Subject: Highway Engineering Th.4	**No. of days/per week Class Allotted: 5**	**Name of the teaching faculty: Er. Adyashree Sahoo**
Week	**Class/Day**	**Theory Topics**
1st	1st	**Introduction:** Importance of Highway transportation
	2nd	Importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.
	3rd	Functions of Indian Roads Congress
	4th	IRC classification of roads
	5th	Organisation of state highway department
2nd	1st	**Road Geometrics:** Glossary of terms used in geometric and their importance.
	2nd	Right of Way, Formation Width
	3rd	Road Shoulder, Road Margin
	4th	Carriage Way, Side Slopes
	5th	Kerbs, Formation Level
3rd	1st	Camber and Gradient
	2nd	Design and average running speed
	3rd	Analysis of Stopping Sight Distance (**SSD**).
	4th	Solving the Problem related to Stopping Sight Distance (**SSD**).
	5th	Solving the Problem related to Stopping Sight Distance (**SSD**).
4th	1st	Analysis of Passing Sight Distance/Overtaking Sight Distance (OSD).
	2nd	Analysis of Passing Sight Distance/Overtaking Sight Distance (OSD).
	3rd	Solving the Problem related to Passing Sight Distance/Overtaking Sight Distance (OSD).
	4th	Solving the Problem related to Passing Sight Distance/Overtaking Sight Distance (OSD).
	5th	Solving the Problem related to Passing Sight Distance/Overtaking Sight Distance (OSD).
5th	1st	Necessity of curves, horizontal and vertical curves including transition curves
	2nd	Analysis of Super-elevation
	3rd	Necessity of super elevation, Methods of providing super – elevation
	4th	Solving the Problem related to Super Elevation
	5th	Solving the Problem related to Super Elevation
6th	1st	**Road Materials:** Difference types of road materials in use: soil, aggregates, and binders
	2nd	Difference types of road materials in use: soil, aggregates, and binders

	3rd	Difference types of road materials in use: soil, aggregates, and binders
	4th	Function of soil as highway Sub-grade
	5th	California Bearing Ratio (CBR)
7th	1st	Methods of finding CBR valued in the laboratory and at site and their significance
	2nd	Testing aggregates: Abrasion test, Impact test
	3rd	Crushing strength test
	4th	Water Absorption Test & Soundness Test
	5th	**Road Pavements: Road Pavement**: Flexible and rigid pavement, their merits and demerits
8th	1st	Typical cross-sections, functions of various components
	2nd	Flexible pavements: Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment
	3rd	Construction Of Embankment, Compaction, Stabilization, Preparation Of Subgrade, Methods Of Checking Camber,
	4th	Gradient And Alignment As Per Recommendations Of IRC, Equipment Used For Subgrade Preparation
	5th	Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization (no designs)
9th	1st	Types of stabilization: Mechanical stabilization
	2nd	Lime stabilization , Cement stabilization, Fly ash stabilization
	3rd	Base Course: Preparation of base course, Bric,k soling, stone soling and metalling
	4th	Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types
	5th	Surfacing: Surface dressing (i) Premix carpet and (ii) Semi dense carpet
10th	1st	Bituminous concrete , Grouting
	2nd	Rigid Pavements: Concept of concrete roads as per IRC specifications
	3rd	**Hill Roads:** Introduction- Definition
	4th	Typical cross-sections showing all details of a typical hill road in cut
	5th	Typical cross-sections showing all details of partly in cutting
11th	1st	Typical cross-sections showing all details of partly in filling
	2nd	Breast Walls
	3rd	Retaining walls
	4th	Different types of bends
	5th	**Road Drainage:** Necessity of road drainage work
12th	1st	Cross drainage works

	2nd	Surface and sub-surface drains and storm water drains
	3rd	Location, spacing and typical details of side drains
	4th	Side ditches for surface drainage, intercepting drains
	5th	Pipe drains in hill roads, details of drains in cutting embankment
13th	1st	Typical cross sections
	2nd	**Road Maintenance :** Common types of road failures – their causes and remedies
	3rd	Common types of road failures – their causes and remedies
	4th	Maintenance of bituminous road such as patch work and resurfacing
	5th	Maintenance of concrete roads – filling cracks, repairing joints
14th	1st	Maintenance of shoulders (berm), maintenance of traffic control devices
	2nd	Basic concept of traffic study
	3rd	Traffic safety and traffic control signal
	4th	**Construction equipments:** Preliminary ideas of the following plant and equipment: Hot mixing plant
	5th	Tipper, tractors (wheel and crawler) scraper
15th	1st	Bulldozer, Dumpers
	2nd	Shovels, Graders
	3rd	Roller Dragline
	4th	Road pavers
	5th	Modern construction equipments for roads
16th	1st	Revision
	2nd	Revision
	3rd	Revision
	4th	Revision
	5th	Revision
17th	1st	Revision
	2nd	Revision
	3rd	Revision
	4th	Revision
	5th	Revision