

Appendix I
General Chemistry Concept Map Scoring

	Pre-Concept Maps				Post-Concept Maps		
	Circles	Lines	Diff.		Circles	Lines	Diff.
Ch.1	18	17	0		28	27	0
	29	29	1		28	30	3
	14	14	1		15	13	-1
	26	28	3		19	20	2
	19	18	0		22	22	1
	14	17	4		27	31	5
	8	7	0		19	18	0
	40	43	4		40	37	-2
	9	8	0		34	35	2
	29	30	2		17	17	1
	10	11	2		11	13	3
	24	27	4		26	34	9
	20	18	-1		47	48	2
	21	36	16		23	37	15
	13	12	0		23	22	0
	13	12	0		13	12	0
	13	12	0		17	16	0
	18	20	3		17	17	1
	36	34	-1		27	26	0
	24	21	-2		19	18	0
	32	33	2		30	31	2
	24	30	7		24	23	0
	8	14	7		8	10	3
	11	16	6		8	7	0
	10	9	0		23	22	0
	24	23	0		25	24	0
	17	16	0		29	28	0
	29	30	2		17	20	4
	23	22	0		24	24	1
	23	22	0		32	35	4
	22	26	5		22	20	-1
	32	37	6		33	32	0
	33	36	4		19	18	0
	31	32	2		34	32	-1
	10	9	0		22	23	2
Ch.2	20	19	0		18	18	1
	10	10	1		8	7	0
	19	18	0		16	16	1
	38	42	5		37	38	2
	15	22	8		17	23	7
	22	23	2		22	22	1

General Chemistry Concept Map Scoring (Con't)

	23	22	0		23	23	1
	15	14	0		22	21	0
	14	14	1		15	15	1
	24	23	0		16	15	0
	13	14	2		15	14	0
	22	28	7		21	20	0
	31	30	0		34	33	0
	20	18	-1		28	28	1
	13	12	0		16	15	0
	12	11	0		17	16	0
	15	20	6		19	20	2
	21	21	1		23	22	0
	28	26	-1		30	32	3
	23	23	1		18	18	1
	13	12	0		19	19	1
	18	17	0		25	24	0
	9	14	6		15	20	6
	27	29	3		31	36	6
	13	11	-1		17	17	1
	20	18	-1		14	13	0
	18	23	6		18	26	9
	15	16	2		14	15	2
Ch.3	14	13	0		17	16	0
	13	12	0		16	14	-1
	15	14	0		15	14	0
	17	16	0		29	29	1
	21	20	0		46	50	5
	13	14	2		12	11	0
	16	17	2		18	19	2
	13	13	1		11	10	0
	28	28	1		27	26	0
	26	27	2		40	39	0
	15	16	2		17	19	3
	17	24	8		10	14	5
	6	6	1		7	6	0
	19	21	3		18	21	4
	16	15	0		17	16	0
	10	9	0		10	9	0
	23	22	0		21	20	0
	13	12	0		16	17	2
	15	14	0		20	22	3
	26	25	0		27	24	-2
	14	13	0		23	23	1
	14	13	0		10	9	0
	18	17	0		13	12	0

General Chemistry Concept Map Scoring (Con't)

	26	25	0		24	26	3
	13	12	0		17	20	4
	21	21	1		27	31	5
	22	21	0		18	17	0
	15	18	4		14	14	1
	17	16	0		31	27	-3
	23	23	1		17	18	2
	12	22	11		14	15	2
	22	25	4		21	25	5
	13	10	-2		10	9	0
	11	10	0		18	17	0
	26	23	-2		28	27	0
	11	11	1		15	19	5
Ch.4	15	14	0		17	16	0
	18	20	3		13	12	0
	20	21	2		26	24	-1
	24	21	-2		23	22	0
	20	20	1		26	29	4
	15	16	2		14	13	0
	30	29	0		28	31	4
	18	17	0		33	35	3
	11	9	-1		11	11	1
	26	28	3		26	25	0
	9	10	2		10	9	0
	17	16	0		17	16	0
	28	26	-1		46	45	0
	19	17	-1		19	19	1
	7	6	0		12	11	0
	19	19	1		24	24	1
	11	14	4		11	14	4
	29	28	0		28	30	3
	10	9	0		19	18	0
	8	7	0		10	9	0
	21	23	3		4	6	3
	26	26	1		18	17	0
	6	5	0		15	14	0
	17	18	2		20	22	3
	21	19	-1		28	26	-1
	28	28	1		26	30	5
	12	12	1		12	9	-2
	13	13	1		19	17	-1
	17	18	2		15	17	3
	27	25	-1		28	31	4
	26	26	1		15	16	2
	14	13	0		10	13	4

General Chemistry Concept Map Scoring (Con't)

	26	29	4		31	33	3
	13	12	0		15	15	1
Ch.5	18	17	0		16	16	1
	15	14	0		15	14	0
	24	24	1		25	24	0
	18	18	1		24	25	2
	7	6	0		18	18	1
	17	18	2		29	40	12
	35	36	2		38	39	2
	12	11	0		14	13	0
	23	23	1		18	18	1
	19	20	2		20	19	0
	19	23	5		18	17	0
	11	10	0		13	20	8
	19	16	-2		26	28	3
	9	8	0		16	15	0
	13	11	-1		10	12	3
	13	14	2		11	13	3
	18	18	1		40	38	-1
	13	12	0		8	7	0
	29	28	0		30	35	6
	17	16	0		17	20	4
	8	7	0		13	12	0
	21	20	0		32	34	3
	17	19	3		16	24	9
	25	22	-2		24	23	0
	8	7	0		24	30	7
	24	23	0		21	23	3
	26	24	-1		45	51	7
	39	35	-3		35	40	6
	6	6	1		10	8	-1
	16	14	-1		16	15	0
	9	13	5		7	8	2
	10	9	0		13	12	0
	10	9	0		19	18	0
	14	13	0		20	18	-1
Average	18.41	18.65	1.240		20.68	21.31	1.629
T-test probability (with difference)							0.165048