TOPICS		KEY POINTS	LECTURE/LAB
Thematic Mapping	Data classification method	Quantile,\equal interval,\natural break, ... number of categories, color schemes, symbology	Lab 1; Lab 2 Lectures 2, 4 ;
	Exclusion	Exclusion (visual representation; what should be excluded) ; Definition query (calculation; what should be included); Remember to annotate the excluded features in your legend.	Lab 2; Lab 3;
	Projection system	Local projected system, lat\lon system; how to convert projection system from one to another; how to assign a projection system to a layer.	Lab 2 Part IV; Lecture 2
GIS Models; **Querying** **(attribute table or feature);** **Data Manipulation**	Vector vs. Raster; attribute tables	vector model: objects in empty space described by X/Y boundary points in 2D coordinate system; raster model: divide space into cells and characterize content	Lectures 1,5,6;
	Select by attribute	How to query a table to select the records of interest? (e.g., how to find out the minimum/maximum/mean value of a data column? --Sort ascending/descending, or check "Statistics")	Lab 3; HW 1 Part 2
	Select by location	If you have features selected, any of your subsequent operations are applied only to the selected features.	
	Field calculator	When dividing a value using "Field Calculator", zero-value records should be excluded first—you can use definition query to preclude the zero-value records, or you can "select by attribute" to only select non-zero-valued records as denominators.	Lab 2
	Join table to a layer	Join attributes from a table Keep all records| Keep only matching records	Lab 2; Lecture 2; HW 3 Part I
	Aggregation	Summarize in ArcGIS; (Database manipulation in Ms-Access)	HW 1 Part 2; HW 2 Part 1; Lecture 3; Recitation 2
	Census Data	Census Geography; Summary Levels; Summary Files (SF1 & SF3)	Lecture 3; Lab 3; HW 1 Part 1; HW 2 Part 1

Spatial Analysis: Vector Models	Buffer	Dissolve: to remove buffer feature overlap Not all cases need to dissolve the resulting buffers. In some cases, individual buffer for each feature would be more reasonable.	Lab 2; Lab 5 Lecture 5; _____ Recitation 3; HW 1 Part 2; HW 2 Part 2
	Union v.s. Intersect		
	Erase		
	Spatial join*	Creates a table join where fields from one layer's attribute table are appended to another layer's attribute table based on the relative locations of the features in the two layers.	
Spatial Analysis: Raster Models	Raster analysis	Convert: features to raster; How to set up raster properties (cell size, mask area, extent)	Lecture 6; Lab 6; Recitation 3; HW 3 Part I;
	Neighborhood statistics v.s. zonal statistics		
	Spatial analyst tools	Not limited to the ones mentioned in the lab exercises or homework. In cases where you need other functions, you may refer to the ArcGIS (online) help for in-depth guidance.	

*Spatial join also has summarizing function (see examples in ArcGIS Desktop Help→Index→spatial joins/aggregating fields)

This is not required for the test. However, if more than one join feature is found for a target feature, and you want to maintain the exact same number of output features as Target features (input features) you need to set a Join merge rule in order to explain how to collapse the multiple matching rows into a summary attribute. The Join merge rule combines values from a single field for multiple rows in the join feature class when more than one join feature is found for a target feature. For example, a city land use feature class has a text field called LU containing two letter characters indicating each polygon's land use classification (such as 'CO' for commercial). The land use feature class is then joined to a city district polygon feature class, where the districts are the target of the spatial join. The one-to-one join operation is chosen so the new feature class will have the same number of features as the original input districts, but it will have the attributes of the land use feature class. The Join merge rule was applied to the LU classification field (with a comma as the delimiter).