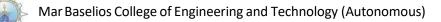
CURRICULUM 2023 (Autonomous)

VERSION 1.0

B.TECH. CIVIL ENGINEERING



MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS) Mar Ivanios Vidyanagar, Nalanchira, Thiruvananthapuram – 695 015 August 2023



CURRICULUM

FOR

B. TECH. DEGREE PROGRAMME

IN

CIVIL ENGINEERING

SEMESTERS I TO VIII

2023 SCHEME (AUTONOMOUS)

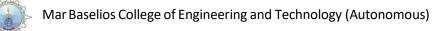


MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

(Approved by AICTE, Autonomous Institution Affiliated to APJ Abdul Kalam Technological University) MAR IVANIOS VIDYANAGAR, NALANCHIRA, THIRUVANANTHAPURAM – 695015, KERALA. Phone: 0471 2545866 Fax: 0471 2545869

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MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF CIVIL ENGINEERING

B. TECH DEGREE PROGRAMME

IN

CIVIL ENGINEERING

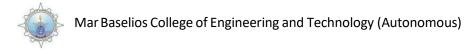
CURRICULUM

2023 SCHEME

| Items | Board of Studies (BoS) | Academic Council (AC) |
|--|------------------------|-----------------------|
| Date of Approval | 14/7/2023 | 09/08/2023 |
| Date of Approval of Revised version | 12/08/2024 | 19/06/2024 |

Head of the Department Chairman, Board of Studies

Principal Chairman, Academic Council



MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

Vision and Mission of the Institution

Vision:

To be an Institution moulding globally competent professionals as epitomes of Noble Values.

Mission:

To transform the Youth as technically competent, ethically sound and socially committed professionals, by providing a vibrant learning ambience for the welfare of humanity.

DEPARTMENT OF CIVIL ENGINEERING

Vision and Mission of the Department

Vision:

To be a Centre of Excellence in Civil Engineering education with a global perspective, creating ethically strong engineers for the service of society.

Mission:

To provide Engineering Education which can create exemplary professional Civil Engineers of high ethics with strong conceptual foundation coupled with practical insight, to serve the industryand community.



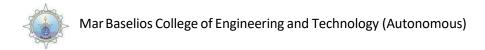
PROGRAMME EDUCATIONAL OBJECTIVES(PEOs)

- **PEO1:** Graduates of the Programme will have a successful career as Civil Engineering practitioners, entrepreneurs or professionals, addressing the needs of the industry with a global perspective.
- PEO2: They will contribute to society as ethical and responsible citizens with proven expertise
- **PEO3:** They will engage in continuous professional development and advance to leadership roles in their chosen career.

PROGRAMME OUTCOMES (POs)

Engineering graduates will be able to:

- 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. **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.
- 3. **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.
- 4. **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.
- 5. **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.
- 6. **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.
- 7. **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.
- 8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. **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.



- 11. **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 multidisciplinary environments.
- 12. 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- **PSO1:** Provide feasible and sustainable solutions to problems in various Civil Engineering disciplines such as Structural, Environmental, Geotechnical, Transportation and Construction Engineering.
- **PSO2:** Apply the principles, methods, software and codes of practices to design various Civil Engineering Systems.



MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY THIRUVANANTHAPURAM-695015

DEPARTMENT OF CIVIL ENGINEERING

CURRICULUM 2023 UNDER AUTONOMY STATUS

i) Knowledge Segments and Credits

Every course of the B Tech Programme is placed in one of the nine categories as listed in Table below. No semester shall have more than six lecture-based courses and two laboratory courses, and/or drawing/seminar/project courses in the curriculum.

| SI. No. | Category | Category Code | Totalcredits |
|------------|--|------------------|--------------|
| 1 | Humanities and Social Sciences including Management Courses | HSC | 6 |
| 2 | Basic Science Courses | BSC | 26 |
| 3 | Engineering Science Courses | ESC | 24 |
| 4 | Programme Core Courses | PCC | 74 |
| 5 | Programme Elective Courses | PEC | 18 |
| 6 | Institute Elective Courses | IEC | 6 |
| 7 | Project Work, Seminar, Comprehensive Viva Voce and internship | PWS | 13 |
| 8 | Mandatory Student Activities (P/F) | MSA | 3 |
| | Total Mandatory Credits | | 170 |
| | Value Added Courses (Optional) – Honours/Minor | VAC | 15 |

ii) Semester-wise Credit Distribution

| Semester | 1 | 11 | <i>III</i> | IV | V | VI | VII | VIII | Total |
|--------------------------|-------------------------|---------|------------|----|---|----|-----|------|-------|
| Credits for Courses | 20 20 22 20 25 22 21 17 | | | | | | 167 | | |
| Credits for Activities 3 | | | | | | | | | 3 |
| | 170 | | | | | | | | |
| Value Adde | | 15 | | | | | | | |
| | | Total C | redits | | | | | | 185 |

| | | | SEMESTER I | | | | | |
|------|---------------------------|----------------|---|---------|----|-------|--------|--|
| Slot | Cate- gory Cod e | Course Code | Courses | L-T-P-J | SS | Hours | Credit | |
| А | BSC | 23MAL10A | Linear Algebra and Calculus | 3-1-0-0 | 5 | 4 | 4 | |
| В | BSC | 23CYL10A | Engineering Chemistry | 3-1-0-0 | 5 | 4 | 4 | |
| С | ESC | 23ESB10A | Engineering Graphics | 2-0-2-0 | 4 | 4 | 3 | |
| D | ESC | 23ESB10K | Basics of Electrical Engineering B | 1-0-2-0 | 3 | 3 | 2 | |
| E | ESC | 23ESL10M | Basics of Mechanical Engineering | 2-0-0-0 | 3 | 2 | 2 | |
| | ESC | 23ESL10N | Basics of Civil Engineering | 2-0-0-0 | 3 | 2 | 2 | |
| G | ESC | 23ESL1NA | Environmental Science | 2-0-0-0 | 3 | 2 | 1* | |
| S | BSC | 23CYP10A | Engineering Chemistry Lab | 0-0-2-0 | 1 | 2 | 1 | |
| Т | ESC | 23ESP10A | Manufacturing and Construction Practices A | 0-0-2-0 | 1 | 2 | 1 | |
| | TOTAL 28 25 20 | | | | | | | |

*Not to be considered for Grade/GPA/CGPA. Pass or Fail only

| | | | SEMESTER II | | | | | | |
|------|-----------------|----------------|--|---------|----|-------|--------|--|--|
| Slot | Categoy Code | Course Code | Courses | L-T-P-J | SS | Hours | Credit | | |
| А | BSC | 23MAL10B | Vector Calculus, Differential Equations and Transforms | 3-1-0-0 | 5 | 4 | 4 | | |
| В | BSC | 23PYL10A | Engineering Physics | 3-1-0-0 | 5 | 4 | 4 | | |
| С | ESC | 23ESL10B | Applied Mechanics | 2-1-0-0 | 4 | 3 | 3 | | |
| D | ESC | 23ESB10F | Problem Solving and Programming | 2-0-2-0 | 4 | 4 | 3 | | |
| E | ESC | 23ESL10R | Building Materials and Construction Technology | 3-0-0-0 | 5 | 3 | 3 | | |
| G | HSC | 23HSJ1NB | Professional Communication | 2-0-0-2 | 5 | 4 | 1* | | |
| S | BSC | 23PYP10A | Engineering Physics Lab | 0-0-2-0 | 1 | 2 | 1 | | |
| Т | ESC | 23ESP10C | Design Studio I | 0-0-2-0 | 1 | 2 | 1 | | |
| | TOTAL 30 26 20 | | | | | | | | |

*Not to be considered for Grade/GPA/CGPA. Pass or Fail only



| | | | SEMESTER III | | | | |
|------|----------|----------------|---|---------|-------|-------|--------|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit |
| A | BSC | 23MAL20A | Partial Differential Equations and Complex Analysis | 3-1-0-0 | 5 | 4 | 4 |
| В | PCC | 23CEL20A | Mechanics of Structures | 3-1-0-0 | 5 | 4 | 4 |
| С | PCC | 23CEL20B | Fluid Mechanics and Hydraulics | 3-1-0-0 | 5 | 4 | 4 |
| D | PCC | 23CEL20C | Surveying and Geomatics | 3-0-0-0 | 5 | 3 | 3 |
| E | ESC | 23ESL00A | Design Engineering | 2-0-0-0 | 3 | 2 | 2 |
| G | HSC | 23HSL2NA | Professional Ethics | 2-0-0-0 | 3 | 2 | 1* |
| S | PCC | 23CEP20A | Fluid Mechanics Laboratory | 0-0-3-0 | 2 | 3 | 2 |
| Т | PCC | 23CEP20B | Surveying Laboratory | 0-0-3-0 | 2 | 3 | 2 |
| М | VAC | | Minor Course | 3-0-0-0 | 5 | 3 | 3 |
| | | | | TOTAL | 30/35 | 25/28 | 22/25 |

*Not to be considered for Grade/GPA/CGPA. Pass or Fail only

| | | | SEMESTER IV | | | | |
|------|--------------|----------------|---|---------|-------|-------|--------|
| Slot | Categor y | Course Code | Courses | L-T-P-J | SS | Hours | Credit |
| A | BSC | 23MAL20D | Probability, Statistics and Numerical Methods | 3-1-0-0 | 5 | 4 | 4 |
| В | PCC | 23CEL20D | Structural Analysis | 3-1-0-0 | 5 | 4 | 4 |
| С | PCC | 23CEL20E | Hydrology and Water Resources Engineering | 4-0-0-0 | 6 | 4 | 4 |
| D | PCC | 23CEB20F | Water and Wastewater Engineering | 4-0-2-0 | 7 | 6 | 5 |
| E | HSC | 23HSL2NB | Universal Human Values II | 2-1-0-0 | 4 | 3 | 1* |
| G | ESC | 23ESL2NC | Industrial Safety Engineering | 2-1-0-0 | 4 | 3 | 1* |
| S | PCC | 23CEP20C | Material Testing Lab I | 0-0-2-0 | 1 | 2 | 1 |
| M/H | VAC | | Minor/Honours Course | 3-0-0-0 | 5 | 3 | 3 |
| | | | TOTAL | 32/37 | 26/29 | 20/23 | |

*Not to be considered for Grade/GPA/CGPA. Pass or Fail only



| | | | SEMESTER V | | | | |
|------|----------|----------------|--|---------|-------|-------|--------|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit |
| A | PCC | 23CEL30A | Design of Reinforced Concrete Structures | 3-0-0-0 | 5 | 3 | 3 |
| В | PCC | 23CEJ30B | Applications of Artificial Intelligence in Civil Engineering | 2-0-0-1 | 4 | 3 | 3 |
| С | PCC | 23CEL30C | Soil Mechanics | 3-1-0-0 | 5 | 4 | 4 |
| D | PCC | 23CEL30D | Transportation Engineering | 3-0-0-0 | 5 | 3 | 3 |
| E | PCC | 23CEJ30E | Quantity Surveying and Valuation | 3-0-0-2 | 7 | 5 | 5 |
| F | PEC | 23CEL31X | Program Elective I | 3-0-0-0 | 5 | 3 | 3 |
| S | PCC | 23CEP30A | Material Testing Lab II | 0-0-3-0 | 2 | 3 | 2 |
| Т | PCC | 23CEP30B | Transportation Engineering Laboratory | 0-0-3-0 | 2 | 3 | 2 |
| M/H | VAC | | Minor/Honours Course | 3-0-0-0 | 5 | 3 | 3 |
| | | | TOTAL | 35/40 | 27/30 | 25/28 | |

| | | | Program Elective I | | | | |
|------|----------|----------------|---|---------|----|-------|--------|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit |
| F | PEC | 23CEL31A | Advanced Concrete Technology | 3-0-0-0 | 5 | 3 | 3 |
| F | PEC | 23CEL31B | Structural health monitoring and retrofitting | 3-0-0-0 | 5 | 3 | 3 |
| F | PEC | 23CEL31C | Geotechnical Investigation | 3-0-0-0 | 5 | 3 | 3 |
| F | PEC | 23CEL31D | Mechanics of Fluid Flow | 3-0-0-0 | 5 | 3 | 3 |
| F | PEC | 23CEL31E | Air Quality Management | 3-0-0-0 | 5 | 3 | 3 |
| F | PEC | 23CEL31F | Transportation Planning | 3-0-0-0 | 5 | 3 | 3 |



| | | | SEMESTER VI | | | | |
|------|----------|----------------|--|---------|-------|-------|--------|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit |
| А | PCC | 23CEL30F | Design of Steel Structures | 3-1-0-0 | 5 | 4 | 4 |
| В | PCC | 23CEL30G | Foundation Engineering | 3-0-0-0 | 5 | 3 | 3 |
| С | PEC | 23CEL32X | Program Elective II | 3-0-0-0 | 5 | 3 | 3 |
| Е | IEC | 23IEL31X | Institute Elective I | 3-0-0-0 | 5 | 3 | 3 |
| F | HSC | 23HSL30A | Business Economics and Accountancy | 3-0-0-0 | 5 | 3 | 3 |
| S | РСС | 23CEP30C | Geotechnical Engineering Laboratory | 0-0-3-0 | 2 | 3 | 2 |
| Т | PCC | 23CEP30D | Design Studio II | 0-0-3-0 | 2 | 3 | 2 |
| U | PWS | 23CES38A | Seminar | 0-0-3-0 | 2 | 3 | 2 |
| M/H | VAC | | Minor/Honours Course | 3-0-0-0 | 5 | 3 | 3 |
| | | | TOTAL | 31/36 | 25/28 | 22/25 | |

| | | | Program Elective II | | | | |
|------|----------|-------------|---|---------|----|-------|--------|
| Slot | Category | Course Code | Course Name | L-T-P-J | SS | Hours | Credit |
| C | PEC | 23CEL32A | Advanced Structural Analysis | 3-0-0-0 | 5 | 3 | 3 |
| С | PEC | 23CEL32B | Prestressed Concrete | 3-0-0-0 | 5 | 3 | 3 |
| С | PEC | 23CEL32C | Ground Improvement Techniques | 3-0-0-0 | 5 | 3 | 3 |
| C | PEC | 23CEL32D | Applied soil mechanics | 3-0-0-0 | 5 | 3 | 3 |
| C | PEC | 23CEL32E | Applied Hydrology | 3-0-0-0 | 5 | 3 | 3 |
| С | PEC | 23CEL32F | Solid and Hazardous Waste Management | 3-0-0-0 | 5 | 3 | 3 |
| С | PEC | 23CEL32G | Traffic Flow Modelling | 3-0-0-0 | 5 | 3 | 3 |



| | | Institute Elective I | | | | | | | | | |
|------|----------|----------------------|---|---------|----|-------|--------|--|--|--|--|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit | | | | |
| E | IEC | 23IEL31A | Green Building and Energy Management | 3-0-0-0 | 5 | 3 | 3 | | | | |
| E | IEC | 23IEL31B | Engineering Project Management | 3-0-0-0 | 5 | 3 | 3 | | | | |
| E | IEC | 23IEL31C | Disaster Mitigation and Management | 3-0-0-0 | 5 | 3 | 3 | | | | |
| E | IEC | 23IEL31D | Environmental Impact Assessment and Life Cycle Analysis | 3-0-0-0 | 5 | 3 | 3 | | | | |

| | | | SEMESTER VII | | | | |
|------|----------|----------------|---------------------------------------|----------|--------------|-------|--------|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit |
| А | РСС | 23CEJ40B | Traffic Engineering and Management | 3-0-0-2 | 7 | 5 | 5 |
| В | PEC | 23CEL43X | Program Elective III | 3-0-0-0 | 5 | 3 | 3 |
| С | PCC | 23CEB40B | Construction Project Management | 3-0-2-0 | 6 | 5 | 4 |
| E | IEC | 23IEL42X | Institute Elective II | 3-0-0-0 | 5 | 3 | 3 |
| т | PWS | 23CEV48A | Comprehensive Course Viva | 0-0-2-0 | 1 | 2 | 1 |
| | | 23CEJ48A | Project | 0.0.10.0 | | 10 | 5 |
| U | PWS | 23CEI48A | Internship* | 0-0-10-0 | 10 | 10 | Э |
| Н | VAC | | Honours Course | 3-0-0-0 | 5 | 3 | 3 |
| М | VAC | | Minor Course | 0-0-6-0 | 6 | 3 | 3 |
| | | | TOTAL | | 34/39 /40 | 28/31 | 21/24 |

* Students can opt for Internship either in S7 or S8. However, in S7, the internship can be permitted only if there are no pending Programme/Course requirements in the semester, that need to be completed in College in the offline mode, such as laboratory sessions.



| | | | Program Elective III | | | | |
|------|----------|----------------|--|---------|----|-------|--------|
| Slot | Category | Course Code | Course Name | L-T-P-J | SS | Hours | Credit |
| В | PEC | 23CEL43A | Computed aided Structural analysis | 3-0-0-0 | 5 | 3 | 3 |
| В | PEC | 23CEL43B | Advanced Design of Structures | 3-0-0-0 | 5 | 3 | 3 |
| В | PEC | 23CEL43C | Environmental Geotechnics | 3-0-0-0 | 5 | 3 | 3 |
| В | PEC | 23CEL43D | Integrated Watershed Management | 3-0-0-0 | 5 | 3 | 3 |
| В | PEC | 23CEL43E | Industrial Wastewater Management | 3-0-0-0 | 5 | 3 | 3 |
| В | PEC | 23CEL43F | Ecological Engineering | 3-0-0-0 | 5 | 3 | 3 |
| В | PEC | 23CEL43G | Road Safety and Management | 3-0-0-0 | 5 | 3 | 3 |
| В | PEC | 23CEL43H | Geometric Design of Transportation Facilities | 3-0-0-0 | 5 | 3 | 3 |

| | | Institute Elective II | | | | | | | | | | | |
|------|----------|-----------------------|---|---------|----|-------|--------|--|--|--|--|--|--|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit | | | | | | |
| E | IEC | 23IEL42A | Global Climate Change | 3-0-0-0 | 5 | 3 | 3 | | | | | | |
| E | IEC | 23IEL42B | Environmental Health and Safety | 3-0-0-0 | 5 | 3 | 3 | | | | | | |
| E | IEC | 23IEL42C | Application of Remote Sensing and GIS | 3-0-0-0 | 5 | 3 | 3 | | | | | | |
| E | IEC | 23IEL42D | Circular Economy for Sustainable Development | 3-0-0-0 | 5 | 3 | 3 | | | | | | |



| | SEMESTER VIII | | | | | | | | | | | |
|------|---------------|----------------------|-----------------------------------|--------------|-------|-------|--------|--|--|--|--|--|
| Slot | Category | Course Code | Courses | L-T-P-J | SS | Hours | Credit | | | | | |
| A | PCC | 23CEL40C | Integrated Waste Management | 3-0-0-0 | 5 | 3 | 3 | | | | | |
| В | PEC | 23CEL44X | Program Elective IV | 3-0-0-0 | 5 | 3 | 3 | | | | | |
| С | PEC | 23CEL45X | Program Elective V | 3-0-0-0 | 5 | 3 | 3 | | | | | |
| D | PEC | 23CEL46X | Program Elective VI | 3-0-0-0 | 5 | 3 | 3 | | | | | |
| U | PWS | 23CEJ48B 23CEI48A | Project Internship* | 0-0-10- 0 | 10 | 10 | 5 | | | | | |
| M/H | VAC | | Minor/Honours Course | 0-0-6-0 | 6 | 6 | 3 | | | | | |
| | | TOTAL | 30/36 | 22/25 | 17/20 | | | | | | | |



| Program Elective IV | | | | | | | | | | | |
|---------------------|----------|----------------|---|---------|----|-------|--------|--|--|--|--|
| Slot | Category | Course Code | Course Name | L-T-P-J | SS | Hours | Credit | | | | |
| В | PEC | 23CEL44A | Introduction to Bridge Engineering | 3-0-0-0 | 5 | 3 | 3 | | | | |
| В | PEC | 23CEL44B | Structural Dynamics | 3-0-0-0 | 5 | 3 | 3 | | | | |
| В | PEC | 23CEL44C | Soil Dynamics and Machine Foundation | 3-0-0-0 | 5 | 3 | 3 | | | | |
| В | PEC | 23CEL44D | Geosynthetics and Reinforced Soil Structures | 3-0-0-0 | 5 | 3 | 3 | | | | |
| В | PEC | 23CEL44E | Irrigation and Drainage | 3-0-0-0 | 5 | 3 | 3 | | | | |
| В | PEC | 23CEL44F | Advanced Environmental Engineering | 3-0-0-0 | 5 | 3 | 3 | | | | |
| В | PEC | 23CEL44G | Mass Transportation Systems | 3-0-0-0 | 5 | 3 | 3 | | | | |
| В | PEC | 23CEL44H | Pavement Analysis and Design | 3-0-0-0 | 5 | 3 | 3 | | | | |
| | | | Program Elective V | | | | | | | | |
| Slot | Category | Course Code | Course Name | L-T-P-J | SS | Hours | Credit | | | | |
| C | PEC | 23CEL45A | Seismic Design of Structures | 3-0-0-0 | 5 | 3 | 3 | | | | |
| C | PEC | 23CEL45B | Advanced Numerical Methods | 3-0-0-0 | 5 | 3 | 3 | | | | |
| C | PEC | 23CEL45C | Soil Structure Interaction | 3-0-0-0 | 5 | 3 | 3 | | | | |
| C | PEC | 23CEL45D | Earth & Rockfill Dam Engineering | 3-0-0-0 | 5 | 3 | 3 | | | | |
| C | PEC | 23CEL45E | Hydroclimatology | 3-0-0-0 | 5 | 3 | 3 | | | | |
| С | PEC | 23CEL45F | Environmental Impact Assessment | 3-0-0-0 | 5 | 3 | 3 | | | | |
| С | PEC | 23CEL45G | Railway, Airport and Harbour Engineering | 3-0-0-0 | 5 | 3 | 3 | | | | |
| С | PEC | 23CEL45H | Pavement Asset Management for Roads, Airports and Ports | 3-0-0-0 | 5 | 3 | 3 | | | | |



| | | | Program Elective VI | | | | |
|------|----------|----------------|--|---------|----|-------|--------|
| Slot | Category | Course Code | Course Name | L-T-P-J | SS | Hours | Credit |
| D | PEC | 23CEL46A | Structural Masonry and alternative building technologies | 3-0-0-0 | 5 | 3 | 3 |
| D | PEC | 23CEL46B | Probability in Civil Engineering | 3-0-0-0 | 5 | 3 | 3 |
| D | PEC | 23CEL46C | Geotechnical Earthquake Engineering | 3-0-0-0 | 5 | 3 | 3 |
| D | PEC | 23CEL46D | Introductory Rock Mechanics | 3-0-0-0 | 5 | 3 | 3 |
| D | PEC | 23CEL46E | Environmental Microbiology | 3-0-0-0 | 5 | 3 | 3 |
| D | PEC | 23CEL46F | Analysis and Evaluation of Transportation Systems | 3-0-0-0 | 5 | 3 | 3 |
| D | PEC | 23CEL46G | Pavement Evaluation, Rehabilitation and Maintenance | 3-0-0-0 | 5 | 3 | 3 |

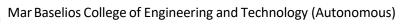


MINOR BASKET





| <u>د</u> | | Basket I | | | | Basket II | | | | Basket III | | |
|------------|--|--|---------|---------|------------------------------------|--|---------|----------------------------|----------------|--|---------|---------|
| Semester | Infrastructure Development and Management | | | Enviror | nmental and Water R Engineering | esou | rce | Transportation Engineering | | | | |
| S | Course Code | Course | L-T-P-J | Credits | Course Code | Course | L-T-P-J | Credits | Course Code | Course | L-T-P-J | Credits |
| S 3 | 23CEL2MA | Building Information Modelling | 3-0-0 | 3 | 23CEL2MC | Climate Change and Disaster Mitigation | 3-0-0 | 3 | 23CEL2ME | Traffic Engineering | 3-0-0 | 3 |
| S4 | 23CEL2MB | Infrastructure Health Monitoring | 3-0-0-0 | 3 | 23CEL2MD | Watershed Management | 3-0-0-0 | 3 | 23CEL2MF | Urban Transportation Planning | 3-0-0-0 | 3 |
| S5 | 23CEL3MA | Infrastructure Project Management | 3-0-0-0 | 3 | 23CEL3MC | Air Pollution and Control Techniques | 3-0-0-0 | 3 | 23CEL3ME | Traffic Flow Theory and Modelling | 3-0-0 | 3 |
| S6 | 23CEL3MB | Performance and Risk Assessment of Infrastructure Systems | 3-0-0-0 | 3 | 23CEL3MD | Integrated Waste Management for Smart Cities | 3-0-0-0 | 3 | 23CEL3MF | Transportation and logistics management | 3-0-0 | 3 |
| S7/ S8 | 23CEl4MA | Mini Project | 0-9-0-0 | 3 | 23CEL4MC | Mini Project | 0-9-0-0 | 3 | 23CEL4ME | Mini Project | 0-9-0-0 | 3 |





| | | Basket IV | | | Basket V | | | | | |
|------------|-------------|---|---------|-------------|--------------------------------|--|---------|-------------|--|--|
| Semester | | l Reality and Auton nologies in Constru | | | Engineering Project Management | | | | | |
| Ser | Course Code | Course | [-d-T-J | Credi ts | Course Code | Course | ſ-d-1- | Credi ts | | |
| S3 | 23CEL2MG | Infrastructure Management with Informatics | 0-0-0-8 | 3 | 23CEL2MI | Advanced Project Management | 3-0-0-0 | 3 | | |
| S 4 | 23CEL2MH | Construction Automation and Robotics | 3-0-0-0 | 3 | 23CEL2MJ | Building Information Modelling in Management | 3-0-0 | 3 | | |
| S5 | 23CEL3MG | Machine Learning for Construction Automation | 0-0-0-8 | 3 | 23CEL3MI | Contract Management | 3-0-0-0 | 3 | | |
| S 6 | 23CEL3MH | Virtual Reality in Construction | 0-0-0-8 | 3 | 23CEL3MJ | Quality, Risk and Safety Management | 3-0-0 | 3 | | |
| S7/ S8 | 23CEL4MG | Mini Project | 0-9-0-0 | 3 | 23CEL4MI | Mini Project | 0-9-0-0 | 3 | | |



HONOURS BASKET

Mar Baselios College of Engineering and Technology (Autonomous)

| Semester | | Basket I | Basket II | | | | Basket III | | | | | |
|------------|----------------|----------------------------------|-----------|---------|----------------|--|------------|---------|----------------|--|---------|---------|
| Sen | Course Code | Course | L-T-P-J | Credits | Course Code | Course | L-T-P-J | Credits | Course Code | Course | L-T-P-J | Credits |
| S4 | 23CEL2HB | Advanced Mechanics of Solids | 3-0-0-0 | 3 | 23CEL2HD | Environmental Pollution Control Techniques | 3-0-0-0 | 3 | 23CEL2HF | Geographical Information System | 2-0-2-0 | 3 |
| S5 | 23CEL3HA | Modern Construction Materials | 3-0-0 | 3 | 23CEL3HC | Ground Water Hydrology | 3-0-0-0 | 3 | 23CEL3HE | Pavement Construction and Management | 3-0-0-0 | 3 |
| S 6 | 23CEL3HB | Finite Element Method | 3-0-0 | 3 | 23CEL3HD | Environmental Pollution Modelling | 3-0-0-0 | 3 | 23CEL3HF | Transportation System Management | 3-0-0 | 3 |
| S7 | 23CEL4HA | Structural Dynamics | 3-0-0-0 | 3 | 23CEL4HC | Earth Dams and Earth Retaining Structure | 3-0-0-0 | 3 | 23CEL4HE | Soil Dynamics and Machine Foundation | 3-0-0-0 | 3 |
| S8 | 23CEL4HB | Mini Project | 0-9-0-0 | 3 | 23CEL4HD | Mini Project | 0-9-0-0 | 3 | 23CEL4HF | Mini Project | 0-9-0-0 | 3 |