



**URPL 6560: Transit, Pedestrian, and Bicycle Planning**  
**Department of Urban and Regional Planning**  
**College of Architecture and Planning**  
**University of Colorado Denver**  
**COURSE SYLLABUS**

Instructor Name: Manish Shirgaokar, Ph.D., AICP

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Canvas Website:

Office Hours: Tuesday 1:00 P.M. – 2:30 P.M. and Wednesday 11:30 A.M. – 1:00 P.M.

(sign up at). Office hours are at. This is a different link than the course Zoom location. If you absolutely cannot meet during these regular times, email me to set up an alternative meeting time.

Term: Fall 2020

Class Meeting Days: Monday

Class Meeting Hours: 2:00 P.M. – 4:45 P.M.

Class Location:

Meeting ID: 916 8931 1113

One tap mobile

+1-720-928-9299 US (Denver)

Or, find your local number:

Or, join by Skype for Business

## COURSE OVERVIEW

The bicycle and pedestrian planning sessions are based on *2019 FHWA Pedestrian and Bicycle Transportation University Course*. The transit sessions are based on *2017 Public transportation course modules* designed at the STRIDE Center USDOT Region 4 (Southeast) University Transportation Center (UTC).

### I. Welcome!

We're seeing a revolution in thinking about how we travel, and policymakers are changing their views too about transit and non-motorized modes (walking and bicycling). Many regions and cities are actively investing in transit, bicycling, and pedestrian infrastructure. Planners are often called on to help with these efforts. Your interest and perseverance in this course will equip you to get involved in real-world multimodal transportation efforts, whether you plan to work in government, the non-profit sector, or in consulting.

### II. University Course Catalog Description

Course provides a comprehensive exploration of planning for transit and non-motorized modes (bicycling and walking). Topics include demand estimation, travel behavior, design and suitability analysis, land use interactions, public policy, and evolving technologies.

### III. Course Overview

To train you in the planning of transit, bicycling, or pedestrian infrastructure, we will go through the planning, operations, and analytical portions with a focus on who rides, what are the constraints, and how to plan. In the first eight teaching sessions, we'll focus on bicycling and pedestrian networks, and shift to transit planning in the latter half of the course. Your interest in this topic along with keeping up with readings and homework should equip you with tools that you can bring to the job market.

#### **IV. Course Goals and Learning Objectives**

This course is designed to impart the toolkit of how to plan for a multimodal transportation network with a focus on non-automobile modes. At the end of this course, students will be able to:

1. Explain the transportation needs and behavioral/user/vehicle profiles of different roadway users.
2. Understand the core principles and process for designing for people on transit, walking, or bicycling.
3. Apply critical thinking skills to evaluate alternatives for multimodal planning and design.
4. Build skills in acquiring transit-, pedestrian-, and bicycle-related data, applying analytical methods, and interpreting results.
5. Recognize the role of partnerships and cultivate leadership skills.

#### **V. Course Prerequisites**

Though there are no prerequisites for this course, students should have some level of exposure to transportation concepts and theories such as those covered in URPL 6555 (Transpiration, Land Use, and the Environment). Additionally, students should demonstrate a clear interest in multimodal travel evidenced through use of multimodal facilities, advocacy, un/paid work, or research. Restriction: Graduate level students.

#### **VI. Course Credits**

3 credits

#### **VII. Required Texts and Materials**

There are no required textbooks for this course. Most of the course material is online and will be accessible to you through the internet or through the Auraria Library portal. See reading list for web-links. For the readings for each class, students should budget at least 1 hour to actively read. For longer readings, the expectation is not that you read every word but rather glean from the readings by skimming. Instructor will demonstrate how to skim in the first couple of sessions. Note that some students will get readings done faster than others.

#### **VIII. Supplementary (Optional) Texts and Materials**

See reading list.

**IX. Course Schedule**

No.	Date	Topic area	Topic Title	Assignments
1	17-Aug	Bike-Ped	Who bicycles and walks, and what policies exist to support this mode choice?	
2	24-Aug	Bike-Ped	The multimodal Plan, and building a coalition	A1 released: Local Plan Evaluation
3	31-Aug	Bike-Ped	Data for bicycle and pedestrian planning	(A1 due)
4	7-Sep		Labor Day (Holiday)	
5	14-Sep	Bike-Ped	Designing walking and bicycling infrastructure	
6	21-Sep	Bike-Ped	Technical aspects of design: Facilities, Network analysis, Speed	A2 released: Bicycle Level of Service and Level of Traffic Stress Analyses
7	28-Sep	Bike-Ped	Intersection design	(A2 due) A3 released: Media Portrayal and Perception of Pedestrian and Bicycle Crashes
8	5-Oct	Bike-Ped	Trail design	(A3 due)
9	12-Oct	Bike-Ped -- Transit	1st/last mile connection to transit, and shared mobility	
10	19-Oct	Transit	Introducing transit modes	
11	26-Oct	Transit	Types of data for transit analysis and planning for alternatives	
12	2-Nov	Transit	Bus and rail capacity	A4 released: Bus facilities
13	9-Nov	Transit	Service planning and standards	(A4 due) A5 released: Frequency and reliability
14	16-Nov	Transit	Designing the network and routes	(A5 due) A6 released: Cyclic operations
15	23-Nov		Fall Break (No Class)	
16	30-Nov	Transit	Designing stops and stations	(A6 due) A7: Station planning
17	7-Dec	Transit	Reaching the customer (Finals week)	(A7 due)

**EVALUATION****X. Assignments**

All the assignments will be uploaded to Canvas and will be accessible to you at the start of class on the day the course schedule lists the assignment. Student will need to turn in assignments in one week unless instructions on the assignment say otherwise. Please note that

the instructor requires you to submit all assignments in Microsoft Word format so that he can edit and comment on your documents.

A1 is an short evaluation of the multimodal transportation plan documents for Denver, while A3 is a fun exercise that teaches you how safety is presented and understood in the popular imagination (Hint: it's almost never the driver's fault). The rest of the assignments (A2, A4, A5, A6, and A7) are technical. They are designed to impart skills you will need if you are to work as a multimodal transportation planner. These latter technical assignments involve using lecture notes, some basic mathematics using spreadsheet analysis, and working in teams of up to 2 students, to come up with policy insights using information provided in simple spreadsheets. Note that you can work in teams of 2 but have to turn in separate homework assignments. All these assignments require short answers and descriptions of steps, and are designed to be no more than 2-3 pages single-spaced in length. Overall, your presentation of the material, referencing readings, and demonstrating insight will get you higher scores. When required, rubrics will be provided (especially for A1 and A3) on the assignment documentation, so you can respond to expectations.

There is no examination in this course or a final paper. Instead the course is designed to impart technical skills, which will take some effort to master. As long as you keep up with the assignments, you will incrementally gain confidence in your ability to plan transit, bicycle, or pedestrian infrastructure.

#### XI. Basis for Final Grade

Assessment	Points Possible	Percent of Final Grade
A1: Local ped/bike plan evaluation	15	15%
A2: Bicycle Level of service and level of traffic stress analyses	13	13%
A3: Media portrayal and perception of pedestrian and bicycle crashes	10	10%
A4: Bus facilities	13	13%
A5: Frequency and reliability	13	13%
A6: Cyclic operations	13	13%
A7: Station planning	13	13%
Attendance and participation	10	10%
Total	100	100%

This course uses the grading scale of the university and the MURP Department as below:

Letter	Definition
A (94 to 100) A- (90 to 93)	Exceptional scholarship and superior work products that significantly exceed stated requirements in scope and/or quality.
B+ (87 to 89) B (84 to 86) B- (80 to 83)	Commendable scholarship and accomplished work products that somewhat exceed stated requirements in scope and/or quality.
C+ (77 to 79) C (74 to 76)	Satisfactory scholarship and work products that meet or almost meet stated requirements in scope and/or quality.

C- (70 to 73)	
D+ (67 to 69) D (65 to 66) D- (60 to 63)	Inadequate scholarship and inferior work products that clearly fail to meet stated requirements in scope and/or quality.
F (59 or lower)	Unacceptable scholarship and work product.

## XII. Grade Dissemination

Graded assignments in this course will be returned via Canvas. Each Microsoft Word file you submit will have comments and suggestions, and an overview of the class scores in reference to yours. Note that the Canvas score card only lists assignment scores as set up by instructor. This means that the final score on Canvas can differ from your actual grade once the instructor includes attendance and participation marks.

## COURSE PROCEDURES

### XIII. Course Policies: Grades

**Attendance Policy:** The instructor has designed this course so as to learn the material synchronously. Students are expected to attend all sessions, participate in class, and finish all the assignments. Students are expected to log into the Zoom session on time for all meetings. The instructor may or may not take attendance in each class.

**Late Work Policy:** Late submissions will carry a penalty as follows: After deadline but before 12 hours from deadline - penalty is 25% marks. After 12 hours but before 24 hours from deadline - penalty is 50% marks. After 24 hours but before 48 hours from deadline - penalty is 75% marks. Your submissions will be on Canvas and date stamped by the server. No late submissions will be accepted after two days from deadline.

For an excused absence where the cause is religious belief, a student must contact the instructor within two weeks of the start of classes to request accommodation for the term. Instructor may request adequate documentation to substantiate the student request.

A student who cannot complete one of the course assignments due to incapacitating illness, severe domestic affliction, or other compelling reason should contact the instructor via e-mail as soon as possible.

**Extra Credit Policy:** There are no Extra Credits envisioned for this course. The instructor will inform you if this changes.

**Grades of “Incomplete”:** The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course; students have up to one year (three semesters) to complete course requirements. The instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished within the time allowed or the “I” will automatically be recorded as an “F” on your transcript.

**Rewrite/Resubmit Policy:** For this graduate level course, rewrites on assignments are not recommended. However, if the student has a legitimate reason to rewrite the assignment, s/he may do so after seeking the instructor's approval.

**Group Work Policy:** Though students may work on the technical assignments in pairs, each student has to submit an independent work product which shows the individual's thinking about the problem. Thus, it is possible for two students who shared the analytical effort to have different scores.

#### **XIV. Course Policies: Technology and Media**

**Email:** If you have a question for the instructor you can email him at manish.shirgaokar@ucdenver.edu. Please state in the subject line URPL 6560 and keep the email brief. The instructor will make every effort to answer emails within 24-hours on weekdays. If your email arrives between 5:00 P.M. on Friday and mid-night on Sunday, your emails will be answered by mid-night on Monday.

**Canvas:** We will use Canvas for this course. All announcements, assignments / due dates, and discussions for this course are conducted via Canvas. Students are expected to log into the Canvas website at least once every 2-3 days to keep up with the class.

**Recording course content:** During this term, the instructor will record all Zoom sessions and make them available on the Canvas site for review. Note, however, that this content will be deleted after the semester. You may not record the sessions in audio or video format for any reason except with the explicit permission of the instructor.

#### **XV. Course Policies: Student Expectations Civility:**

My commitment is to create a climate for learning characterized by respect for each other and the contributions each person makes to class. I ask that you make a similar commitment.

##### **The Student and Community Counseling Center:**

The Student and Community Counseling Center is located in Tivoli 454 and provides cost-free and confidential mental health services to help students manage personal challenges that impact emotional or academic wellbeing. You can learn more at the Center at <http://www.ucdenver.edu/life/services/counseling-center/Pages/default.aspx> or by calling (303) 315-7270.

##### **Campus Assessment, Response & Evaluation (CARE):**

If you have immediate concern about the behavior or safety of a class member at CU Denver, help by making a referral to the campus Assessment, Response & Evaluation (CARE) team. The CARE team's purpose is to promote a safe productive learning, living and working environment by addressing the needs of students, faculty, and staff. If you are or a classmate is in need of help, please submit a concern at <http://www.ucdenver.edu/life/services/CARE/Pages/default.aspx> or call 303-315-7306.

**Professionalism:** Mobile devices must be silenced during the classroom Zoom meetings. Please mute yourself on the Zoom calls but feel free to unmute yourself if you wish to contribute. If you have a question, use the raise hand tool in Zoom. The instructor understands that there may be disruptions in your non-/work environment, but encourages you to minimize them, if possible. Also, feel free to keep your video off if you want to do so.

## UNIVERSITY POLICIES

### XVI. Access

**Disability Access:** The University of Colorado Denver is committed to providing reasonable accommodation and access to programs and services to persons with disabilities. Students with disabilities who want academic accommodations must register with Disability Resources and Services (DRS) in the Student Commons Building, Suite 2116, Phone (303) 315-3510, Fax (303) 315-3515, or via email [Disabilityresources@ucdenver.edu](mailto:Disabilityresources@ucdenver.edu). See <http://www.ucdenver.edu/student-services/resources/disability-resources-services/Pages/disability-resources-services.aspx>. I will be happy to provide approved accommodations, once you provide me with a copy of DRS's letter.

### XVII. Academic Honesty

**Student Code of Conduct:** Plagiarism is the use of another person's ideas or words without acknowledgement. The incorporation of another person's work into yours requires appropriate identification and acknowledgement. Examples of plagiarism when the source is not noted include: word-for-word copying of another person's ideas or words; the "mosaic" (interspersing your own words here and there while, in essence, copying another's work); the paraphrase (the rewriting of another's work, while still using their basic ideas or theories); fabrication (inventing or counterfeiting sources); submission of another's work as your own; and neglecting quotation marks when including direct quotes, even on material that is otherwise acknowledge.

CU Denver has a license agreement with Turnitin.com, a service that helps detect plagiarism by comparing student papers with Turnitin's database and Internet sources. Students who take this course agree that all required assignments may be submitted to Turnitin. While students retain copyright of their original course work, papers submitted to Turnitin become part of the Turnitin's reference database for the purposes of detecting plagiarism.

### XVIII. Nondiscrimination and Sexual Misconduct

The University of Colorado Denver is committed to maintaining a positive learning, working and living environment. University policy and Title IX prohibit discrimination on the basis of race, color, national origin, sex, age, disability, pregnancy, creed, religion, sexual orientation, veteran status, gender identity, gender expression, political philosophy or political affiliation in admission and access to, and treatment and employment in, its educational programs and activities.

University policy and Title IX also prohibit sexual misconduct, including harassment, domestic and dating violence, sexual assault, stalking, or related retaliation. If you have experienced some sort of sexual misconduct or discrimination please visit the Office of

Equity/Title IX web site to understand the resources available to you or contact the Office of Equity/Title IX Coordinator (303-315-2567). <https://www1.ucdenver.edu/offices/equity>

## XX. Important Dates to Remember

Academic Calendar: Please review the academic calendar for important dates available at <https://www.ucdenver.edu/student/registration-planning/academic-calendars/fall-2020>

## WEEKLY READINGS

### 1. August 17, 2020 - Who bicycles and walks, and what policies exist to support this mode choice?

- Dill, J., & McNeil, N. (2016). Revisiting the Four Types of Cyclists: Findings from a National Survey. *Transportation Research Record: Journal of the Transportation Research Board*, 2587(1), 90-99. <https://doi.org/10.3141/2587-11>
- Kirley, B. (2017). Human behavior and road safety. In D. Carter (Ed.), *Road safety fundamentals* (unit 2, chapters 5 & 6). Washington, DC: Federal Highway Administration. <https://rspcb.safety.fhwa.dot.gov/rsf/>
- Fleisher, A., Wier, M. L., & Hunter, M. (2016). A vision for transportation safety: framework for identifying best practice strategies to advance vision zero. *Transportation Research Record: The Journal of the Transportation Research Board*, 2582(1), 72-86. <http://dx.doi.org/10.3141/2582-09>
- Macmillan, A., Connor, J., Witten, K., Kearns, R., Rees, D., & Woodward, A. (2014). The societal costs and benefits of commuter bicycling: simulating the effects of specific policies using system dynamics modeling. *Environmental health perspectives*, 122(4), 335-344. <https://doi.org/10.1289/ehp.1307250>
- Delbosc, A., Reynolds, J., Marshall, W., & Wall, A. (2018). American Complete Streets and Australian SmartRoads: What can we learn from each other? *Transportation Research Record: The Journal of the Transportation Research Board*, 036119811877737. <https://doi.org/10.1177/0361198118777379>

### 2. August 24, 2020 - The multimodal Plan, and building a coalition (A1 released)

- Fleisher, A., Wier, M. L., & Hunter, M. (2016). A vision for transportation safety: framework for identifying best practice strategies to advance vision zero. *Transportation Research Record: The Journal of the Transportation Research Board*, 2582(1), 72-86. <http://dx.doi.org/10.3141/2582-09>
- Vision Zero Network. (2020). *Collaborating across departments to achieve vision zero*. Vision Zero Network. <https://visionzeronetwork.org/project/collaborating-across-departments-to-achieve-vision-zero/>

### 3. August 31, 2020 – Data for bicycling and pedestrian planning (A1 due)

- National Academies of Sciences, Engineering, and Medicine. (2014). *Guidebook on pedestrian and bicycle volume data collection*. Appendix A (pages 103-116). Washington, DC: The National Academies Press. <https://doi.org/10.17226/22223>



#### 4. September 7, 2020 – Labor Day (Holiday)

#### 5. September 14, 2020 – Designing walking and bicycling infrastructure

- National Cooperative Highway Research Program. (2016). *Application of Pedestrian Crossing Treatments for Streets and Highways*, NCHRP Synthesis 498, Authors: Thomas, L., N. Thirsk, and C.V. Zegeer. <http://www.trb.org/Publications/Blurbs/175419.aspx> (Read pp. 35-60)
- National Association of City Transportation Officials. (2017). *Designing for all ages and abilities: Contextual guidance for high-comfort bicycle facilities*. New York, NY: NACTO. [https://nacto.org/wp-content/uploads/2017/12/NACTO\\_Designing-for-All-Ages-Abilities.pdf](https://nacto.org/wp-content/uploads/2017/12/NACTO_Designing-for-All-Ages-Abilities.pdf)
- Schlossberg, M., Rowell, J., Amos, D., & Sanford, K. (2013). *Rethinking streets: An evidence-based guide to 25 complete street transformations*. Sustainable Cities Initiative, University of Oregon. <http://rethinkingstreets.com/>

#### 6. September 21, 2020 – Technical aspects of design: Facilities, Network analysis, Speed (A2 released)

- National Transportation Safety Board. (2017). *Reducing speeding-related crashes involving passenger vehicles*. National Transportation Safety Board, Washington, DC. <https://www.ntsb.gov/safety/safety-studies/Documents/SS1701.pdf>
- Poole, B., Johnson, S., and Thomas, L. (2017). *An overview of automated enforcement systems and their potential for improving pedestrian and bicyclist safety*. Chapel Hill, NC: Pedestrian and Bicycle Information Center. [http://www.pedbikeinfo.org/cms/downloads/WhitePaper\\_AutomatedSafetyEnforcement\\_PBIC.pdf](http://www.pedbikeinfo.org/cms/downloads/WhitePaper_AutomatedSafetyEnforcement_PBIC.pdf)
- Griswold, J. B., Yu, M., Filingeri, V., Grembek, O. and Walker, J. L. (2018). A behavioral modeling approach to bicycle level of service. *Transportation Research Part A: Policy and Practice*, 116, 166–177. <https://doi.org/10.1016/j.tra.2018.06.006>
- Mekuria, M. C., Appleyard, B., & Nixon, H. (2017). *Improving livability using green and active modes: A traffic stress level analysis of transit, bicycle, and pedestrian access and mobility*. San Jose, CA: Mineta Transportation Institute. <https://transweb.sjsu.edu/research/Improving-Livability-Using-Green-and-Active-Modes-Traffic-Stress-Level-Analysis-Transit-Bicycle-and-Pedestrian-Access-and-Mobility>
- Mekuria, M.C., P.G. Furth, and H. Nixon. (May 2012). *Low-Stress Bicycling and Network Connectivity*, Mineta Transportation Institute, Report 11-19. <http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf> (pp. 1-27)

#### 7. September 28, 2020 – Intersection design (A2 due) (A3 released)

- Sanders et al. (2020). *Guidance to improve pedestrian and bicycle safety at intersections*. National Academies of Sciences, Engineering, and Medicine, Washington, DC. Developed through NCHRP Project 15-63: <https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4048>

- National Association of City Transportation Officials. (2019). *Don't Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings*. <https://nacto.org/publication/urban-bikeway-design-guide/dont-give-up-at-the-intersection/>
  - Pedestrian and Bicycle Information Center. (2017). "Making Signals Work for Bicyclists and Pedestrians." Webinar. [http://www.pedbikeinfo.org/webinars/webinar\\_details.cfm?id=26](http://www.pedbikeinfo.org/webinars/webinar_details.cfm?id=26)
- 8. October 5, 2020 – Trail design (A3 due)**
- Merriam, D.; Bality, A.; Stein, J.; Boehmer, T. (2017). *Improving public health through public parks and trails: Eight common measures. Summary report*. US Department of Health and Human Services, Centers for Disease Control and Prevention and US Department of the Interior, National Park Service. <https://npgallery.nps.gov/RTCA/GetAsset/f09e69fc-2696-45e8-b4d5-90e4cea5e689>
  - North Carolina Department of Transportation. (2018). *Evaluating the Economic Impact of Shared Use Paths in North Carolina*. By Institute for Transportation Research and Education and Alta Planning and Design. (pp. 3-74). [https://itre.ncsu.edu/wp-content/uploads/2018/03/NCDOT-2015-44\\_SUP-Project\\_Final-Report\\_optimized.pdf](https://itre.ncsu.edu/wp-content/uploads/2018/03/NCDOT-2015-44_SUP-Project_Final-Report_optimized.pdf)
- 9. October 12, 2020 – 1<sup>st</sup>/last mile connection to transit and shared mobility**
- National Association of City Transportation Officials. (n.d.). *Transit street design guide*. New York, NY: NACTO. Online book as webpages at <https://nacto.org/publication/transit-street-design-guide/>
- 10. October 19, 2020 – Introducing transit modes**
- *2020 APTA Public Transportation Fact Book* (Skim) <https://www.apta.com/wp-content/uploads/APTA-2020-Fact-Book.pdf>
- 11. October 26, 2020 – Types of data for transit analysis and planning for alternatives**
- TCRP Synthesis 77: Passenger Counting Systems (Chapter 3) - [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_syn\\_77.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_syn_77.pdf)
  - TCRP Report 113: Using Archived AVL-APC Data to Improve Transit Performance and Management (Chapters 2-3) - [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_rpt\\_113.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_113.pdf)
- 12. November 2, 2020 – Bus and rail capacity (A4 released)**
- Transportation Research Board, *Transit Capacity and Quality of Service Manual*, 3rd Edition, TCRP Report 165, 2013 (<http://www.trb.org/Main/Blurbs/169437.aspx>) Chapter 6: Bus Transit Capacity -- Read Sections 1, 2, 3, 4, 7 & 8; Skim Sections 5, 6 & 9
  - Transportation Research Board, *Transit Capacity and Quality of Service Manual*, 3rd Edition, TCRP Report 165, 2013 (<http://www.trb.org/Main/Blurbs/169437.aspx>) Chapter 8: Rail Transit Capacity -- Read Sections 1, 2, 3 & 4; Skim Sections 5, 6 & 7
- 13. November 9, 2020 – Service planning and standards (A4 due) (A5 released)**

- Hickman, Mark, “Fundamentals of Transportation” wikibook, [https://en.wikibooks.org/wiki/Fundamentals\\_of\\_Transportation](https://en.wikibooks.org/wiki/Fundamentals_of_Transportation) -- Read Network Design and Frequency (under Transit)
- Transportation Research Board, *Transit Capacity and Quality of Service Manual*, 3rd Edition, TCRP Report 165, 2013 (<http://www.trb.org/Main/Blurbs/169437.aspx>) Chapter 5: Quality of service methods -- Read pages 5-1 to 5-46, 5-71 to 5-78

**14. November 16, 2020 – Designing the network and routes (A5 due) (A6 released)**

- Jarrett Walker, “Human Transit”, 2011, Auraria Library link is <http://skyline.ucdenver.edu/record=b2841617~S0> (click on “Connect to resource” and sign in using your login credentials) -- Read chapter 4, 7, 10, 12, and 13

**15. November 23, 2020 – Fall Break (No Class)****16. November 30, 2020 – Designing stops and stations (A6 due) (A7 released)**

- Transportation Research Board, *Transit Capacity and Quality of Service Manual*, 3rd Edition, TCRP Report 165, 2013 (<http://www.trb.org/Main/Blurbs/169437.aspx>) Chapter 10: Station Capacity -- Read pages 10-1 to 10-61

**17. December 7, 2020 – Reaching the customer (Finals Week) (A7 due)**

- TCRP Synthesis 91, *Use and Deployment of Mobile Device Technology for Real-time Transit Information*, [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_syn\\_91.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_syn_91.pdf)
- TCRP Report 122, *Understanding How to Motivate Communities to Support and Ride Public Transportation*, [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_rpt\\_122.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_122.pdf)
- APTA *Recommended Practice, BRT Branding, Imaging, and Marketing*, 2010, <https://nbrti.org/wp-content/uploads/2017/05/APTA-BTS-BRT-RP-001-10.pdf>