

**MULTIMODAL TRANSPORTATION PLANNING AND ENGINEERING (TE-40)****COURSE OUTLINE**

(Revised for February 2016)

**Day 1 Framework for Multimodal Transportation Planning in California**

7:30 – 8 AM            Check-in

8 – 9:15 AM            **Module 1** (Lee)

**Self-Introductions****Icebreaker****Course Overview****The Multimodal Transportation Planning Process and Legal Framework**

- What is comprehensive multimodal transportation planning? Goals, objectives, policies, actions
- Reasons for travel desires
- Intergovernmental relations, legal and institutional framework for multimodal transportation planning in California
- “Complete Streets” concept & requirements; street classification systems
- Land use/ transportation relationships
- Demographics/ transportation relationships
- Role of freight in urban transportation
- Transit-first/ priority policies

9:15 – 10:30 AM        **Module 2** (Lee)

**Data Collection, Quantitative Analysis, and Travel Forecasts**

- Primary data sources: counts, surveys, and inventories
- Secondary data sources (US Census, BTS, etc.)
- Biggest mistakes and pitfalls in data collection
- Types of data measurement: data interpretation and reading charts and tables
- Statistical concepts and definitions
- Visual display of data
- Practical techniques for counting pedestrians and bicyclists
- Travel forecasts: their use, misuse, abuse
- Ethical use of data

10:30 - 10:45 AM      Break

10:45 AM – 12 NN     **Module 3** (Lee)

**Environmental Analysis and CEQA New Trends (SB 743)**

- Introduction to CEQA: What it is, what it applies to. Why do we have it?
- CEQA vs. NEPA
- Vehicle tailpipe emissions
- Greenhouse gases and the Climate Action Plan (CAP)
- New trends, SB 743 & OPR requirements, and infill development near transit
- Noise impacts of traffic
- Energy consumption of transportation modes
- SB 375: “Sustainable Transportation”
- Mitigations: Transportation Systems management(TSM) and Travel Demand Management (TDM)

12 – 1 PM                      Lunch (on your own)

1 - 2:15 PM                    **Module 4** (Lee & Raie)

**Public Participation & Involvement, Dealing with Controversy**

- Why do conflicts over projects occur?
- Communication techniques, including using social media
- What kinds of projects generate the most controversy?
- Practical public participation: Identifying Stakeholders and reaching them using today’s social media
- Dealing with NIMBYs: negotiation, mediation, and the role of the transportation professional
- Six things you should never do when dealing with the public

2:15 – 3:30 PM                **Interactive Engagement** (Lee & Raie)

We will do a case study of a controversial, multi-agency, bus-transit transfer center in the Sonoma Valley. After a presentation and reading on the facts of the case, including both proponents’ and opponents’ arguments, we will do a small-group break (4-8 students per group, depending on the size of the class) to discuss the merits of the arguments, and try to develop alternative solutions to resolve the conflict. This is based on a real-life situation. Each group will pick a spokesperson to report back (summarize) the thinking of the group.

3:30 - 3:45 PM                Break

3:45 – 4:45 PM                **Module 5** (Lee)

**Evaluation and Prioritization of Multimodal Transportation Projects**

- Developing multimodal vision statements, evaluation criteria & measures

- What techniques can I use?
- Comparative economic costs & benefits
- Estimating costs/ cost indexes
- Prioritization techniques

4:45 – 5 PM Course evaluation for the day

## **Day 2 Optimizing Roadway Systems for Mobility, Interconnectivity, and Quality of Life**

8 – 9:15 AM **Module 6** (*Raie*)

### **Freeway Multimodal Considerations**

- Optimizing HOT/HOV System for BRT and express bus service
- Real-time traffic management systems
- Integrated corridor management
- Ramp metering and HOV access lanes
- Highway advisory systems

9:15 – 10:30 AM **Module 7** (*Raie & Rivasplata*)

### **The New Transit/Multimodal Role for Arterials and Collectors**

- Accommodating buses in existing arterials and collectors
- Transit role in communities
- Transit corridors
- Great transit facilities including branding of transit routes
- Transit level of service (Are we there yet?)
- Discovering transit demand
- Safe Route to Transit for pedestrians and bicyclists

10:30 - 10:45 AM Break

10:45 – 12 NN **Module 8** (*Raie*)

### **Multimodal Traffic Signals**

- Traffic signal basics
- Planning - design - operations
- Timing philosophies, norm setting
- Latest in traffic signal technology
  - Vehicles - real time data
  - Transit - priority
  - Pedestrians - scramble
  - Bicycles - detection and timing
- Permissive treatments impact of pedestrian

- Course evaluation for the day

12 – 1 PM                      Lunch (on your own)

1 - 2:15 PM                      **Interactive Engagement** (*Raie & Rivasplata*)

Multimodal Auditing Techniques and Walking Tour

- Elements to consider in a field audit
- Walking tour of a specified route
- Feedback on tour and recommended actions
- Reality check of recommended actions

2:15 – 3:30 PM                      **Module 9** (*Rivasplata*)

**Residential Streets: Livability and Quality of Life**

- Street layouts, cross-sections
- Differences between urban, suburban and “rural feel” contexts
- Importance of connectivity and livability
- Speed limits, speeding, and traffic calming
- Safe Routes to School
- Promoting bicycling on residential streets

3:30 - 3:45 PM                      Break

3:45 – 4:45 PM                      **Module 10** (*Raie*)

**Parking Considerations for Healthy Economic Development**

- Off-street parking policy
- Parking design and parking standards
- Parking cost influence on mode choice
- Parking reform practice - shared parking
- Loading/unloading zones
- TDM to offset parking supply and demand

4:45 – 5 PM                      Course evaluation for the day

## **Day 3 Transforming Walking, Bicycling, and Transit into More Viable Modes**

8 – 9:15 AM                      **Module 11** (*Raie*)

**Safe and Accessible Pedestrian Design**

- ADA overview - It is the law
- Pedestrian master planning

- Pedestrian demand projection tools
- Pedestrian connectivity analysis
- Designing for pedestrians
- Pedestrian treatments evolution
- Uncontrolled intersections and crosswalks
- Latest design treatments
- OTS safety technical assistance from Tech Transfer

9:15 – 10:30 AM      **Module 12** (*Rivasplata*)

**On-Street Bicycling and Bicycle Safety**

- Common auto-bike safety issues, and how to use crash data to select best design
- How to accommodate both bikes and transit
- Cycle tracks and buffered bike lanes
- Bikes in rural and mountainous areas
- Intersections, roundabouts and bike signal heads
- Bike parking policies

10:30 - 10:45 AM      Break

10:45AM – 12 NN      **Module 13** (*Rivasplata*)

**Bicycle Paths**

- Differences between shared use paths, side paths, and cycle tracks
- Key considerations for bike paths to be used as transportation
- Why and how to separate bicyclists and pedestrians on bike paths
- Bike path opportunities and other community objectives, e.g. protection
- Key intersection design elements for a trail crossing a roadway
- How across-barrier connections complete the network

12 – 1 PM              Lunch (on your own)

1 - 2:15 PM            **Interactive Engagement** (*Rivasplata & Raie*)

Students will work on the following real-life problem: Given a downtown area with several one-way couplets, develop a strategy to accommodate bicyclists. Trainees could choose between possible applications, such as converting to two-way streets, installing contraflow bike lanes, installing one-way or two-way cycle tracks, or installing bike lanes on the left side of one-way streets, among others.

2:15 – 3:30 PM      **Module 14** (*Rivasplata*)

**Mass Transit Planning Concepts**

- Why cities need public transit
- Ways to classify public transportation
- Transit, land use context and city size
- Transit-specific policies - city and regional level planning and regulation
- Transit fare and payment options
- Best practices - rider information and integration with other modes

3:30 - 3:45 PM            Break

3:45 – 4:45 PM            **Module 15** (*Rivasplata*)

**Transit Design & Operational Issues**

- Key issues affecting transit travel speeds
- Light rail and streetcar design elements
- BRT essential elements, operations, and design issues
- Subway, commuter rail, and regional rail
- LRT/Rail pedestrian safety
- Course evaluation for the day

4:45 – 5 PM                Course evaluation for the day