Welcome to **Academic Preparation**

Ask your questions in the chat!

Please turn off your camera and microphone when you join!

16.00 – Presentation, Q&A

16.30 – Presentation, Q&A

17.00 – Presentation, Q&A

Fontys

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

JADS Jheronimus Academy of Data Science

specialization
academic preparation

Joris Geurts

coordinator academic transfer

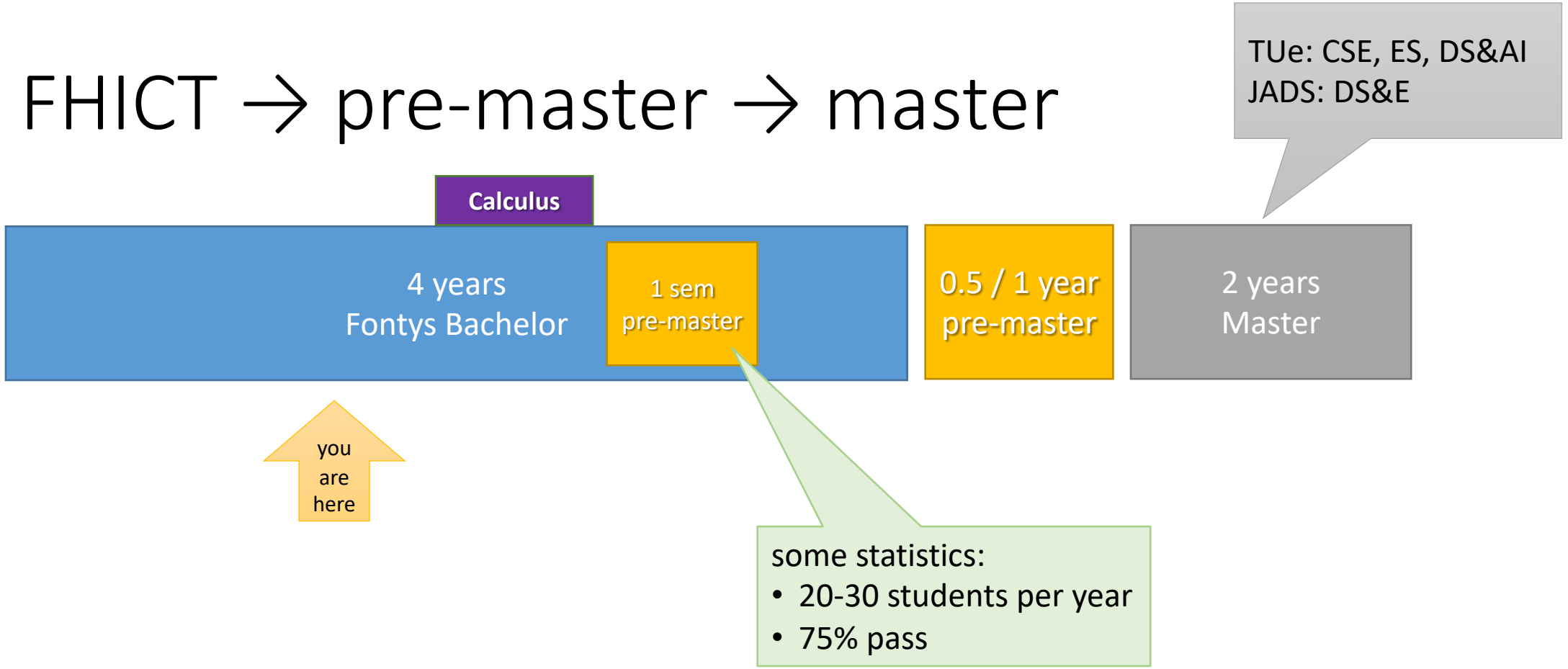
TU/e Technische Universiteit Eindhoven University of Technology

any other job in the industry

agenda

- pre-master + master program
- academic preparations + minor
  - what is it?
  - study plan (semesters)
  - pre-requisites

FHICT → pre-master → master



https://www.tue.nl/en/education/graduate-school/master-computer-science-and-engineering/
https://www.tue.nl/en/education/graduate-school/master-data-science-and-artificial-intelligence/
https://www.tue.nl/en/education/graduate-school/master-embedded-systems/
https://www.jads.nl/joint-master-program-data-science-entrepreneurship.html

warning !!!

pre-master | master

Proof. Suppose $L = \mathcal{L}(N)$ for an NFA $N = (Q_N, \Sigma, \to_N, q_N^0, F_N)$. The so-called ε-closure $E(\bar{q})$ of a state $\bar{q}$ of N is given by

$$E(\bar{q}) = \{\, q' \in Q_N \mid (\bar{q}, \varepsilon) \vdash_N^* (q', \varepsilon) \,\}$$

Thus $q' \in E(\bar{q})$ if there is a sequence of zero, one or more τ-transitions from $\bar{q}$ to q'. We construct a DFA $D = (Q_D, \Sigma, \delta, Q_D^0, F_D)$ such that $\mathcal{L}(D) = \mathcal{L}(N)$ as follows.

- $Q_D = \mathcal{P}(Q_N)$, i.e. states of D are sets of states of N
- $\delta(Q, a) = \bigcup \{\, E(\bar{q}) \mid q \in Q \,\}$
- $Q_D^0 = E(q_N^0)$, the ε-closure of the initial state of N
- $F_D = \{\, Q \subseteq Q_N \mid Q \cap F_N \neq \emptyset \,\}$

Put differently, $\delta(Q, a) = \{\, q' \in Q_N \mid \exists q \in Q : (q, a) \vdash_N (\bar{q}, \varepsilon) \vdash_N^* (q', \varepsilon) \,\}$, and $Q_D^0 = \{\, q' \in Q_N \mid (q_N^0, \varepsilon) \vdash_N^* (q', \varepsilon) \,\}$. Furthermore

$$(q, w) \vdash_N^* (q', \varepsilon) \quad \text{iff} \quad \exists Q' \subseteq Q_N : (E(q), w) \vdash_D^* (Q', \varepsilon) \text{ and } q' \in Q'$$

Fontys: University of ***Applied Science***

Tue/JADS: ***Academic*** Research University

pre-master / master:

- *way* more difficult than Fontys courses
- more mathematics
- theoretical oriented

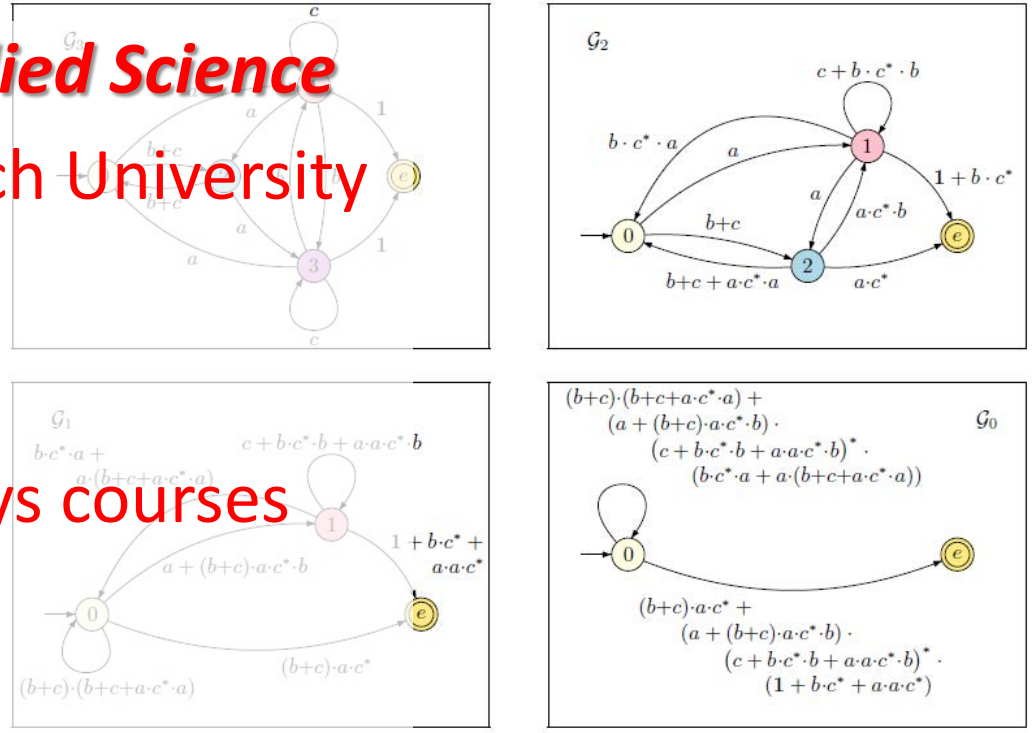
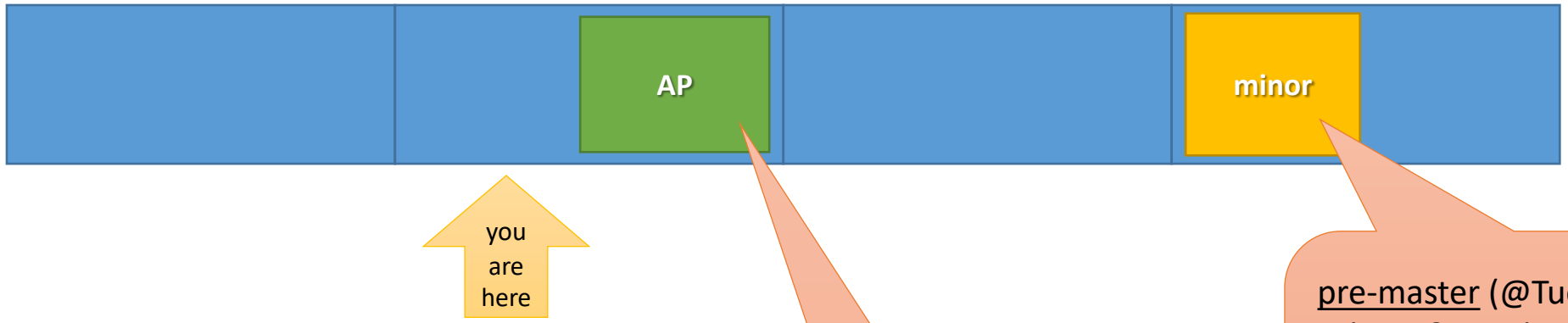


Figure 2.14: GFA sequence of Example 2.32

contents pre-master & academic preparation



pre-master (@Tue or Jads):
- logic & set theory
- statistics
- algorithms & data structures
- data science
- linear algebra

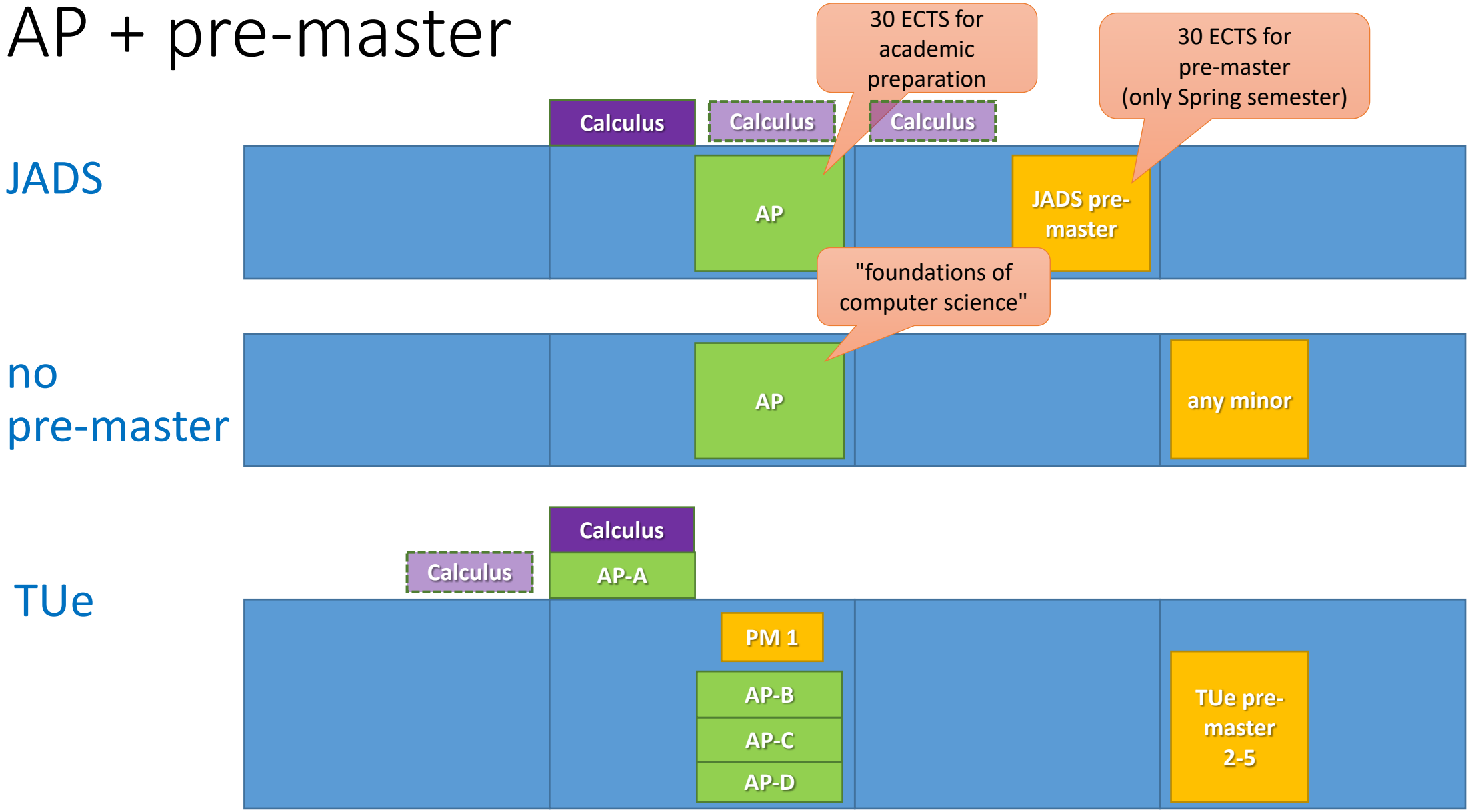
academic preparation (@Fontys):
- introduction into those subjects
- including programming
- develop your academic thinking

contents academic preparation

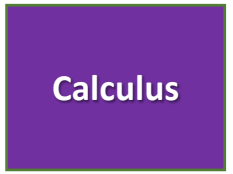
AP

	I	II	III
A	Logic & Set Theory Graphs	Lin Algebra Automata: NFA, DFA, reg. expr	Applied Logic: constraint programming
B	Data Struc & Algo 1	Data Struc & Algo 2 • P vs. NP, NP-completeness	Automata • parsers, lexers, grammars
C	Statistics • hypothesis testing, Bayes theorem		Decision Theory • optimum strategies for (adversary) agents
D	Functional Programming	Data Science • landscape and algorithms	Synchronization • multi-threading, deadlock

AP + pre-master



pre-requisites



- Good (or Outstanding) for all semesters
- software skills (object oriented)
- for Tue/JADS pre-master:
  - Calculus course; one of those:
    - high school VWO Math-B
    - Open University Math-T
    - 2DL00 (TUe, only Spring semester)
    - Boswell-Math-B
    - (perhaps your home-country high school diploma is OK)

https://www.ou.nl/voortentamen-wiskunde-t
https://www.boswell-beta.nl/examen/vwo/mathematics-b

final remarks

- interested in JADS master?
  - ICT & Artifical Intelligence specialization is also allowed (instead of Academic Preparation specialization)
- interested in TUe Industrial Design master?
  - https://educationguide.tue.nl/programs/pre-master-programs/industrial-design
  - Calculus not required
  - any specialization is OK

questions?

(or mail me via fhict-academictransfer@fontys.nl)