Item	Performance/Task: The student will:	text (Tro)
	General Equilibria	
1	If given a reaction, be able to write the expression for any equilibrium using standard states	14.1-14.3
2	Be able to solve for an unknown quantity in an equilibrium problem when simple substitution is involved (RSCC type 1 - when the problem is presented at equilibrium).	14.2-14.3
3	Be able to apply algebra to problems that start out <u>not</u> at equilibrium and approach equilibrium (RSCC type 2)	14.4
4	Be able to apply Le Châtelier's principle to shifts in equilibrium cause by changes in temperature, pressure and concentrations.	14.5
5	Be able to describe the role of a catalyst.	14.5,(13.6)
	Acids and Bases and pH	
6	Be able to write any Brønsted-Lowry acid-base reaction (review from CHEM 1110)	15.1
7	Be able to describe autoionization and be able to make calculations using the K_w	15.2
8	Be able to calculate the pH given either the $[H_3O^+]$} or the $[OH^-]$	15.3
9	Be able to calculate the pH of a strong acid or a strong base	15.4
10	Be able to calculate the pH of a weak acid or a weak base (type 2)	15.5, 15.6
11	Be able to calculate the equilibrium constant for the conjugate of a weak acid or weak base.	15.7
12	Be able to calculate pH of polyprotic acids and know the convention for the 1st, 2nd, etc. ionization constant	15.8
13	Know the strong and weak acids and the strong, slightly soluble and weak soluble bases	15.9
14	Be able to do salt hydrolysis problems to obtain pH	15.10
15	Be able to write the reaction between metal or non-metal oxides and water.	15.11
16	Know the definition of amphoteric (and amphiprotic) and how it applies to slightly soluble polyprotic hydroxides.	15.11
17	Know the definition of a Lewis acid and base and be able to identify these in a reaction	15.12

From CHEM 1110, here are some items you need to know and/or be able to do:

- **Determine oxidation numbers.**
- **Know the common polyions.**
- **Be able to determine the van't Hoff factor.**
- **Know how to determine the Lewis dot structure.**