

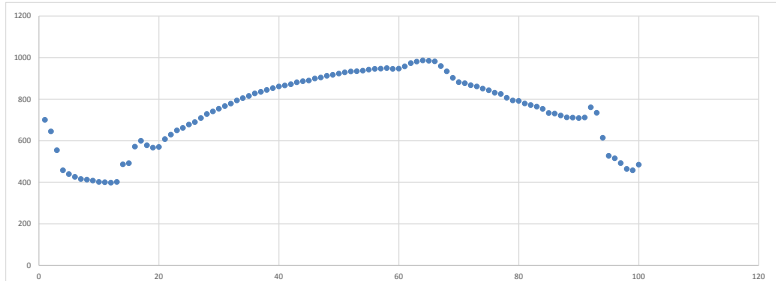
Plot Title: Library Study Room 2			Coutdoor [ppm]	456
#	Date Time, GMT-08:00	CO2, ppm	Room Volume [m3]	62.9
1	2/14/2014 14:43	756.4		
2	2/14/2014 14:44	700.9		
3	2/14/2014 14:45	610.5		
4	2/14/2014 14:46	514		
5	2/14/2014 14:47	495.7		
6	2/14/2014 14:48	482.3		
7	2/14/2014 14:49	471.9		
8	2/14/2014 14:50	468.3		
9	2/14/2014 14:51	464		
10	2/14/2014 14:52	457.9		
11	2/14/2014 14:53	456		
12	2/14/2014 14:54	454.2		
13	2/14/2014 14:55	457.9		
14	2/14/2014 14:56	542.7		
15	2/14/2014 14:57	547.6		
16	2/14/2014 14:58	627.6		
17	2/14/2014 14:59	655.7		
18	2/14/2014 15:00	634.3		
19	2/14/2014 15:01	622.7		
20	2/14/2014 15:02	625.8		
21	2/14/2014 15:03	663.6		
22	2/14/2014 15:04	685.6		
23	2/14/2014 15:05	705.7		
24	2/14/2014 15:06	717.9		
25	2/14/2014 15:07	733.8		
26	2/14/2014 15:08	746		
27	2/14/2014 15:09	765		
28	2/14/2014 15:10	784.5		
29	2/14/2014 15:11	796.7		
30	2/14/2014 15:12	810.1		
31	2/14/2014 15:13	823		
32	2/14/2014 15:14	834.6		
33	2/14/2014 15:15	849.8		
34	2/14/2014 15:16	861.4		
35	2/14/2014 15:17	871.2		
36	2/14/2014 15:18	884		
37	2/14/2014 15:19	891.3		
38	2/14/2014 15:20	900.5		
39	2/14/2014 15:21	909		
40	2/14/2014 15:22	917		
41	2/14/2014 15:23	921.9		
42	2/14/2014 15:24	928		
43	2/14/2014 15:25	937.1		
44	2/14/2014 15:26	942.6		
45	2/14/2014 15:27	945.7		
46	2/14/2014 15:28	955.4		
47	2/14/2014 15:29	960.3		
48	2/14/2014 15:30	968.3		
49	2/14/2014 15:31	973.1		
50	2/14/2014 15:32	979.2		
51	2/14/2014 15:33	985.3		
52	2/14/2014 15:34	989.6		
53	2/14/2014 15:35	990.8		
54	2/14/2014 15:36	993.3		
55	2/14/2014 15:37	998.2		
56	2/14/2014 15:38	1001.8		
57	2/14/2014 15:39	1003.1		
58	2/14/2014 15:40	1005.5		
59	2/14/2014 15:41	1001.8		
60	2/14/2014 15:42	1003.1		
61	2/14/2014 15:43	1014		
62	2/14/2014 15:44	1029.3		
63	2/14/2014 15:45	1037.2		
64	2/14/2014 15:46	1042.1		
65	2/14/2014 15:47	1040.9		
66	2/14/2014 15:48	1037.9		
67	2/14/2014 15:49	1015.3		
68	2/14/2014 15:50	990.2		
69	2/14/2014 15:51	958.5		
70	2/14/2014 15:52	937.7		
71	2/14/2014 15:53	932.8		
72	2/14/2014 15:54	923.1		
73	2/14/2014 15:55	917		
74	2/14/2014 15:56	907.2		
75	2/14/2014 15:57	898.7		
76	2/14/2014 15:58	887.1		
77	2/14/2014 15:59	881		
78	2/14/2014 16:00	862.6		
79	2/14/2014 16:01	849.8		
80	2/14/2014 16:02	847.4		
81	2/14/2014 16:03	835.2		
82	2/14/2014 16:04	827.8		
83	2/14/2014 16:05	819.9		
84	2/14/2014 16:06	809.5		
85	2/14/2014 16:07	789.4		
86	2/14/2014 16:08	786.9		
87	2/14/2014 16:09	777.8		
88	2/14/2014 16:10	768.6		
89	2/14/2014 16:11	767.4		
90	2/14/2014 16:12	765		
91	2/14/2014 16:13	768		
92	2/14/2014 16:14	816.8		
93	2/14/2014 16:15	790.6		
94	2/14/2014 16:16	670.3		
95	2/14/2014 16:17	583.6		
96	2/14/2014 16:18	571.4		
97	2/14/2014 16:19	548.2		
98	2/14/2014 16:20	520.1		
99	2/14/2014 16:21	514		
100	2/14/2014 16:22	540.9		

Alex Watson  
ENGR 115  
10/21/2016

Input Parameters:

Measured Outdoor [ppm]	456
Assumed Outdoor [ppm]	400
Correction Factor	.56

Analysis		Hobbs CO2 Concentration	Actual CO2 Concentration [ppm]
Measurement	Date and Time		
1	2/14/2014 14:43	756.4	700.4
2	2/14/2014 14:44	700.9	644.9
3	2/14/2014 14:45	610.5	554.5
4	2/14/2014 14:46	514	458
5	2/14/2014 14:47	495.7	439.7
6	2/14/2014 14:48	482.3	426.3
7	2/14/2014 14:49	471.9	415.9
8	2/14/2014 14:50	468.3	412.3
9	2/14/2014 14:51	464	408
10	2/14/2014 14:52	457.9	401.9
11	2/14/2014 14:53	456	400
12	2/14/2014 14:54	454.2	398.2
13	2/14/2014 14:55	457.9	401.9
14	2/14/2014 14:56	542.7	486.7
15	2/14/2014 14:57	547.6	491.6
16	2/14/2014 14:58	627.6	571.6
17	2/14/2014 14:59	655.7	599.7
18	2/14/2014 15:00	634.3	578.3
19	2/14/2014 15:01	622.7	566.7
20	2/14/2014 15:02	625.8	569.8
21	2/14/2014 15:03	663.6	607.6
22	2/14/2014 15:04	685.6	629.6
23	2/14/2014 15:05	705.7	649.7
24	2/14/2014 15:06	717.9	661.9
25	2/14/2014 15:07	733.8	677.8
26	2/14/2014 15:08	746	690
27	2/14/2014 15:09	765	709
28	2/14/2014 15:10	784.5	728.5
29	2/14/2014 15:11	796.7	740.7
30	2/14/2014 15:12	810.1	754.1
31	2/14/2014 15:13	823	767
32	2/14/2014 15:14	834.6	778.6
33	2/14/2014 15:15	849.8	793.8
34	2/14/2014 15:16	861.4	805.4
35	2/14/2014 15:17	871.2	815.2
36	2/14/2014 15:18	884	828
37	2/14/2014 15:19	891.3	835.3
38	2/14/2014 15:20	900.5	844.5
39	2/14/2014 15:21	909	853
40	2/14/2014 15:22	917	861
41	2/14/2014 15:23	921.9	865.9
42	2/14/2014 15:24	928	872
43	2/14/2014 15:25	937.1	881.1
44	2/14/2014 15:26	942.6	886.6
45	2/14/2014 15:27	945.7	889.7
46	2/14/2014 15:28	955.4	899.4
47	2/14/2014 15:29	960.3	904.3
48	2/14/2014 15:30	968.3	912.3
49	2/14/2014 15:31	973.1	917.1
50	2/14/2014 15:32	979.2	923.2
51	2/14/2014 15:33	985.3	929.3
52	2/14/2014 15:34	989.6	933.6
53	2/14/2014 15:35	990.8	934.8
54	2/14/2014 15:36	993.3	937.3
55	2/14/2014 15:37	998.2	942.2
56	2/14/2014 15:38	1001.8	945.8
57	2/14/2014 15:39	1003.1	947.1
58	2/14/2014 15:40	1005.5	949.5
59	2/14/2014 15:41	1001.8	945.8
60	2/14/2014 15:42	1003.1	947.1
61	2/14/2014 15:43	1014	958
62	2/14/2014 15:44	1029.3	973.3
63	2/14/2014 15:45	1037.2	981.2
64	2/14/2014 15:46	1042.1	986.1
65	2/14/2014 15:47	1040.9	984.9
66	2/14/2014 15:48	1037.9	981.9
67	2/14/2014 15:49	1015.3	959.3
68	2/14/2014 15:50	990.2	934.2
69	2/14/2014 15:51	958.5	902.5
70	2/14/2014 15:52	937.7	881.7
71	2/14/2014 15:53	932.8	876.8
72	2/14/2014 15:54	923.1	867.1
73	2/14/2014 15:55	917	861
74	2/14/2014 15:56	907.2	851.2
75	2/14/2014 15:57	898.7	842.7
76	2/14/2014 15:58	887.1	831.1
77	2/14/2014 15:59	881	825
78	2/14/2014 16:00	862.6	806.6
79	2/14/2014 16:01	849.8	793.8
80	2/14/2014 16:02	847.4	791.4
81	2/14/2014 16:03	835.2	779.2
82	2/14/2014 16:04	827.8	771.8
83	2/14/2014 16:05	819.9	763.9
84	2/14/2014 16:06	809.5	753.5
85	2/14/2014 16:07	789.4	733.4
86	2/14/2014 16:08	786.9	730.9
87	2/14/2014 16:09	777.8	721.8
88	2/14/2014 16:10	768.6	712.6
89	2/14/2014 16:11	767.4	711.4
90	2/14/2014 16:12	765	709
91	2/14/2014 16:13	768	712
92	2/14/2014 16:14	816.8	760.8
93	2/14/2014 16:15	790.6	734.6
94	2/14/2014 16:16	670.3	614.3
95	2/14/2014 16:17	583.6	527.6
96	2/14/2014 16:18	571.4	515.4
97	2/14/2014 16:19	548.2	492.2
98	2/14/2014 16:20	520.1	464.1
99	2/14/2014 16:21	514	458
100	2/14/2014 16:22	540.9	484.9



Input Parameters:

Measured Coutdoor [ppm]	456
Assumed Coutdoor [ppm]	400
Correction Factor [ppm]	-56
Room Volume [ft3]	2221
Room Capacity [people]	5

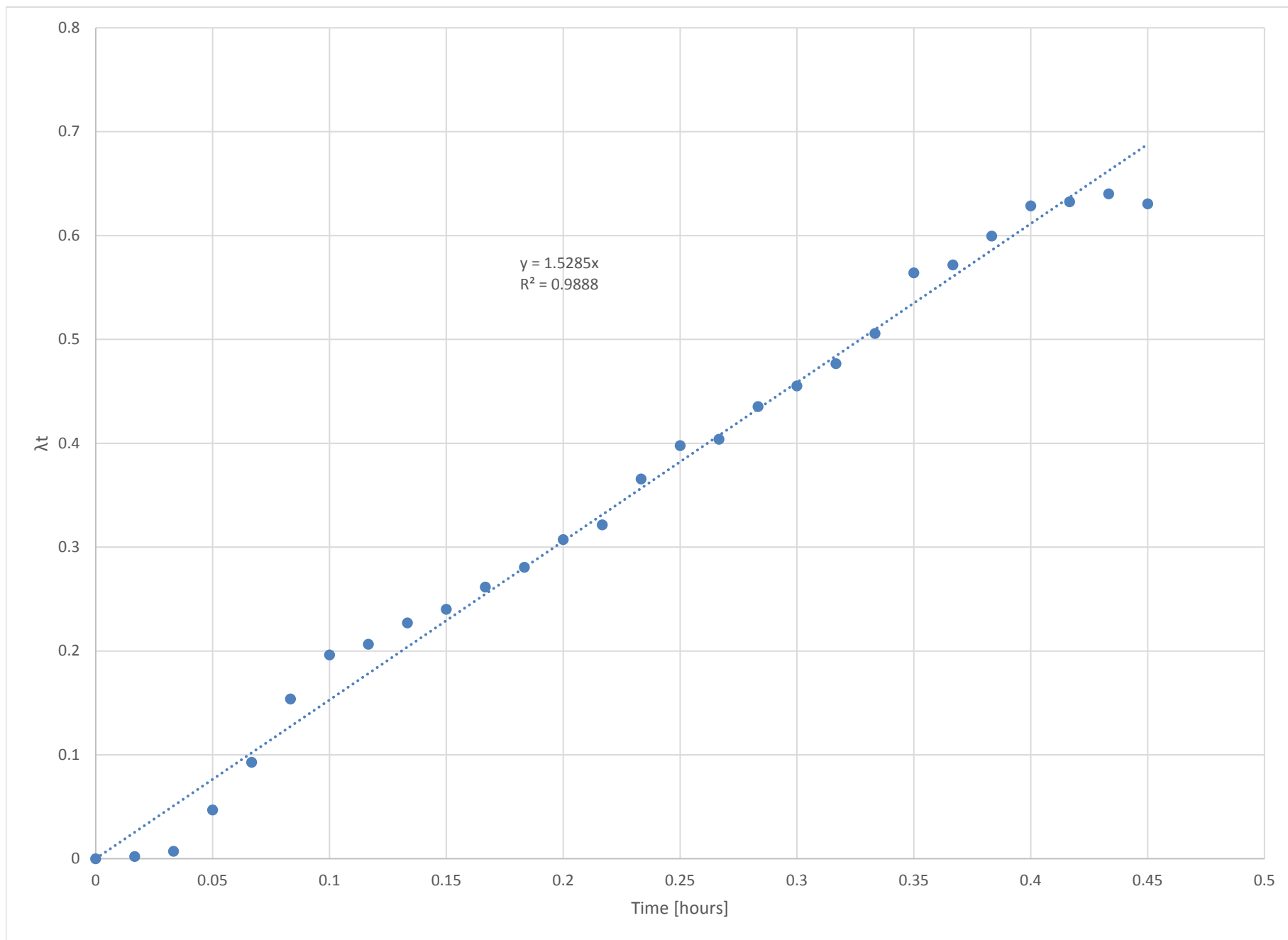
\*Room Capacity was not given

Calculations:

Air Exchange Rate [1/hr]	1.5
Time to remove non-reactive chemical	2
Ventilation Rate [ft3/min/person]	11.105

Analysis:

Measurement	Date and Time	Hobo Co2 Concentration	Actual CO2 Concentration [ppm]	Experimental Time [hr]	Δt
0	2/14/2014 15:46	1042.1	986.1	0	0
1	2/14/2014 15:47	1040.9	984.9	0.016666667	0.002049531
2	2/14/2014 15:48	1037.9	981.9	0.033333333	0.007191812
3	2/14/2014 15:49	1015.3	959.3	0.05	0.046804422
4	2/14/2014 15:50	990.2	934.2	0.066666667	0.092720123
5	2/14/2014 15:51	958.5	902.5	0.083333333	0.153894784
6	2/14/2014 15:52	937.7	881.7	0.1	0.19616891
7	2/14/2014 15:53	932.8	876.8	0.116666667	0.206393308
8	2/14/2014 15:54	923.1	867.1	0.133333333	0.226947056
9	2/14/2014 15:55	917	861	0.15	0.24009238
10	2/14/2014 15:56	907.2	851.2	0.166666667	0.261579723
11	2/14/2014 15:57	898.7	842.7	0.183333333	0.280598084
12	2/14/2014 15:58	887.1	831.1	0.2	0.307150342
13	2/14/2014 15:59	881	825	0.216666667	0.321401255
14	2/14/2014 16:00	862.6	806.6	0.233333333	0.365660522
15	2/14/2014 16:01	849.8	793.8	0.25	0.397647257
16	2/14/2014 16:02	847.4	791.4	0.266666667	0.403760369
17	2/14/2014 16:03	835.2	779.2	0.283333333	0.435426653
18	2/14/2014 16:04	827.8	771.8	0.3	0.455134348
19	2/14/2014 16:05	819.9	763.9	0.316666667	0.476611319
20	2/14/2014 16:06	809.5	753.5	0.333333333	0.505606938
21	2/14/2014 16:07	789.4	733.4	0.35	0.564147453
22	2/14/2014 16:08	786.9	730.9	0.366666667	0.571674209
23	2/14/2014 16:09	777.8	721.8	0.383333333	0.599560189
24	2/14/2014 16:10	768.6	712.6	0.4	0.628566005
25	2/14/2014 16:11	767.4	711.4	0.416666667	0.632412164
26	2/14/2014 16:12	765	709	0.433333333	0.640149147
27	2/14/2014 16:13	768	712	0.45	0.630487236



1. The air exchange rate of the room tested was 1.5 per hour.
2. If a group of five individuals were spending an extended amount of time this room without any ventilation, I would suggest spending at least two hours outside of the room before returning.
3. If the ASHRAE standard is 15 scfm and there are five people in the room the recommended rate would be 75 scfm. Our calculated ventilation rate was 11, therefore the group is being slightly cheap and should add a bit more air supply.
4. Using the ASHRAE standard it is recommended that no more than 3 people in the room at a time to keep the ventilation rate above 15.