

# TNFL01

## Air Traffic and Air Transportation Flygtrafik och flygtransporter

lecturer: Christiane Schmidt

course webpage: <http://webstaff.itn.liu.se/~chrsc91/teaching/f22/tnfl01/>

Before we get started with lots of course information, let us start with a round of introductions:

- Who are you?
- Why did you choose to study FTL?
- What do you expect from this course?
- What job would you like to have after your studies?

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Recording ok?

- Lectures and self-study

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- Assignments:

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  - ◉ Individual/groups

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  - ➔ Slides (password-protected on homepage, password: **WrightBrothers1903**)

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  - ➔ Course information
  - ➔ Homework sets



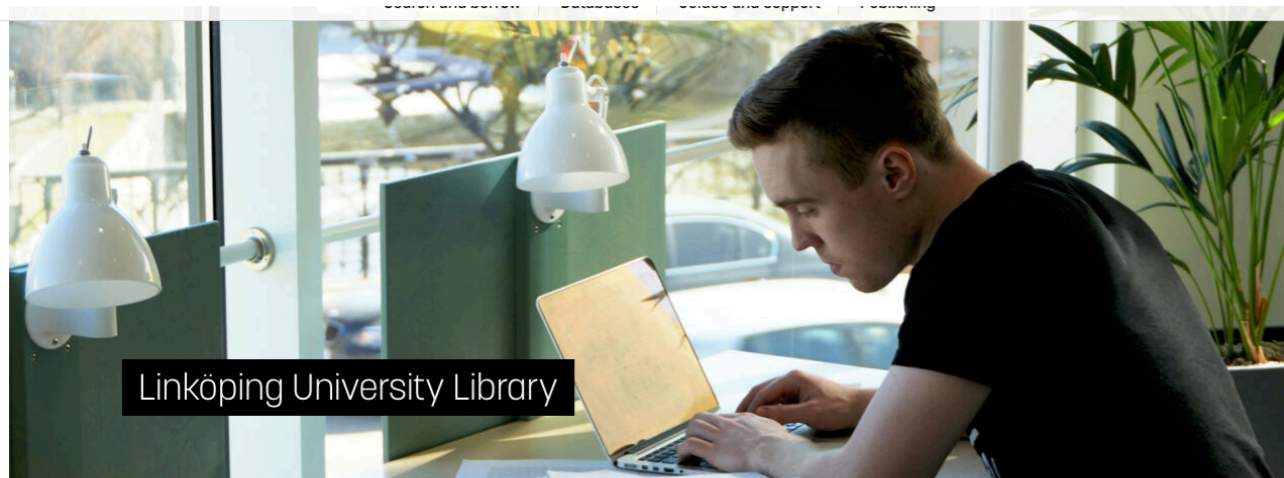
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- Note: this class gives an overview over various topics related to air traffic, you will learn more details in later classes

- *New course book since 2018: The Global Airline Industry*, edited by Peter Belobaba, et al., John Wiley & Sons, Incorporated, 2015. Online version available from LiU library. Linked from the course webpage.

TGAI - Chapter xx

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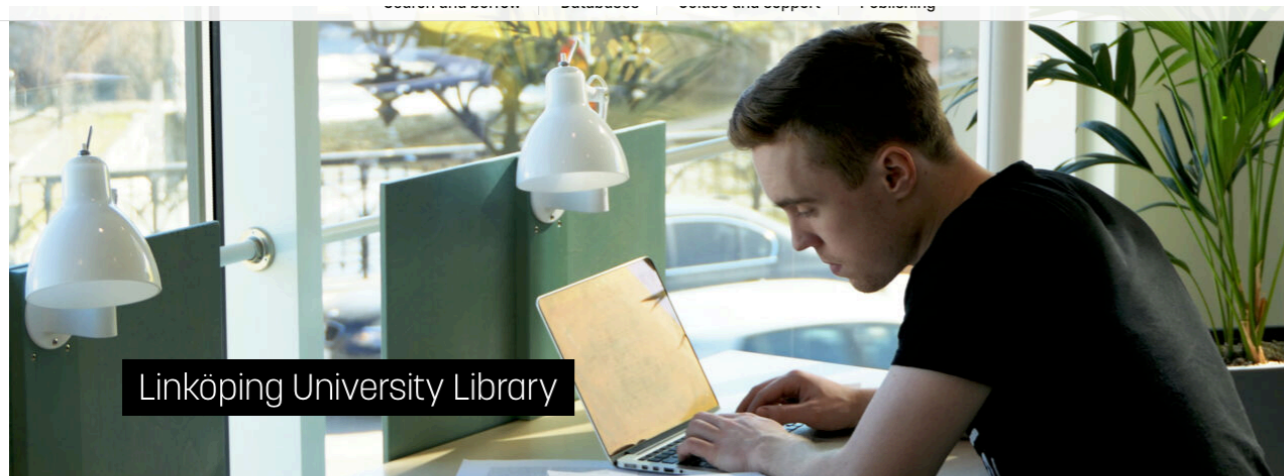
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 Chichester, England : Wiley, 2016. 1 online resource (683 pages) : illustrations. Language: English, Database: LIUB Library Catalogue


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**Subjects:** Flygindustri; Airlines; Aeronautics, Commercial; Airlines -- Management; Airlines -- Marketing; Aircraft industry; Electronic books

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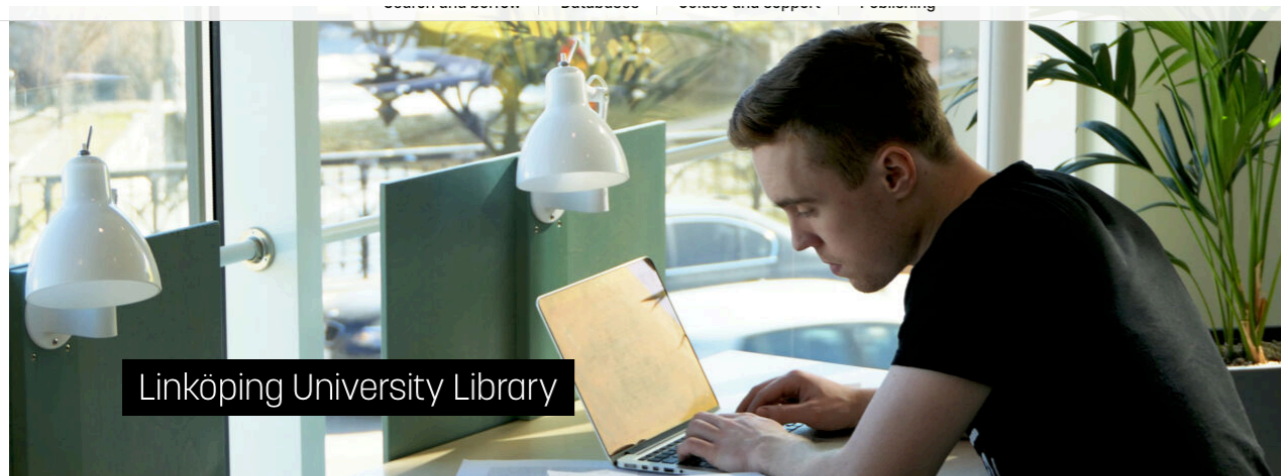
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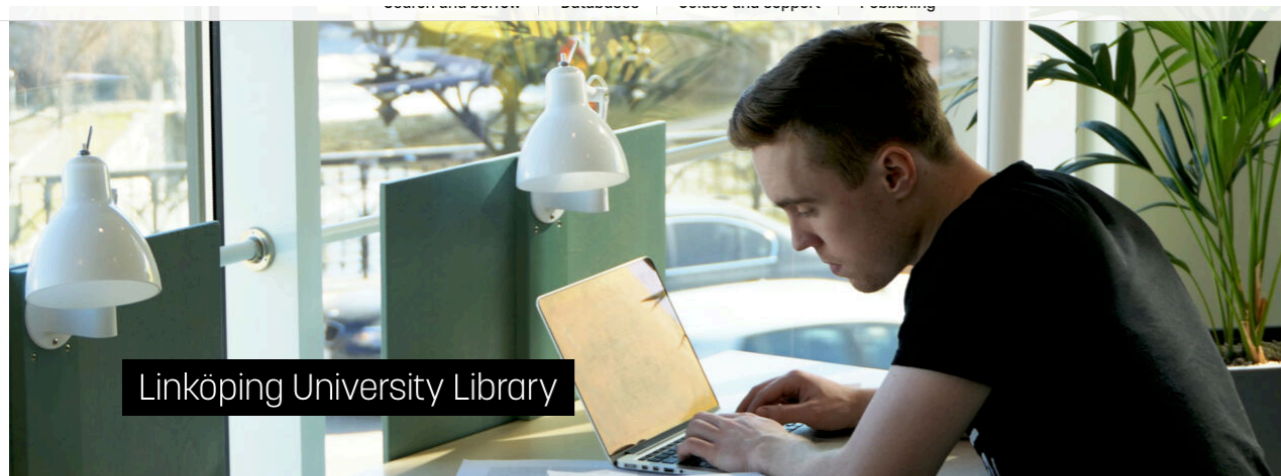
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**The Global Airline Industry**  
Peter Belobaba, Amedeo Odoni, Cynthia Barnhart, Peter Belobaba, Amedeo Odoni, and Cynthia Barnhart

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**Description**  
Extensively revised and updated edition of the bestselling textbook, provides an overview of recent global airline industry evolution and future challenges Examines the perspectives of the many stakeholders in the global airline industry, including airlines, airports, air traffic services, governments, labor unions, in addition to passengers Describes how these different players have contributed to the evolution of competition in the  
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**Book Details**

TITLE  
The Global Airline Industry

SERIES  
Aerospace Ser.

EDITION  
2

EDITORS  
Peter Belobaba, Amedeo Odoni, and Cynthia Barnhart

PUBLISHER  
John Wiley & Sons, Incorporated

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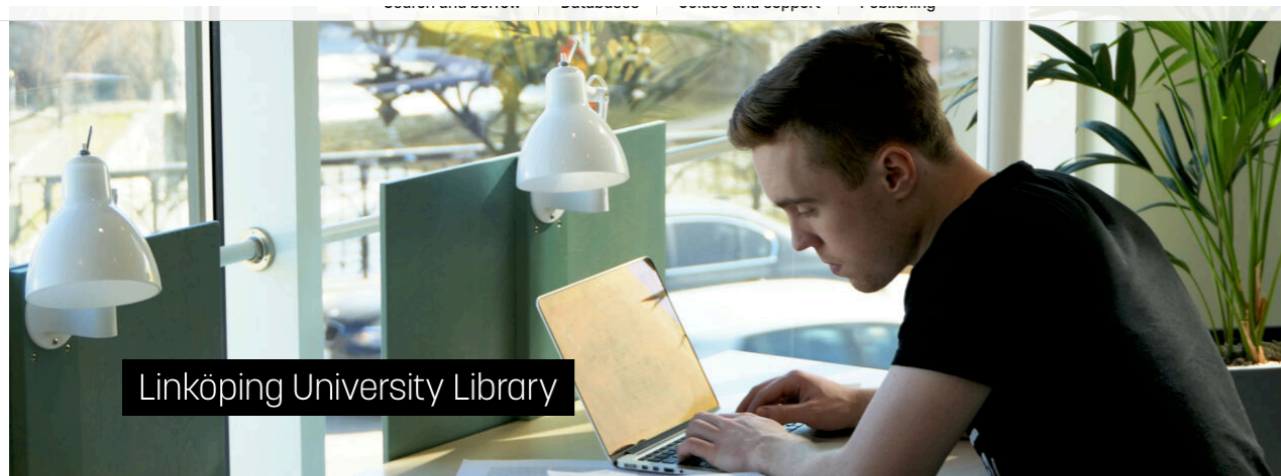
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Peter Belobaba, Amedeo Odoni, Cynthia Barnhart, Peter Belobaba, Amedeo Odoni, and Cynthia Barnhart

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Book Details: TITLE: The Global Airline Industry, SERIES: Aerospace Ser., EDITION: 2, EDITORS: Peter Belobaba, Amedeo Odoni, and Cynthia Barnhart, PUBLISHER: John Wiley & Sons, Incorporated, PRINT PUB DATE: [Show more](#)



- *New course book since 2018: The Global Airline Industry*, edited by Peter Belobaba, et al., John Wiley & Sons, Incorporated, 2015. Online version available from LiU library. Linked from the course webpage.
- Possible further reading: **TGAI - Chapter xx**
  - Olle Åkerlind och Håkan Örtlund, "The ABZ of Flight Operations". Can be bought at Bokakademin or via <http://www.flightproc.com/>
  - Ahmed Abdelghany och Khaled Abdelghany, "Introduction to airline management", from *Modeling applications in the airline industry*. Linked from the course webpage.
  - Lindh A, Andersson T, Värbrand P and Yuan D, "Airport Logistics – Integration of ATM and ground processes". Linked from the course webpage.



- The course takes place in distance mode as I had planned so from the spring and had obtained an ok from the study director

Topic 1: Airlines #1 General Questions

Topic 2: Airlines #2 Management of Resources

Topic 3: Airlines #3 Management of Resources - Four  
Successive Aircraft and Crew Planning Problems

Topic 4: Airlines #4 Economical Strategies and Steerage

Topic 5: Airport and Capacity

Topic 6: Collaborative Decision Making

- The deadline for the responsible group is marked for each homework set

Week #	Monday	Tuesday	Wednesday	Thursday	Friday
33					
34				25.08., 15-17 Introduction FTL1	
				New HW1-FTL1	
35	29.8. 13-15 Introduction SL3	30.8. 13-17 Topic 1	Submission HW1-FTL1	Homework groups must be formed by 15:00	2.9., 15-17 guest lecture, Reidar Svedahl On campus
	New HW1-SL3	New HW2			
36	5.9., 10-12 guest lecture		Submission HW2		9.9., 10-12 + 13-15 seminar + questions
	5.9. 13-17 topic 2				ALL: presentation HW1 (FTL1 + SL3)
	New HW3				Feedback HW2
	Submission HW1-SL3				
37	12.9., 10-12 +13-15 topic 3	13.9. 10-12 seminar+ questions	Feedback HW3		16.9., 10-12 seminar+ questions
	New HW4	Presentation HW2			Presentation HW3
	Submission HW3	13.9. 13-15 guest lecture			
		13.9. 15-17 guest lecture			
38	19.9., 10-12 guest lecture, Kaija Sterner, LFV		Feedback HW4		23.9. 10-12 seminar+ questions
	19.9., 13-17 topic 4				Presentation HW4
	New HW5				23.9., 13-15 guest lecture, Emma Green, SAS online
	Submission HW4				23.9., 15-17 guest lecture
39	26.9., 10-12 +13-15 topic 5	27.9. 13-15 guest lecture, Magnus Molitor, Transportstyrelsen	Feedback HW5		30.9., 10-12 seminar + questions
	New HW6				Presentation HW5
	Submission HW5				30.9., 13-15 guest lecture, Daniel Skoglund, Swedavia On campus
40	3.10., 10-12 +13-15 topic 6	4.10., 13-15 guest lecture, Christoffer	Feedback HW6		7.10., 10-12 seminar + questions
	Submission HW6				Presentation HW6
	New HW7				
41	10.10., 10-12 guest lecture, Marcus Öberg, Pontarius	Feedback HW7	12.10., 10-12 seminar + questions + Quiz		
	Submission HW7		Presentation HW7		

Lecturer (if not noted otherwise): Christiane Schmidt, [christiane.schmidt@liu.se](mailto:christiane.schmidt@liu.se)

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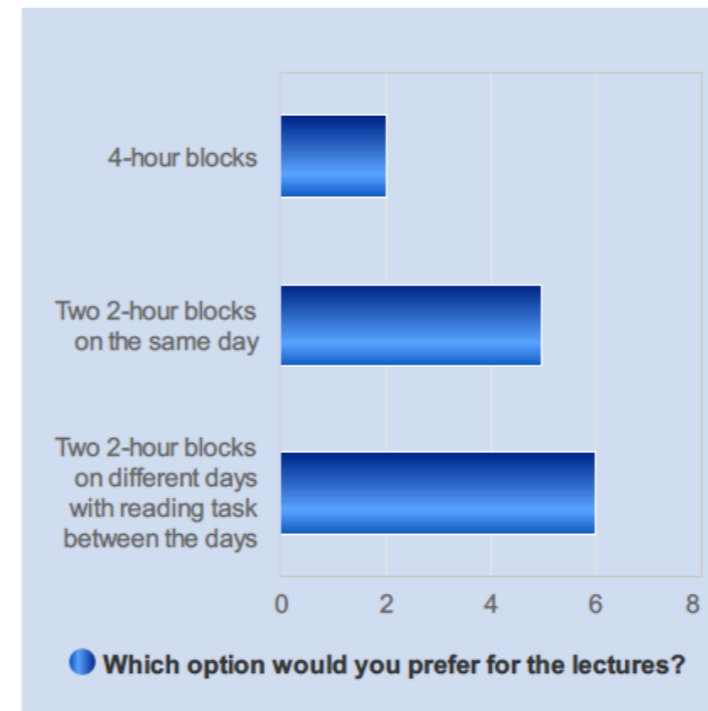
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## 15. Which option would you prefer for the lectures?

Which option would you prefer for the lectures?	Antal svar
4-hour blocks	2 (17%)
Two 2-hour blocks on the same day	5 (42%)
Two 2-hour blocks on different days with reading task between the days	6 (50%)
Summa	13 (108%)



	Medelvärde	Standardavvikelse	Variationskoefficient	Min	Undre kvartil	Median	Övre kvartil	Max
Which option would you prefer for the lectures?	2,31	0,75	32,55 %	1,00	2,00	2,00	3,00	3,00

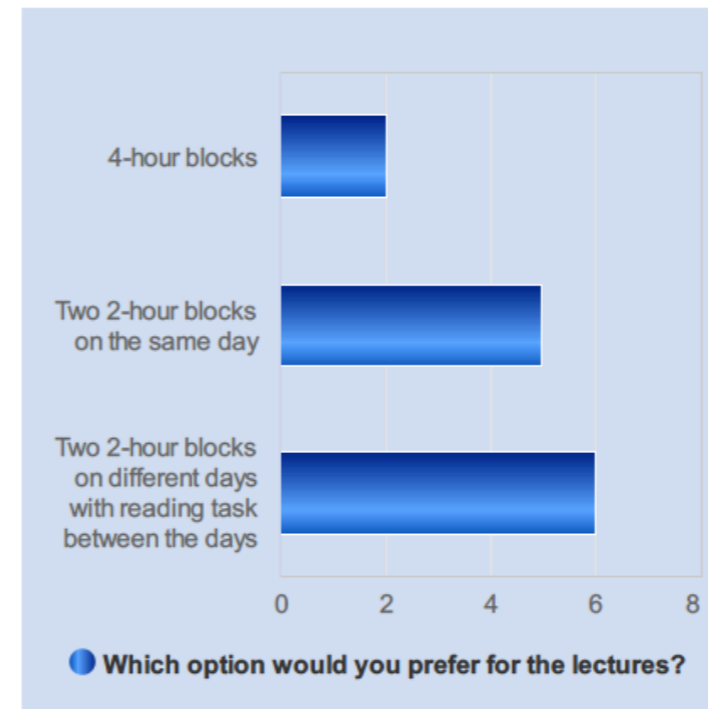
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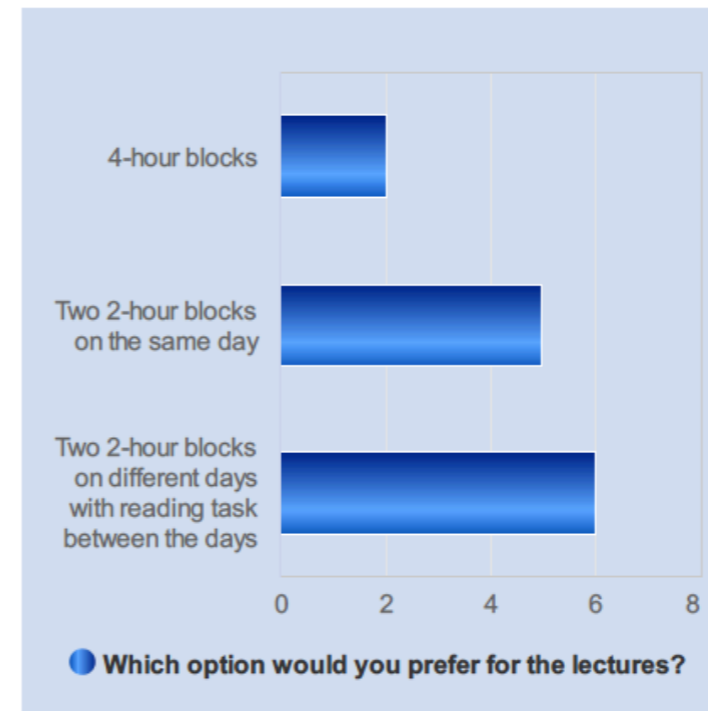
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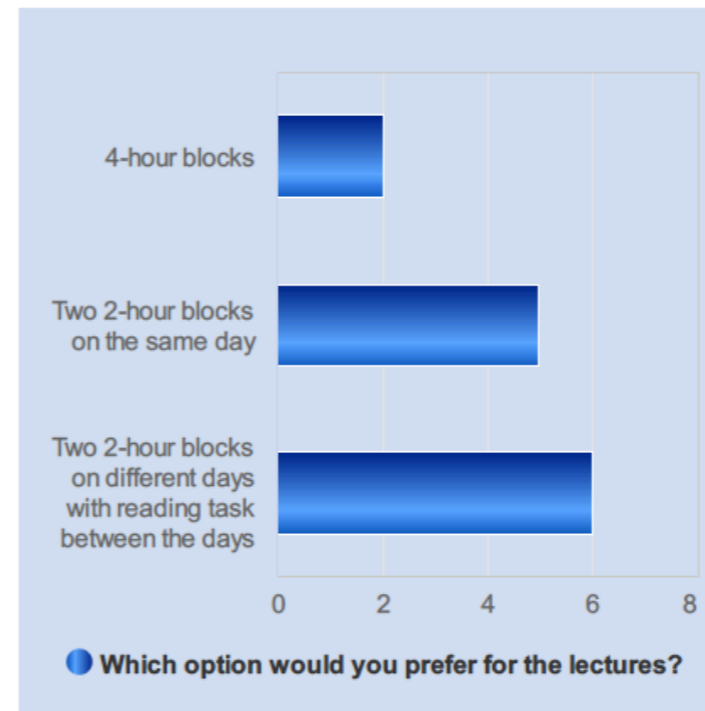
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- 4-hour lecture with integrated reading blocks (August 30)

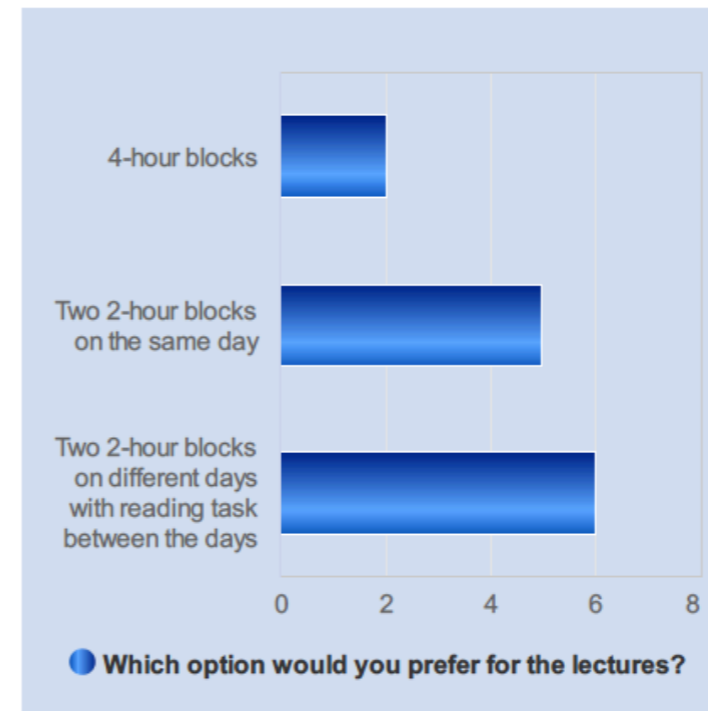
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We will test three versions this year:

- 4-hour lecture with integrated reading blocks (August 30)
- Recorded lecture with reading blocks, I'll be available for questions in the last two hours of the reserved lecture time (September 5)

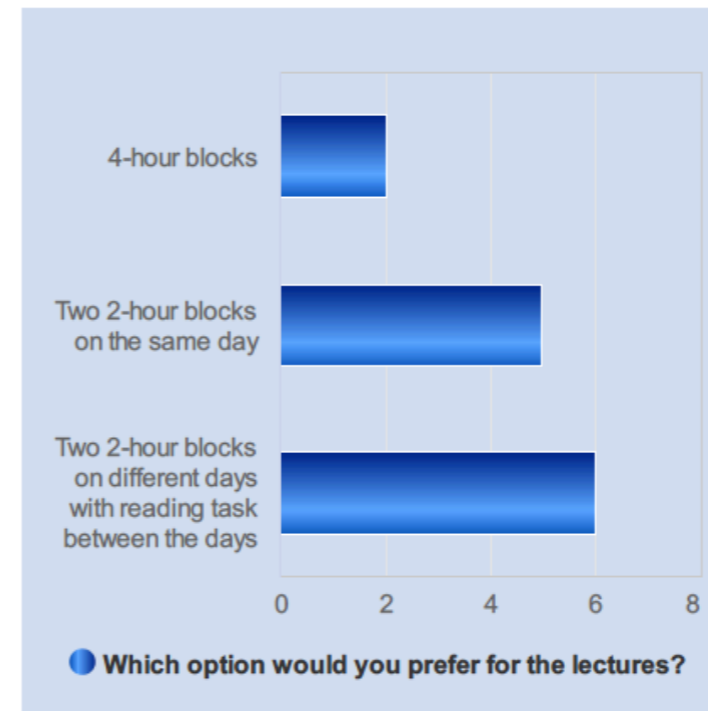
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- 4-hour lecture with integrated reading blocks (August 30)
- Recorded lecture with reading blocks, I'll be available for questions in the last two hours of the reserved lecture time (September 5)
- Two 2-hour blocks on the same day with integrated reading blocks (September 12)

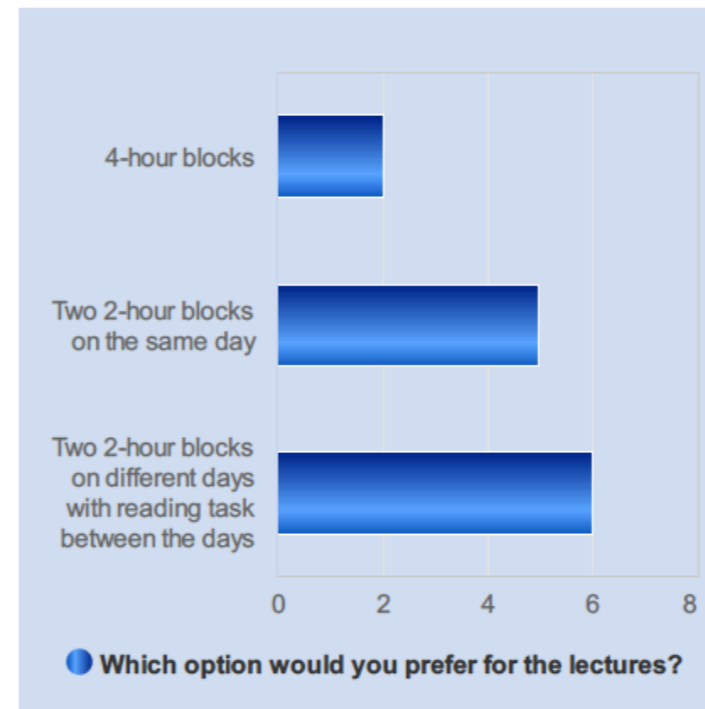
Lecture blocks are quite long (4h or 2x2h)—why?

Each lecture includes “actual lectures” and reading blocks.

I had tried to ask students to prepare the reading before lectures, but about half of the class then came unprepared, and the lecture time was not enough to follow up on that delay, plus, those that did read are frustrated.

## 15. Which option would you prefer for the lectures?

Which option would you prefer for the lectures?	Antal svar
4-hour blocks	2 (17%)
Two 2-hour blocks on the same day	5 (42%)
Two 2-hour blocks on different days with reading task between the days	6 (50%)
Summa	13 (108%)



	Medelvärde	Standardavvikelse	Variationskoefficient	Min	Undre kvartil	Median	Övre kvartil	Max
Which option would you prefer for the lectures?	2,31	0,75	32,55 %	1,00	2,00	2,00	3,00	3,00

The third option did not work with the schedule (there is a central scheduling unit)

We will test three versions this year:

- 4-hour lecture with integrated reading blocks (August 30)
- Recorded lecture with reading blocks, I'll be available for questions in the last two hours of the reserved lecture time (September 5)
- Two 2-hour blocks on the same day with integrated reading blocks (September 12)

Then you can vote how to handle the remaining 4-hour and 2x2-hour block lectures.

- The deadline for the responsible group is marked for each homework set

Week #	Monday	Tuesday	Wednesday	Thursday	Friday
33					
34				25.08., 15-17 Introduction FTL1	
				New HW1-FTL1	
35	29.8. 13-15 Introduction SL3	30.8. 13-17 Topic 1	Submission HW1-FTL1	Homework groups must be formed by 15:00	2.9., 15-17 guest lecture, Reidar Svedahl On campus
	New HW1-SL3	New HW2			
36	5.9., 10-12 guest lecture		Submission HW2		9.9., 10-12 + 13-15 seminar + questions
	5.9. 13-17 topic 2				9.9. presentation HW1 (FTL1 + SL3)
	New HW3				Feedback HW2
	Submission HW1-SL3				
37	12.9., 10-12 + 13-15 topic 3	13.9. 10-12 seminar+ questions	Feedback HW3		16.9., 10-12 seminar+ questions
	New HW4	Presentation HW2			Presentation HW3
	Submission HW3	13.9. 13-15 guest lecture			
		13.9. 15-17 guest lecture			
38	19.9., 10-12 guest lecture, Kaija Sterner, LFV		Feedback HW4		23.9. 10-12 seminar+ questions
	19.9., 13-17 topic 4				Presentation HW4
	New HW5				23.9., 13-15 guest lecture, Emma Green, SAS online
	Submission HW4				23.9., 15-17 guest lecture
39	26.9., 10-12 + 13-15 topic 5	27.9. 13-15 guest lecture, Magnus Molitor, Transportstyrelsen	Feedback HW5		30.9., 10-12 seminar + questions
	New HW6				Presentation HW5
	Submission HW5				30.9., 13-15 guest lecture, Daniel Skoglund, Swedavia On campus
40	3.10., 10-12 + 13-15 topic 6	4.10., 13-15 guest lecture, Christoffer	Feedback HW6		7.10., 10-12 seminar + questions
	Submission HW6	Massinger, Transportstyrelsen On campus			Presentation HW6
	New HW7				
41	10.10., 10-12 guest lecture, Marcus Öberg, Pontarius	Feedback HW7	12.10., 10-12 seminar + questions + Quiz		
	Submission HW7		Presentation HW7		

Pre-recorded lecture with online question time (available online in week 35)

Online lectures



- The deadline for the responsible group is marked for each homework set

Week #	Monday	Tuesday	Wednesday	Thursday	Friday
33					
34				25.08., 15-17 Introduction FTL1 New HW1-FTL1	
35	29.8. 13-15 Introduction SL3 New HW1-SL3	30.8. 13-17 Topic 1 New HW2	Submission HW1-FTL1	Homework groups must be formed by 15:00	2.9., 15-17 guest lecture, Reidar Svedahl On campus
36	5.9., 10-12 guest lecture 5.9. 13-17 topic 2 New HW3 Submission HW1-SL3		Submission HW2		9.9., 10-12 + 13-15 seminar + questions Presentation HW1 (FTL1 + SL3) Feedback HW2
37	12.9., 10-12 +13-15 topic 3 New HW4 Submission HW3	13.9. 10-12 seminar+ questions Presentation HW2 13.9. 13-15 guest lecture 13.9. 15-17 guest lecture	Feedback HW3		16.9., 10-12 seminar+ questions Presentation HW3
38	19.9., 10-12 guest lecture, Kaija Sterner, LFV 19.9., 13-17 topic 4 New HW5 Submission HW4		Feedback HW4		23.9. 10-12 seminar+ questions Presentation HW4 23.9., 13-15 guest lecture, Emma Green, SAS online 23.9., 15-17 guest lecture
39	26.9., 10-12 +13-15 topic 5 New HW6 Submission HW5	27.9. 13-15 guest lecture, Magnus Molitor, Transportstyrelsen	Feedback HW5		30.9., 10-12 seminar + questions Presentation HW5 30.9., 13-15 guest lecture, Daniel Skoglund, Swedavia On campus
40	3.10., 10-12 +13-15 topic 6 Submission HW6 New HW7	4.10., 13-15 guest lecture, Christoffer Massinger, Transportstyrelsen On campus	Feedback HW6		7.10., 10-12 seminar + questions Presentation HW6
41	10.10., 10-12 guest lecture, Marcus Öberg, Pontarius Submission HW7	Feedback HW7	12.10., 10-12 seminar + questions + Quiz Presentation HW7		

Pre-recorded lecture with online question time (available online in week 35)

Online lectures

- The deadline for the responsible group is marked for each homework set

Week #	Monday	Tuesday	Wednesday	Thursday	Friday
33					
34				25.08., 15-17 Introduction FTL1	
				New HW1-FTL1	
35	29.8. 13-15 Introduction SL3	30.8. 13-17 Topic 1	Submission HW1-FTL1	Homework groups must be formed by 15:00	2.9., 15-17 guest lecture, Reidar Svedahl On campus
	New HW1-SL3	New HW2			
36	5.9., 10-12 guest lecture		Submission HW2		9.9., 10-12 + 13-15 seminar + questions
	5.9. 13-17 topic 2				9.9. presentation (HW1, FTL1 + SL3)
	New HW3				Feedback HW2
	Submission HW1-FTL1				
37	12.9., 10-12 + 13-15 topic 3	13.9. 10-12 seminar+ questions	Feedback HW3		16.9., 10-12 seminar+ questions
	New HW4	Presentation HW2			Presentation HW3
	Submission HW3	13.9. 13-15 guest lecture			
		13.9. 15-17 guest lecture			
38	19.9., 10-12 guest lecture, Kaija Sterner, LFV		Feedback HW4		23.9. 10-12 seminar+ questions
	19.9., 13-17 topic 4				Presentation HW4
	New HW5				23.9., 13-15 guest lecture, Emma Green, SAS online
	Submission HW4				23.9., 15-17 guest lecture
39	26.9., 10-12 + 13-15 topic 5	27.9. 13-15 guest lecture, Magnus Molitor, Transportstyrelsen	Feedback HW5		30.9., 10-12 seminar + questions
	New HW6				Presentation HW5
	Submission HW5				30.9., 13-15 guest lecture, Daniel Skoglund, Swedavia On campus
40	3.10., 10-12 + 13-15 topic 6	4.10., 13-15 guest lecture, Christoffer	Feedback HW6		7.10., 10-12 seminar + questions
		Massinger, Transportstyrelsen On campus			
	Submission HW6				Presentation HW6
	New HW7				
41	10.10., 10-12 guest lecture, Marcus Öberg, Pontarius	Feedback HW7	12.10., 10-12 seminar + questions + Quiz		
	Submission HW7		Presentation HW7		

Pre-recorded lecture with online question time (available online in week 35)

Online lectures

- The deadline for the responsible group is marked for each homework set

Week #	Monday	Tuesday	Wednesday	Thursday	Friday
33					
34				25.08., 15-17 Introduction FTL1 New HW1-FTL1	
35	29.8. 13-15 Introduction SL3 New HW1-SL3	30.8. 13-17 Topic 1 New HW2	Submission HW1-FTL1	Homework groups must be formed by 15:00	2.9., 15-17 guest lecture, Reidar Svedahl On campus
36	5.9., 10-12 guest lecture 5.9. 13-17 topic 2 New HW3 Submission HW1-FTL1		Submission HW2		9.9., 10-12 + 13-15 seminar + questions Presentation HW1 (FTL1 + SL3) Feedback HW2
37	12.9., 10-12 + 13-15 topic 3 New HW4 Submission HW3	13.9. 10-12 seminar+ questions Presentation HW2 13.9. 13-15 guest lecture 13.9. 15-17 guest lecture	Feedback HW3		16.9., 10-12 seminar+ questions Presentation HW3
38	19.9., 10-12 guest lecture, Kaija Sterner, LFV 19.9., 13-17 topic 4 New HW5 Submission HW4		Feedback HW4		23.9. 10-12 seminar+ questions Presentation HW4 23.9., 13-15 guest lecture, Emma Green, SAS online 23.9., 15-17 guest lecture
39	26.9., 10-12 + 13-15 topic 5 New HW6 Submission HW5	27.9. 13-15 guest lecture, Magnus Molitor, Transportstyrelsen	Feedback HW5		30.9., 10-12 seminar + questions Presentation HW5 30.9., 13-15 guest lecture, Daniel Skoglund, Swedavia On campus
40	3.10., 10-12 + 13-15 topic 6 Submission HW6 New HW7	4.10., 13-15 guest lecture, Christoffer Massinger, Transportstyrelsen On campus	Feedback HW6		7.10., 10-12 seminar + questions Presentation HW6
41	10.10., 10-12 guest lecture, Marcus Öberg, Pontarius Submission HW7	Feedback HW7	12.10., 10-12 seminar + questions + Quiz Presentation HW7		

Pre-recorded lecture with online question time (available online in week 35)

Online lectures

Some of the guest lectures will take place on campus, we'll need volunteers for each occasion to help the guest lecturer set up—an opportunity to talk more with them about their job. The first such occasion will be September 2, any volunteers? (This is Reidar Svedahl, he does not use slides, so, only whiteboard and whiteboard markers ;))

## Reading List TNFL01

### Introduction Lecture

#### TGAI Chapter 1

#### Topic 1

- Read TGAI Chapter 2 until the end of 2.3 (~6 pages)
- Read TGAI Chapter 3 until the end of 3.1 (5 pages)
- Read TGAI Chapter 3.2 until the end of 3.3.4 (11 pages)

#### Topic 2

- Read TGAI Chapter 7.1 until before 7.1.2.1 starts (9 pages)
- Read TGAI Chapter 7.2 until before 7.2.2 starts (7 pages)

#### Topic 3

- Read TGAI Chapter 9 until before 9.3.2 starts (5 pages)
- Read TGAI Chapter 10 until before 10.2.3.2 starts (13 pages)

#### Topic 4

- Read TGAI Chapter 4 until before 4.2.2 starts (8.5 pages)
- Read TGAI Chapter 5.2 until Equation 5.5 (5.5 pages)

#### Topic 5

- TGAI Chapter 2.4 until the start of 2.4.2 (3.5 pages)
- Read the paper  
AIRPORT LOGISTICS – INTEGRATION OF ATM AND GROUND PROCESSES by Anna Lindh, Tobias Andersson, Peter Vårbrand and Di Yuan
- Watch: <https://www.youtube.com/watch?v=aMlkcAZuhHM>

#### Topic 6

Read:

- <https://www.eurocontrol.int/publication/airport-collaborative-decision-making-cdm-impact-assessment>
- <https://www.eurocontrol.int/sites/default/files/publication/files/airport-cdm-manual-2017.PDF>

pages:

- XIX to XXII
- to 1-3
- 2-5
- 3-1 to 3-3
- 3-10

Continue watching/reading <https://de.slideshare.net/PreziChef/acdm>

If you'd still rather read before the lecture:

## Reading List TNFL01

### Introduction Lecture

TGAI Chapter 1

#### Topic 1

- Read TGAI Chapter 2 until the end of 2.3 (~6 pages)
- Read TGAI Chapter 3 until the end of 3.1 (5 pages)
- Read TGAI Chapter 3.2 until the end of 3.3.4 (11 pages)

#### Topic 2

- Read TGAI Chapter 7.1 until before 7.1.2.1 starts (9 pages)
- Read TGAI Chapter 7.2 until before 7.2.2 starts (7 pages)

#### Topic 3

- Read TGAI Chapter 9 until before 9.3.2 starts (5 pages)
- Read TGAI Chapter 10 until before 10.2.3.2 starts (13 pages)

#### Topic 4

- Read TGAI Chapter 4 until before 4.2.2 starts (8.5 pages)
- Read TGAI Chapter 5.2 until Equation 5.5 (5.5 pages)

#### Topic 5

- TGAI Chapter 2.4 until the start of 2.4.2 (3.5 pages)
- Read the paper  
AIRPORT LOGISTICS – INTEGRATION OF ATM AND GROUND PROCESSES by Anna Lindh, Tobias Andersson, Peter Vårbrand and Di Yuan
- Watch: <https://www.youtube.com/watch?v=aMlkcAZuhHM>

#### Topic 6

Read:

- <https://www.eurocontrol.int/publication/airport-collaborative-decision-making-cdm-impact-assessment>
- <https://www.eurocontrol.int/sites/default/files/publication/files/airport-cdm-manual-2017.PDF>

pages:

- XIX to XXII
- to 1-3
- 2-5
- 3-1 to 3-3
- 3-10

Continue watching/reading <https://de.slideshare.net/PreziChef/acdm>

# The Homework Cycle

- Per topic one student group will be **responsible**: I will mark their report and give all students access to my comments, and the students need to present their work.
- Each student group needs to write a report on each homework set, only their opponents will evaluate and critique their work, based on my comments for the responsible student group.
- The responsible opposition group needs to write an opposition until the presentation and act as an opponent at the presentation.
- All other opposition groups need to submit their opposition report one day after the presentation.
- This pattern for all except first homework set. <http://weber.itn.liu.se/~chrsc91/teaching/f22/tnfl01/overview-on-homework-sets-2022.pdf>
- Group sign-up: online [Group-signup-2022.xlsx](#) (please sign up by 01.09.22, 15:00; 4-5 people/group)

Opponent for		Homework 1-FTL1	Homework 1-SL3	Homework 2	Homework 3	Homework 4	Homework 5	Homework 6	Homework 7
Homework set published on		24.08. <i>Individually, that is, NOT in groups</i>	29.08. <i>Individually, that is, NOT in groups</i>	30.08.	5.09.	12.09.	19.09.	26.09.	3.10.
Group A	Group C	Submission: 31.08. Presentation: 09.09.	Submission: 05.09. Presentation: 09.09.	Submission: 07.09. Feedback: 09.09. Presentation: 13.09. Opposition report: 14.09.	Submission: 15.09. Opposition report: 17.09.	Submission: 22.09. Opposition report and be opponent: 23.09.	Submission: 29.9. Opposition report: 1.10.	Submission: 6.10. Opposition report: 8.10.	Submission: 11.10. Opposition report: 13.10.
Group B	Group D	Submission: 31.08. Presentation: 09.09.	Submission: 05.09. Presentation: 09.09.	Submission: 12.09. Opposition report: 14.09.	Submission: 12.09. Feedback: 14.09. Presentation: 16.09. Opposition report: 17.09.	Submission: 22.09. Opposition report: 24.09.	Submission: 29.9. Opposition report and be opponent: 30.9.	Submission: 6.10. Opposition report: 8.10.	Submission: 11.10. Opposition report: 13.10.
Group C	Group E	Submission: 31.08. Presentation: 09.09.	Submission: 05.09. Presentation: 09.09.	Submission: 12.09. Opposition report: 14.09.	Submission: 15.09. Opposition report: 17.09.	Submission: 19.09. Feedback: 21.09. Presentation: 23.09. Opposition report: 24.09.	Submission: 29.9. Opposition report: 1.10.	Submission: 6.10. Opposition report and be opponent: 7.10.	Submission: 11.10. Opposition report: 13.10.
Group D	Group F	Submission: 31.08. Presentation: 09.09.	Submission: 05.09. Presentation: 09.09.	Submission: 12.09. Opposition report: 14.09.	Submission: 15.09. Opposition report: 17.09.	Submission: 22.09. Opposition report: 24.09.	Submission: 26.09. Feedback: 28.09. Presentation: 30.09. Opposition report: 1.10.	Submission: 6.10. Opposition report: 8.10.	Submission: 11.10. Opposition report and be opponent: 12.10.
Group E	Group A	Submission: 31.08. Presentation: 09.09.	Submission: 05.09. Presentation: 09.09.	Submission: 12.09. Opposition report and be opponent: 13.09.	Submission: 15.09. Opposition report: 17.09.	Submission: 22.09. Opposition report: 24.09.	Submission: 29.9. Opposition report: 1.10.	Submission: 3.10. Feedback: 5.10. Presentation: 7.10. Opposition report: 8.10.	Submission: 11.10. Opposition report: 13.10.
Group F	Group B	Submission: 31.08. Presentation: 09.09.	Submission: 05.09. Presentation: 09.09.	Submission: 13.09. Opposition report: 14.09.	Submission: 15.09. Opposition report and be opponent: 16.09.	Submission: 22.09. Opposition report: 24.09.	Submission: 29.9. Opposition report: 1.10.	Submission: 6.10. Opposition report: 8.10.	Submission: 10.10. Feedback: 11.10. Presentation: 12.10. Opposition report: 13.10.

Here: [homework-schedule-explanation-TNFL01-2022.pdf](#)

## Explanation of the Homework Schedule, TNFL01, fall 2022

In the table, the columns 3-10 indicate the different homework sets. Independent of which group you are in, the first homework set is done individually, shown in the green columns. If you are a FTL1 student, the submission deadline is August 31, otherwise it is September 5. All presentations for this homework set, where each student gives a presentation, take place on September 9. Also, all students will be an oral opponent for another student's presentation.

For homework sets 2-7, all groups need to write a report and an opposition report, but not all need to present and to do an oral opposition. Responsibility for these two things is indicated by:

- Yellow: group is responsible for homework presentation of that homework set
- Blue: group is responsible for the oral opposition of that homework set

Let us assume you signed up for group A. Then you can see in column 2 that your group will always (homework sets 2-7) be the opponent for group C. This means, all your opposition reports will give feedback for group C, in the week in which group C presents, you will do the oral opposition. As group A, you are only interested in the third row of the document:

Group A	Group C	Submission: 11.08. Presentation: 09.09.	Submission: 09.09. Presentation: 09.09.	Submission: 07.09. Feedback: 18.09. Presentation: 13.09. Opposition report: 14.09.	Submission: 15.09. Opposition report: 17.09.	Submission: 23.09. Opposition report and be opponent: 23.09.	Submission: 29.09. Opposition report: 1.10.	Submission: 1.10. Opposition report: 8.10.	Submission: 11.10. Opposition report: 13.10.
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You are group A, and you are the opponent for group C. The green columns indicate the deadlines for homework 1. Let us look at the other columns:

- The yellow color in the column of homework set 2 indicates that this is the homework that you will present. In the field, you find all deadlines for homework set 2:
  - Submission: 07.09. –this refers to your homework report
  - Feedback: 09.09. –this refers to the feedback you obtain from me and that others can use to base their feedback on
  - Presentation: 13.09. –this refers to the day where you will present your work
  - Opposition report: 14.09. –this is the deadline for your opposition report
- For homework 3, you do not have to give either a presentation or the oral opposition, but you need to submit your report and the opposition report (for group C), the deadlines are given in the 6th column in your row.
- For homework 4, as the blue color indicates, you are responsible for the oral opposition (group C is presenting that week), again, the deadlines for report submission, opposition report submission and oral report are given in that field.
- For homework 5-7, you do not give a presentation or the oral opposition, but you need to submit your report and the opposition report (for group C), the deadlines are given in the 8th-10th column in your row.

We look at one other group, let us assume you are in group E. You are interested in the 7th row of the document:

Group E	Group A	Submission: 01.08. Presentation: 09.09.	Submission: 09.09. Presentation: 09.09.	Submission: 12.09. Opposition report and be opponent: 13.09.	Submission: 15.09. Opposition report: 17.09.	Submission: 22.09. Opposition report: 24.09.	Submission: 29.09. Opposition report: 3.10.	Submission: 6.10. Feedback: 5.10. Presentation: 7.10. Opposition report: 8.10.	Submission: 11.10. Opposition report: 13.10.
---------	---------	--	--	---	---	---	--	---	---

You can see in the second column that you will always be the opponent for group A. Columns 3 and 4 again indicate the individual deadlines for homework set 1.

- Your field in column 5 is blue, this indicates that you are responsible for the oral opposition for homework 2 (group A presents its report on that topic). The deadlines you can find in column 5 are:
  - Submission: 12.09. –this is the deadline for your report on homework set 2
  - Opposition report and be opponent: 13.09. –these are the deadlines for your written opposition report and the date for the oral opposition
- In columns 6-8, we see that you are not responsible for homework sets 3-5, but you are given the deadlines for your homework reports (submission:...) and for your opposition reports (Opposition report: ...) on the work of group A
- Your field in column 9 is yellow: you are responsible for the presentation of homework set 6. You can find several deadlines:
  - Submission: 3.10. –this is the deadline for your report on homework 6
  - Feedback: 5.10. –this is the day when you get feedback from me that all can use as a base for their feedback
  - Presentation: 7.10. –this is the day of your presentation
  - Opposition report: 8.10. –this is the deadline for your opposition report (for the work of group A)
- Finally, in column 10, we see that you are not responsible for homework set 7, but you are given the deadlines for your homework report (submission:...) and for your opposition report (Opposition report: ...) on the work of group A





A written explanation of the homework cycle would be appreciated.

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*Done, available on lisam [here](#)*

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Instead of one week between report presentation and oral opposition, two weeks would be easier.

A written explanation of the homework cycle would be appreciated.

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Instead of one week between report presentation and oral opposition, two weeks would be easier.

*Done.*

A written explanation of the homework cycle would be appreciated.

*Done, available on lisam [here](#)*

Instead of one week between report presentation and oral opposition, two weeks would be easier.

*Done.*

First two homework sets individually, then group work.

A written explanation of the homework cycle would be appreciated.

*Done, available on lisam [here](#)*

Instead of one week between report presentation and oral opposition, two weeks would be easier.

*Done.*

First two homework sets individually, then group work.

*This is difficult with the content—all students get different tasks for homework #1, the others are covered by all, so, presentation is not the same as for the first set. The main motivation for that request was that students wanted to know each other before forming groups better (in former years, I took over groups from Mats' course, or had a relatively early sign-up deadline). So, this year I postponed the deadline for signing up for the groups (September 1<sup>st</sup>, 12:00).*

A written explanation of the homework cycle would be appreciated.

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Given the numbers of homework sets, clarify that no minimum report length is required.



A written explanation of the homework cycle would be appreciated.

*Done, available on lisam [here](#)*

Instead of one week between report presentation and oral opposition, two weeks would be easier.

*Done.*

First two homework sets individually, then group work.

*This is difficult with the content—all students get different tasks for homework #1, the others are covered by all, so, presentation is not the same as for the first set. The main motivation for that request was that students wanted to know each other before forming groups better (in former years, I took over groups from Mats' course, or had a relatively early sign-up deadline). So, this year I postponed the deadline for signing up for the groups (September 1<sup>st</sup>, 12:00).*

Given the numbers of homework sets, clarify that no minimum report length is required.

*I only check content, not length, if you have the content one page is fully enough!*

A written explanation of the homework cycle would be appreciated.

*Done, available on lisam [here](#)*

Instead of one week between report presentation and oral opposition, two weeks would be easier.

*Done.*

First two homework sets individually, then group work.

*This is difficult with the content—all students get different tasks for homework #1, the others are covered by all, so, presentation is not the same as for the first set. The main motivation for that request was that students wanted to know each other before forming groups better (in former years, I took over groups from Mats' course, or had a relatively early sign-up deadline). So, this year I postponed the deadline for signing up for the groups (September 1<sup>st</sup>, 12:00).*

Given the numbers of homework sets, clarify that no minimum report length is required.

*I only check content, not length, if you have the content one page is fully enough!*

Make clear that students should come to me with any problems in the group.

A written explanation of the homework cycle would be appreciated.

*Done, available on lisam [here](#)*

Instead of one week between report presentation and oral opposition, two weeks would be easier.

*Done.*

First two homework sets individually, then group work.

*This is difficult with the content—all students get different tasks for homework #1, the others are covered by all, so, presentation is not the same as for the first set. The main motivation for that request was that students wanted to know each other before forming groups better (in former years, I took over groups from Mats' course, or had a relatively early sign-up deadline). So, this year I postponed the deadline for signing up for the groups (September 1<sup>st</sup>, 12:00).*

Given the numbers of homework sets, clarify that no minimum report length is required.

*I only check content, not length, if you have the content one page is fully enough!*

Make clear that students should come to me with any problems in the group.

*I can only try to solve any problems, if I know about them—as this does not seem to be clear to all: please contact me in case of any problems (e.g., not all members contribute, some members are hard to reach) as early as possible, such that frustration does not build up.*

A written explanation of the homework cycle would be appreciated.

*Done, available on lisam [here](#)*

Instead of one week between report presentation and oral opposition, two weeks would be easier.

*Done.*

First two homework sets individually, then group work.

*This is difficult with the content—all students get different tasks for homework #1, the others are covered by all, so, presentation is not the same as for the first set. The main motivation for that request was that students wanted to know each other before forming groups better (in former years, I took over groups from Mats' course, or had a relatively early sign-up deadline). So, this year I postponed the deadline for signing up for the groups (September 1<sup>st</sup>, 12:00).*

Given the numbers of homework sets, clarify that no minimum report length is required.

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# This course - and me...



Taxi, NYC, May 2017

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- **BUT: ask whenever something is unclear!**



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For the first homework set we will split the group:

- Group 1: TNFL01 students with a first name starting with A-J
- Group 2: TNFL01 students with a first name starting K-Z
- Group 3: SL3 students
- Idea:
  - You learn some background information.
  - You start writing directly.
  - You get training and feedback on presentation.

For the first homework set we will split the group:

- Group 1: TNFL01 students with a first name starting with A-J
- Group 2: TNFL01 students with a first name starting K-Z
- Group 3: SL3 students
- Idea:
  - You learn some background information.
  - You start writing directly.
  - You get training and feedback on presentation.

Pick topics on a FCFS basis here: [TNFL01-assignment HW1-2022.xlsx](#) (sign up in column H with full name)



At <http://www.techrepublic.com/article/12-drone-disasters-that-show-why-the-faa-hates-drones/> 12 drone accidents are listed.

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Your task is to choose one of these crashes and discuss the procedures, routines and technology of the UTM system, using the chosen crash as a starting point. Possible questions you could discuss:

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How did the crash happen? Why did it happen? Which person/s (if any) acted incorrect? Which technology (if any) failed? How could the crash have been avoided? Which lessons can one learn from the crash? Which changes in routines, technology etc. resulted from the crash? Could the same typ of crash happen today?

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You have to look for further necessary information. Please remember to be critical of your sources.



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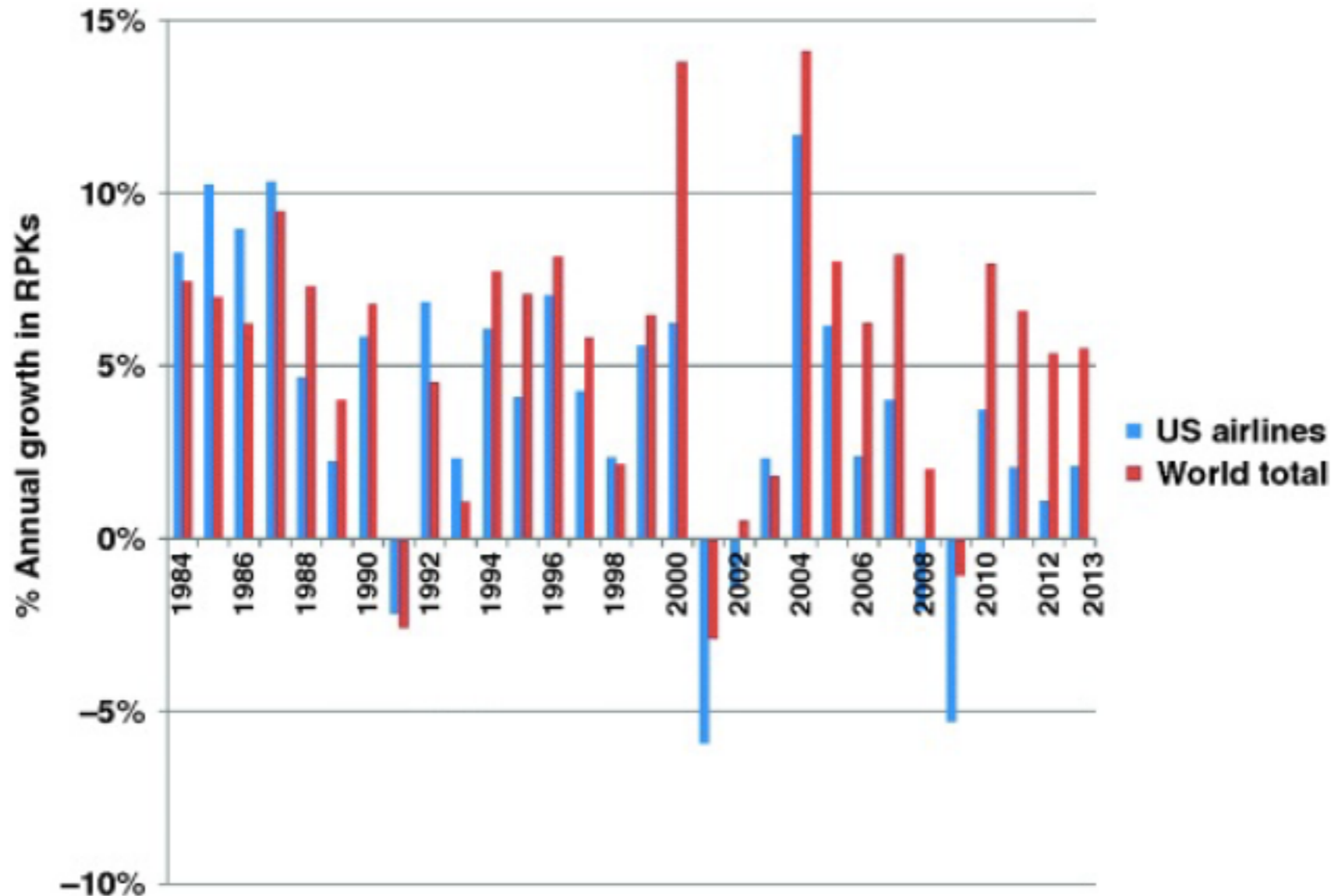
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You have to look for further necessary information. Please remember to be critical of your sources.

The assignment should be handled separately (that is, each person works on her/his own) and reported as a short memo, maximal 2 pages. No two persons in the class are allowed to chose the same drone crash, thus, your choice of crash must be approved by the supervisor.

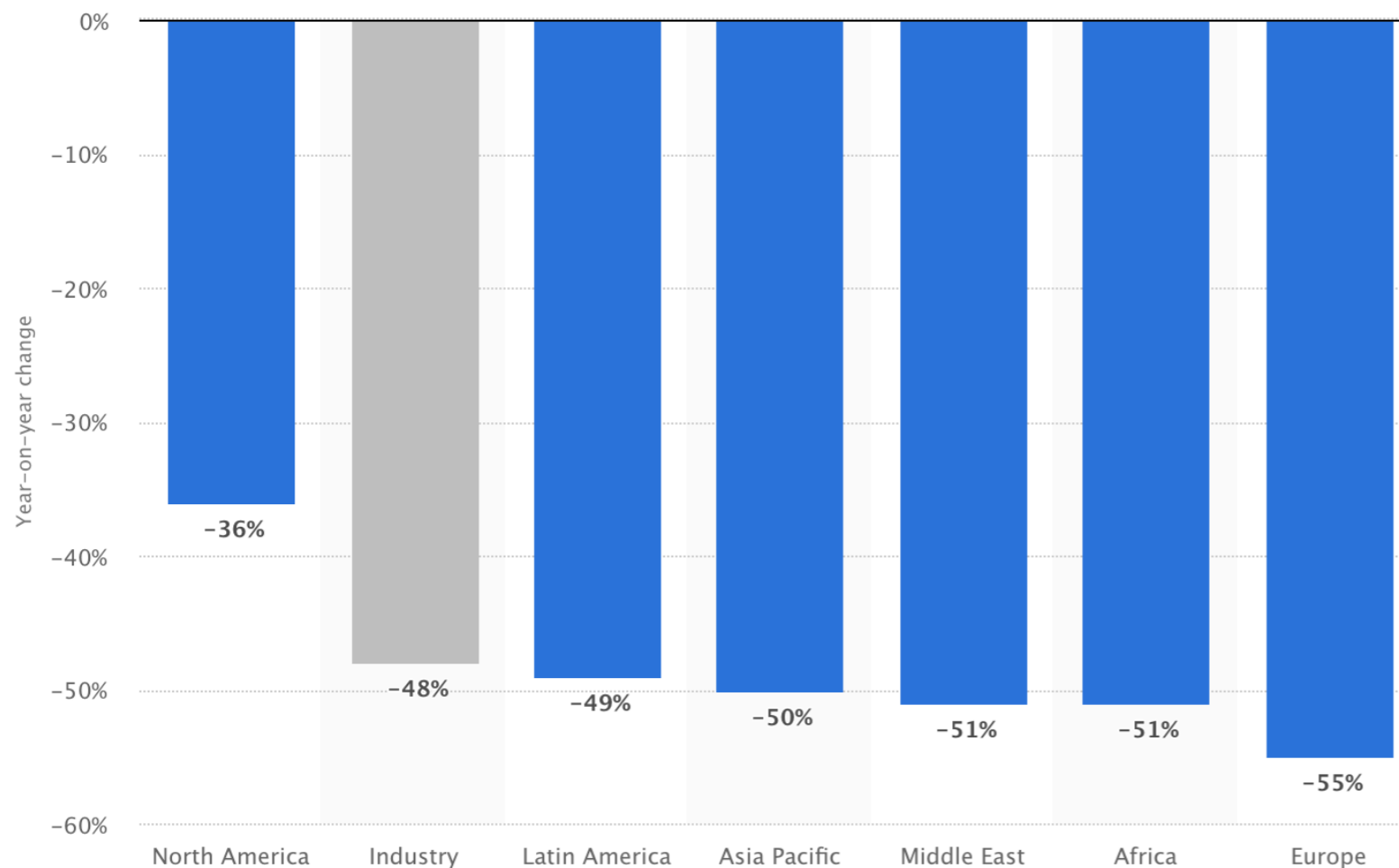
TGAI - Chapter 1



**Figure 1.1** Annual RPK growth rates 1984–2013. (Data sources: Air Transport Association; ICAO)

RPK=revenue passenger kilometers (definition later)

# Year-on-year change of revenue passenger kilometers(RPKs) in the aviation industry in 2020, by region\*



[Additional Information](#)

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### Source

[→ Show sources information](#)

[→ Show publisher information](#)

### Release date

April 2020

### Region

Worldwide

### Survey time period

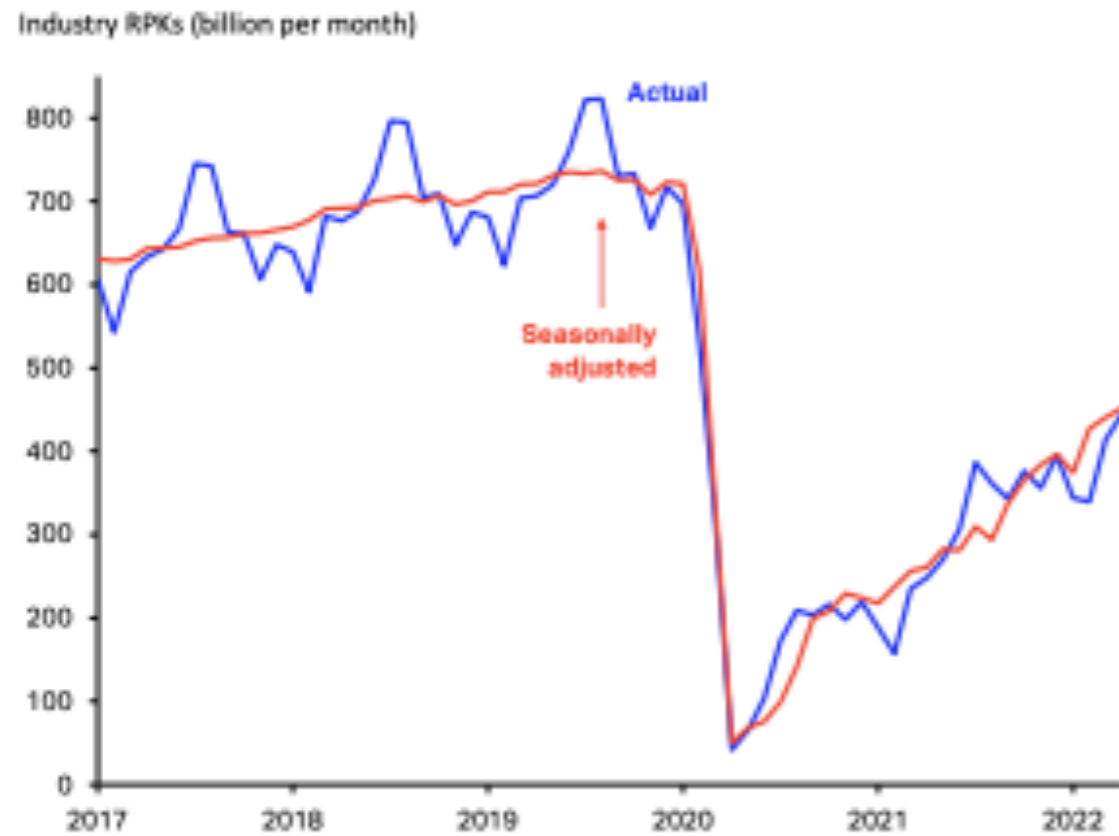
Q2 2020

### Supplementary notes

\* A 3 months lockdown was assumed until the end of Q2 and international travel restrictions are assumed in this assessment to be reduced more slowly, with only 50 percent of inhibited international RPKs recovered by Q4 (after reduction of international RPKs)

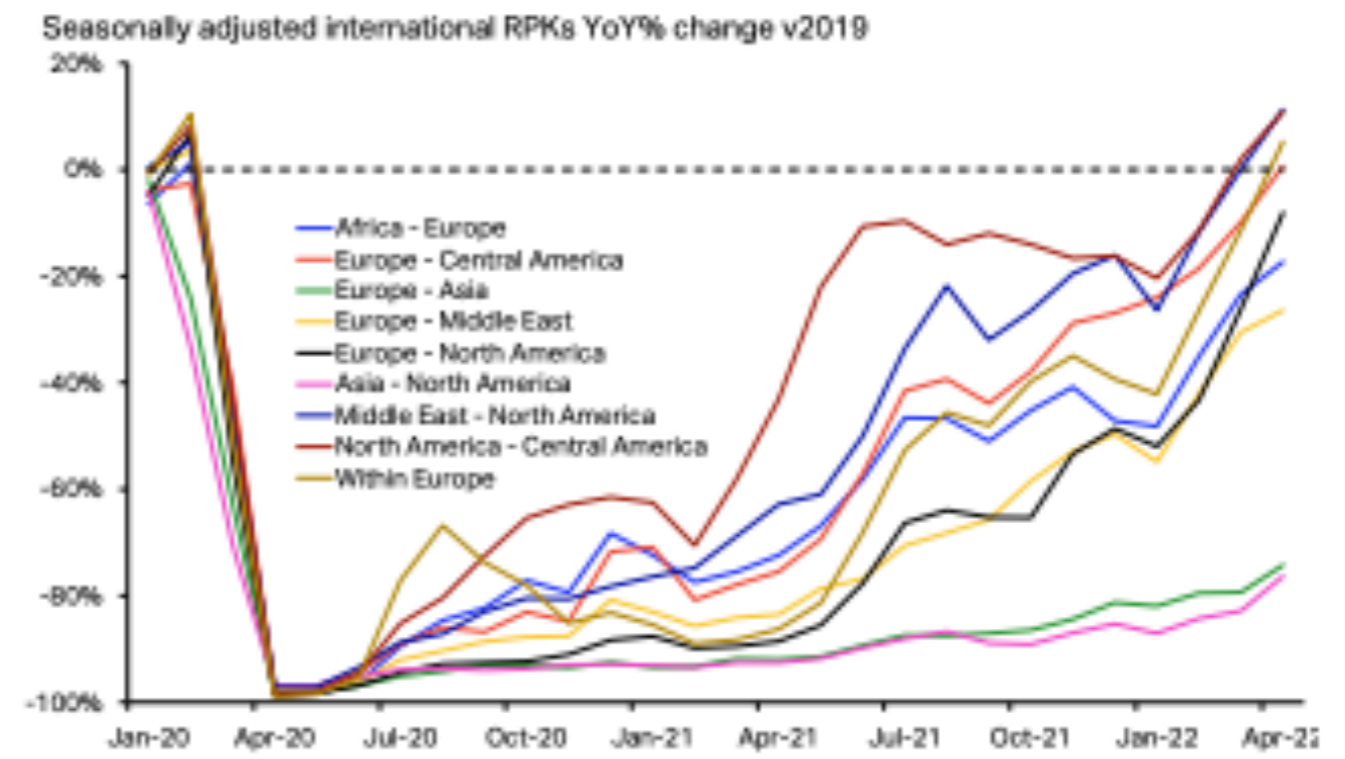
<https://www.statista.com/statistics/1106659/coronavirus-impact-aviation-revenue-passenger-kilometers-region/>

**Chart 1: Global air passenger volumes (RPKs)**



Sources: IATA Economics, IATA Monthly Statistics

**Chart 4: Seasonally adjusted international RPKs, selected routes**



Source: IATA Monthly route area statistics

Source: <https://www.iata.org/economics/>

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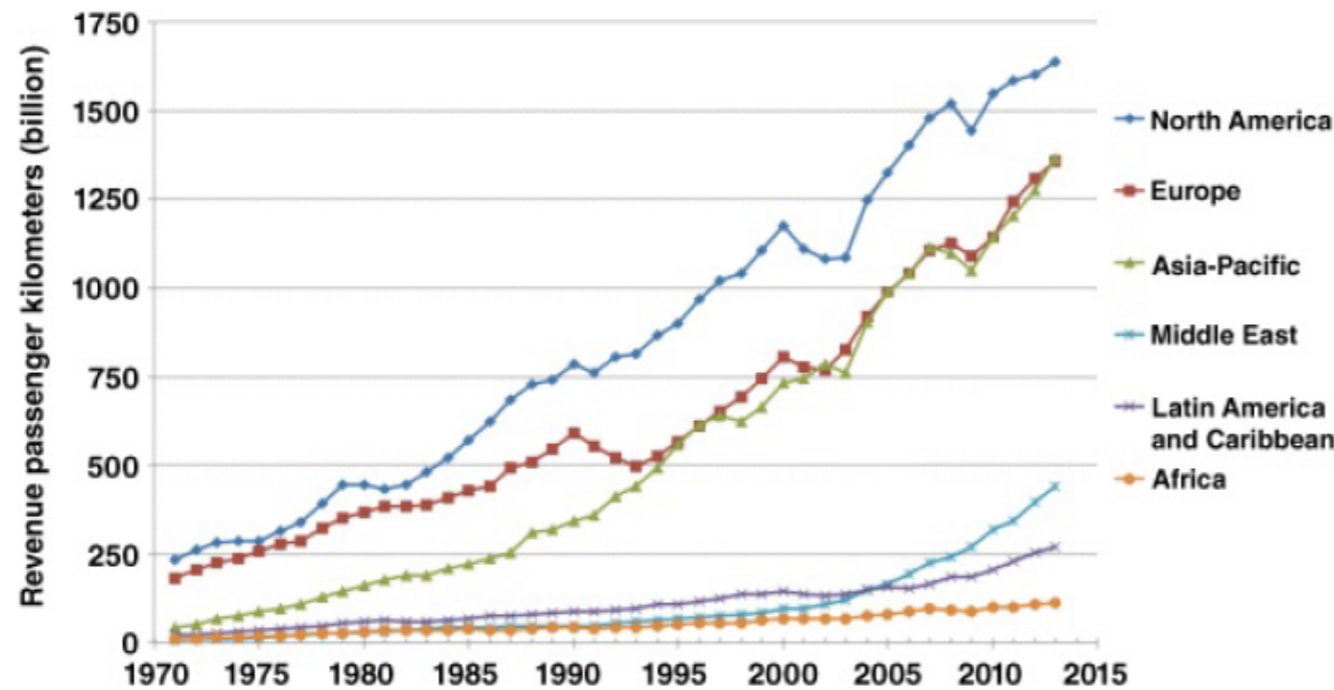


Figure 1.2 Growth of airline passenger traffic by world region. (Data sources: ICAO, 1971–2005; IATA, 2006–2013)

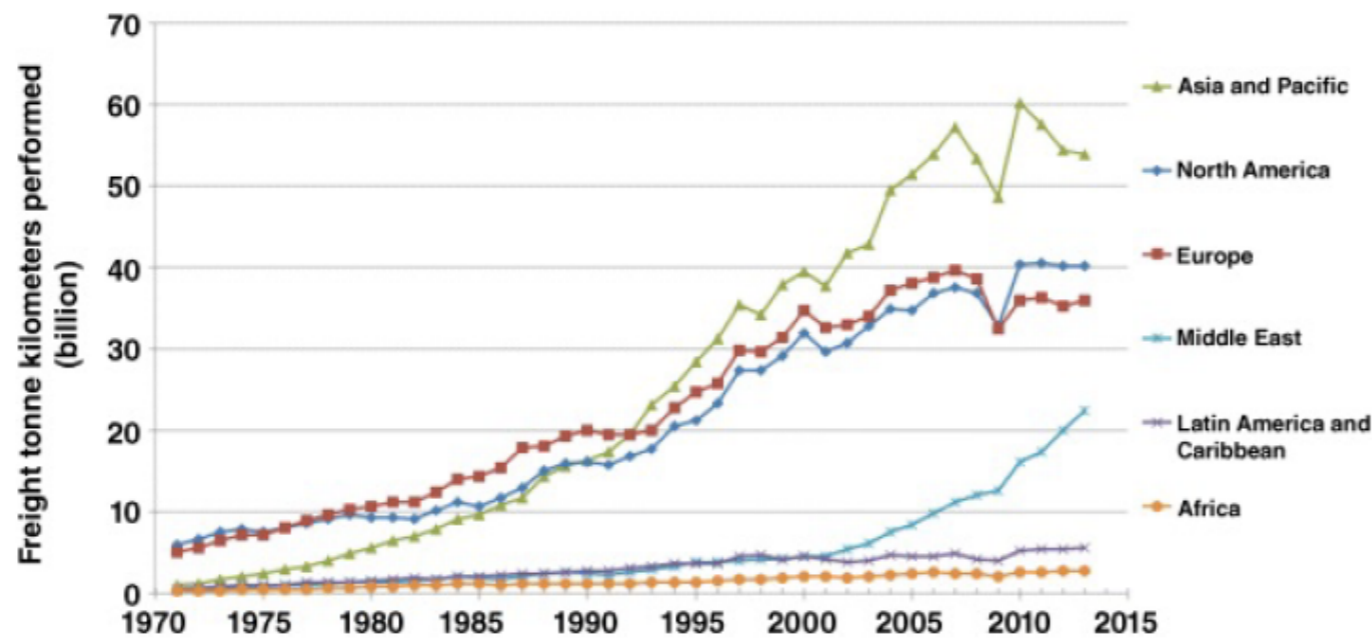
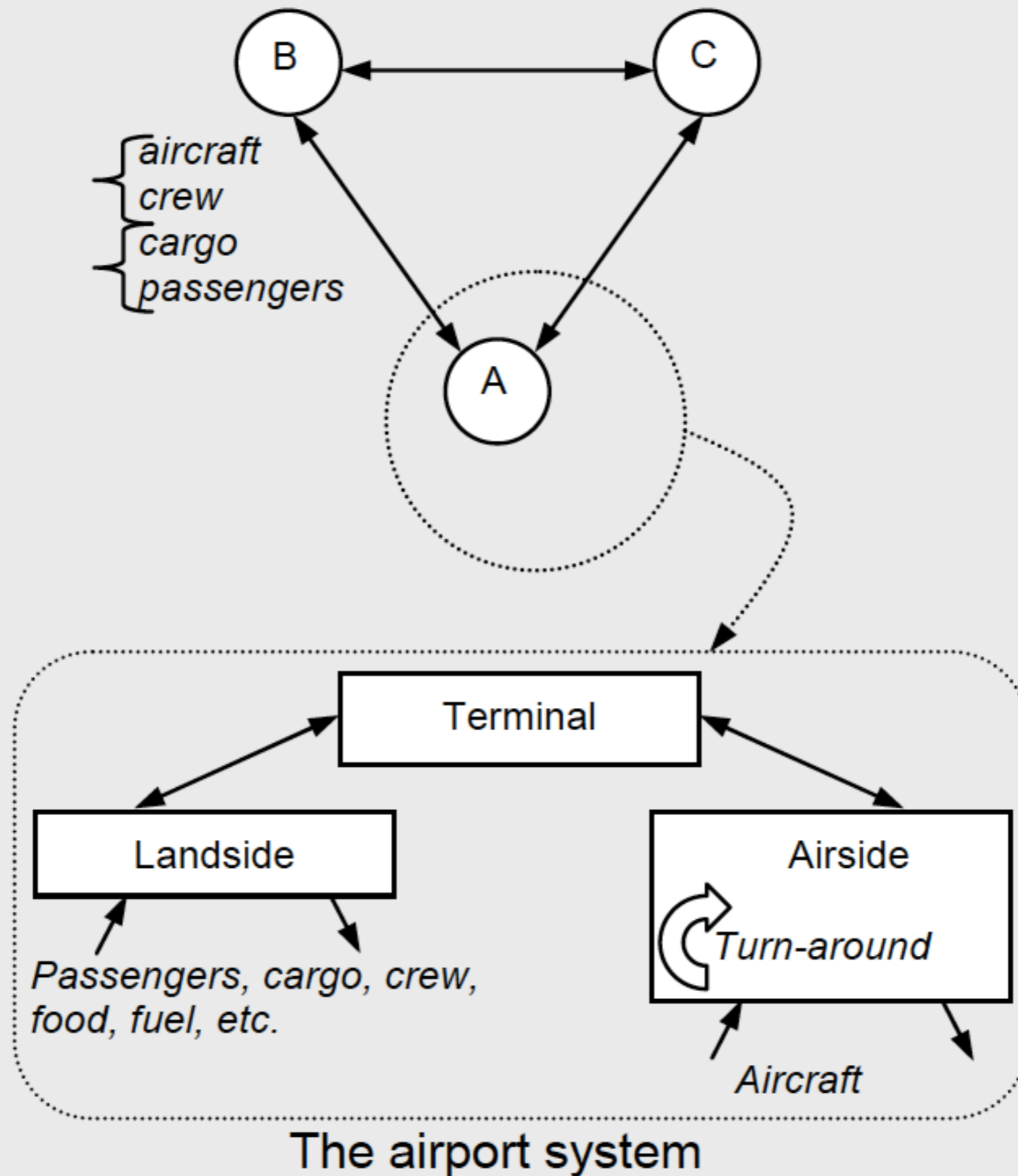


Figure 1.3 Growth of air freight volumes by world region. (Data sources: ICAO, 1971–2005; IATA, 2006–2013)

# The air transportation system



source: Lindh A, Andersson T, Värbrand P and Yuan D, "Airport Logistics – Integration of ATM and ground processes".



✦ Passengers/goods



- ✦ Passengers/goods
  - travel/itinerary

- ✦ Passengers/goods
  - travel/itinerary
  - planning of goods

- ✦ Passengers/goods
  - travel/itinerary
  - planning of goods

- ✦ Airline

## ❖ Passengers/goods

- travel/itinerary
- planning of goods

## ❖ Airline

- time schedule, fleet, staff, seats/tickets, orientation, economies/  
finances

## ❖ Passengers/goods

- travel/itinerary
- planning of goods

## ❖ Airline

- time schedule, fleet, staff, seats/tickets, orientation, economies/finances

## ❖ Airport

## ❖ Passengers/goods

- travel/itinerary
- planning of goods

## ❖ Airline

- time schedule, fleet, staff, seats/tickets, orientation, economies/finances

## ❖ Airport

- infrastructure, gate allocation, handling (check in, boarding, refueling, cleaning, etc.)

## ❖ Passengers/goods

- travel/itinerary
- planning of goods

## ❖ Airline

- time schedule, fleet, staff, seats/tickets, orientation, economies/finances

## ❖ Airport

- infrastructure, gate allocation, handling (check in, boarding, refueling, cleaning, etc.)

## ❖ ATM/ATC

## ❖ Passengers/goods

- travel/itinerary
- planning of goods

## ❖ Airline

- time schedule, fleet, staff, seats/tickets, orientation, economies/finances

## ❖ Airport

- infrastructure, gate allocation, handling (check in, boarding, refueling, cleaning, etc.)

## ❖ ATM/ATC

- fleet planning, arrival manager (AMAN)/departure manager (DMAN), operational control



**Read TGA1 Chapter 1**

**Answer online quiz: <https://forms.gle/zDy9NPFTxg1TiMG79>**