NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF CIVIL ENGINEERING

COURSE PLAN – PART I

Name of the programme and specialization	M. Tech. (Transportation Engineering and Management)
Course Title	TRANSPORTATION PLANNING

Course Code	CE604	**No. of Credits**	4
Course Code of Pre-requisite subject(s)	None		

Session	January 2019	**Section (if, applicable)**	N.A
Name of Faculty	Mrs. Gouri Gopan	**Department**	Civil Engineering
Official Email	gouri@nitt.edu	**Telephone No.**	8281510657

Name of Course Coordinator(s) (if, applicable)	N.A

Official E-mail	-	**Telephone No.**	-
Course Type (please tick appropriately)	✓ Core course	☐ Elective course	

Syllabus (approved in Senate)

Urban morphology - Urbanization and travel demand – Urban activity systems and travel patterns – Systems approach – Trip based and Activity based approach - Urban Transportation Planning – Goals, Objectives and Constraints - Inventory, Model building, Forecasting and Evaluation - Study area delineation – Zoning - UTP survey

Trip generation models – Trip classification - productions and attractions – Trip rate analysis - Multiple regression models - Category analysis - Trip distribution models – Growth factor models, Gravity model and Opportunity modes

Modal split models – Mode choice behavior – Trip end and trip interchange models- Probabilistic models - Utility functions - Logit models - Two stage model. Traffic assignment – Transportation networks – Minimum Path Algorithms - Assignment methods – All or Nothing assignment and Multi path assignment - Route-choice behavior

User Equilibrium assignment- System optimum assignment- Incremental assignment- Capacity restraint assignment- Stochastic user equilibrium assignment- Dynamic Assignment

Landuse transportation models – Urban forms and structures - Location models - Accessibility – Landuse models - Lowry derivative models – Micro level Planning- International Practices

Reference books:

1. Hutchinson, B.G., *Principles of Urban Transport Systems Planning*, Scripta, McGraw-Hill, NewYork, 1974.

2. Khisty C.J., *Transportation Engineering - An Introduction*, Prentice Hall, NJ, 2007.

3. Papacostas C.S. and Prevedouros, P.D., *Transportation Engineering & Planning*, PHI, New Delhi,2002.

4. Transport analysis guidance: WebTAG

COURSE OBJECTIVES

1. To learn the fundamentals of transportation planning
2. To understand the classical methods of urban transportation planning
3. To understand the trip generation and trip distribution concepts
4. To learn the mode and route choice behaviour of trip makers
5. To be acquainted with the transportation landuse interaction

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO)
1. Ability to interpret the urban activity system and travel patterns	1, 2, 4
2. Skill to demonstrate the classical methods of urban transportation planning	1, 2, 3, 5, 7, 9
3. Ability to apply the four stage travel demand modeling	1, 2, 3, 5, 7, 9
4. Capability to understand the trip generation and trip distribution concepts	1, 2, 3, 5, 7, 9
5. Capability to understand the mode and route choice of trip makers	1, 2, 3, 5, 7, 9

COURSE PLAN – PART II

COURSE OVERVIEW

To understand the fundamental principles of transportation planning and learn the classical four stage urban transportation planning models.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week 1	• Syllabus and course content • Urban morphology • Urbanization and travel demand Urban activity systems and travel patterns	• Chalk and Board • PPT

2	Week 2	• Systems approach • Trip based and Activity based approach • Urban Transportation Planning Goals, Objectives and Constraints	• Chalk and Board • PPT
3	Week 3	• Inventory, Model building, Forecasting and Evaluation • Study area delineation • Principles of Zoning UTP surveys	• Chalk and Board • PPT
4	Week 4	• Trip generation models • Trip classifications • Productions and attractions Trip rate analysis	• Chalk and Board • PPT
5	Week 5	• Multiple regression models • Step-wise approach • Goodness-of-fit parameters Category analysis	• Chalk and Board • Tutorials
6	Week 6	• Trip distribution models • Growth factor models Comparison of the models	• Chalk and Board • Tutorials
7	Week 7	• Cycle Test I	
8	Week 8	• Gravity model • Calibration of the Gravity model • Intervening and Competing Opportunity models	• Chalk and Board • Tutorials
9	Week 9	• Modal split models • Mode choice behavior • Trip end and trip interchange models	• Chalk and Board • Tutorials
10	Week 10	• Probabilistic models • Utility functions • Logit models • Two stage model	• Chalk and Board • Tutorials
11	Week 11	• Traffic assignment • Transportation networks • Minimum Path Algorithms	• Chalk and Board • Tutorials
12	Week 12	• Assignment methods • All or Nothing assignment • Capacity restrained assignment • Multi path assignment • Route-choice behavior	• Chalk and Board • Tutorials

13	Week 13	• Cycle Test II	
14	Week 14	• Landuse transportation models • Urban forms and structures • Location models • Accessibility	PPT
15	Week 15	• Landuse models • Lowry derivative models • Quick response techniques • Non-Transport solutions for transport problems	PPT
16	Week 16	• Preparation of alternative plans • Evaluation techniques • Plan implementation • Monitoring	PPT
17	Week 17	• Financing of Transportation Projects • Urban development planning policy • Case studies	PPT

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment 1	Week 7	1.5 hours	20
2	Assessment 2	Week 13	1.5 hours	20
3	Assignment 1			5
4	Assignment 2			5
CPA	Compensation Assessment*	Week 17	1.5 hours	20
5	Final Assessment *	Week 18	3 hours	50

*mandatory

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

It is proposed to take feedback from the students, at the end of the semester to evaluate the execution of the course.

COURSE POLICY

1. Passing minimum shall be 40% overall and 30% for Final Assessment alone .
2. Compensation Assessment will be administered (at the end of the course) to those students who had missed Cycle Test 1 or 2 for valid reasons. The portions for Compensation Assessment

will be the combined portions for Cycle Tests 1 or 2.

3. The students who wish to appear for the Compensation Assessment should obtain prior permission from the HoD.

MODE OF CORRESPONDENCE (email/ phone etc)

1. **Email on** gouri@nitt.edu or gourigopan93@gmail.com

2. **Phone on** 8281510657

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- ➤ At least 75% attendance in each course is mandatory.

- ➤ A maximum of 10% shall be allowed under On Duty (OD) category.

- ➤ Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY & PLAGIARISM

- ➤ Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.

- ➤ Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.

- ➤ The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

- ➤ The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION, IF ANY

Queries/ clarifications/discussions (if any) may be emailed to the Course Faculty or the Faculty can be contacted in office hours.

FOR APPROVAL

Course Faculty _____   CC- Chairperson _____   HOD _____

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