Supplemental Table 4. Informatics for Pathology Practice and Research 3 Course Architecture.

Module #	Module Objectives	Assessment	Course Objective #
1	Navigate Big Datasets	Exercises	1,2
1	Retrieve detailed explanations of data in files	Exercises	1,2
1	Navigate the Pandas Library	Pre-Class Quiz, Exercises	2
2	Apply filters to Data frames and mine useful data	Pre-Class Quiz*, Exercises	2
2	Analyze data by plotting related values from Data Sets	Pre-Class Quiz*, Exercises	1,2,3
2	Navigate Data frames using Indexes	Pre-Class Quiz*, Exercises	2
3	Manage columns and rows within a Data frame	Pre-Class Quiz*, Exercises	2
3	Experiment with string functions and apply them to the Data	Pre-Class Quiz*, Exercises	1,2
3	Arrange time series data using pandas time functions to extract required information	Pre-Class Quiz*, Exercises	1,2
3	Edit raw Data Sets to address missing data problems	Exercises	1,2,3,4
4	Organize and classify data based on group	Pre-Class Quiz, Exercises	1,2,3
4	Apply user defined functions to the data frame	Pre-Class Quiz*, Exercises	2
4	Express regular function in the form of Lambda expression	Pre-Class Quiz*, Exercises	1
5	Rearrange data according to the needs of the analysis	Exercises	1,2
5	Extract parts of data for better understanding of patterns	Exercises	1,2,3,4
5	Construct new tables from the old tables to correlate separate data	Exercises	3,4
1-5	Evaluate Python and Panda use for efficient extraction of relevant information in large data sets	Peer Review	5
1-5	Evaluate Python and Panda use for effective visualization of key information in large data sets	Peer Review	5

*Pre-class Quizzes were used as assessment scaffolding to check knowledge and comprehension of commands prior to higher-order Exercises.