










## Three-course data analytics series at CCAC's North Campus

1. DAT-102: Introduction to Data Analytics
2. DAT-201: Data Analytics 1
3. DAT-202: Data Analytics 2

### Course concept progression

The following table maps course session dates, lesson topics, LIANG9 references, and content links for all three Java courses in the series.

course	date	wk no.	session links	learning objectives	out-of-class work
DAT-102	TUE 29-JAN-19	1	<b>Introduction to data analytics</b> <a href="#">📖 Course syllabus</a> <a href="#">🖨️ Week 1 Station Guide</a>	<b>TR.102.DS.3.A - Decompose the data analytics field</b>  <b>TR.102.DS.1.A - Data Tables - Creating:</b> Create a data table with logically assigned types for each column and a unique identifier for each row	
DAT-102	TUE 5-FEB-19	2	<a href="#">🔗 Data structures stations</a> <a href="#">🖨️ Data structures station worksheet</a>	<b>TR.102.DS.3.B Broadly Classify data analytic artifacts/products/displays (Quant/qual/categorical/textual)</b>  <b>TR.102.DS.3.C - Continuous &amp; categorical variables</b>  <b>TR.102.DS.3.D - Data structures (list, set, stream, table, graph, tree)</b>  <b>TR.102.DS.3.E - Analytic modes: describing, modeling, predicting</b>  <b>TR.102.DS.1.B - Data Tables - Converting:</b> Export and import data tables in .xlsx, .ods, .csv formats	




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DAT-102	TUE 12-FEB-19	3	 Strip surveys from FA18  Quant variable profile Editable  Quant variable profile PDF  Online box plot image creator   Sample strip survey analysis 		1
DAT-102	TUE 19-FEB-19	4	<p><b>KISS: Non-summary descriptive statistics</b></p> <p><b>Phase 0:</b> Ida's whiskers</p>  <a href="#">Ida Mae Darsow Interest Inventory Results</a>  <a href="#">Non-summary statistics</a>	<p><b>Data.quant.1.A:</b> Generate box and whisker plots for categorical and non-categorical data</p>	Inquiry cycle on the MN trees



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DAT-102	TUE 26-FEB-19	5	<p><b>Summary-based descriptive stats: mean and standard deviation</b></p> <p><b>Anchoring data lifecycle in management concerns</b></p> <p><b>Phase 1:</b> Spreadsheet play-along: center and spread computation and manipulation</p> <p><b>Phase 2:</b> Debrief of Dutch Elm Disease inquiry process outlining &amp; setup of group role play</p> <p><b>Phase 3:</b> Trade-offs and conflicting priorities group exercise</p> <p><b>Phase 4:</b> Debrief and discussion of normality assumptions in statistical inference</p>		Generating and interpreting standard deviation
DAT-102	TUE 5-MAR-19	6	<p><b>Census vs. sampling: estimates and margins of errors</b></p>	<p>TR.102.DS.6.A - Surveys - Designing:</p> <p>TR.102.DS.6.B - Surveys - Sampling &amp; Administering:</p> <p>TR.102.DS.6.C - Surveys - Analyzing:</p>	
DAT-102	TUE 12-MAR-19	7	<p><b>US Opportunity Atlas: National policy implications of data science</b></p>		Prep and full-bake atlas mini-project
DAT-102	TUE 19-MAR-19	8	<p><b>Opportunity Atlas mini-project: multi-type data policy inquiry</b></p>	Open Refine: GREL language	relax!

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DAT-102	TUE 26-MAR-19	9	<b>Data gathering 1: Non-human subject experiments</b>		1
DAT-102	TUE 2-APR-19	10	<b>Cleaning, storing, &amp; annotating multi-typed data sets</b>	TR.102.DS.5.A - Statistical errors - Unbounded population definition TR.102.DS.5.B - Statistical errors - Selection bias TR.102.DS.5.C - Statistical errors - Nonresponse bias TR.102.DS.5.D - Statistical errors - Measurement error TR.102.DS.5.E - Statistical errors - Misapplication of statistical tools TR.102.DS.5.F - Statistical errors - Unsupported claim making TR.102.Q.7 - Outliers TR.102.Q.8 - Normalization & z-scores TR.102.Q.9 - Confidence intervals TR.102.Q.10 - Standard errors	1
DAT-102	TUE 9-APR-19	11	<b>Data gathering 2: Human subject experiments</b>	TR.102.DS.7.A - Experiments - Designing: TR.102.DS.7.B - Experiments - Treatment assignment & Implementing: TR.102.DS.7.C - Experiments - Analyzing: TR.102.Q.10 - Standard errors TR.102.Q.11 - Student's T-tests - Setup TR.102.Q.12 - Student's T-tests - Interpretation	1
	TUE 16-APR-19	-	SPRING BREAK!		

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DAT-102	TUE 23-APR-19	12	<b>Database crash course</b> (NHSTA-approved!)	1	1
DAT-102	TUE 30-APR-19	13	<b>Visualization best practices</b> <b>Final project concept development</b>	1	1
DAT-102	TUE 7-MAY-19	14	<b>Final project sharing and celebration of data</b>	FINAL SESSION	1

## Data 201: Data Analytics 1

course	date	wk no.	session links	learning objectives	out-of-class work
DAT-201	MON 28-JAN-19	1	 <a href="#">Session guide: VLookup() and Pivot tables review</a>		<b>Pre-reading for week 2: Maps!</b>  <a href="#">Pre-reading on Responsible map making</a>
DAT-201	MON 4-FEB-19	2	<b>Map projections and Intro to QGIS</b>   <a href="#">Session guide: Maps 1</a>	TR.201.DS.8.A - Maps - Projections TR.201.DS.8.B - Maps - Vector (points, lines, and polys) & raster (bands) TR.201.DS.8.C - Maps - QGIS fundamentals	<b>Homework:</b> Explore QGIS, make sure you understand what a layer is and how to add one. Come with questions next week.
DAT-201	MON 11-FEB-19	3	<b>QGIS Demonstrations</b>   <a href="#">Session guide: Maps 2</a>	TR.201.DS.8.D - Maps - Creating study areas TR.201.DS.8.E - Maps - Flat Joins TR.201.DS.8.F - Maps - Spatial Joins	<b>Homework:</b> Details available on the session guide; short version: make a map with PASDA data (mostly in-class), and start on your mid-semester mapping project (mostly out-of-class). Be ready to share what you're planning to do and any initial steps you've taken, next week.

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DAT-201	MON 18-FEB-19	4	<b>QGIS and Map Layouts</b>  <a href="#">Session guide: Maps 3</a>	TR.201.DS.8.G - Maps - Layouts & printing TR.201.DS.8.H - Maps - Web compatability	
DAT-201	MON 25-FEB-19	5	<b>Civic mapping with Draw the Lines</b>  <a href="#">Draw The Lines (nonprofit org; homepage)</a>		1
DAT-201	MON 4-MAR-19	6	<b>Worktime and presenting mapping mini-project</b> 6-7pm: Finlize mapping mini-project 7-8pm: Present project to class with feedback 8-9pm: Closing GIS activity	TR.201.DS.9.E - Clients - Feedback presentations	1
DAT-201	MON 11-MAR-19	7	<b>Database Primer</b> How are spreadsheets and databases related? By the table, of course! Dig into the fundamentals of structure data system design, population, and querying.	TR.201.DB.1: Database use cases TR.201.DB.2: Types (File, relational, NOSQL) TR.201.DB.3: Leading vendors TR.201.DB.4.A - Tables - Data types TR.201.DB.4.B - Tables - Keys TR.201.DB.4.C - Tables - Foreign Keys TR.201.DB.5.A - Queries - SELECT	1
DAT-201	MON 18-MAR-19	8	<b>Queries and Data Manipulation</b> SQL specifies mind-bogglingly powerful query expressions, allowing you to slice and dice data in your tables every which way.	TR.201.DB.4.D - Tables - Manipulating TR.201.DB.6.A - Data - INSERT TR.201.DB.6.B - Data - UPDATE TR.201.DB.5.B - Queries - FROM (Joins) TR.201.DB.5.C - Queries - WHERE TR.201.DB.5.D - Queries - ORDER BY	1

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DAT-201	MON 25-MAR-19	9	<b>Databases in their ecosystem</b>  DBs exist alongside spreadsheets, analytic software packages, web services, multi-user access control systems, and much more. On what basis can these disparate systems communicate?	TR.201.DB.7 - Exporting TR.201.DB.8.A - Connecting - Spreadsheets TR.201.DB.8.B - Connecting - Python & Java	1
DAT-201	MON 1-APR-19	10	<b>Database Design Fundamentals</b>  Focusing on data-project scale database, what structural considerations must take place in creating and linking tables in a new database?	TR.201.DB.10.A - Design - Methodologies TR.201.DB.10.B - Design - Creating from data statements TR.201.DB.10.C - Design - Normalization TR.201.DB.10.D - Design - Many-to-many relationships TR.201.DB.10.E - Design - Spotting traps	1
DAT-201	MON 8-APR-19	11	<b>Database server configuration</b>  Carrying out even small administration tasks correctly on a database requires a basic foundation in how the larger DB system works with the operating systems and its users.	TR.201.DB.9.A - Server - User configuration & permissions TR.201.DB.9.B - Server - Access, GUIs, and SSH TR.201.DB.9.D - Server - Indexes & query optimization TR.201.DB.5.E - Queries - Functions TR.201.DB.5.F - Queries - Fuzzy matching	1
	MON 15-APR-19	-	SPRING BREAK!		
DAT-201	MON 22-APR-19	12	<b>Flex time/TBD/Outside presenter</b>	1	1

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DAT-201	MON 29-APR-19	13	<b>Collaborative work time on final projects</b>	TR.201.DS.9.A - Clients - Client interviews & problem scoping  TR.201.DS.9.B - Clients - Specification negotiation  TR.201.DS.9.C - Clients - Work process logs & billing	1
DAT-201	MON 6-MAY-19	14	<b>Final project sharing!</b>  Bring fully-baked final project to class at our normal 6:00 pm. We'll share what you've discovered, submit grade proposals, and offer final program feedback.	TR.201.DS.9.D - Clients - Feedback conversations  TR.201.DS.9.E - Clients - Feedback presentations  TR.201.DS.9.F - Clients - Tool maintenance planning:  TR.201.DS.9.G - Clients - Iterative tool development:	

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