Data Science is

the methodology and engineering behind

managing, **analyzing**, and **communicating**

ethical and **useful**

decisions informed by data.

Jeff Phillips | jeffp@cs.utah.edu

What is Data Science:

What skills *should** a Data Scientist have?

(1) To efficiently **manage**, process, and compute on a wide variety of data types.

(2) To apply probabilistic and statistical thinking and **analysis**.

(3) To take an abstract task involving a data set, and perform appropriate and **useful** data analysis.

(4) To **interact** meaningfully with experts in a technical data domain.

Computer Science Fundamentals

Probability, Statistics, Linear Algebra

Data Wrangling, Math Foundation, Data Ethics

Data Domain Interaction

* according to SOC and
"Curriculum Guidelines for Undergraduate Programs in Data Science" - PCMI 2016
"Data Science for Undergraduates: Opportunities and Options (2018)" — NASEM 2018

What is Data Science:

What skills *should** a Data Scientist have?

2013

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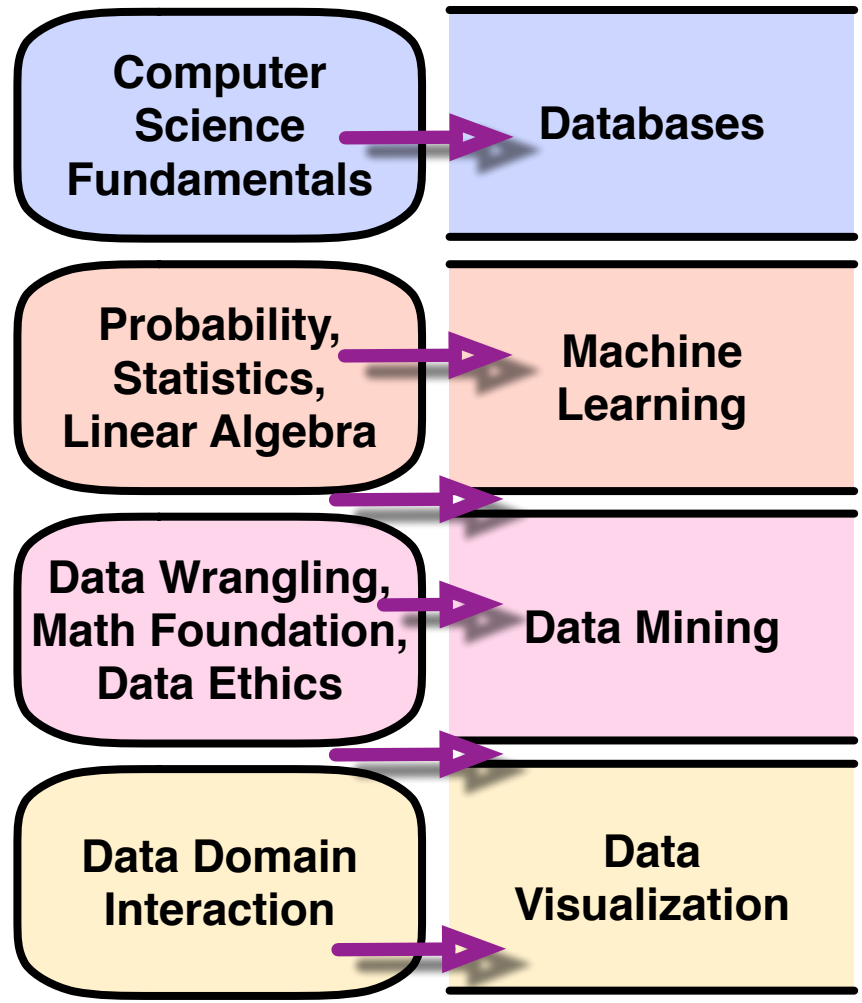

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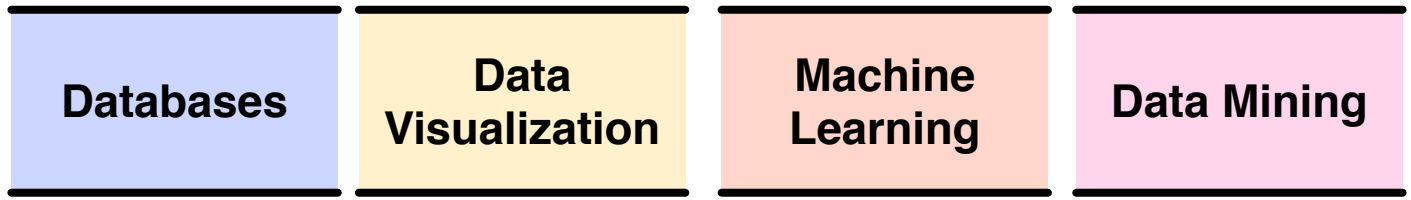
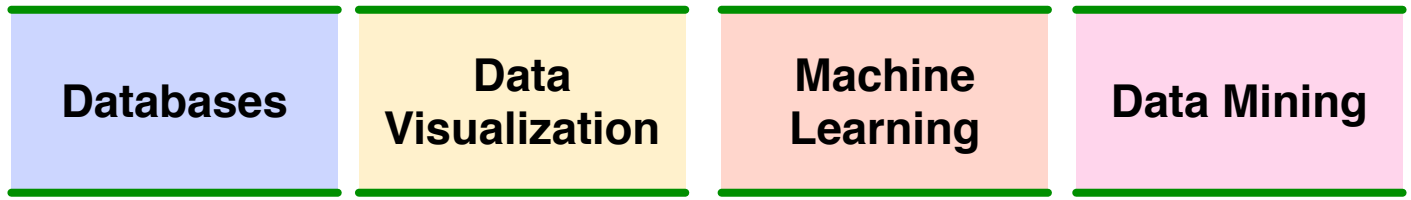
BS in Data Science Flow Chart

2013



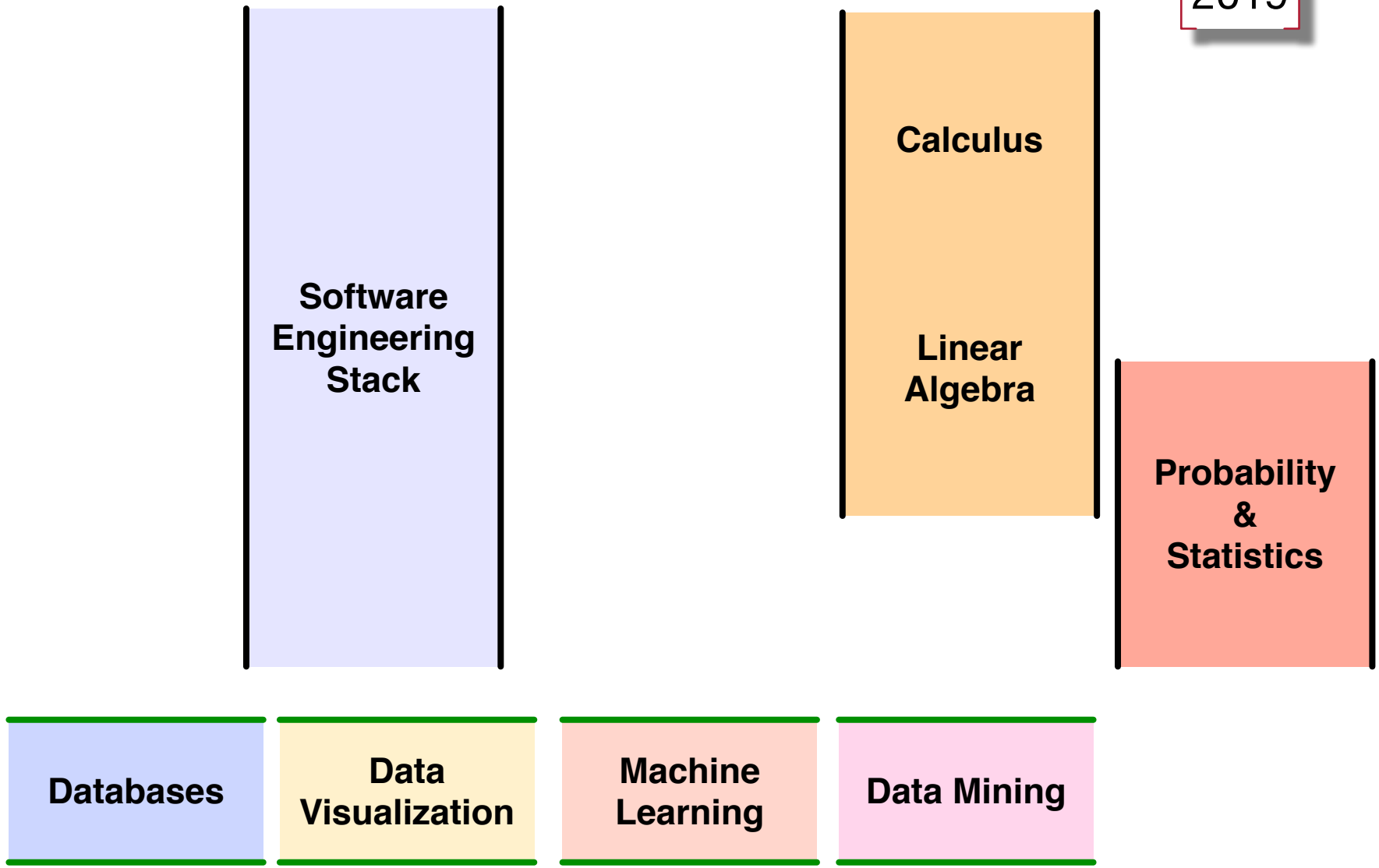
BS in Data Science Flow Chart

2014

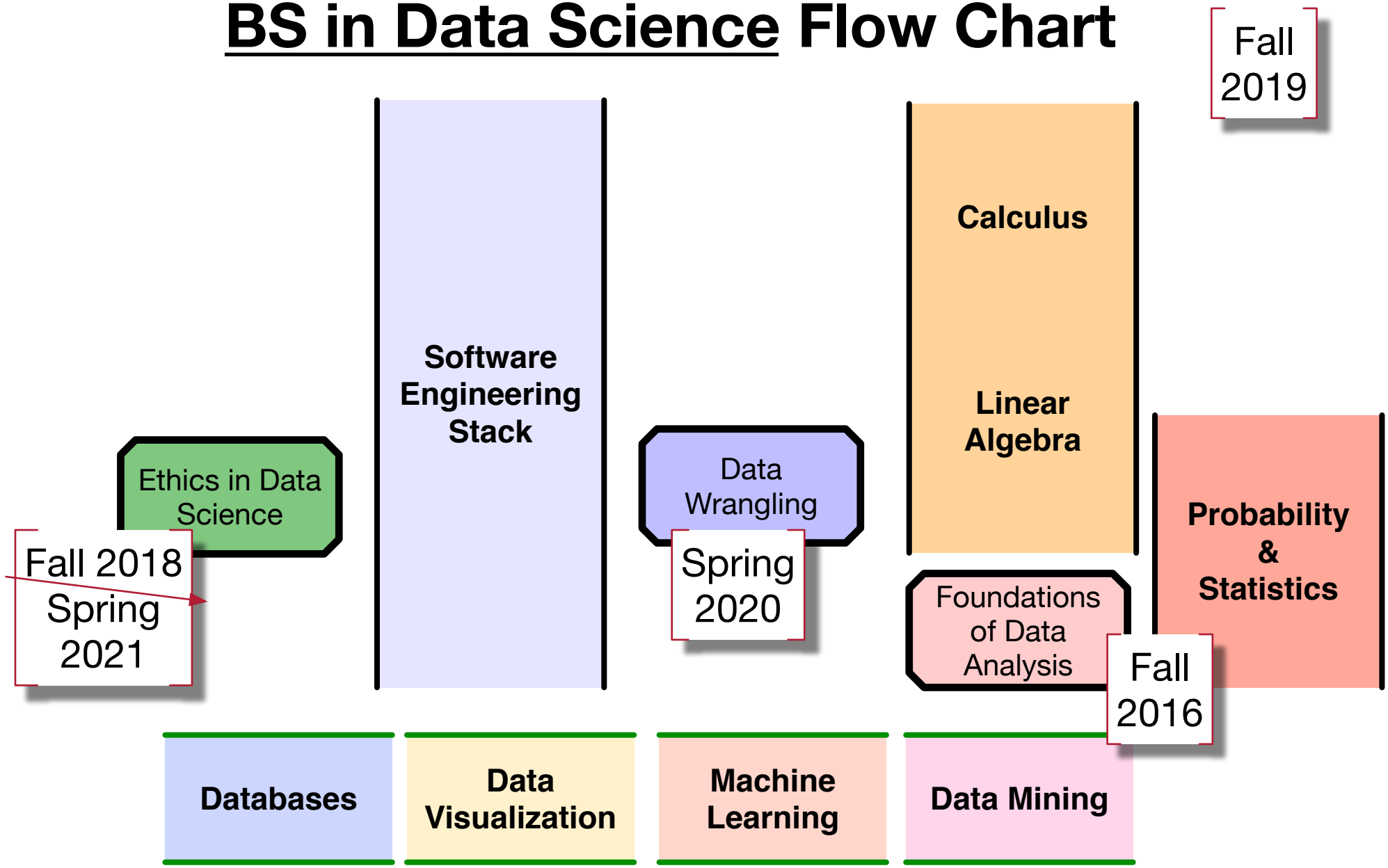


BS in Data Science Flow Chart

Fall 2019

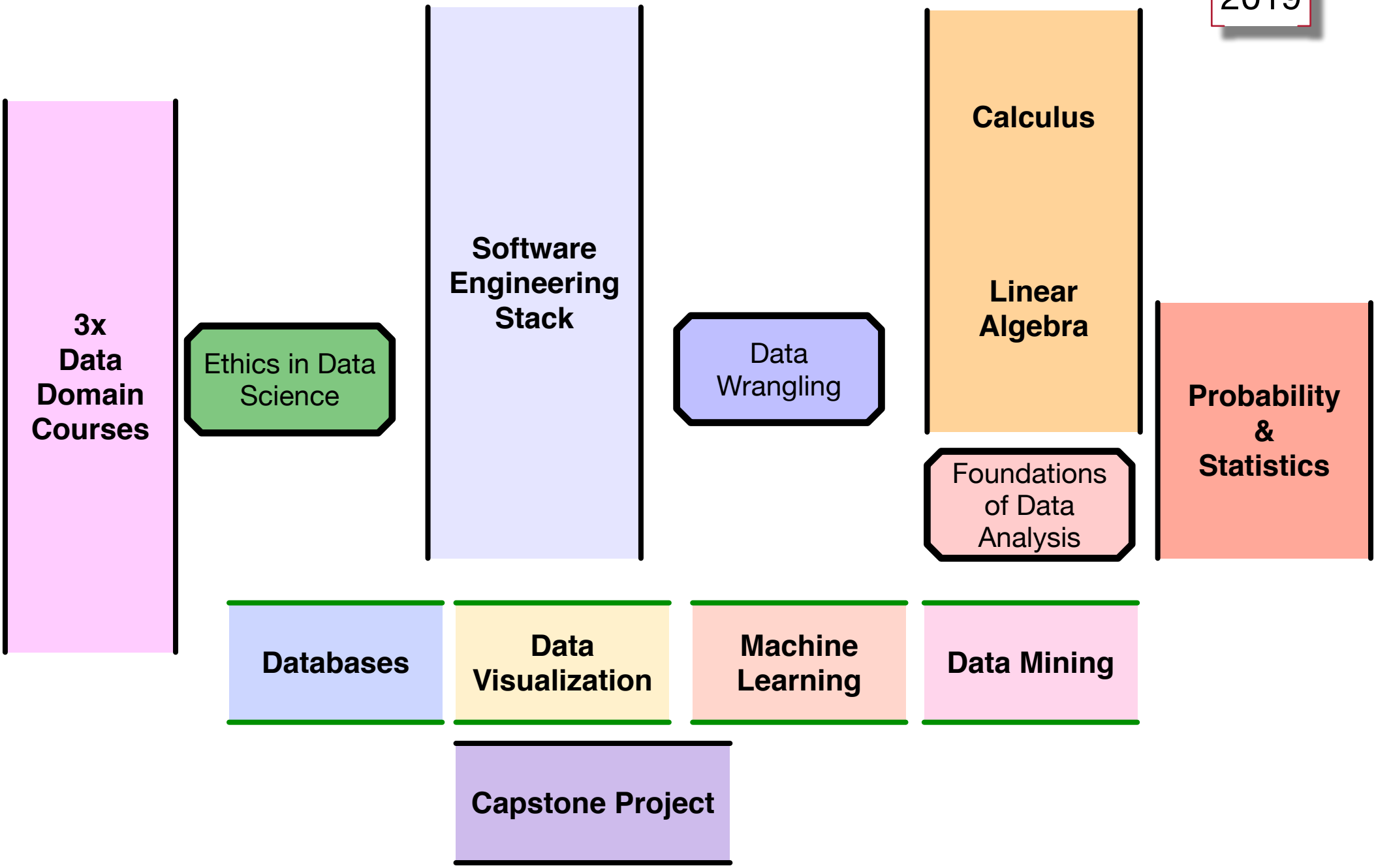


BS in Data Science Flow Chart

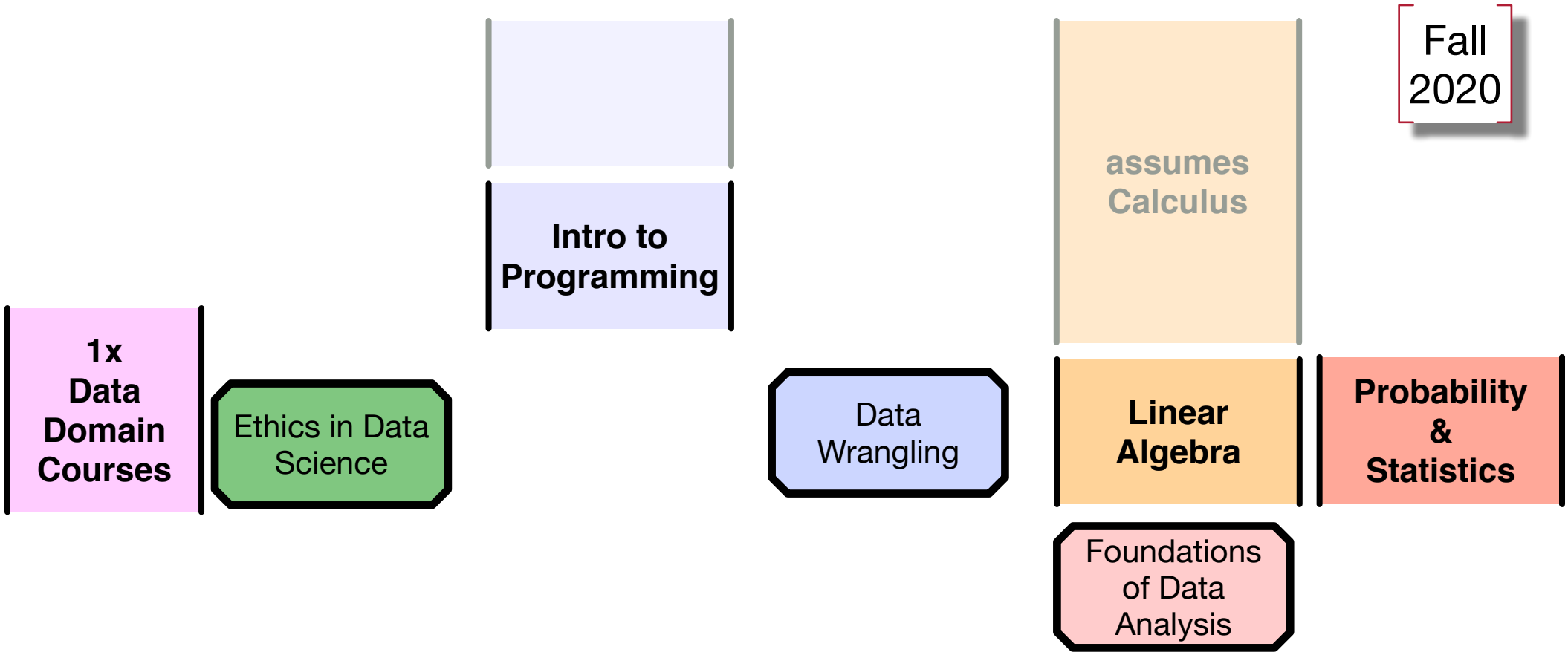


BS in Data Science Flow Chart

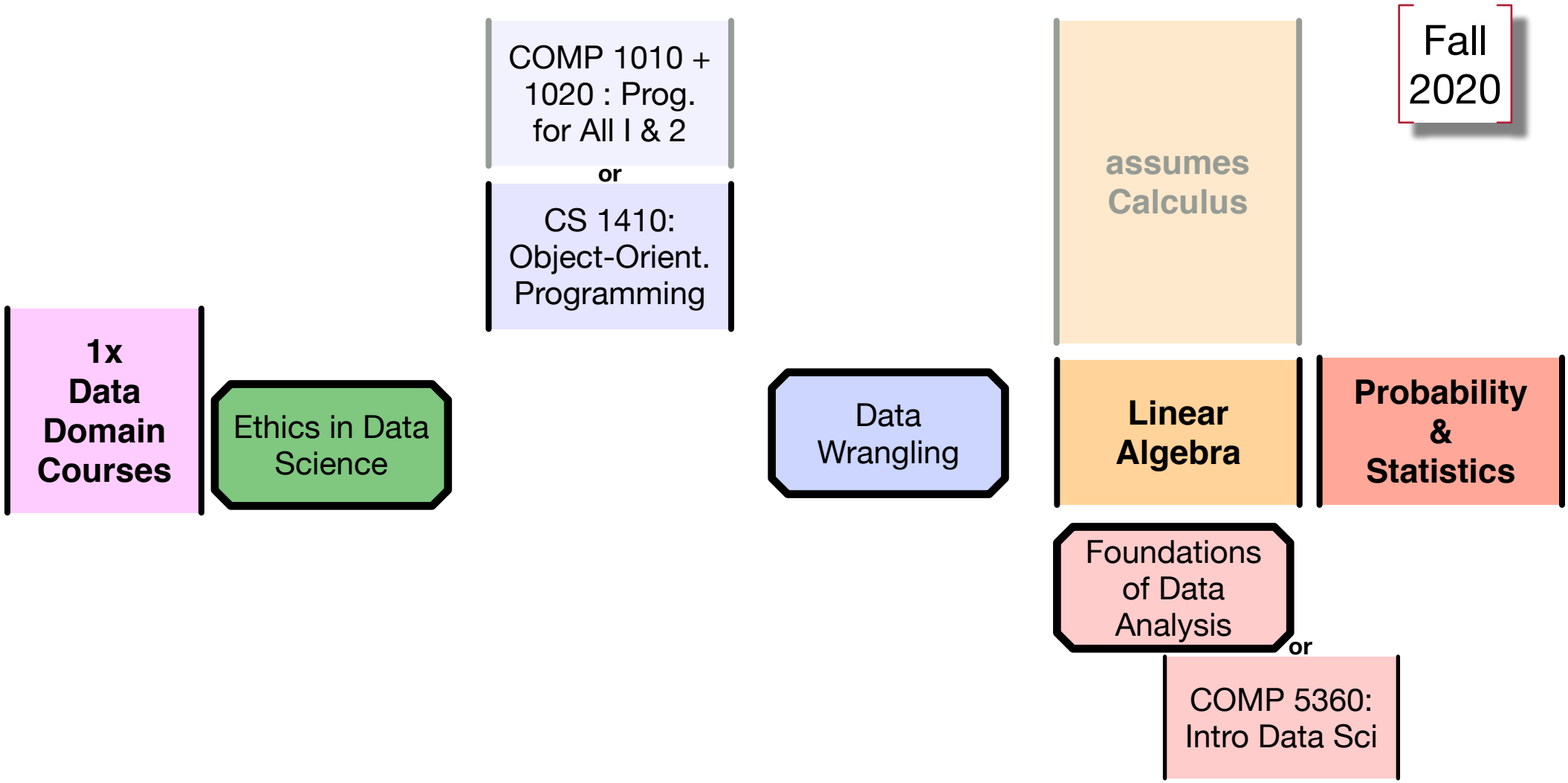
Fall 2019



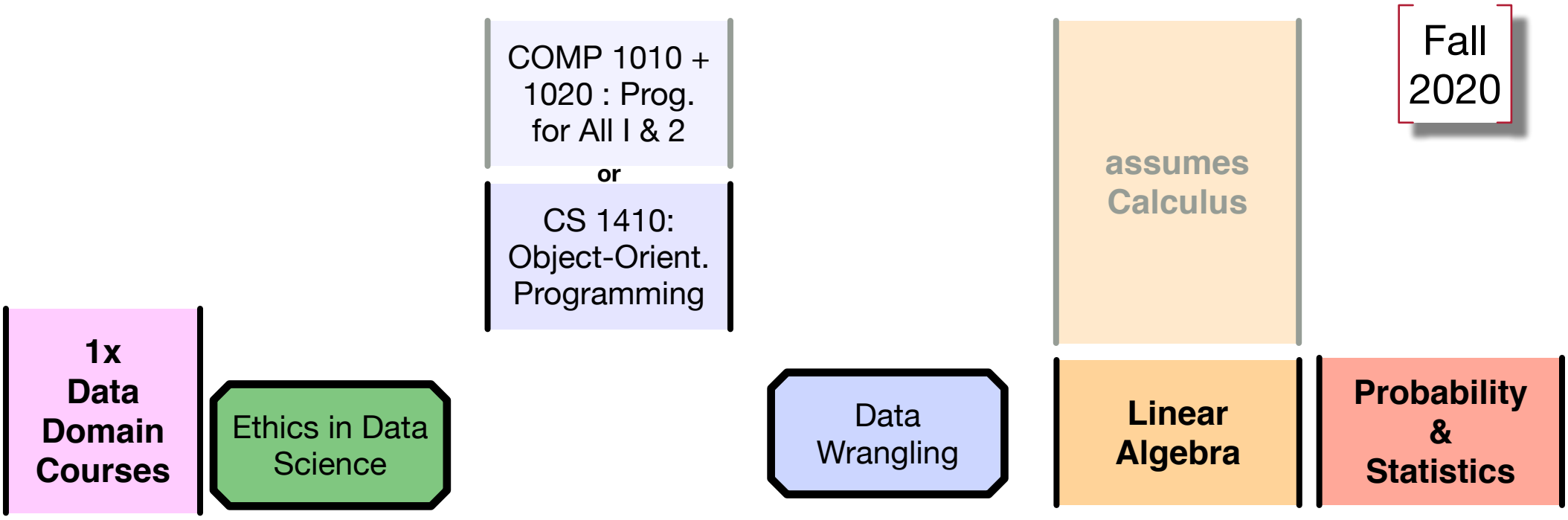
UG Certificate in Data Science Flow Chart



UG Certificate in Data Science Flow Chart



UG Certificate in Data Science Flow Chart



Targeted Majors

* Computer Science
* Engineering (Mechanical, Electrical, Biomedical, …)
* Sciences (Math, Physics&Astronomy, …)

and maybe

* Social Sciences (Economics, Geography, …)
* Business

UG Certificate in Data Fluency Flow Chart

Fall 2020

3x Data Domain Courses

Ethics in Data Science

COMP 1010: Prog. for All I

or

CS 1410: Object-Orient. Programming

does **NOT** assumes Calculus

Math 1070: Intro to Stat Inference

Data Wrangling

or

COMP 5360: Intro Data Sci

UG Certificate in Data Fluency Flow Chart

Fall 2020

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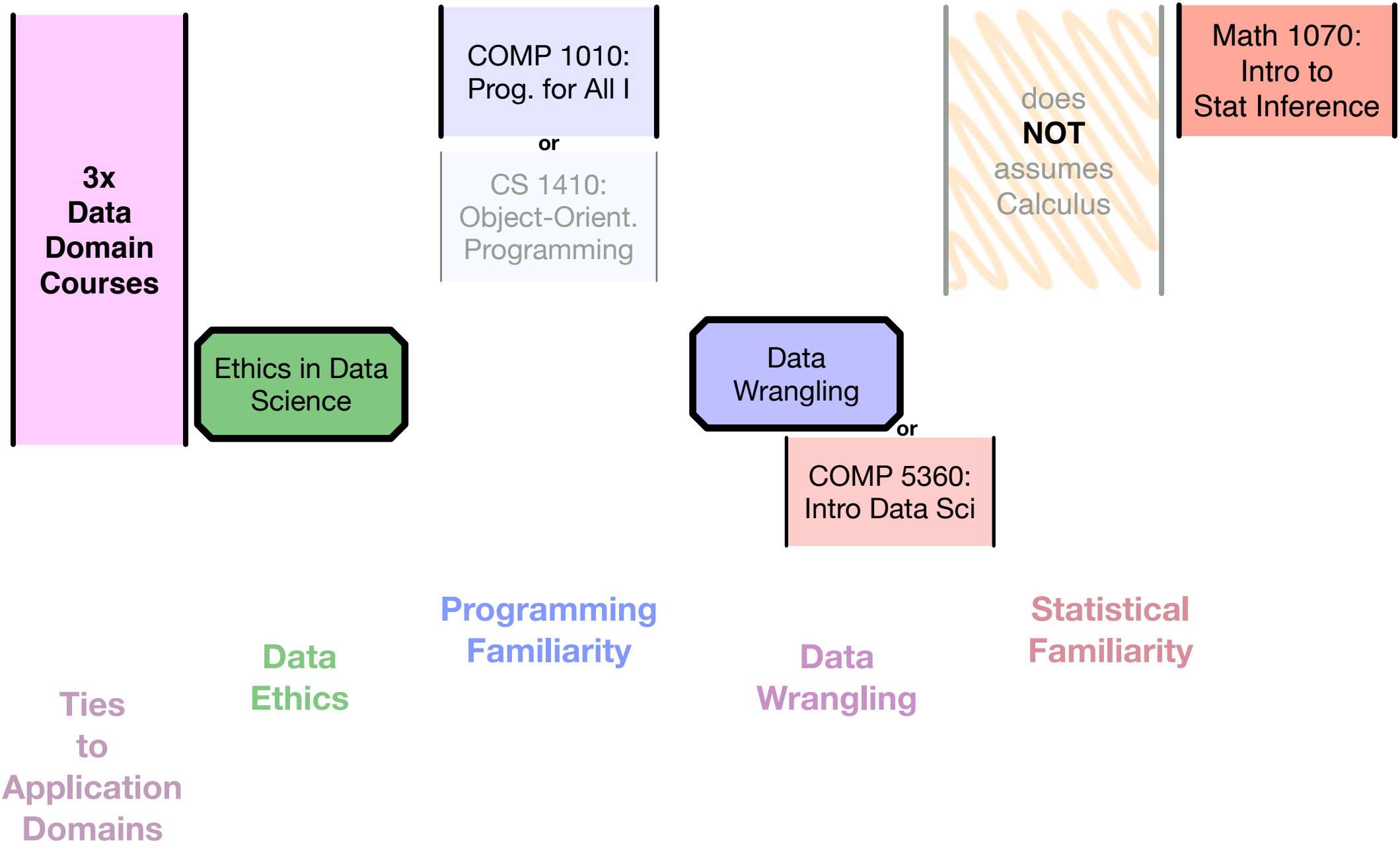
Programming Familiarity

Statistical Familiarity

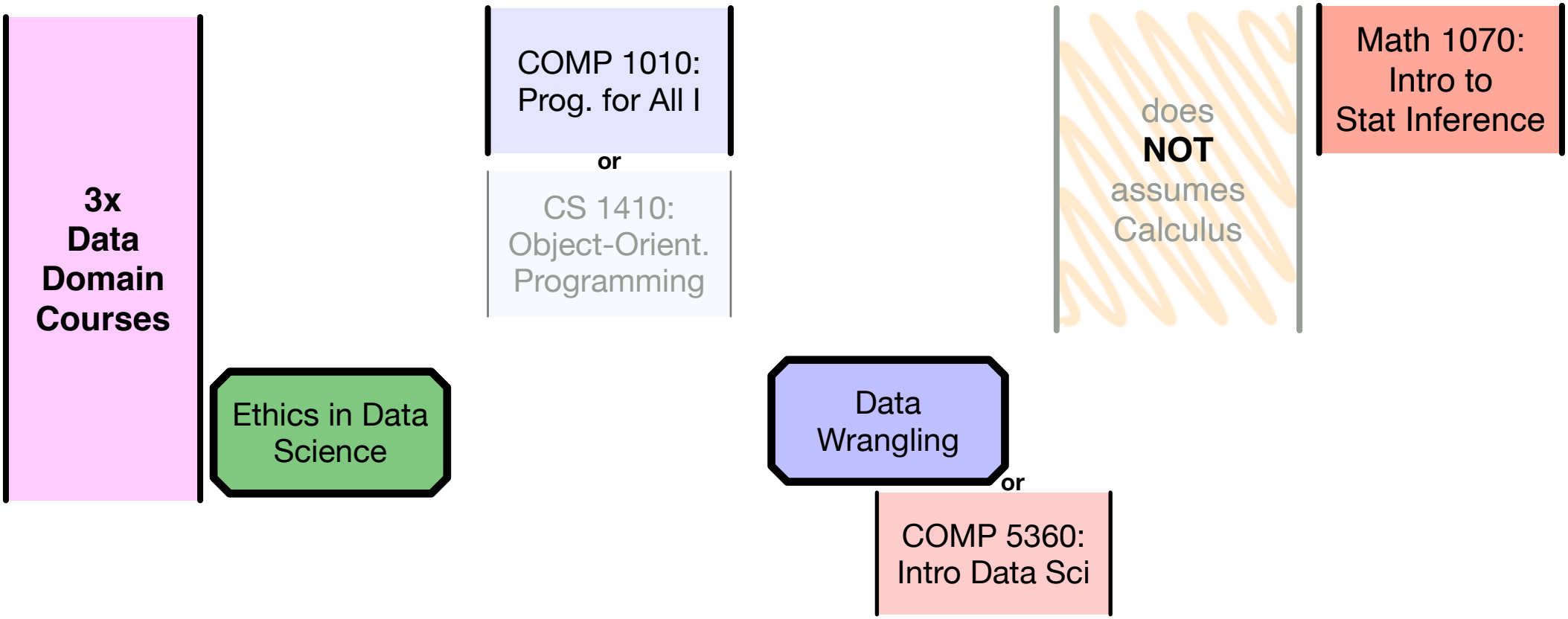
UG Certificate in Data Fluency Flow Chart

Fall 2020



UG Certificate in Data Fluency Flow Chart

Fall 2020



Most undergraduates do not take calculus!

Targeted Majors

* Social Sciences (Economics, Geography, Psychology, Sociology, …)
* Business (Information Systems, Finance, QAMO, …)
* Humanities (Linguistics, Philosophy, …)

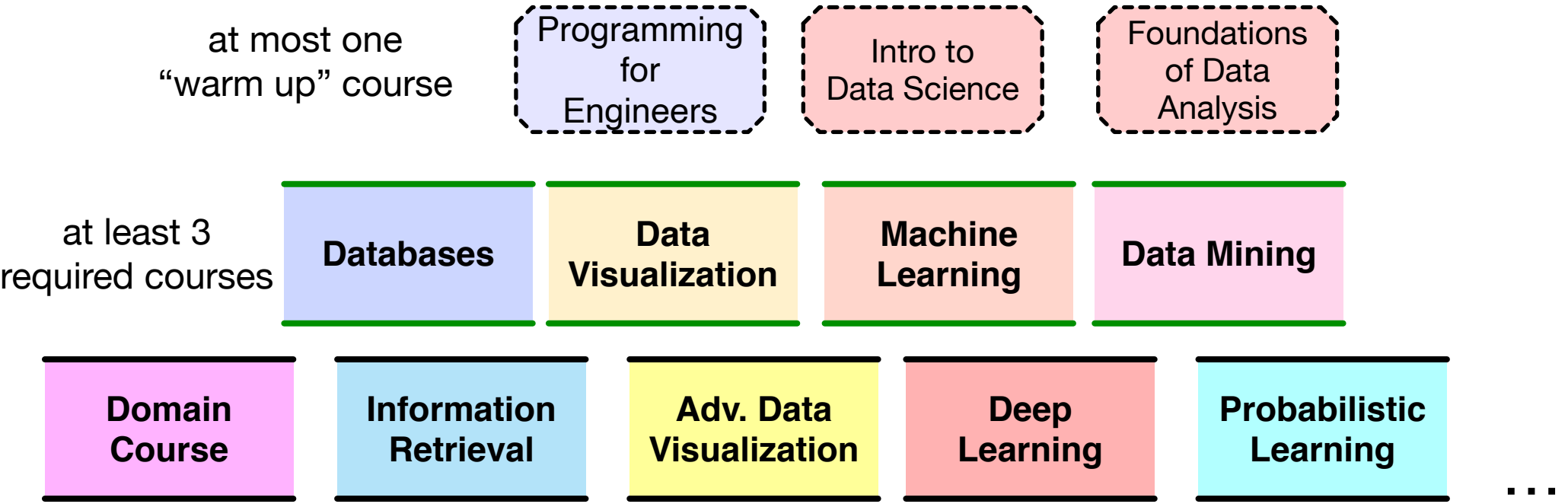
and some

* Engineering, Science, CS, …

Grad Certificate in Data Science Flow Chart

Fall
~~2014~~
2020

5 Grad-Level Courses



Grad Certificate in Data Science Flow Chart

Fall 2020

5 Grad-Level Courses