Kalinga University
Technology
Master Of Technology In Civil Engineering (Highway Engineering)

PO

S. No.	Program Outcome (PO) Description
1	Scholarship of Knowledge – Acquire in depth knowledge of highway technology, including wider and global perspective, with an ability to discriminate, evaluate, analyze and synthesize existing and new knowledge and integration of same for enhancement of Knowledge.
2	Critical Thinking – Analyze complex highway engineering problems critically, apply independent judgement for synthesizing information to make intellectual and or creative advances for conducting research in theoretical, practical and policy context.
3	Problem Solving – Think laterally and originally, conceptualize and solve highway technological problems, evaluate a wide range of potential solutions for those problems and arrive at feasible, optimal solutions after considering public health and safety, cultural, societal and environmental factors.
4	Research Skill – Extract information pertinent to unfamiliar problems through literature survey and experiments, apply appropriate research methodologies, techniques and tools, design, conduct experiments, analyze and interpret data, demonstrate higher order skill and view things in a broader perspective, contribute individually / in groups to the development of scientific / technological knowledge in one or more domains of materials, design, construction, maintenance and management of pavements.
5	Usage of Modern tool – Create, select, learn and apply appropriate techniques, resources and modern engineering and software for prediction and modeling of pavement performances.
6	Collaborative and multidisciplinary research – Possess knowledge and understanding of group dynamics, recognize opportunities and contribute positively to collaborative multi-disciplinary scientific research, demonstrate capacity for self-management and team work, decision making based on open mindedness, objectivity and rational analysis in order to achieve common goals and further learning of themselves as well as others

7	Project management and Finance- Demonstrate knowledge and understanding of highways and project management and apply the same to one's own work as a member and leader in team, manage projects efficiently in highway technology and inter-disciplinary environments after consideration of economic and financial factors
8	Communication – Communicate with the engineering community and with society at large, regarding complex engineering activities confidently and effectively, such as, being able to comprehend and write effective reports and design documentation by adhering to appropriate standards, make effective presentations and give and receive clear instructions.
9	Life Long Learning – Recognize the need for, and have the preparation and ability engage in lifelong learning independently, with high level of enthusiasm and commitment to improve knowledge and competence continuously
10	Ethical Practices and Social responsibility – Acquire and intellectual integrity, professional code of conduct, ethics of research and scholarship, consideration of the impact of research outcomes on professional practices and an understanding of responsibility to contribute to the community for sustainable development of society
11	Independent and reflective thinking – Observe and examine critically outcome of ones actions and make corrective measures subsequently and learn from mistakes without depending on external feedback.

PSO

S. No.	Program Specific Outcome (PSO) Description
1	Apply knowledge of materials, analysis and design for construction, maintenance and management of pavements.
2	Demonstrate the ability to carry out pavement surveys and investigations for road projects.

CO

S.No.	Course Code	Course Name	Course Outcome (CO's) - Description
1	MTHE101	Highway infrastructure design	**CO1:** On completion of the course, the student would have gained knowledge of highway design & traffic analysis.
2	MTHE102	Traffic Engineering	**CO1:** To impart knowledge in traffic flow characteristics, flow modeling & computer simulation. Student would have gained knowledge on traffic flow that would help them to develop an efficient transport system
3	MTHE103	Pavement analysis and design	**CO1:** The students are expected to understand the properties & use of various material &construction, analysis of stress distribution, evaluation & maintenance of flexible & rigid pavement.
4	MTHE104	Urban Transportation Planning	**CO1:** Student would have gained knowledge about the urban area like how to develop the rural area, to improve particular area and data calculation for particular developing area
5	MTHE105A	Applied Statistics	**CO1:** Students would have the knowledge about the mathematical applications of statistics , probability in various parts of highway engineering like forecasting the required numerical data in transportation sector.
6	MTHE105B	Project Management	**CO1:** To impart knowledge of activities that accurately forecast project cost, timelines and quality improvement process for successful resources, communication and risk and change management
7	MTHE105C	Bridge engineering	**CO1:** To impart knowledge of mechanics of various kinds of bridges and its sub structure.
8	MTHE201	HIGHWAY PROJECT FORMULATION & ECONOMICS	**CO1:** To learn about sub grade preparation
			CO2: To learn about economics and base course
			CO3: to learn about Highway development
			CO4: to learn about various aspects for project approval
9	MTHE202	PAVEMENT CONSTRUCTION MAINTENANCE AND MANAGEMENT	**CO1:** to learn about basic PMS.
			CO2: to learn about evaluation of existing pavement
			CO3: to learn about construction and maintenance of pavement
10	MTHE203	TRAFFIC ANALYSIS	**CO1:** to learn traffic studies ,their analysis & cost
			CO2: to learn design of signals
			CO3: to learn transportation system management
11	MTHE204	PAVEMENT MATERIAL CHARACTERIZATION	**CO1:** to learn about characteristic of sub grade soil
			CO2: to learn about characteristic of road aggregate
			CO3: to learn about characteristic of uses of road construction
			CO1: to learn the basic principles of various ground improvement techniques

12	MTHE205A	Ground Improvement Techniques	**CO2:**	to understand the design procedure of various ground improvement techniques
			CO3:	to learn use of geotextileand other synthetic materials for reinforcing soil
13	MTHE205B	Advanced Modelling Techniques In Highway Engineering	**CO1:**	To impart knowledge of various smart solutions and advanced modelling techniques used in Highway engineering, and also to enrich new innovative ideas in them
14	MTHE205C	Financial Management in Construction Industries	**CO1:**	To impart knowledge of activities that accurately forecast project cost, timelines and quality improvement process for successful resources, communication and risk and change management
15	MTHE301	CONCRETE TECHNOLOGY	**CO1:**	to understand the properties of ingredients
			CO2:	to study the behavior of concrete at its fresh & hardened state
			CO3:	to understand special concrete &their uses
16	MTHE302	Communication and Research Methodology	**CO1:**	Provide or overview the concept methods and tools by which communication research is designed ,conducted inpreced and critically evaluated .
17	MTHE303A	Construction Equipment and Material Management	**CO1:**	To train the students with the latest and the best in the rapidly changing fields of construction engineering
			CO2:	To prepare the students to be industry leaders who implement the best engineering and management practices and technologies in the construction industries
18	MTHE303B	ENVIRONMENTAL IMPACT ASSESSMENT FOR TRANSPORTATION PROJECTS	**CO1:**	To impart knowledge regarding the Environment Impact Assessment requirements and procedures for any transportation project
19	MTHE303C	LAND USE AND TRANSPORTATION MODELLING	**CO1:**	To impart the knowledge of various landuses and the type of transportation models required for it for a well planned and sustainable development in various areas.
20	MTHE304	Preliminary Work on Dissertation	**CO1:**	Capable to conduct research in writing studies and profession writing.
			CO2:	Capable to improve their ability to frame and analysis problems
			CO3:	Impart advanced skills in planning, drafting and editing.
21	MTHE305	Seminar based on Dissertation	**CO1:**	Capable to conduct research in writing studies and profession writing.
			CO2:	Capable to improve their ability to frame and analysis problems
			CO3:	Impart advanced skills in planning, drafting and editing.
22	MTHE401	Dissertation	**CO1:**	Capable to conduct research in writing studies and profession writing.
			CO2:	Capable to improve their ability to frame and analysis problems
			CO3:	Impart advanced skills in planning, drafting and editing.