Transport Operation

Introduction of on-field measurement 2
Public transport vehicle occupancy, time parameters

Faculty of Transportation Engineering and Vehicle Engineering
Department of Transport Technology and Economics

MŰEGYETEM 1782

Schedule

| Week	Date	Subject	Place
1	11 Sept	NO CLASS	
2	18 Sept	Introduction, editing requirements of reports	St 320
3	25 Sept	Presentation of on-field measurement 1 (Safety level)	St 320
4	2 Oct	(1) Safety level examination of road traffic	Road intersection
5	9 Oct	Presentation of on-field measurement 2 (Occupancy)	St 320
6	16 Oct	(2) Examination of public transport vehicle occupancy and time parameters	PuT stops
7	23 Oct	National holiday - no class	
8	30 Oct	Presentation of on-field measurement 3 (Intersection)	St 320
9	6 Nov	(3) Traffic survey at a road intersection	Road intersection
10	13 Nov	Presentation of on-field measurement 4 (GPS)	St 320
11	20 Nov	(4) Examination of public transport circulation with GPS device	PuT route
12	27 Nov	In-class exercise 1: Tram tachograph data analysis	St 320
13	4 Dec	In-class exercise 2: Rail line capacity analysis	St 320
14	11 Dec	Site visit / Consultation	

1. Public transport vehicle occupancy measured by „pattern technique" – good to know

- **The aim:**

  ☐ numerate the number of passengers not in a PuT stop but at a cross section (passenger/vehicle, passenger/hour)

  ☐ specify time parameters like dwell time and running time (punctuality)
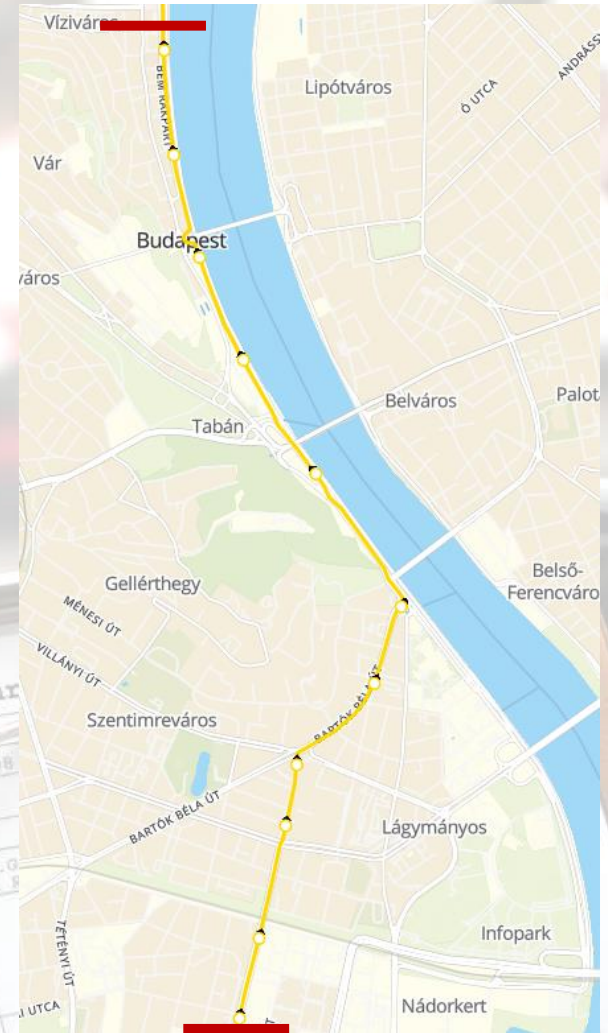
- **Measurement time:**

  ☐ 8:30-9:30 (Gr.No.: 1-11)
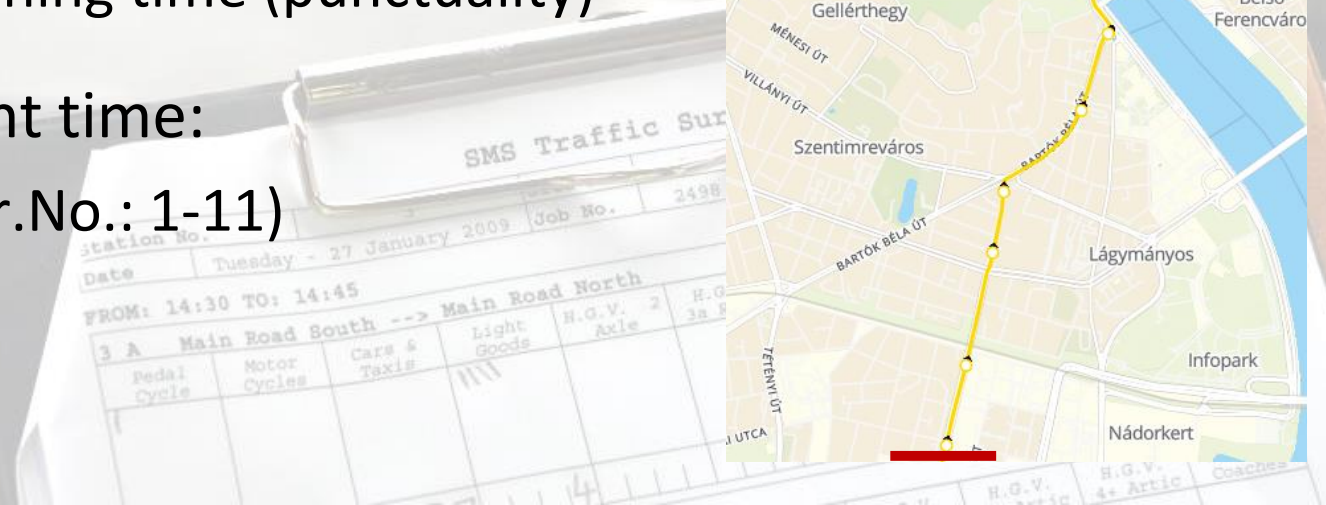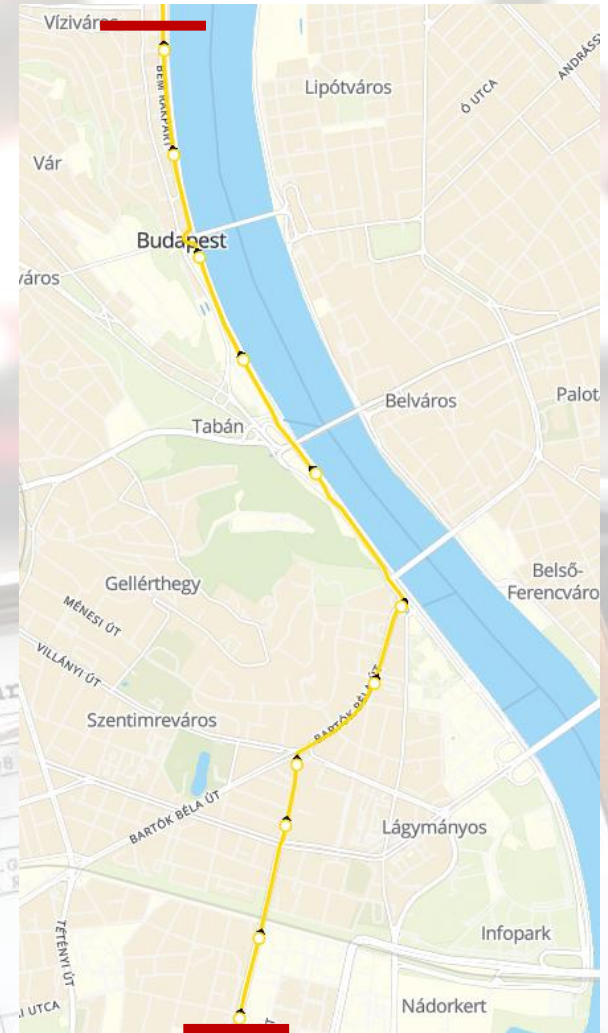
1. Public transport vehicle occupancy measured by „pattern technique" – good to know

- The measurement take place at:
  - ☐ PuT stops along the route of tram No. 41, in both directions
- One person/"stop"/direction
- All the lines (that serves the particular stop) and its vehicles should be measured
- Record exact time values (based on seconds)
  - ☐ timer or by phone (be offline)
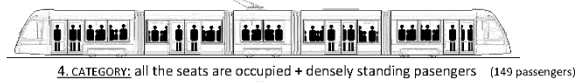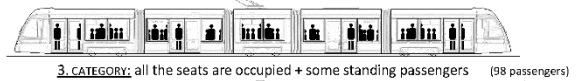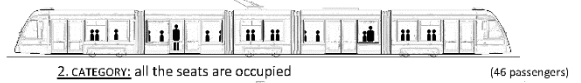- 1 report each group

Groups - Assignment

No.	Students	Stop	Direction
1	Farias Chaves Quirino Yasmin	Hauszmann Alajos utca	North (dep)
	Fatma Dilek Gamlı		South (arr)
2	Malek Alkhatatne	Csonka János tér	North (dep)
	Sagidullayeva Slushash		South (arr)
3	Issa Matalqah	Újbuda-központ M	North (dep)
	Anas Alatawneh		South (arr)
4	Pathan Zaid Khan	Móricz Zsigmond körtér M	North (dep)
	Kevin Armel Sonkeng		South (arr)

Groups - Assignment

No.	Students	Stop	Direction
5	Esraa Husein	Gárdonyi tér	North (dep)
	Muslum Dibirov		South (arr)
6	Julio Cesar Lopez Lizarraga	Szent Gellért tér M	North (dep)
	Yahya Aladdin		South (arr)
7	Manoel Victor Araújo Oliveira	Rudas gyógyfürdő	North (dep)
	Rodrigo Netto de Souza		South (arr)
8	Lucas Gabriel Soares Padre Santos	Várkert Bazár	North (dep)
	André Pessoa Pacheco		South (arr)
9	Fabian Feiland	Clark Ádám tér	North (dep)
	Timo Lederer		South (arr)
10	Thérèse de Nantes	Halász utca	North (dep)
	Sébastien Vieugué		South (arr)
11	Nils Mielicki	Batthyány tér M+H	North (dep)
	Erik Drawe		South (arr)

1. Public transport vehicle occupancy measured by „pattern technique" – how to measure
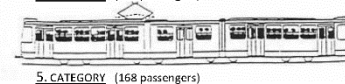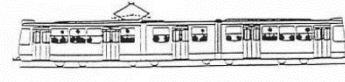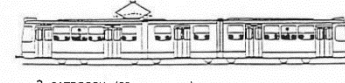
- **Positioning to be able to inspect quite well**
- **Vehicle occupancy based on the sample patterns (5+"0" categories)**
- **Category „0" have to be counted exactly**
- **Inspection:**
  - ☐ North: right after departure!
  - ☐ South: just before arrival!

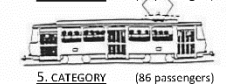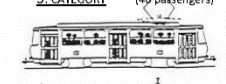**Tram occupancy (pattern) categories**

Caf Urbos 3

1. CATEGORY: half of the seats are occupied (23 passengers)

2. CATEGORY: all the seats are occupied (46 passengers)

3. CATEGORY: all the seats are occupied + some standing passengers (98 passengers)

4. CATEGORY: all the seats are occupied + densely standing pasengers (149 passengers)

5. CATEGORY: fully occupied (passengers on stairs as well) (200 passengers)

Ganz

1. CATEGORY (19 passengers)

2. CATEGORY (38 passengers)

3. CATEGORY (82 passengers)

4. CATEGORY (125 passengers)

5. CATEGORY (168 passengers)

Tatra T5C5

1. CATEGORY (13 passengers)

2. CATEGORY (26 passengers)

3. CATEGORY (46 passengers)

4. CATEGORY (66 passengers)

5. CATEGORY (86 passengers)
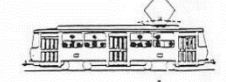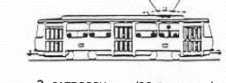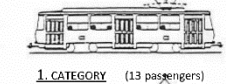
1. Public transport vehicle occupancy measured by „pattern technique" – how to measure

- Pattern category as an average (once below once above)
- Standing passengers vs. empty seats
- Smooth passengers on-board
- Exact number of passengers according to category and type of the tram afterwards!

	Type	Capacity (4 passenger/m2)			Pattern category				
		standing	seats	sum	1. cat	2. cat	3. cat	4. cat	5. cat
Trams	Ganz, KCsV-7	130	38	**168**	19	38	82	125	168
	Tatra T5C5, T5C5K	60	26	**86**	13	26	46	66	86
	TW6000	104	46	**150**	23	46	81	116	150
	Siemens Combino NF12B	286	64	**350**	32	64	160	255	350
	CAF Urbos 3 34 m	154	46	**200**	23	46	98	149	200
	CAF Urbos 3 56 m	264	81	**345**	41	81	169	257	345

2. Occupancy and time parameters – survey sheet

PuT stop and direction							Start: 8:30:00			
				Time moment						
Nr.	**Line**	**Type of trams**	**License plate number**	**Arrival**	**End of boarding/ alighting**	**Door closing**	**Departure from traffic light**	**Pattern category**		**Number of passengers**
1.	**41**	T	4105	+ 1:15	+ 1:27	+ 1:34	+ 1:54	**II**	**III**	26	46
2.	**17**	C	2201	+ 1:50	+ 1:56	+ 1:56	-	**IV**		149
3.										

Place of measurement

one vehicle journey (departure) in each row

on the side as well

❑   start on time
❑   exact time value only at the beginning

❑   C - CAF
❑   G – Ganz
❑   T – Tatra

2. Occupancy and time parameters – survey sheet

				Time moment				Pattern category		Number of passengers	
Nr.	Line	Type of trams	License plate number	Arrival	End of boarding/ alighting	Door closing	Depar-ture from traffic light				
1.	41	T	4105	+ 1:15	+ 1:27	+ 1:34	+ 1:54	II	III	26	46
2.	17	C	2201	+ 1:50	+ 1:56	+ 1:56	-	IV		149	
3.											

PT stop and direction — Start: 8:00:00

elapsed time from beginning in format of [+mm:ss]

end of continuous getting on and off

departure from 🚦 if the bus stopped at red light

moment of stop (door opening)

beginning of closing the doors

based on chart

2. Occupancy and time parameters – to evaluate

- Average headway (by lines/aggregate)
  - time interval between to trams
- Max and min headway (by lines/aggregate)
- Average occupancy (by lines/aggregate)
  - according to the exact number of passengers not the category
- Max and min occupancy (by lines/aggregate)
- Traffic volume [passenger/hour/direction] (aggregate)
- Cycle time (re-departure of the same vehicle)
- Average dwell time (by lines/aggregate)
  - time interval from arrival to door closing
- + on-field survey sheet attached

Thank you for your kind attention!

Have fun ;)

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