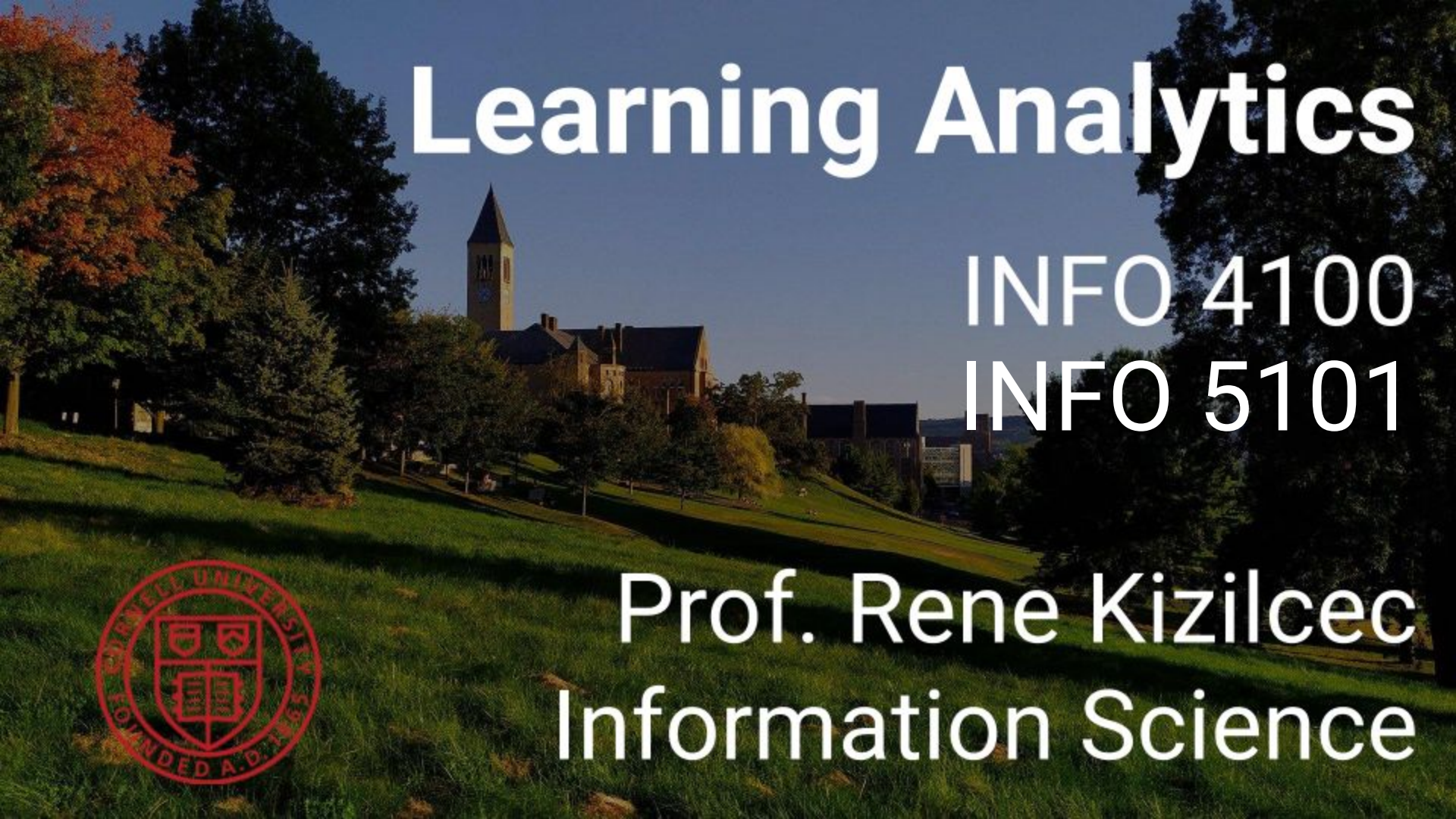
Learning Analytics
INFO 4100
INFO 5101
Prof. Rene Kizilcec
Information Science

Meet the Teaching Team: Your Instructor

Prof. Rene Kizilcec
Information Science
Pronouns: he/him

CORNELL FUTURE OF LEARNING LAB

Research

- Education Technology
- Equity and Fairness
- Educational Data Science

Other Teaching

- Behavioral Science Interventions COMM/INFO 4800
- *Coming soon:* AI in Education

Meet the Teaching Team: Your TAs

Scott Allen (he/his; PhD candidate in Physics)
Jinsook Lee (she/her; PhD student in Information Science)
Yan Tao (she/her; PhD student in Information Science)
Lincy Chen (she/her; Senior majoring in ILR)
Mitra Farzami (she/her; Senior majoring in IS)
Salma Hazimeh (she/her; Senior majoring in IS)
Gemma Petrulla (she/her; Senior majoring in ISST)
Dave Tirtariyadi (he/him; Senior in Chemical Engineering / Data Science)
Lucia Zacek (she/her; Senior majoring in CS / Statistics)

Check out the video online with advice from past TAs

Meet your Classmates

First-year	1
Sophomores	13
Juniors	51
Seniors +	39
Master’s	20
PhD	2

Arts & Sciences	46
MPS	19
Engineering	17
CALS	38
Business	2
M.Eng.	1
Human Ecology	2

Meet your Classmates

Information Science
Computer Science
Economics
AEM
Environment & Sustainability
ORIE
Agricultural Sciences
American Studies
Biological Sciences
Biometry & Statistics
Chemical Engineering
Chemistry
Government
History of Art
Human Development
Human Environment Relations
Environmental Psychology & Human Factors
International Agriculture & Rural Development
Psychology
Cognitive Science
Sociology
Physics

Meet your Classmates

Enough data…

Introduce yourself to 1-2 new people sitting close to you

LEARNING ANALYTICS

Emerging job opportunities **require digital skills**

WORLD ECONOMIC FORUM

Top 5 jobs with
increasing demand

1. Data Analyst and Scientists
2. AI / ML Learning Specialists
3. Big Data Specialists
4. Digital Marketing and Strategy Specialists
5. Process Automation Specialists

Emerging job opportunities **require digital skills**

Top 5 jobs with **increasing demand**

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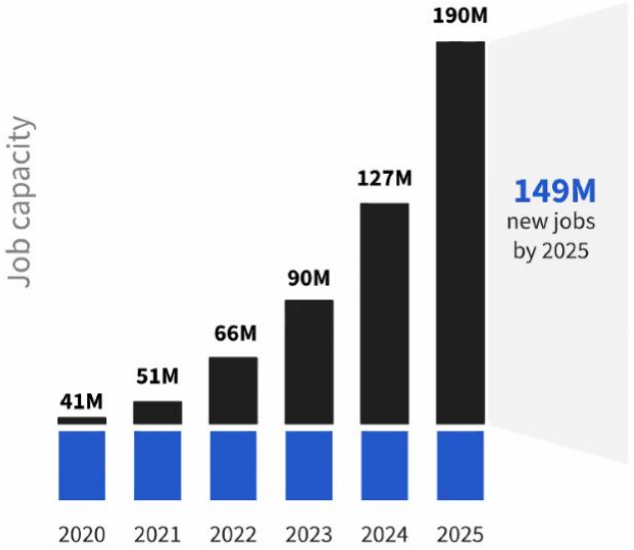
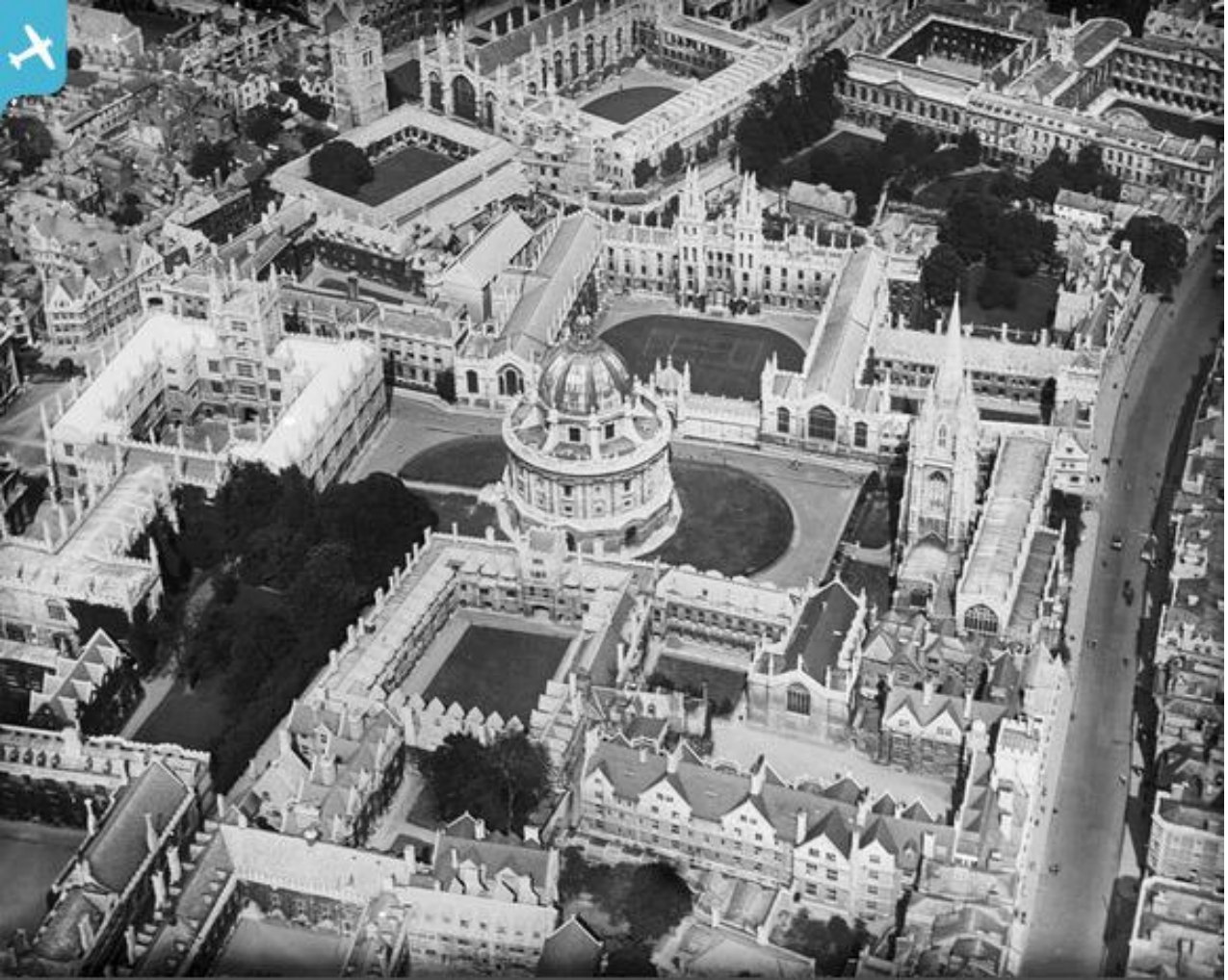
3. Big Data Specialists
4. Digital Marketing and Strategy Specialists
5. Process Automation Specialists

Digital job capacity from 2020-2025



- **1M** Privacy and trust
- **6M** Cybersecurity
- **20M** Data analysis, ML and AI
- **23M** Cloud and data roles
- **98M** Software development

Ancient Greece - The School of Athens

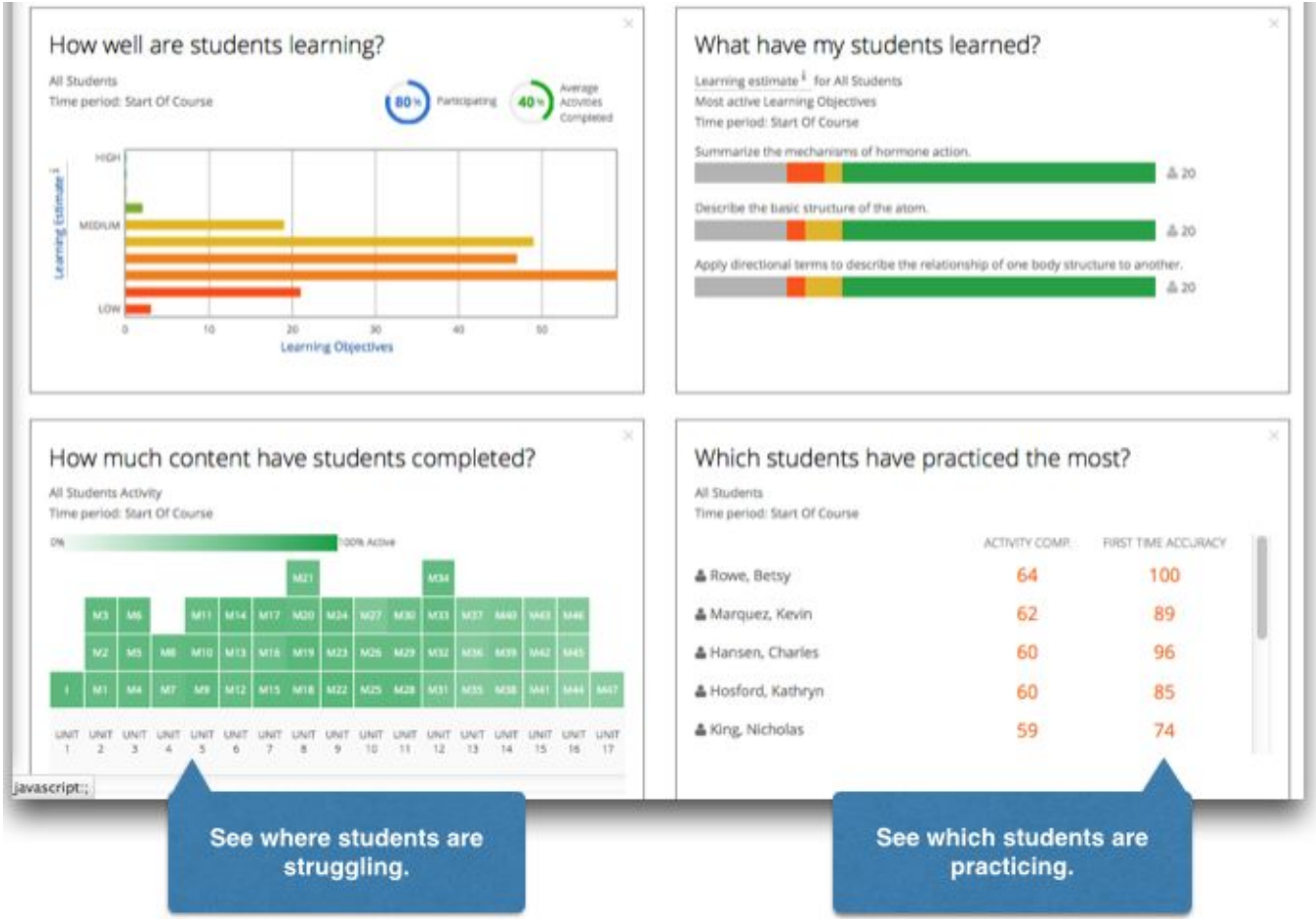


1320 Europe - The Bodleian Library at Oxford

Today - Distributed learning with digital tools

State Library of Queensland
John Oxley Library

DeVry
University of Phoenix
KAPLAN UNIVERSITY
LIBERTY UNIVERSITY Online
Berkeley College
Changing Lives for 80 Years
CCi
CORINTHIAN COLLEGES, INC.
A Global Network of Schools


How well are students learning?
All Students
Time period: Start Of Course
80% Participating
40% Average Activities Completed
HIGH
MEDIUM
LOW
Learning Estimate
0
10
20
30
40
50
Learning Objectives
What have my students learned?
Learning estimate for All Students
Most active Learning Objectives
Time period: Start Of Course
Summarize the mechanisms of hormone action.
20
Describe the basic structure of the atom.
20
Apply directional terms to describe the relationship of one body structure to another.
20
How much content have students completed?
All Students Activity
Time period: Start Of Course
0%
100% Active
UNIT 1
UNIT 2
UNIT 3
UNIT 4
UNIT 5
UNIT 6
UNIT 7
UNIT 8
UNIT 9
UNIT 10
UNIT 11
UNIT 12
UNIT 13
UNIT 14
UNIT 15
UNIT 16
UNIT 17
Which students have practiced the most?
All Students
Time period: Start Of Course
ACTIVITY COMP.
FIRST TIME ACCURACY
Rowe, Betsy 64 100
Marquez, Kevin 62 89
Hansen, Charles 60 96
Hosford, Kathryn 60 85
King, Nicholas 59 74
javascript:;
See where students are struggling.
See which students are practicing.

coursera
UDACITY
Learn. Think. Do.
edX
canvas
NETWORK
NovoED
iversity
OPEN
2 STUDY
Future
Learn

All Education Apps

See All >

Macco Lingui - Learn ...
Paul Macco
$3.99

Arabic Typing
Anis Marrouchi
$19.99

R+Motion
ROBOTIS CO., LTD.
GET

Manoké Stage
Manoke Inc
GET

Kindergarten Math
Nathalie Palma
$2.99

ElectriCon
Nic Kolbe
$1.99

Manoké Studio
Manoke Inc
GET

Dictionnaire Le Petit R...
SEJER
$54.99

The Country Flags Tou...
Gaurav Kestwal
$1.99

Anatomical Atlas Of Hu...
Tools Assistant
GET
In-App Purchases

EST Courses
Elite Strategic Training
GET

Quick Equation - Menu...
Solaz Dazen srl
$3.99

mPV Course Recording...
Nonlinear Educating Inc.
$13.99

SAAo-SX Reader Lite
Chaitanya D Kanchan
GET

Typing Instructor Bundle
individual Software, Inc.
$34.99

Mental Math Practice ...
Ramon Dormans
GET
In-App Purchases

Solar Eclipses
Pietro Massimino
$1.99

JLPTN5
Rebouh Aymen
$0.99

Cardflow
Qrayon, LLC
GET
In-App Purchases

TranslateMe for Safari
Side Tree Software
$7.99

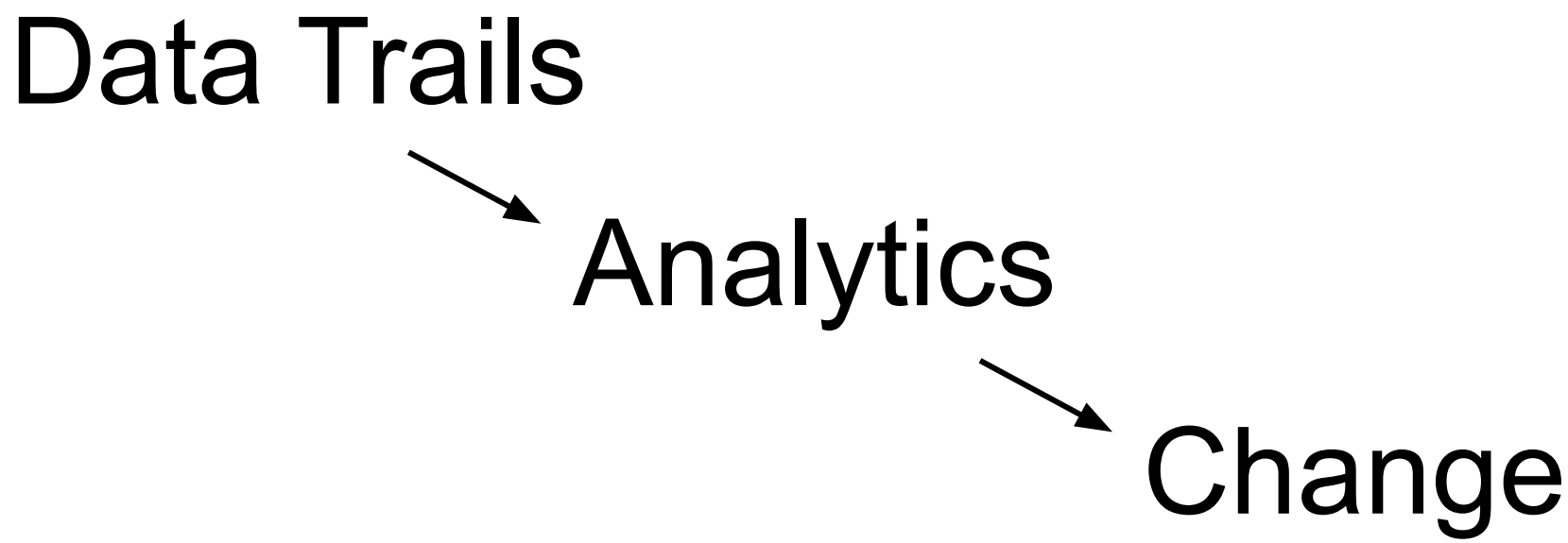
ABCmouse LIVE!
Age of Learning, Inc.
GET

JSON Visualizer
Biscuit & Chai, LLC
$0.99

3DL
App Studio AS
GET

Sweet Dream Journey
Sugan Sirihattasak
$2.99

Why Learning Analytics?



What are Learning Analytics?

The measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environment in which it occurs.

Learning Analytics & Knowledge Conference, 2011

Quick Activity

First, make a list on your own: 2 mins

1. **What learning environments do you use?**

Turn to the person next to you: 6 mins

2. **Share your list**
3. **Together think about what data these systems do collect or could collect**
4. **How could this data be useful to learners and/or teachers**

Learning Objectives

1. Explain key insights from learning science research and how learning works.
2. Select and apply methods from educational data mining and learning analytics to analyze different kinds of educational data.
3. Evaluate the results of different methods for different applications.
4. Compare the strengths and weaknesses of methods for different applications.
5. Identify potential benefits and risks of learning analytics for students, teachers, and institutions.

Course Structure: About One Topic Per Week

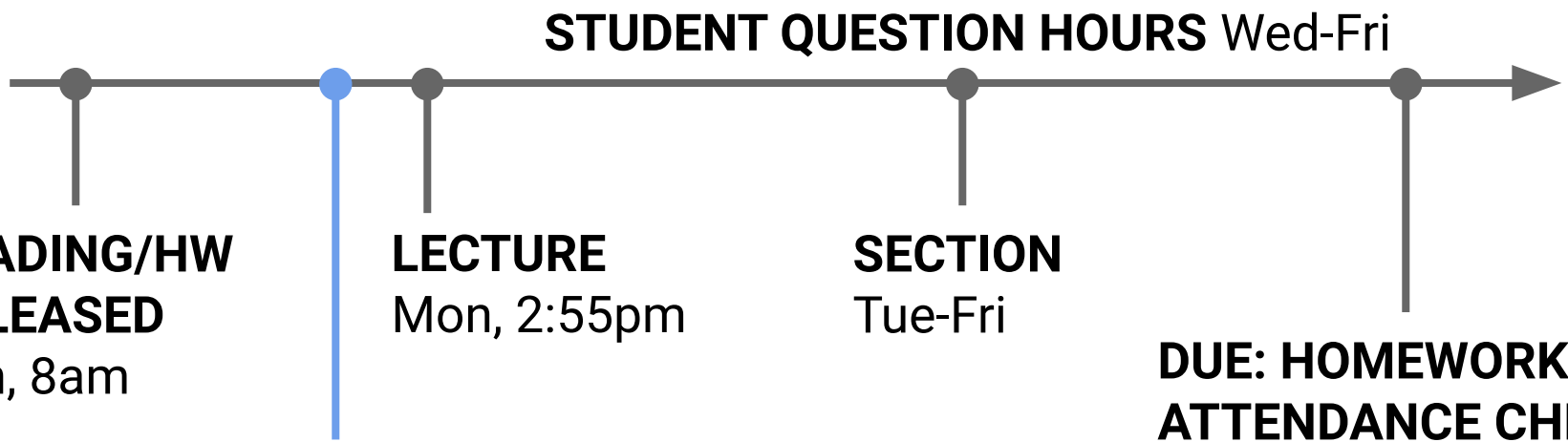
1. Overview of Learning Analytics
2. Ethical Considerations
3. How Learning Works — **GROUP PROJECT**
4. Causal Inference
5. Multimedia Learning & Video Analytics
6. Predictive Modeling — **GROUP PROJECT**
7. Self-regulated Learning
8. Assessment
9. Emotional Learning Analytics
10. Learning Analytics Dashboards — **GROUP PROJECT**
11. Curriculum Analytics

Course Structure

What You Do In A Typical Week

- Do the readings, watch some videos on edX
- Participate in lectures, sections in person
- Answer reading comprehension questions on edX
- Post a reading reflection and comment on someone else's on Slack
- Submit your homework assignment on edX
- Submit attendance check on edX

Course Structure Timeline



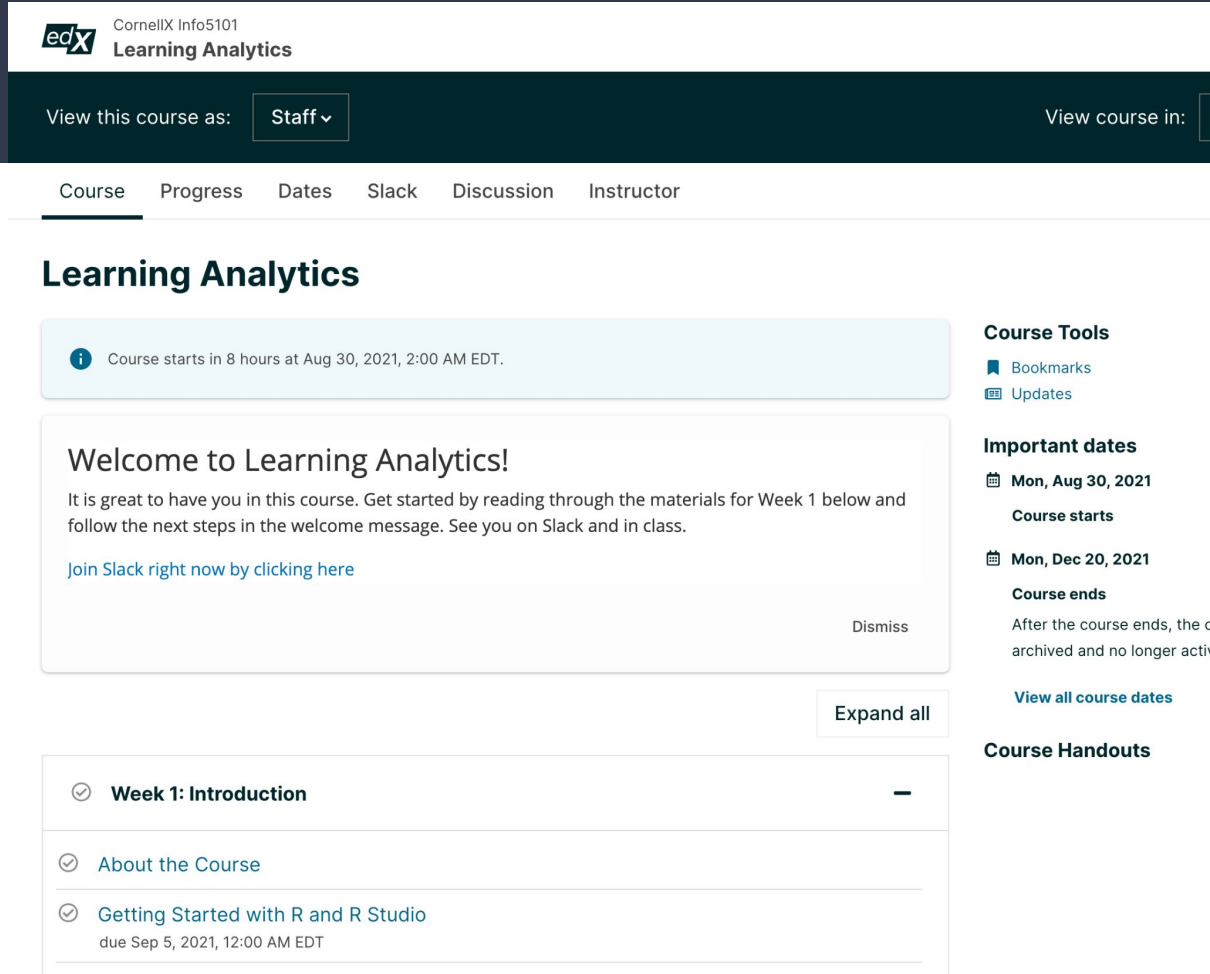
Getting Started

Log into the edX

Review Week 1 materials

Read the syllabus

Follow R instructions

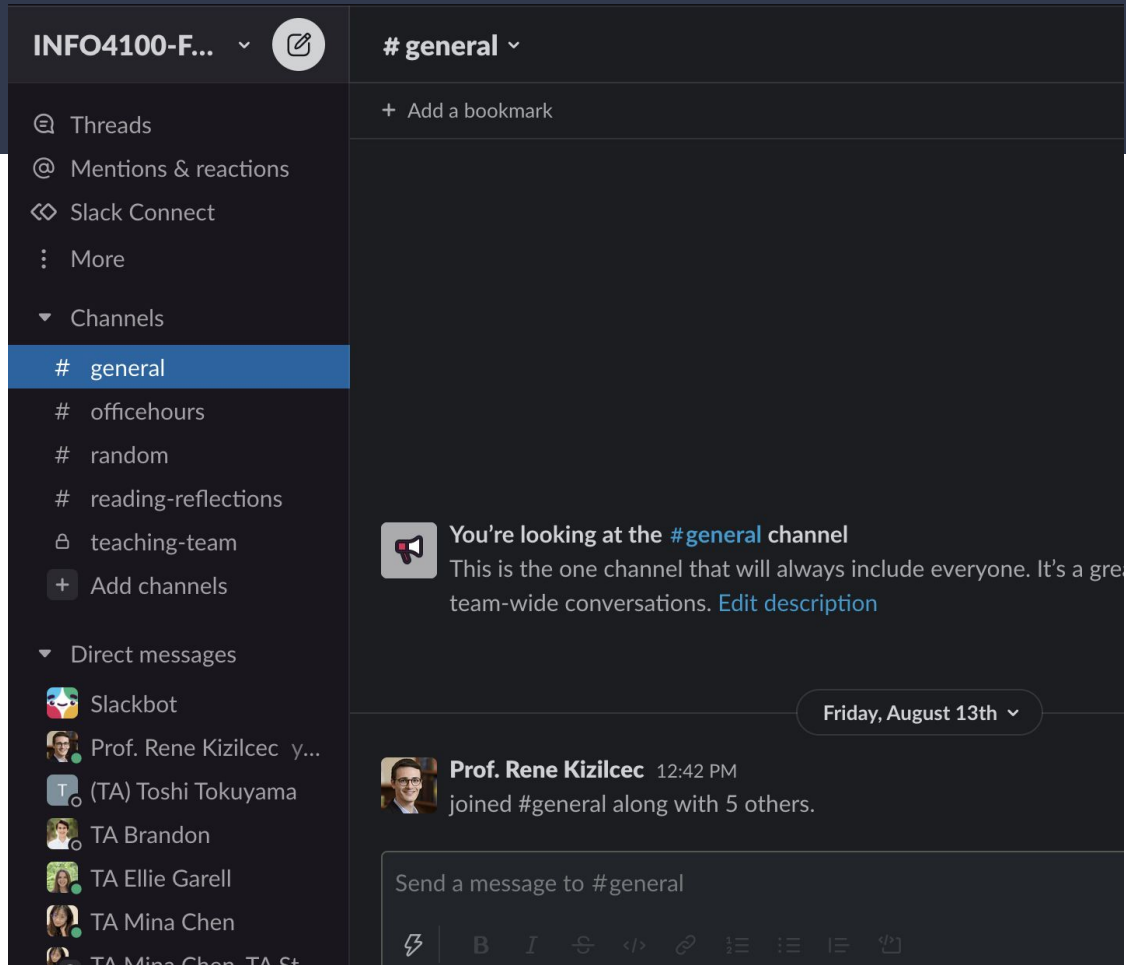


Getting Started

Log into the Slack group

Introduce yourself in #general

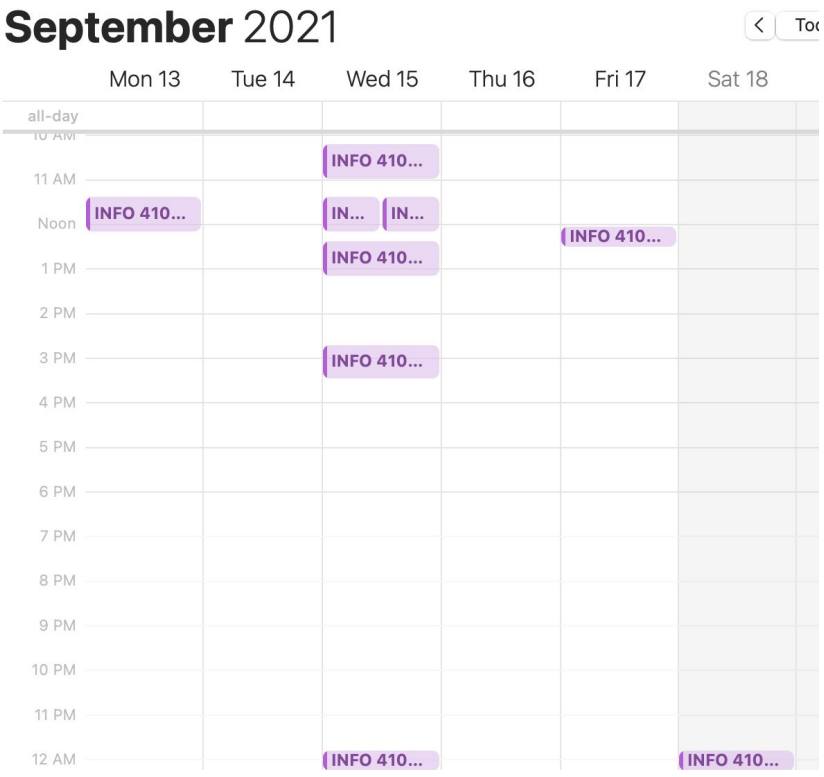
Once you formed a group (4-6 students), create a private channel, add teaching team



Getting Started

Download and import the course calendar with all important events and due dates

Link to the file is at the bottom of the first page of the “About the Course” section in edX



Course Procedures

Communication: use Slack, not email

Grading: everything happens on edX, see Progress page

No late days: If you forget something, it counts as 0.
→ Unless there's a documented accommodation

Attendance	Reading Comprehension	Reading Reflections	Homework	Group Projects
10%	10%	10%	55%	15% (3 * 5%)

Your First Section

1. Form a study group of 4-6 students
2. Get to know each other
3. Read advice from previous students
4. Help with R set up and test script
5. Any lingering questions about using R
6. Complete the course survey if you haven’t yet

Section Enrollments

New portal for enrollment help:
https://tdx.cornell.edu/TDClient/193/

Section 201 is quite full – consider moving to a later section (204, 205, 206, 207, 208)

Section Balancing

201 Tuesday	**2:55PM – 4:10PM**	**314**	**→ over-enrolled**
205 Wednesday	8:40AM – 9:55AM	314	→ space
206 Thursday	8:40AM – 9:55AM	314	→ space
203 Thursday	2:55PM – 4:10PM	314	
202 Friday	**11:40AM – 12:55PM**	**206**	**→ merge with 208**
208 Friday	11:40AM – 12:55PM	401	→ space
207 Friday	1:25PM – 2:40PM	401	→ space
204 Friday	2:55PM – 4:10PM	401	→ space

Any questions?