Public transport has become a central issue in how we plan and design cities. Learning the fundamental principles of PT network design will enable you to participate in the conversation about how to move people around in a city.

This course is ideally suited for urban planners, urban designers, transportation engineers, policy planning professionals, and local elected leaders.

Through a series of exercises you will intuitively learn how PT network planning and design works and the trade-offs associated with advocating particular decisions. Key learnings include:

- Economic and geometric principles of network design
- Designing for coverage vs patronage
- Connective networks vs direct service
- Setting frequency and span of service
- Calculating travel time and service outcomes
- Impacts of busways, light rail and alternate technologies

This course is tailored for a New Zealand audience. Jarrett has worked extensively in New Zealand and will be addressing concepts that are relevant here including:

- Pulsing, how to make fast connections with low frequencies
- How to balance the need for farebox-recovery with social service requirements
- Techniques to provide efficient service for small cities

AUDIENCE

The course is not just for professional transport planners, though it can help them talk about their work. The target audience is people who will interact with PT in their own work, and who need to understand the relationships between PT network design and their own expertise. Students who have raved about the course include land use planners, urban designers, transportation engineers, and people engaged in all kinds of city and regional transportation policy. PT professionals in areas other than network design also find great value in understanding this core element of the PT task. The course is tailored to address issues and opportunities in New Zealand.

LEVEL OF DETAIL

The level of detail is carefully designed for someone who needs to understand its basic nature and tradeoffs. Insights are continuously related to larger areas of urban transport and land use policy. Through fun interactive exercises, students discover for themselves the basic math and concepts of public transport, and the trade-off that public transport requires us to think about. We do not go into levels of detail needed only by PT planning or scheduling professionals.

TECHNIQUE

The course operates mostly through a series of small-group exercises or ‘games’, done in groups of 6 or less at each table. In these, participants design a PT network for the fictional city of Newport, using a limited budget and a basic set of service types and options. These limits and options vary from one exercise to the next. The instructor moves among the tables answering questions and participating in their discussions.
WORKSHOP DAY 1

**WIELDING PUBLIC TRANSPORT’S TOOLS FACING THE REAL CHOICES EVALUATING OUTCOMES**

We begin by introducing the fictional but oddly familiar city of Newport, and the rules of the fun “games” by which much of the learning will occur. In each game, groups are tasked with laying out PT lines taking into consideration route length, frequency and operating costs. Each game ends with a “pin-up” discussion in which the class compares the maps drawn by different groups, and draws insights out of their similarities and differences.

The course is designed to put central focus on frequency, and on consciously thinking about all-day networks and not just the commute peaks. These two concepts, central to the planning of broadly useful PT networks, are often neglected in broader transport planning.

In Game 1, working with buses and a low budget, students discover the key tradeoffs around network design, including issues of walking distance, coverage, connections, and basic network typologies: nodal (sometimes called hub-and-spoke) and grid.

In the second game, Newport has decided to spend more money on PT, but the expectations are higher too. Government wants more coverage but also high ridership. This time, we have “races”, where each group must plot eight sample customer trips through their networks to see which network is fastest.

From students’ experience grappling with these pressures, we start to formulate ideas about what policy should look like. What questions does a government policy about PT need to answer, for it to be effective?

WORKSHOP DAY 2

**PLANNING FIXED INFRASTRUCTURE RETHINKING LAND USE FORGING USEFUL POLICY**

The day begins with a brief lecture and discussion on measuring access outcomes of network design – including not just ridership and coverage but also mobility and access.

Now that students are familiar with network design principles and trade-offs we turn to fixed infrastructure. In Game 3 students deploy a fixed capital budget for PT infrastructure, including options such as light rail, busways (open or closed), and gondolas.

In Game 4 we ask: now that you have a favorite mix of future technologies, and alignments for them, what should the total PT network look like? Students have a large budget but need to pay the operating costs of all the technologies they’ve built, including a bus network. This final game also has new council direction on matters of coverage and social inclusion.

The results of today’s games are evaluated for basic outcomes: calculating coverage standards, sample travel times, and similar features.

The workshop wrap up includes discussion about how transport planning principles and design fit into the bigger picture of urban planning, property development and PT-oriented developments. We return also to the question of how governments can give useful direction to PT planners.