functional units and classify types of computers, how they process information and how individual computers interact with other computing systems and devices.
3. Understand an operating system and its working, and solve common problems related to operating systems.
4. Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.
5. Study to use the Internet safely, legally, and responsibly.

Semester III

YBE 301-Mathematics -II

CO1:Know Laplace Transform to get the solution to differential equation, convolution and Integral equation.
CO2:Interpret the concepts of Fourier series, Fourier transform, Fourier Integral.
CO3:Solve beta function and error function to get solutions of complex real life problem.
CO4:Compare the scalar and vector problems.
CO5:Evaluate line integral and double integration problems.
CO6:Know the techniques of combinethe problemsusing Gauss divergence and Stoke's theorem.

YBME 302-Production Process

CO1:Use appropriate CNC machine as per given application.
CO2:Prepare the component using grinding and various finishing operation.
CO3:Produce gears using various gear manufacturing methods.
CO4:Select the press and its components for various applications.
CO5:Select suitable Non-Traditional machining process for given component.

YBME 303-Strength & Mechanics of Materials

CO1:To get the knowledge of properties of material, stress, thermal stress and various mechanical components.
CO2:Able to understand how different components will fail under load with help of theories of failure for brittle and ductile materials.
CO3:Able to apply concepts of stress, strain, principle stress in 1D, 2D and 3D objects and also able to apply stress functions, and calculate stresses in plates and shells, thick circular cylinders and discs and employ contact stresses and stress concentration knowledge.
CO4:Able to analyze the different methods of unsymmetrical bending analysis and concept of shear center.
CO5:Able to evaluate force, stress and displacement in simple structures with use of energy methods.
CO6:Able to create stress-strain model for any mechanical component.

YBME 304-Thermodynamics

CO1:Knowledge about availability and entropy generation.
CO2:Solve problem on vapour power cycles.
CO3:Analyse and solve problem on gas power cycles.
CO4:Solve problem on refrigeration cycle.
CO5:Understand the thermodynamic property relations.
CO6:Solve problem on reciprocating air compressor.

YBME 305- Machine drawing & design

CO1:Identify the national and international standards pertaining to machine drawing.

CO2:Apply limits and tolerances to assemblies and choose appropriate fits.

CO3:Recognize machining and surface finish symbols.

CO4:Explain the functional and manufacturing datum.

CO5:Illustrate various machine components through drawings.

Semister IV

YBME 401-Mathematics -III

CO1:Understand the concepts of Analytic functions, Complex integrations and Cauchy-Riemann equations.
CO2:Evaluate real integrals and learn residue integration method.
CO3:Explain the errors of numerical results and different types of interpolations.
CO4:Implement different Numerical Integration methods and find solution to ordinary differential equations.
CO5:Analyse Random variables and different Probability Distributions.
CO6:Apply Correlation analysis, Regression Analysis and Statistical hypothesis.

YBME 402-Material Science and Metallurgy

CO1:Analyze and classify crystal structures and imperfections in solids using unit cells and defect mechanisms.

CO2:Evaluate mechanical properties of materials through testing methods and understand their relationships, including stress-strain curves, hardness, and strength.

CO3:Apply static failure theories and fracture mechanics to predict failure modes and analyze fatigue behaviour and nondestructive testing methods.

CO4:Interpret phase diagrams and microstructures in alloys, including the iron carbide phase diagram and micro structural aspects of the given steel types.

CO5:Apply heat treatment techniques to control microstructure development in steel and understand the effects on properties.

CO6:Examine the properties and applications of alloyed steels, cast irons, copper alloys, aluminium alloys, nickel-based super alloys, and titanium alloys.

YBME 403-Theory of M/C and Mechanism

CO1: To identify and enumerate different link based mechanisms with basic understanding of motion
CO2: To understand and illustrate various power transmission mechanisms using suitable methods
CO3:To understand and illustrate various power transmission mechanisms using suitable methods
CO4: To design and evaluate the performance of different cams and followers.

YBME 404- Thermal Engg and gas dynamics

CO1:. Graduate will be able to design and conduct experiments, as well as to organize, analyze and interpret data to produce meaningful conclusions andrecommendations

CO2: Graduate will be able to provide thermal systems or components or process to meet desiredneed within realistic constraints such as manufacturability, sustainability and safety

CO3:. Graduate will be able to identify, formulate andsolve complex engineering problems

CO4: Graduate will be able to use the techniques, skills and modern engineering tools necessary for engineering practices

YBME 405- Fluid Mechanics

CO1:Understand the fundamentals of fluid mechanics and fluids.

CO2:Determine the basic equation to find the force on submerged surfaces.

CO3:Calculate the centre of buoyancy of floating body, and the, velocity and acceleration of a fluid.

CO4:Learn about fluid kinematics and fluid dynamics.

CO5:Differentiate between hydraulic turbines and reaction turbines.

CO6:Analyze Centrifugal pumps an positive displacement pumps.

Semester V

YBME 501-Entrepreneurship and Management Concepts.

CO1:Define various aspects & key factors of organizational behavior.
CO2:Understand the culture and dimensions of various organizations.
CO3:Apply motivational and leadership theories to resolve problems of organizations.
CO4:Classify the contribution of disciplines, approaches, challenges, opportunities of OB and behavior of individuals.

YBME 502-Turbo Machinery

CO1: Recognize typical designs of turbomachines and differentiate from positive displacement machines
CO2:Explain the working principles of turbomachines and apply it to various types of machines
CO3: Perform the preliminary design of turbomachines (pumps, compressors, turbines) ona 1-D basis
CO4: Determine the off-design behavior of turbines and compressors and relate it to changes in the velocity triangles
CO5:. Recognize relations between choices made early in the turbomachinery design process and the final components and operability
CO6:Recognize and discuss today's and tomorrow's use of turbomachines for enabling a sustainable society.

YBME 503-Mechanical Measurement & control

CO1:Learner will be able to apply the concept of limits, fits and tolerance of interchangeable manufacture to design Go and No Go Gauges.

CO2:Learner will be able to describe the concept of interference for measurement of various surface roughness parameters.
CO3:Learner will be able to identify the various static characteristics and different types of inputs associated with measuring instruments.
CO4:Learner will be able to select and use appropriate measuring instruments for displacement/ pressure/flow/temperature and strain measurement.
CO5:measuring instruments for displacement/ pressure/flow/temperature and strain measurement.

YBME 504-Machine Component Design

CO1:Understand the failure criteria, concept of mechanics of materials, empirical design formula & safety considerations, codes & standards for design

CO2:Analyse permanent and temporary joints viz. riveted joints, welded joints and bolted joints based on design aspect

CO3:Analyse design of shafts, belts, gears, chains and pulleys.

CO4:Solve design problems on spring, cotter joint, knuckle joint based on optimum criteria.

CO5:Determine optimum design of Coupling, brakes and screw jack based on friction principle.

CO6:Apply knowledge of design principles and calculations to design springs, clutches and bearings.

YBME 505-Dynamics of Machines

CO1:Learner will be able to illustrate working principles of different types of governors and gyroscopic effects on the mechanical systems.
CO2:Learner will be able to illustrate basics of static and dynamic forces of slider-crank mechanism.
CO3:Learner will be able to determine natural frequency of single degree of freedom system/element.
CO4:Learner will be able to determine vibratory response of mechanical system/element.
CO5:Learner will be able to determine parameters for vibration isolation of the given system.
CO6:Learner will be able to analyse and balance the given rotary system.

YBME 601-Operations Management

CO1:Apply and Summarize workings of the simplex method, the relationship between a linear program and its dual, including strong duality and complementary slackness.
CO2:Analyze, Identify and Solve specialized LPP like transportation, assignment and dynamic programming problems.
CO3:Select, Apply and Find the usage of Queuing Theory for solving engineering problems.
CO4:Apply simulation method and usage of simulation in managerial decision-making problems.
CO5:Apply and solve given problems using Game Theory.

YBME 602-Power Plant Engg

CO1:Analyze the vapour power cycles and their modifications

CO2:Understand boilers & calculate its performance parameters.

CO3:Analyze the combustion phenomenon of fuels.

CO4: Determine the performance parameters of steam nozzles and steam turbines.

CO5:Illustrate and Design the condensers and cooling towers.

CO6:Determine power plant economic parameters and know about the Diesel and gas plants, pollution and its control.

YBME 603-Metal Cutting and CNC machines

CO1:Develop manual part program for machining of the parts on CNC turning trainer and milling trainer machine.
CO2:Demonstrate the ability to acquire CAM tool-path from CAD Data.
CO3:Develop any given real life object using 3D printing process.
CO5:Demonstrate the ability to acquire 3D model using available biomedical data

YBME 604- IC engines

CO1:Introduction to heat engines and understand various cycles of operations of Internal combustion engines.
CO2:Discuss the mixture requirement and fuel injection system in IC engines.
CO3:Understand the concept of knocking and fuel ignition system in various engines.
CO4:Describe the lubrication system of engine and evaluate its performance parameters.
CO5:Analyze the current scenario on the pollution and illustrate methods of emission control.
CO6:Understand and evaluate the factor affecting the efficiency of compressor and gas turbines.

YBME 605- Heat and Mass Transfer

CO1:Basic concept of heat transfer and heat conduction.
CO2:Analysis and solve problem of convective heat transfer.
CO3:Analysis and solve problem of radiative heat exchange.
CO4:Solve problem on Heat transfer for boiling liquids and condensing vapours.
CO5:Knowledge about Radiation heat transfer process.
CO6:Analyse heat exchangers.

Semester VII

YBME 701-Work Study & Ergonomics

CO1: Productivity,
CO2: Principles of Method study,
CO3: Charting techniques; process, operation, SIMO, Gantt, man-machine charts etc...,
CO4: Principles of motion economy,
CO5:Work measurement; stop-watch time study, standard data and formula, predetermined time system (MTM), work sampling,
CO6: Job analysis and evaluation, Job rotation, Job enrichment, and Job enlargement.
CO7:Wage incentives,
CO8:Fundamentals of ergonomics; measurement of maximal aerobic capacity,
CO9:Work design; Anthropometry, measurement of noise, illumination and so on

YBME 702-Renewable Energy System

CO1:Describe the basic /technical concepts of the solar radiation.

CO2:Describe the use of solar energy collectors and identify the appropriate methods of energy storage and perform thermal analysis.

CO3:Explain the fundamentals of biomass, biogas and geothermal energy.

CO4:Describe the energy conversion from wind energy and ocean energy to thermal energy.

CO5:Differentiate types of direct energy conversion methods.

CO6:Describe the basic /technical concepts of the solar radiation.

YBME 703-Mechanical Vibration & Noise Engineering

CO1:Mathematical Modeling of SDOF Systems and estimation of natural frequencies, damping factors.
CO2:Forced Vibration Analysis of SDOF Systems, Vibration isolation and vibration measuring instruments.
CO3:Mathematical modeling of 2DOF systems, design of undamped dynamic vibration absorber, fundamentals of modal analysis.
CO4:Learning techniques of vibration monitoring and fundamentals of sound/noise.
CO5:Learning techniques of noise control for welfare of human being.

YBME 704-Automobile Engg

CO1:Understand the basic lay-out of an automobile and engines for two-wheelers, three wheelers, four wheelers, & other passenger and commercial vehicles.

CO2:Explain the operation of engine cooling, lubrication, ignition, electrical, electronics and air conditioning systems.

CO3:Illustrate the principles of transmission, suspension, steering and braking systems and construction of wheels and tyres.

CO4:Determine the tractive effort and power requirements & learn the use of torque-speed curve.

CO5:Learn automobile restraint system.

CO6:Know the latest developments in automobiles.

YBME 705-O R & Supply Chain

CO1:To understand the methodology of OR problem solving and formulate linear programming problem.

CO2:To develop formulation skills in transportation models and finding solutions

CO3:To understand the basics in the field of game theory and assignment problems

CO4:To know how project management techniques help in planning and scheduling a project
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CO5: To know the basics of dynamic programming and simulation.

Semester VIII

YBME 801-Energy Management & Audit.

CO1:Apply energy conservation policy, regulations in industrial practices.

CO2:Recognize opportunities for enabling rational use of energy

CO3:Evaluate energy economics.

CO4:Apply knowledge of Energy Conservation Opportunities in a range of contexts.

CO5:Develop innovative energy efficiency solutions and demand management strategies.

CO6:Analyze the thermal systems for energy efficiency.

YBME 802-Machine Design

CO1:Understand thin pressure vessel & Stresses acting on it.

CO2:Analyze power screws subjected to loading.
CO3:Select appropriate gears for power transmission on the basis of given load and speed.
CO4:Design of belt drive and pulley clutch and brake.
CO5:Calculate the design parameter for energy storage element and engine components, connecting rod and piston.
CO6:Understandc Concept &Procedure of FEM.

YBME 803-Refrigeration & Air Conditioning

CO1:Understand the concept of different refrigeration processes.
CO2:Analyze the reversed Carnot cycle and vapour compression refrigeration cycle (VCR).
CO3:Select the air-refrigeration systems for aircraft, and vapour absorption refrigeration system for rural and remote areas and select environmental friendly refrigerants considering the international standards.
CO4:Identify the Psychrometric processes for different applications and design the parameters of air-conditioning system as per standards.
CO5:Understand the human comfort, ASHRAE chart and concept of effective temperature.
CO6:Estimate cooling load and heating load considering human comfort and optimize the air conditioning system as per requirements.

YBME 804-CAD/CAM/CIM

CO1:Explain structure and units of a digital computer and its related hardware.
CO2:Describe the role of computer graphics especially geometric transformations for CAD/CAM application.
CO3:Recognize various modeling techniques.
CO4:Describe the basic NC system and write part programming in CNC system.
CO5:Identify different quality control methods and apply inspection methods used in various manufacturing systems.
CO6:Effectively communicate and explain the experimental analysis.

School of Engineering & Technology
Department of Machine Design(Mechanical Engineering)

Course Outcomes (COs):

Semester I

YMMD101-Advance Mathematics

CO1:Understand Finite differences, interpolation techniques, Numerical differentiation and Integration and apply it to various practical problems.
CO2:Apply Numerical methods to solve first order ordinary differential equations and Algebraic and Transcendental equations.
CO3:Illustrate Laplace transform and its application in different fields.

CO4:Apply Fourier transforms and its applications to solve Ordinary and Partial differential equations.
CO5:Use Z-transform and its applications to solve difference equations.

YMMD102-Theory of Elasticity & Plasticity

CO1: Mathematical formulation of elasticity problem as a well-posed boundary value problem.
CO2:Solve simple engineering problems with mathematical rigour. Such solutions can act as bench-mark solutions for testing computational methods and software
CO3:Appreciate the cartesian tensor notation, thereby understand modern technical literature elegantly.
CO4:Develop simple approximate methods based on variational formulations.
CO5:Introduction to plasticity will enable understanding advanced books on theory of plasticity

YMMD103-Material Science

CO1:Appreciate the necessity of engineering materials, Smart Sensors and its applications in various fields.
CO2:Identify possible cause of failure due to fatigue and Creep.
CO3:Demonstrate the knowledge of nucleation, Crystal growth, Solid solution and Phase diagrams.
CO4:Appreciate the significance and applications of Various heat treatment processes.
CO5:Explain the definition and classification and fabrication processes of composite materials.

YMMD104-Theory of Vibration

CO1:Classify different types of vibrations and develop mathematical models of vibratory systems.

CO2:Analyze free and forced vibrations of single degree of freedom systems.

CO3:Estimate the natural frequencies and mode shapes of multi degree of freedom systems.

CO4:Analyze free vibrations of continuous systems

YMMD105-Computer Aided Design & Drafting

CO1:create the different wireframe primitives using parametric representations.
CO2:create surface primitives using parametric modeling.
CO3:create the different solid primitives using the different representation schemes.
CO4:apply geometric transformations on the created wireframe, surface and solid models.

Semester II

YMMD201-Adv. Machine Design

CO1:To be acquainted with the overview of design process correlating the fabrication /production process.
CO2:To study the process of production incorporating modern machine design process.
CO3:Correlation of a design process to product.
CO4:To find out best solution by application of optimization technique.
CO5:To incorporate a process of production /member to with stand application hazard and uncertainty by means of robust design

YMMD202-Finite Elements Method

CO1:Apply and understand the basic concepts of Finite element analysis procedure.
CO2:Analyze and build FEA model for complex engineering problems.
CO3:Knowledge of mathematics and engineering in solving the problems related to structural and heat transfer.
CO4:Develop element characteristic equation and generation of global equation.
CO5:Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements.
CO6:Use the commercial FEA packages like ANSYS for solving real life structural thermal, dynamic problems etc.

YMMD203-Robotics

CO1:apply the concepts of coordinate transformations for development of arm equation and subsequently the inverse kinematics model for given serial manipulator.
CO2:apply the concepts of robotic workspace analysis for design of robotic manipulator for required work cell applications.
CO3:design and analyze the workcell environment for given robotic manipulator configuration and workcell devices for required integrated industrial application.
CO4:develop and analyze the mathematical model for trajectory planning, resolved motion rate control and dynamics model for a given serial robotic manipulator.
CO5:develop the algorithms for design of robotic work cell controller and its programming for given serial robotic manipulator.

YMMD204-Industrial Tribology

CO1:design and simulate a system or process to meet desired needs within realistic constraints and the same can be applied to automate the different processes in contemporary manufacturing systems.
CO2:design pneumatic and electro-pneumatic logic circuits.
CO3:use the different automation approaches and skills to solve the complex industrial problems necessary for contemporary engineering practice.

YMMD205-Vibration and Noise Control

CO1:Ability of perform harmonic analysis of systems with Fourier series expansions, frequency domain representations. Analysis of systems under hysteresis damping, coulomb damping and other different types of damping.

CO2:The ability to analyze and solve two degree of freedom systems with or without damping using Transfer function approach, problems using Laplace transforms.

CO3:To develop ability for analyzing response of systems under periodic force of irregular form, non periodic force. Understanding the convolution integral. Understanding the control of vibrations.

CO4:Ability to use different approach, Eigen value problem approach to generate the equation of motion for systems undergoing multidegree of freedom vibration. Understanding and performing Modal Analysis.

CO5:Understanding and analyzing vibration of continuous systems.

CO6:Understanding and performing numerical integration methods in vibration analysis. Develop ability to analyze a vibrating system with Finite Element Methods.

Semester III

YMMD301-Experimental stress Analysis

CO1:To understand the mechanical properties of strain gauges andapplications.

CO2:To understand the design and performance of strain gauges.

CO3:To understand the methods of Non-Destructive testing.

CO4:To understand the methods of photo elasticity and models.

CO5:To have a brief idea regarding experiments in material testing.

YMMD302-Fluid Film Lubrication

CO1: Describe engineering significance of tribology and lubrication.

CO2:Describe the tribological significance of surface physico-chemical, topographical and mechanical properties.

CO3:Calculate surface topographical parameters from measurement data.

CO4:Describe the tribological significance of the physical and chemical properties of lubricants and rheology of lubricating oils.

CO5:Calculate viscosity of lubricating oil from laboratory data.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING - PSO

UG-PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1:: To analyse, design and develop solutions for the real time problems and to apply the technical Knowledge for developing quality products for Electronics and Communication based Industry.

PSO2:: To adapt to emerging Information and Communication technologies and to develop innovative ideas and solutions in RF & Communication, Networking, Embedded Systems, and VLSI.

PSO3:: An ability to make use of acquired technical knowledge to get employed in the field of Electronics and Communication and also to become successful Entrepreneur.

PG-PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1:: Recognize the complex problems and develop solutions in diverse fields of Communication Systems.

PSO2:: Acquire specific knowledge to promote research and career excellence in the area of Communication Systems.

COURSE OUTCOMES-ECE

B. TECH ELECTRONICS & COMMUNICATION ENGINEERING

Course Outcomes

Semester: CO3:

Electronic Devices

CO1: Recall the basic concepts of semiconductor devices.

CO2: Understand various applications of electronic devices like diode, transistor, FET etc.

CO3: Apply different types of biasing circuits and models on electronic devices like diode, transistor, FET etc.

CO4: Analyze the working operation, characteristics and structure of various electronic devices.

Electronic Devices Lab

CO1: Identify various electronic devices like diodes, transistors, FET and SCR.

CO2: Understand the characteristics of various types of electronic devices.

CO3: Demonstrate various applications of electronic devices like diodes, BJT and FET.

CO4: Analyze the input/output behaviour of electronic devices to variable inputs and also verify their operations.

Data Structures

CO1: Define basic concepts of data structure & algorithm.

CO2: Understand various aspects of stack, queue, list & graph.

CO3: Apply different searching & sorting techniques to solve the problem of data structure.

CO4: Analyze the complexity of various sorting algorithms.

Signals and Systems

CO1: Define various types of signals and systems based on the continuous and discrete type signals.

CO2: Understand the spectral characteristics of continuous-time periodic and aperiodic, LTI system and convolution.

CO3: Apply the Fourier, Laplace and Z- transform for solving continuous-time and discrete-time signals and systems.

CO4: Analyze state equation for continuous and discrete type systems.

Network Theory

CO1: Define the fundamental concepts of various Networks & Theorems.

CO2: Understand the transient behavior of networks & filters.

CO3: Apply fourier series, fourier transform &laplace transform to solve various signals & networks.

CO4: Analyze various two port network parameters, RLC networks and network topology.

Network Theory Lab

CO1: Define the basic concepts of network theory and simulation software.

CO2: Understand the Transient Response of RL, RC, and RLC Circuits.

CO3: Calculate various parameters of two port network and determine half power frequency of filters.

CO4: Analyze and synthesize the network functions for various networks.

PCB & Electronic Workshop Lab

CO1: Identify the process of designing PCB and outputs of different circuits using software simulation.

CO2: Understand different methodology for layout PCB and report.

CO3: Use the etching, UV exposure and drilling of PCB.

CO4: Test and design various electronic circuits.

Economics For Engineers

CO1:.Define various concepts of micro economics related to the production units.

CO2: Understand various aspects of economics which can affect the engineering profession in terms of demand and decision making related to it.

CO3: Choose best engineering practice by cost consideration and profit estimation.

CO4:.Examine the economic environment and effects of government policies on the Indian economy which can be related to engineering services.

Environmental Science

CO1: Recall basic environmental social issues, scope, importance and various protection acts.

CO2: Understand the renewable and non-renewable resources.

CO3: Apply the biodiversity for its conservation.

CO4: Differentiate various ecosystems.

Semester: CO4:

Analog Circuits

CO1: Define the basic concepts and characteristics of various semiconductor devices.

CO2: Understand different types of oscillators, regulators and feedback topologies.

CO3: Demonstrate the linear and non-linear applications of op-amp.

CO4:. Analyze various rectifiers, amplifiers, configurations and small signal models of analog circuits on different parameters.

Analog Circuits Lab

CO1:.Show the characteristics of various configurations of transistors.

CO2:.Explain voltage regulator, push-pull amplifier , SMPS power supply and various types of oscillators in terms their oscillation frequency.

CO3:. Demonstrate the applications of IC 555 timer and calculate the gain of amplifiers.

CO4:.Analyze the operation of oscillators and frequency response of amplifiers.

Communication System

CO1: Define various fundamental aspects of the communication systems.

CO2: Understand various modulation & demodulation techniques used in communication systems.

CO3: Interpret various radio transmitter & receiver circuits and different types of noise in communication systems.

CO4: Analyze various parameters such as modulation index, channel capacity, transmission efficiency, S/N ratio.

Communication System Lab

CO1: Define the fundamentals and functions of various communication systems.

CO2: Understand the working operation of analog & digital modulation techniques used in communication systems.

CO3: Apply various methods used in communication systems for generation & reception of modulated &demodulated .

CO4: Analyze the waveforms of various modulation & demodulation techniques.

Digital Electronics

CO1: Recall basic concepts of logic gates, Boolean algebra, and number systems.

CO2: Understand the various digital codes and characteristics of memory.

CO3: Applying the various methods to solve the logical expression like K-map, Quine Mcluskey method, etc.

CO4: Classify various combinational, sequential logic circuits & Convertors.

Digital Electronics Lab

CO1: Define all Logic Gates with Truth-Table, ADC and DAC.

CO2: Understand the various Combinational and Sequential Circuits.

CO3: Apply the K-MAP method to solve the Boolean Expression.

CO4: Analyze the operation and working of Flip-Flops, Registers & Counters by their Truth-Table.

Microcontrollers

CO1: Recall architecture and signal description of various Microprocessors.

CO2: Understand concepts of virtual memory, cache memory and Instruction set of various microprocessors.

CO3: Demonstrate the enhanced features of various microprocessors and mobile processors.

CO4: Analyze various designing parameters of microprocessors and microcontrollers.

Microcontrollers Lab

CO1: Define fundamental architectural and programming concepts of 8086.

CO2: Understand the instruction set and process used for 8086 programming.

CO3: Apply the interfacing and implementation of various peripheral chips using 8086 microprocessors.

CO4: Analyze and compare the logic used in programs output carried out by 8086 microprocessorstheoreticall.

Organizational Behaviour

CO1: Define the management process with the scope and importance of management.

CO2: Understand all aspects of Organizational Behavior contended to various communication channels.

CO3: Demonstrate the phenomenon of learning, leadership and motivation.

CO4: Analyze the framework of all organizational structures and management conflicts intending .

Semester: 5

Electromagnetic Waves

CO1: Identify the basic laws of electromagnetic propagation.

CO2: Understand radiation, characteristics and wave propagation on high frequency transmission lines.

CO3: Apply Maxwell equation to solve problems in transmission lines and uniform plane wave propagation.

CO4: Analyze the nature of electromagnetic wave propagation in guided medium used in microwave applications.

Computer Organization & Architecture

CO1: Define the basic structure of computers, operations and instructions.

CO2: Understand non pipelined CPU architecture, memory hierarchy and input/output techniques.

CO3: Demonstrate the enhancing performance of CPU architecture and expansion memory organization.

CO4: Illustrate parallelism and computer organization.

Communication Engineering

CO1: Define the basic concepts of probability, random variable, and correlation function.

CO2: Understand the cumulative distribution function, probability density function.

CO3: Apply the various coding techniques to determine the channel efficiency.

CO4: Analyze the spectral characteristics by Fourier analysis, filters and block codes.

Digital Signal Processing

CO1: Define the various discrete time signals and systems with their representations.

CO2: Understand the process for sampling of time signals, sampling rate conversion .

CO3: Solve the discrete time systems using DTFT, DFT, FFT and ZT.

CO4: Analyze the various design techniques/ methods for digital finite impulse response (FIR) and (IIR) filters.

Power Electronics

CO1: Define the basic concepts of power electronics components.

CO2: Understand the working operation and characteristics of different power electronics devices inverters, converters.

CO3: Demonstrate the applications of various power electronics devices.

CO4: Analyze the parameters of waveforms generated by various power electronics devices.

Measurements and Instrumentation

CO1: Define fundamental concepts of various measurement systems.

CO2: Understand the operation of oscilloscopes, signal conditioning system, recorders & printers etc.

CO3: Apply various digital instruments/transducers & bridges for measuring different quantities.

CO4: Analyze the operation of transducers and signal analyzers.

Electromagnetic Waves Lab

CO1: Identify various components of the microwave test bench.

CO2: Understand the working operation of attenuator, isolator and circulator.

CO3: Apply various techniques for antenna radiation and find its radiation parameters.

CO4: Analyze waveguide general approach and model propagation in rectangular waveguide.

Digital Signal Processing Lab

CO1: Identify the basic signals (Unit Step, unit impulse, Ramp, Exponential, Sine and Cosine).

CO2: Understand the operation of convolution, Correlation, DFT and Z transform.

CO3: Apply the window techniques for designing FIR filters.

CO4: Analyze frequency response characteristics of digital IIR and FIR filter.

Practical Training – CO1:

CO1: Identify various technologies and fields for practical training to enhance employability skills.

CO2: Understand the ability to adapt with the latest changes in the technological world.

CO3: Applying engineering knowledge and ethical practices to solve industrial problemss.

CO4: Analyze the ability of learning skills to be job ready with real corporate exposure.

Linear IC Application

CO1: Define basic concepts of PLL, Timers, Voltage Regulators and operational amplifier.

CO2: Understand various feedback topologies and frequency response of operational amplifier.

CO3: Demonstrate the linear and non linear applications of operational amplifier.

CO4: Analyze the operations of different operational amplifier.

Semester: 6

Control Systems

CO1: Define the feedback and non-feedback control architecture and discuss the importance of performance.

CO2: Understand the analysis techniques like block diagram reduction, Root locus, Routh stability criteria

CO3: Determine the performance characteristics of first and second-order systems using standard test signals.

CO4: Analyze the system response and stability in both time-domain and frequency domain.

Computer Network

CO1: Define basic concepts, types, systems & applications of computer networks.

CO2: Understand the important aspects & functions of different layers in internetworking.

CO3: Demonstrate appropriate routing algorithm for optimization of computer networks.

CO4: Analyze the performance of different protocols of computer networks.

Engineering Ethics

CO1: Define environmental and engineering ethics in society.

CO2: Understand the importance of engineering ethics in their personal lives and professional careers.

CO3: Apply professional rights and responsibilities for the benefit of society.

CO4: Analyze various risk factors associated with professionalism and engineering ethics in industrial growth .

CMOS Design

CO1: Define fundamental concept of MOS transistors.

CO2: Understand the working of digital systems, arithmetic building blocks, memory and array structures.

CO3: Apply principles of minimization techniques to simplify digital functions.

CO4: Analyze the combinational and sequential circuit based on CMOS logic.

VHDL and Digital Design

CO1: Define the basic concepts of various digital systems' and VHDL.

CO2: Understand the needs, applications of hardware description language and programmable devices.

CO3: Apply modelling & simulations of various basic & advanced digital systems using VHDL.

CO4: Analyze different PLD's techniques at circuit level for improving power and speed of combinational .

Python Programming

CO1: Define the fundamentals of Python programming.

CO2: Explain string manipulation and text files of Python programming.

CO3: Apply various Lists, Dictionaries and Functions used in Python language.

CO4: Analyze Object-Oriented aspects in Python programming such as inheritance, polymorphism etc.

Computer Network Lab

CO1: Define various technological trends of computer networking.

CO2: Understand the basic aspects of application layer protocol design including client

CO3: Apply various routing protocols/algorithms and internetworking used in computer networks.

CO4: Analyze network application such as data transmission between client and server, file transfer.

Control System Lab (LC-ECE-CO3:CO2:CO4:G)

CO1: Define the control components like AC/DC servo motor, stepper motor & lead lag compensators, PID Controller.

CO2: Understand the behaviour of various types and order of control system.

CO3: Apply the MATLAB software to plot the frequency response of the various given functions.

CO4: Analyze the motion & water level control of a conveyor belt using an industrial PLC.

Mini Project/Electronic Design Workshop (LC-ECE-CO3:CO2:6G)

CO1: Identify various technologies and fields for projects.

CO2: Understand the process to make reports and presentation.

CO3: Applying engineering knowledge to solve industrial problems.

CO4: Analyze ethical practices and tools used in different technologies for projects.

CO5: Evaluate the performance on parameters such as communication skills, technical knowledge.

CO6: Design and develop the skills to make software/hardware related to industrial projects.

Semester: 7

Mobile Communication and Networks (PEC-ECE-CO4:CO1:0-G)

CO1: Define wireless standard, networking, GSM architecture and mobile radio propagation.

CO2: Understand various aspects of frequency reuse, Handoffs, cell splitting and channel assignment.

CO3: Demonstrate various models, multiple access and modulation techniques used in communication systems.

CO4: Analyze various fading effects and parameters of mobile multipath channels like time dispersion.

Fiber Optic Communication (PCC-ECE-CO4:0CO1:-G)

CO1: Define the fundamental concepts of optical communication system

CO2: Understand working of various modes such as mono/multi-mode and characteristics.

CO3: Demonstrate the principle of optical transmission and detection using light sources and photodiodes.

CO4: Analyze behaviour and various parameters of optical fibers such as attenuation, absorption, noise, bandwidth etc.

Antenna and Wave (PCC-ECE-CO4:0CO2:-G)

CO1: Define the physical concepts of antenna theory.

CO2: Understand various parameters of the antenna like gain, directivity, radiation resistance and beam – width.

CO3: Demonstrate various types of antenna used in wave propagation.

CO4: Analyze uniformly spaced arrays with uniform and non uniform excitation amplitude.

Data Communication Networking and Security (PEC-ECE-CO4:CO1:CO1:-G)

CO1: Define the fundamental concepts of analog and digital transmission of data communication networks.

CO2: Understand various network configurations and topologies of data communication networks.

CO3: Apply various detection and correction techniques used in data communication networks.

CO4: Analyze various communication architectures and their protocols in data communication networks.

Radar and Sonar (PEC-ECE-CO4:CO1:CO4:-G)

CO1: Define fundamental concepts and applications of RADAR and SONAR system.

CO2: Understand the operation of various types of Radar systems like: CW, FMCW, MTI and Pulse Doppler RADAR.

CO3: Examine receivers, displays and duplexers used in RADAR system.

CO4: Analyze acquisition and tracking range and different system losses applicable to RADAR system.

Constitution of India (MC-CO4:CO1:7-G)

CO1: Recall the basic structure of constitution of India.

CO2: Discuss the federal system & distribution of various powers between union and the states.

CO3: Understand various organs of governance.

CO4: Classify various fundamental rights & duties given by constitution of India.

Data Communication Networking Lab (LC-ECE-CO4:05-G)

CO1: Define fundamental concepts of different types of transmission media.s

CO2: Understand various digital modulation techniques.

CO3: Demonstrate LAN using different topologies like bus, ring, star & tree.

CO4: Analyze the operation for configuration of modem and hub.

Project Stage-I (PROJ-ECE-CO4:07-G)

CO1:Identify various technologies and fields for making project.

CO2:Understand the process to make reports and presentations.

CO3:Apply engineering knowledge to solve various industrial problems.

CO4:Analyze ethical practices and tools used for different technologies.

CO5:Evaluate the performance on parameters like communication skills and technical knowledge etc.

CO6:Design and develop the skills to make software/hardware, related to project for serving the society.

Semester: 8

Embedded System (PEC-ECE-CO4:CO1:5-G)

CO1:Define the basic concepts, types and applications of microcontroller and embedded system.

CO2:Understand the memory, features and addressing modes of different microcontrollers.

CO3:Demonstrate interfacing between microcontroller and I/O chips.

CO4:Analyze and compare architecture, pin diagram and working operations of different microcontrollers.

Satellite Communication (PCC-ECE-CO4:0CO3:-G)

CO1:Define basic concepts, band spectrum, types & applications of analog /digital satellite communication system.

CO2:Derive the link design equations for satellite communication system.

CO3:Demonstrate various multiple access techniques used in satellite communication systems and calculate C/N & S/N ra

CO4:Analyzing different environmental effects, orbital and earth station parameters used in satellite communication system

Microwave Theory and Technique (PCC-ECE-CO4:0CO4:-G)

CO1:Define basic concepts of microwave components with their characteristics./td>

CO2:Understand the working operation of waveguides, microwave tubes, active and passive microwave devices.

CO3:Determine microwave power using calorimeter and bolometer devices.

CO4:Analyze the effects of microwave in different medical and civil applications.

Wireless and Satellite Communication Lab (LC-ECE-CO4:06-G)

CO1:Describe the basic components of satellite communication system.

CO2:Understand transmission of audio & video signal, telemetry data, GPS data and modulation techniques.

CO3:Demonstrate radiation pattern and calculate beam width for different antennas.

CO4:Analyze the propagation delay of signals in satellite communication links.

Disaster Management (OEC-CE-CO4:CO1:7-G)

CO1:Define the fundamental aspects of natural and man-made disasters with their impact.

CO2:Understand the role and responsibilities of various disaster management agencies.

CO3:Apply the methods of disaster risk reduction for suitable measures like flood, cyclone, drought and earthquake etc.

CO4:Illustrate and processing the spatial data for better disaster risk management of natural disaster.

Project Work-II/ Dissertation (PROJ-ECE-CO4:08-G)

CO1:Identify various technologies and fields for making project.

CO2:Understand the process to make reports and presentations.

CO3:Apply engineering knowledge to solve various industrial problems.

CO4:Analyze ethical practices and tools used for different technologies.

5 Evaluate the performance on parameters like communication skills and technical knowledge etc.

6 Design and develop the skills to make software/hardware, related to project for serving the society.

Electronics and Communication Engineering - Programme Outcomes

On completion of the B.E (ECE) degree the Electronics and Communication graduates will be able to

- PO1: -
  Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO2: -
  Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3: -
  Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO4: -
  Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5 -
  Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- PO6 -
  The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

- PO7 -
  Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8 -
  Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9 -
  Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi-disciplinary settings.
- PO1:0 -
  Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO1
  Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments.
- PO1:
  Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOME

At the end of CO4: years, Electronics & Communication graduates of MCET will be able to:

PSO1:: **Professional Competence**: Apply the knowledge of Electronics & Communication Engineering principles in VLSI, Signal processing, Communication, Embedded system & Control Engineering.

PSO2:: **Technical Skills**: Design and implement products using the cutting- edge software and hardware tools.

PSO3:: **Social consciousness**: Demonstrate the leadership qualities and strive for the betterment of organization, environment and society.

ProgramOutcomes(POs)

ProgramOutcomes

PO1: Engineering Knowledge
PO2: Problem Analysis
PO3: Development of Solutions
PO4: Investigation of Complex Problems
POS: Modern Tool Usage
PO6: The Engineer and Society.
PO7: Environment and Sustainability
PO8: Ethics
PO9: Individual and Team work
PO10: Communication.
PO11: Project Management and Finance
PO12: Life-long learning Programme Specific Objectives

ProgramsSpecificOutcomes(PSOs)

PSO 1. Ability to pursue careers in industry/ research and development, teaching and allied areas related to Mechanical Engineering.
PSO 2. outline the specific skills and knowledge a graduate should possess beyond basic engineering principles, focusing on areas like design, analysis, and manufacturing

CourseOutcomes(COs):

SemesterIII

YBE301-Mathematics-II

CO1 KnowLaplaceTransformtogetthesolutiontodifferentialequation,convolution and Integralequation.
CO2 InterprettheconceptsofFourierseries,Fouriertransform,FourierIntegral.
CO3 Solvebetafunctionanderror functiontogetsolutionsofcomplexreallifeproblem.
CO4 Comparethescalarandvectorproblems.
CO5 Evaluatelineintegralanddoubleintegrationproblems.

YBCE303-StrengthofMaterials

CO1 They will be able to identify and evaluate material properties like tensile strength, compressive strength, yield strength, hardness, and impact strength

CO2 They will be able to analyze beams under bending moments, determine shear forces and bending moments, and understand the stresses and deflections in beams

CO3 Students will understand the concept of torsion and analyze the stresses in shafts subjected to twisting moments

CO4 They will be able to evaluate the stability of structural elements like columns and struts

CO5 They will be able to select appropriate materials for various structural applications based on their mechanical properties and the loading conditions

YBCE304-Engineering Geology

CO1Students will be able to distinguish between different types of rocks and minerals based on their properties and understand their formation processes

CO2Students will be able to evaluate the impact of natural processes like earthquakes, landslides, and erosion on civil engineering projects and recommend appropriate mitigation measures

CO3Students will be able to utilize their knowledge of geology to select suitable construction sites, design foundations, and assess the stability of slopes

CO4Students will be able to interpret geological reports, maps, and data to assess the suitability of a site for construction and identify potential geological hazards

CO5Students will be able to interpret geological maps and understand how geological features like faults, folds, and bedding planes can affect the stability of structures

YBCE305-Bldg. Design & Drawing

CO1This includes grasping terms like building codes, materials, construction techniques, and the importance of different types of drawings (plans, elevations, sections

CO2This involves understanding concepts like space planning, functionality, and the relationship between form and function

CO3This encompasses the ability to draw basic building drawings, including line plans, elevations, and sections

CO4This could involve designing simple projects that demonstrate understanding of space planning and functionality

CO5In many modern programs, CO1 might also involve demonstrating proficiency in using CAD software to create and edit drawings

SemisterIV

YBCE401-Mathematics-III

CO1UnderstandtheconceptsofAnalyticfunctions,ComplexintegrationsandCauchy- Riemann equations.

CO2Evaluaterealintegralsandlearnresidueintegration method.

CO3Explainthe errorsofnumericalresultsanddifferenttypesofinterpolations.

CO4ImplementdifferentNumericalIntegrationmethodsandfindsolutiontoordinary differential equations.

CO5AnalyseRandomvariablesanddifferentProbabilityDistributions.

YBCE402-Concrete Technol ogy

CO1Students will learn how the properties of each ingredient contribute to the overall properties of the concrete, such as its strength, durability, workability, and setting time

CO2 Student will also cover basic testing procedures for concrete ingredients, such as compressive strength tests, fineness tests, and slump tests

CO3The knowledge gained in CO1 is crucial for understanding the principles of concrete mix design and production, allowing students to produce concrete with desired properties for specific applications

CO4 will involve learning about the various types of cement (e.g., Ordinary Portland Cement, Portland Pozzolana Cement), different types of aggregates (e.g., crushed stone, gravel), and common admixtures (e.g., water reducers, air entrainers)

CO5.understanding the fundamental properties of concrete ingredients and their impact on the concrete's overall characteristics.

YBCE403-Surveying

CO1 might require students to understand the fundamental principles of surveying, including the different types of surveying methods (e.g., planimetric, topographic, geodetic)

CO2Students might be expected to know the main reasons why surveying is needed, such as determining the relative position of objects, measuring distances and angles, and creating maps

CO3Students might learn about different tools and techniques for measuring distances, such as tapes, ranging rods, and EDM (Electronic Distance Measurement)

CO4Students might be expected to learn about the operation and maintenance of basic surveying instruments

CO5Students might be expected to apply their knowledge of surveying to solve real-world problems, such as establishing control points, plotting maps, or computing areas and volumes

YBME404-Construction Materials & Techniques

CO1. typically focuses on foundational knowledge and skills related to construction materials

CO2. should help students grasp the basic physical and mechanical properties of common construction materials like concrete, steel, wood, bricks, and aggregates

CO3. Students should be able to select appropriate materials based on project requirements, considering factors like durability, strength, cost, and sustainability

CO4. may introduce students to basic testing methods for evaluating the quality and suitability of construction materials

CO5. Students should be able to recognize common material defects and understand basic remedial measures

YBCE405-Fluid Mechanics

CO1Understandthe fundamentalsoffluid mechanicsand fluids.
CO2Determinethebasicequationto findtheforceonsubmerged surfaces.
CO3Calculate the centreof buoyancy of floating body, and the, velocityand acceleration of a fluid.
CO4Learnaboutfluidkinematicsand fluiddynamics.
CO5Differentiatebetweenhydraulicturbinesandreactionturbines.

SemesterV

YBCE501-Transportation Engineering

CO1often introduces the core principles of the subject, such as traffic flow characteristics, highway geometric design, or pavement materials and design

CO2It may cover the historical development of transportation systems and infrastructure

CO3can involve understanding traffic flow parameters, different types of transportation systems, or the principles of transportation planning

CO4In some courses, CO1 might involve specific skills like estimating stresses and strains in structural components or understanding different types of surveying equipment

CO5could involve learning the fundamentals of urban transportation planning and understanding different urban forms and structures.

YBCE502-Advanced Surveying

CO1Students should be able to use their knowledge of surveying principles to solve practical problems in the field

CO2Students should be proficient in using surveying instruments, including theodolites, total stations, and other advanced tools

CO3Students should be able to conduct various types of field surveys, such as traverse surveys, level surveys, and topographic surveys

CO4Students should be able to process field data, adjust measurements, and calculate areas and volumes

CO5Students should be able to prepare clear and concise technical reports documenting their survey work

YBCE503-Fluid Mech. - II

CO1Students understand the principles of pressure exerted by fluids at rest and how it varies with depth

CO2They learn about buoyancy, the upward force exerted by a fluid on an immersed object, and how it relates to the stability of floating bodies.

CO3understanding and applying fundamental fluid properties and their impact on fluid behavior, particularly in situations involving hydrostatic pressure and the stability of floating bodies

CO4This includes solving problems related to pressure, buoyancy, and fluid density

YBCE504-Structural Design &Drawing – I (RCC)

CO1 would likely involve understanding the properties of concrete and reinforcing steel, how they interact, and the advantages and disadvantages of using RCC

CO2 might also cover topics like material grades, stress-strain relationships, bending moment diagrams, and shear force diagrams

CO3 Understanding the fundamental principles of Reinforced Cement Concrete (RCC) design and analysis

CO4This could include learning about different design codes and methodologies for RCC structures, understanding the different types of loads that structures might experience, and applying basic structural analysis principles to analyze beams, columns, and other structural elements

YBCE505-Theory of Structures -I

CO1Students learn fundamental principles like stress, strain, equilibrium, and material properties

CO2They learn to differentiate between statically determinate and indeterminate structures and understand the implications of each

CO3They apply methods like the method of joints or method of sections to determine internal forces in trusses and beams

CO4They learn to draw influence lines and determine the maximum values of reactions, bending moments, and shear forces for different loading conditions

CO5understanding basic structural mechanics, identifying different types of structures (determinate vs. indeterminate), and applying analytical techniques to simple structures

SemesterVI

YBCE601- Theory of Structures-II

CO1Students will be able to identify and understand the degree of indeterminacy in structures like trusses and arches

CO2They will learn to analyze structures using the moment distribution method, a technique for determining internal forces and displacements in indeterminate frames

CO3Students will learn to apply Kani's method, a simplified version of the moment distribution method, for analyzing indeterminate frames

CO4They will be able to analyze structures using stiffness and flexibility matrix methods, which provide a more general and powerful approach for analyzing indeterminate structures

CO5Students will learn to analyze structures using approximate methods, such as portal and cantilever methods, for analyzing multi-story frames

YBCE602-Water Resources & Irrigation Engineering

CO1Students will learn about the reasons why irrigation is necessary, such as insufficient rainfall, the need to supplement natural water sources, and the ability to grow crops in arid and semi-arid regions

CO2They will understand the positive impacts of irrigation, including increased crop yields, the ability to grow crops in diverse climates, and the potential for economic development. They will also learn about the negative consequences, such as waterlogging, salinization, and the depletion of groundwater resources

CO3Students will be introduced to various irrigation methods, such as surface irrigation (flooding, furrow, contour), sprinkler irrigation, and drip irrigation, and their respective applications in different agricultural settings. They will learn about the advantages and disadvantages of each method, including efficiency, water use, and cost-effectiveness

CO4Students will be introduced to various irrigation methods, such as surface irrigation (flooding, furrow, contour), sprinkler irrigation, and drip irrigation, and their respective applications in different agricultural settings. They will learn about the advantages and disadvantages of each method, including efficiency, water use, and cost-effectiveness

YBCE603- Environmental Engg. - I

CO1often involves learning about the different parameters used to assess water and wastewater quality, such as pH, dissolved oxygen, BOD (Biochemical Oxygen Demand), and various chemical and biological indicators

CO2Students will likely be involved in hands-on experiments to analyze water and wastewater samples, using techniques like filtration, spectroscopic analysis, and microbiological testing

CO3CO1 helps students develop the ability to select the correct tests for different types of environmental problems, considering factors like the source of pollution, the type of contaminant, and the intended use of the water or wastewater.

CO4CO1 also covers how these laboratory results can be used to assess the impact of pollution on human health, ecosystems, and infrastructure

CO5focuses on understanding and applying fundamental principles related to water and wastewater quality, including performing common environmental experiments and

knowing which tests are appropriate for specific problems

YBCE604-Geo Tech Engg I

CO1Students should be able to classify different types of soils based on their grain size and other characteristics, such as clay, silt, sand, and gravel

CO2grasp the fundamental principles and properties of soil

CO3Students should understand key soil properties like:

CO4Students should be familiar with common laboratory tests used to determine soil properties, such as

CO5Students should understand how these soil properties influence the behavior of soil in various engineering applications, such as

YBCE605-Structural Design & Drawing – II

CO1This would include the properties of cement, concrete, and reinforcing steel (rebar), as well as their interaction in a composite material

CO2Students would learn about different types of concrete structures, design philosophies (e.g., limit state design), and load transfer mechanisms

CO3Students would learn about different types of concrete structures, design philosophies (e.g., limit state design), and load transfer mechanisms

CO4CO1 could cover topics like stress-strain relationships, bending moments, shear forces, and the role of reinforcement in resisting these forces

SemesterVII

YBCE701-Design of Hydraulic Structure

CO1CO1 often aims to provide students with a comprehensive understanding of various hydraulic structures, including dams, weirs, canals, and other related infrastructure.

CO2Students will learn to differentiate between various types of hydraulic structures and understand their specific functions, such as water storage, diversion, conveyance, and regulation.

CO3CO1 may also introduce basic design principles, such as understanding hydraulic loads, stability analysis, and the selection of appropriate materials.

CO4The course outcome may also emphasize the practical applications of hydraulic structures in water management, hydropower generation, and irrigation

YBCE702-Advanced Structural Design –II (R.C.C.)

CO1This would include the properties of cement, concrete, and reinforcing steel (rebar), as well as their interaction in a composite material

CO2Students would learn about different types of concrete structures, design philosophies (e.g., limit state design), and load transfer mechanisms

CO3Students would learn about different types of concrete structures, design philosophies (e.g., limit state design), and load transfer mechanisms

CO4CO1 could cover topics like stress-strain relationships, bending moments, shear forces, and the role of reinforcement in resisting these forces

YBCE703-Environmental Engg. - II

CO1Identifying different types of wastewater (domestic, industrial, agricultural) and their specific properties (e.g., flow rate, pollutants, physical and chemical properties)

CO2Understanding different types of collection systems (e.g., separate or combined sewers, pumping stations, gravity systems) and their design considerations

CO3Gaining an understanding of various treatment processes, including primary, secondary, and tertiary treatment methods (e.g., screening, sedimentation, biological treatment, disinfection).

CO4Applying learned concepts to design, analyze, and evaluate wastewater collection and treatment systems

CO5Understanding how these concepts are applied in practice, including design, operation, and maintenance of wastewater treatment plants

YBCE704-Quantity Surveying & Costing

CO2: Understanding legal principles in land surveying, such as boundary laws and professional ethics.

CO3: Establishing control points and plotting topographical maps.

CO4: Computing areas and volumes from ground data and maps.

CO5: Setting out horizontal and vertical curves on the ground

SemesterVIII

YBCE801-Geo. Technical Engg.II

CO1Students will be able to assess and apply compaction and consolidation characteristics of soil in geotechnical problems.

CO2They will be able to calculate earth pressure on rigid retaining walls using established theories.

CO3Students will understand different methods in pavement design and construction.

CO4They will be able to design the safety of dams and embankments using slope stability analysis methods.

CO5Students will understand concepts related to pile group bearing capacity, well foundations, and dynamic loads

YBCE802- Construction Planning & Management

CO1Students will understand the fundamental principles of both methods, including network diagrams, critical path analysis, and time estimations.

CO2Students will learn to create network diagrams, representing project tasks and dependencies, using CPM and PERT.

CO3Students will be able to identify the critical path in a project, which is the sequence of activities that determine the minimum project completion time

CO4Students will learn to estimate project duration and cost using CPM and PERT techniques, considering both deterministic and probabilistic estimations.

CO5Students will learn about the different stakeholders involved in construction projects and how they contribute to the project's success.

YBCE803-Refrigeration&AirConditioning

CO1 **Material Properties and Manufacturing:** Understanding the properties of steel and how it's manufactured

CO2**Member Design:** Designing tension and compression members, columns, and column bases

- CO3**Structural Behavior:** Understanding the behavior of steel structures, especially under tension, compression, bending, and combined actions.

CO4**esign Codes:** Effectively using relevant Indian Standards (IS) codes for steel design.

- CO5**Design Philosophy:** Recognizing the design philosophy of steel structures, including limit state and working state designs.

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School of Engineering & Technology

DepartmentofCivil Engineering

Construction Technology and Management

ProgramOutcome(POs)

PO1: Engineering Knowledge
PO2: Problem Analysis
PO3: Development of Solutions
PO4: Investigation of Complex Problems
POS: Modern Tool Usage
PO6: The Engineer and Society.
PO7: Environment and Sustainability
PO8: Ethics
PO9: Individual and Team work
PO10: Communication.
PO11: Project Management and Finance
PO12: Life-long learning Programme Specific Objectives

ProgramsSpecificOutcomes(PSOs)

PSO 1. Ability to pursue careers in industry/ research and development, teaching and allied areas related to Mechanical Engineering.
PSO 2. outline the specific skills and knowledge a graduate should possess beyond basic engineering principles, focusing on areas like design, analysis, and manufacturing

CourseOutcomes(COs):

SemesterI

YMCT101 Advanced Mathematics

CO1 Advanced mathematics courses enhance students' ability to analyze complex problems break them down, and formulate coherent solutions

CO2 Students develop the ability to construct and evaluate mathematical arguments, including proofs, and to think critically about mathematical concepts

CO3 Students learn to apply mathematical concepts and techniques to real-world problems and various fields, such as science, technology, and engineering

CO4 The courses provide a deep understanding of foundational mathematical principles, including axioms and their applications.

CO5 Students are encouraged to develop an interdisciplinary perspective by applying mathematical knowledge to other disciplines

YMCT102 Construction Material

CO1 The course will cover the physical, mechanical, and durability properties of various materials, allowing students to understand how these properties influence their suitability for different applications

CO2 Students will learn how to select and use appropriate materials for different construction tasks, considering factors like cost, durability, aesthetic appeal, and environmental impact

CO3 Some courses may also cover special concretes like high-strength concrete, self-compacting concrete, and polymer concrete

CO4 Some courses may also cover quality control aspects of construction materials, including testing methods and standards

CO5 Students will be encouraged to explore research and advancements in the field of construction materials, including new materials and construction techniques.

YMCT103 Ad. Geotechnical Eng.

CO1 Students will be able to identify, classify, and analyze soil characteristics, including grain size, density, permeability, and strength

CO2 They will be able to predict how soils will behave under different loading conditions, including static and dynamic loads, and under the influence of water

CO3 Students will learn about the properties of different types of rocks and how they behave under stress, including weathering and strength

CO4 They will learn about various methods for improving the geotechnical characteristics of soil, such as soil nailing, ground reinforcement, and deep soil mixing

CO5 Students will be able to propose and design appropriate ground improvement methods for specific site conditions and project requirements

YMCT104 Construction Technology

CO1 Students will develop a strong understanding of various building construction elements, including foundations, superstructures, and different building systems

CO2 Students will learn about project management principles, resource management, and scheduling techniques

CO3 Students will gain knowledge of different construction techniques, including precast concrete, underground and underwater construction, and advanced concrete construction

CO4 Students will learn how to apply construction technologies effectively in various construction projects

CO5 Students will develop skills in analyzing and interpreting data related to construction projects

YMC105 Low-cost Build materials & cont. Technology

CO1 Students will be able to classify and understand the properties of various building materials, including traditional and innovative low-cost options like fly ash bricks, bamboo mat, and RCC planks

CO2 They will learn about the contextual relevance of natural and man-made materials and their applicability in different construction practices

CO3 Students will gain practical skills in applying construction techniques, including foundation design, wall construction, roofing, and finishing

CO4 They will learn to design and construct various types of foundations, including deep foundations, combined footings, and pile foundations

CO5 Students will understand different methods of RCC construction and the use of precast concrete structures

SemesterII

YMCT201 Construction Mgmt.

CO1 Understanding project management functions (planning, scheduling, execution, and control)

CO2 Developing project networks and timelines

CO3 Understanding time-cost relationships in project management

CO4 Creating construction project schedules

YMCT202 Prefabrication n design& its construction tech.

CO1 Students will grasp the fundamentals of prefabrication, including its definition, types, and the need for its application in modern construction

CO2 Students will be able to differentiate between various prefabrication systems, such as modular construction, precast concrete, and steel framing, as discussed in a blog by Tata Steel Nest-In

CO3 Students will learn about different structural connection methods used in prefabricated structures, including bolted connections, welded connections, and various types of jointing techniques

CO4 Students will develop the ability to design and detail prefabricated elements, considering factors such as load bearing capacity, material selection, and connection details, as mentioned in a blog by eSUB Construction Software

CO5 Students will gain hands-on experience with the erection and assembly of prefabricated structures, including the use of cranes, specialized equipment, and construction methodologies

YMCT203 Construction Equipment and Material Management

CO1 Students will learn to plan and appraise major infrastructure projects, including preparing project schedules and managing planning activities

CO2 They will gain the ability to develop project networks to determine the most efficient completion time for projects

CO3 Students will understand and apply the relationship between project timelines and costs, optimizing project execution

CO4 They will be able to implement safety measures during construction projects to ensure worker and public safety

CO5 The course aims to develop managerial skills in students, preparing them for real-world project execution.

YMCT 204 Financial Mgt. in Construction Industries

CO1 Understand the basic principles of accounting

CO2 Understand the financial and economic terminology in construction

CO3 Interpret and analyze financial reports in construction

CO4 Conduct preliminary cashflow forecasting, value management and earned value management calculations

CO5 Evaluate different corporate strategies from the financial perspective for corporate decision making

YMCT 205 Appropriate Technology and Energy Conservation

CO1 They will learn to implement energy-saving measures in various settings, including industrial facilities, buildings, and transportation

CO2Students will be able to assess energy consumption patterns, identify areas for improvement, and develop recommendations for energy conservation

CO3They will understand the relationship between energy consumption, resource depletion, and environmental pollution

CO4Students will learn to assess the cost-effectiveness of energy conservation measures and their impact on utility bills and energy costs

CO5They will be able to design and propose technology solutions that meet local needs while promoting sustainability and environmental protection

SemesterIII

YMCT301 Advance Highway Construction

CO1 Students will be able to prepare project reports for new and upgraded road projects, including conducting feasibility studies and detailed investigations

CO2 Students will learn to conduct soil and material investigations to understand their behavior and performance, including soil testing and material grading

CO3 Students will be able to perform traffic-related studies, including traffic forecasting, to support project planning

CO4 Students will learn to analyze the social impact of road projects and conduct economic feasibility analysis to justify investments

CO5 Students will be able to prepare DPRs for road projects, including drawings and understanding the tendering process for construction

YMCT302Advanced Dam Design and Construction

CO1 This involves applying knowledge of hydraulics, hydrology, geotechnical engineering, structural mechanics, and materials science to dam design and construction

CO2 Students will learn to analyze different dam types, including concrete, rockfill, and earth dams, considering factors like hydrology, seismicity, and material properties

CO3 Students will develop the skills to design various dam components, such as spillways, abutments, and foundations, using relevant codes and standards

CO4 They will gain proficiency in using software for structural analysis, hydraulic modeling, and dam safety assessment

CO5 Students will learn about different failure modes, hazard classification, and emergency action plans to ensure dam safety and minimize potential risks