

Lab Loading Gap Analysis

Two data sets were used in conducting this lab loading cost analysis. The *classes taught* data set was generated by Kerry Mitchell, Director of Institutional Planning, Research, and Effectiveness and included course data extracted from IRIS for Fall 2014, Spring 2015, and Summer 2015. This Spring and Fall data set included 39,926 class sections and the Summer data set included 6,318 class sections. The *course bank* data set was generated by Robert Peterson, Programmer Analyst II for the Center for Curriculum and Transfer Articulation and provides the prescribed credits, instructional load, periods, and load formula designator for each course offered at Maricopa Community Colleges. Because each data set contained information important for this analysis, the *classes taught* data set was augmented with information from the *course bank* data set.

There were a combined total of 39,926 class sections offered districtwide in Fall 2014 and Spring 2015. Of these, 32,941 class sections had instructional load greater than 0. The focus of this lab loading cost analysis is the 9,522 class sections classified L+L or LAB and, more specifically, the 8542 class sections which use the standard load formula S and the 562 class sections which use the activity load formula E. Because Rio prorates instructional load, Rio class sections will be analyzed separately. This analysis focuses on the 7,790 L+L and LAB sections using load formula S with nonzero instructional load at colleges other than Rio. This analysis also focuses on the 562 L+L sections using load formula E with nonzero instructional load at colleges other than Rio (Figure 1).

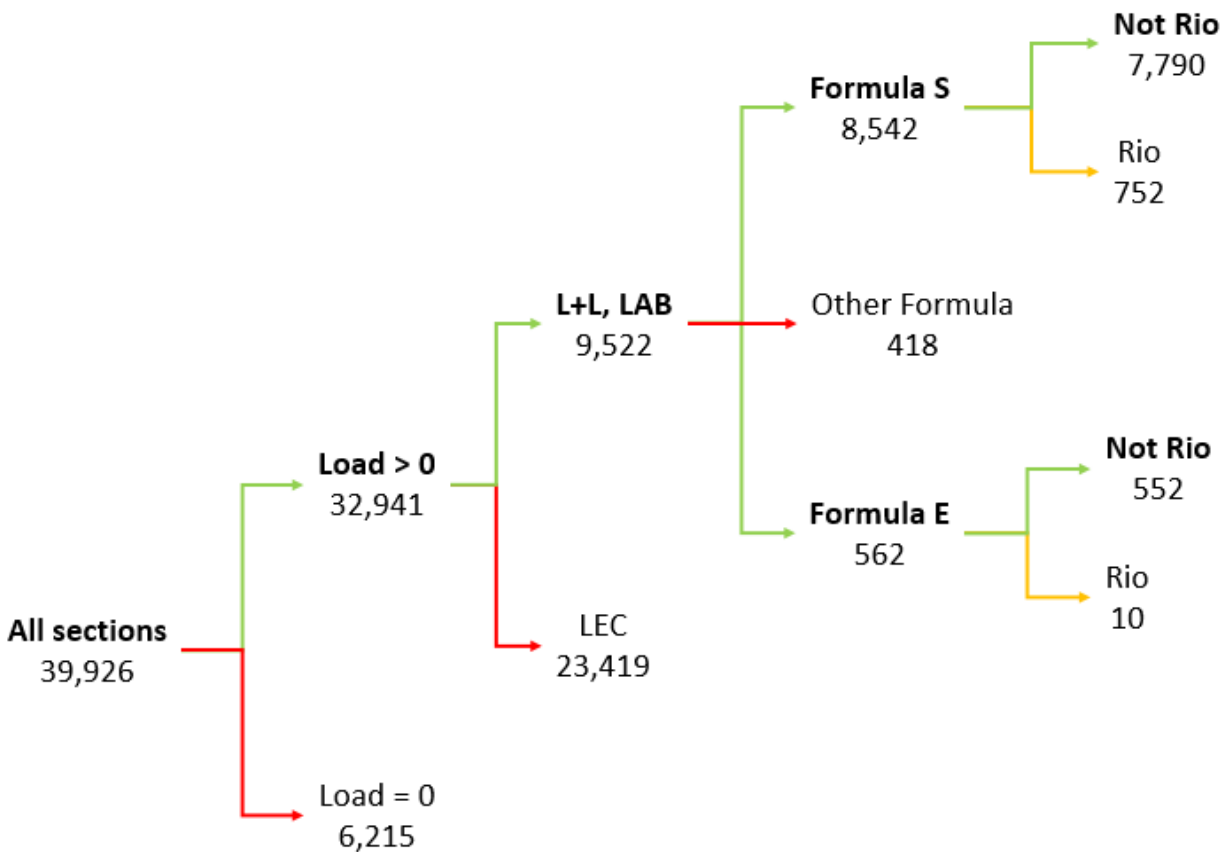


Figure 1. Tree diagram identifying Fall and Spring class sections to be included in the cost analysis

There were a combined total of 6,318 class sections offered districtwide in Summer 2015. Of these, 4,744 class sections had instructional load greater than 0. The focus of this lab loading cost analysis is the 1,220 class sections classified L+L or LAB and, more specifically, the 1,051 class sections which use the standard load formula S and the 72 class sections which use the activity load formula E. Because Rio prorate instructional load, Rio class sections will be analyzed separately. This analysis focuses on the 755 L+L and LAB sections using load formula S with nonzero instructional load at colleges other than Rio. This analysis also focuses on the 67 L+L sections using load formula E with nonzero instructional load at colleges other than Rio (Figure 2).

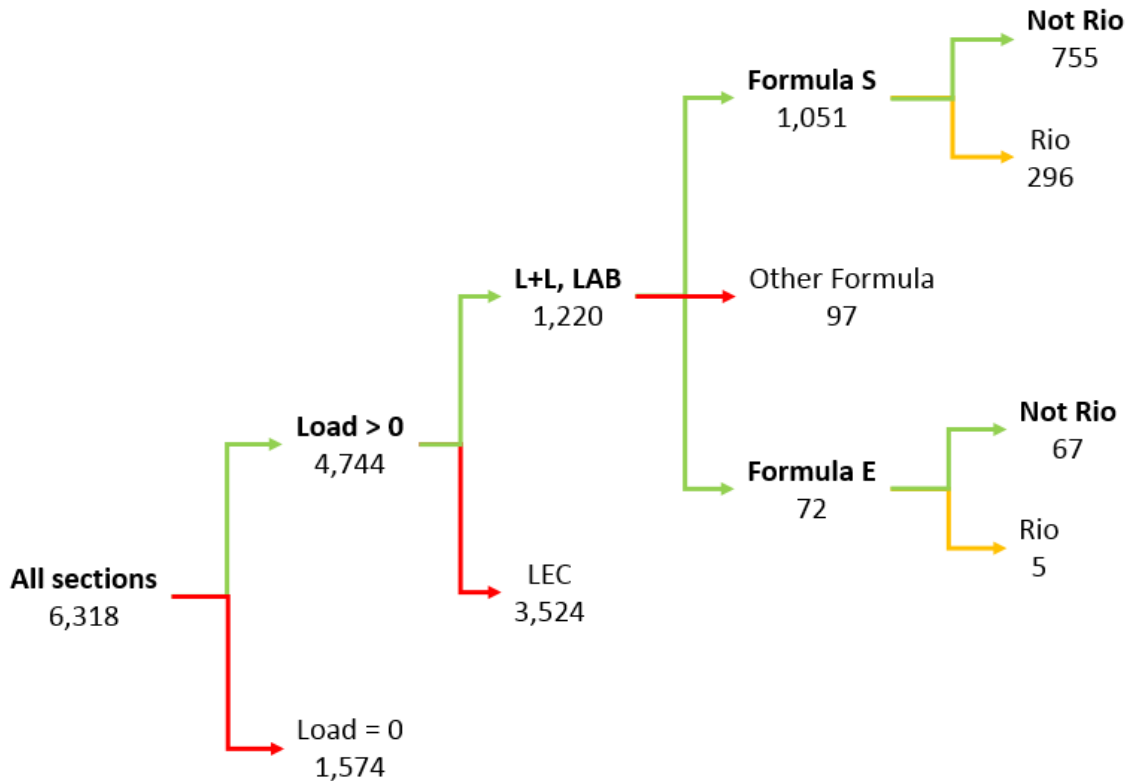


Figure 2. Tree diagram identifying Summer 2015 class sections to be included in the cost analysis

The *course bank* data set provides the prescribed credits, instructional load, and periods for each course offered at Maricopa Community Colleges. In reality, load for a course may be adjusted locally for a number of reasons including high enrollment, low enrollment, or other unspecified reason. This variability in the assignment of instructional load at the college level makes reliance upon the actual load data less reliable than reliance upon the prescribed load data from the course bank. Consider the following examples from the data set which illustrate how the actual instructional load may vary dramatically from the prescribed instructional load (Table 1).

Table 1

Difference between Actual Load and Prescribed Load

Course	Section	College	Semester	Periods	Credits	Formula	Actual Load	Prescribed Load
THP217	36103	SM	Spr 2015	4	3	S	1.8	3.7
WRT125	23681	GW	Fall 2014	6	4	S	3.15	5.4
FSC102	17048	EM	Spr 2015	19.6	11	S	12.7	17.02
PED115	32644	PV	Fall 2014	4	2	E	47.26	3.0
PED115	29710	SC	Spr 2015	4	2	E	35.05	3.0
NUR291	14292	GC	Spr 2015	6	2	S	16.77	4.8
ACC115	26769	CG	Spr 2015	3	2	S	4.05	2.7

Because of the variability in the actual load data, using the actual load data to cost out the lab loading would lead to skewed, inaccurate results. In contrast, using the prescribed load data in developing the cost model will lead to results consistent with load formulas S and E.

The proposed solution to the lab loading problem is to equate load with periods. Table 2 shows the load gap by college for the 7,790 L+L and LAB sections using load formula S with nonzero instructional load at colleges other than Rio and a cost estimate for equating load with periods for classes offered in Fall 2014 and Spring 2015.

Table 2

Cost Estimate for Equating Load with Periods - Non-Rio, Nonzero Load, Formula S, L+L and LAB Sections

College	Class Sections	Load	Periods	Load Gap	Cost (\$863/load hr)
CG	811	2266.31	2603.3	336.99	\$290,822
EM	583	1468.43	1634.9	166.47	\$143,664
GC	1367	3777.98	4332.13	554.15	\$478,231
GW	523	1167.43	1328.4	160.97	\$138,917
MC	1811	5113.62	5823.71	710.09	\$612,808
PC	974	2686.26	3114.7	428.44	\$369,744
PV	610	1577.97	1806.6	228.63	\$197,308
SC	836	2406.96	2751.3	344.34	\$297,165
SM	275	739.47	839.1	99.63	\$85,981
Total	7790	21204.43	24234.14	3029.71	\$2,614,640

Table 3 shows the load gap by college for the 755 L+L and LAB sections using load formula S with nonzero instructional load at colleges other than Rio and a cost estimate for equating load with periods for Summer 2015.

Table 3

Cost Estimate for Equating Load with Periods - Non-Rio, Nonzero Load, Formula S, L+L and LAB Sections

College	Class Sections	Load	Periods	Load Gap	Cost (\$863/load hr)
CG	111	428.36	478.23	49.87	\$43,038
EM	64	212	230	18.00	\$15,534
GC	114	380.24	426.2	45.96	\$39,663
GW	54	203.99	223.7	19.71	\$17,010
MC	161	571.27	643.4	72.13	\$62,248
PC	82	274.11	306.2	32.09	\$27,694
PV	85	292.22	329.4	37.18	\$32,086
SC	62	188.2	211	22.80	\$19,676
SM	22	72.9	78	5.10	\$4,401
Total	755	2623.29	2926.13	302.84	\$261,351

Table 4 shows the load gap by college for the 552 L+L sections using load formula E with nonzero instructional load at colleges other than Rio and a cost estimate for equating load with periods for Fall 2014 and Spring 2015.

Table 4

Cost Estimate for Equating Load with Periods - Non-Rio, Nonzero Load, Formula E, L+L Sections

College	Class Sections	Load	Periods	Load Gap	Cost (\$863/load hr)
CG	22	36	48	12.00	\$10,356
EM	18	27	36	9.00	\$7,767
GC	111	163.87	218.5	54.63	\$47,146
GW	18	33	44	11.00	\$9,493
MC	118	178.12	237.5	59.38	\$51,245
PC	53	88.5	118	29.50	\$25,459
PV	92	141.75	189	47.25	\$40,777
SC	74	116.25	155	38.75	\$33,441
SM	46	76.5	102	25.50	\$22,007
Total	552	860.99	1148	287.01	\$247,690

Table 5 shows the load gap by college for the 67 L+L sections using load formula E with nonzero instructional load at colleges other than Rio and a cost estimate for equating load with periods for Summer 2015.

Table 5

Cost Estimate for Equating Load with Periods - Non-Rio, Nonzero Load, Formula E, L+L Sections

College	Class Sections	Load	Periods	Load Gap	Cost (\$863/load hr)
CG	3	4.5	6	1.50	\$1,295
EM	1	1.5	2	0.50	\$432
GC	24	34.5	46	11.50	\$9,925
GW	3	7.5	10	2.50	\$2,158
MC	3	4.5	6	1.50	\$1,295
PC	8	10.5	14	3.50	\$3,021
PV	14	18.75	25	6.25	\$5,394
SC	10	15.75	21	5.25	\$4,531
SM	1	3	4	1.00	\$863
Total	67	100.5	134	33.50	\$28,911

Table 6 combines the results of Tables 2 through 5 and provides a cost estimate for addressing the lab loading problem at all colleges except Rio Salado College.

Table 6

Cost Estimate for Equating Load with Periods - Rio, Nonzero Load, Formula S and E, L+L and LAB Sections

Term	Load Formula	Class Sections	Load	Periods	Load Gap	Cost (\$863/load hr)
F14, S15	S	7790	21,204.43	24,234.14	3029.71	\$2,614,640
Sum15	S	755	2623.29	2,926.13	302.84	\$261,351
F14, S15	E	552	860.99	1,148	287.01	\$247,690
Sum15	E	67	100.5	134	33.50	\$28,911
Total		9164	24,789.21	28,442.27	3,653.06	\$3,152,591*

*Total differs slightly from column sum due to earlier rounding.

Rio Salado College's business model entails starting new classes weekly. Because it is typical for enrollment in a single class section to be comparatively low, instructional load for class sections is prorated based on enrollment. For example, the actual instructional load for JPN101 varied from 0.81 load hour to 4.07 load hour for the six sections taught in Fall 2014 and Spring 2015 even though the prescribed load was 5.7 (Table 7). Observe that the combined actual load for the two JPN101 sections in Fall 2014 was 5.7 (4.07 + 1.63 = 5.7). In contrast, the combined actual load for the four JPN101 sections in Spring 2015 was more than 5.7 (1.95 + 0.81 + 0.81 + 2.44 = 6.01).

Table 7

Prorated Loading for Rio Salado College Courses

Course	Section	College	Semester	Periods	Credits	Formula	Actual Load	Prescribed Load
JPN101	40022	RS	Fall 2014	6	5	S	4.07	5.7
JPN101	40041	RS	Fall 2014	6	5	S	1.63	5.7
JPN101	40018	RS	Spr 2015	6	5	S	1.95	5.7
JPN101	40026	RS	Spr 2015	6	5	S	0.81	5.7
JPN101	40037	RS	Spr 2015	6	5	S	0.81	5.7
JPN101	40031	RS	Spr 2015	6	5	S	2.44	5.7

In developing a cost model, it would be inappropriate and inaccurate to replace actual load with periods for every class section at Rio Salado. A more appropriate and accurate approach would be to sum the actual load for all sections of a course in a given semester and divide the result by the prescribed load for the course to determine how many typical class sections are represented by the data. For example, Table 8 shows that the two JPN101 sections in Fall 2014 equate to 1.00 typical class section and the four JPN101 sections in Spring 2015 equate to 1.05 typical class sections.

Table 8

Determining Typical Class Sections from Prorated Load Sections by Course and Semester

Course	Class Sections	College	Semester	Periods	Actual Load	Prescribed Load	Typical Class Sections
JPN101	2	RS	Fall 2014	6.0	5.7	5.7	$5.7/5.7 = 1.00$
JPN101	4	RS	Spr 2015	6.0	6.01	5.7	$6.01/5.7 = 1.05$

Multiplying the number of typical class sections by periods gives the appropriate amount of load to be used in the cost estimate (Table 6). For example, the Fall 2014 JPN101 classes should have a new load of 6.0, up from 5.7. Similarly, the Spring 2015 JPN101 sections should have a new load of 6.3, up from 6.01.

Table 9

Determining New Load Value from Typical Class Sections

Course	Class Sections	College	Semester	Periods	Actual Load	Typical Class Sections	New Load
JPN101	2	RS	Fall 2014	6.0	5.7	$5.7/5.7 = 1.00$	$6.0(1.00) = 6.0$
JPN101	4	RS	Spr 2015	6.0	6.01	$6.01/5.7 = 1.05$	$6.0(1.05) = 6.3$

This approach was used to analyze all Rio Salado College courses taught in Fall 2014 and Spring 2015 (Table 10) and Summer 2015 (Table 11).

Table 10

Typical Class Sections, New Load, and Load Gap for Rio Salado LAB and L+L Courses with Load Formula S

Course	Class Sections	Actual Load	Periods	Prescribed Load	Typical Class Sections	New Load	Load Gap
ACC115	5	7.72	3	2.7	2.86	8.58	0.86
AEN103	1	1.7	2	1.7	1.00	2.00	0.30
AGS164	2	6.17	6	5.4	1.14	6.86	0.69
ARB101	4	8.72	5	4.7	1.86	9.28	0.56
ARB102	4	3.35	5	4.7	0.71	3.56	0.21
ART112	4	14.57	6	5.1	2.86	17.14	2.57
ART113	5	13.11	6	5.1	2.57	15.42	2.31
AST102	17	17.84	3	2.4	7.43	22.30	4.46
BIO100	29	53.49	3	2.4	22.29	66.86	13.37
BIO105	10	11.32	3	2.4	4.72	14.15	2.83
BIO145	8	13.38	3	2.4	5.58	16.73	3.35
BIO156	28	57.6	3	2.4	24.00	72.00	14.40
BIO160	24	48.7	3	2.4	20.29	60.88	12.18
BIO201	19	42.86	3	2.4	17.86	53.58	10.72
BIO202	17	27.44	3	2.4	11.43	34.30	6.86
BIO205	33	43.57	3	2.4	18.15	54.46	10.89
BPC110	5	13.22	4	3.7	3.57	14.29	1.07
BPC125	5	3.43	1	1	3.43	3.43	0.00
BPC170	6	12.17	4	3.7	3.29	13.16	0.99
BPC225	4	2.44	2	1.7	1.44	2.87	0.43
BPC270	5	7.94	4	3.7	2.15	8.58	0.64
CFS190	4	2.65	4	3.7	0.72	2.86	0.21
CHI101	4	8.96	6	5.7	1.57	9.43	0.47
CHI102	4	4.06	6	5.7	0.71	4.27	0.21
CHI201	2	2.44	6	5.7	0.43	2.57	0.13
CHI202	3	2.43	6	5.7	0.43	2.56	0.13
CHM107LL	4	2.4	3	2.4	1.00	3.00	0.60
CHM130LL	34	43.89	3	2.4	18.29	54.86	10.97
CHM138LL	4	4.46	3	2.4	1.86	5.58	1.12
CHM151LL	7	11.32	3	2.4	4.72	14.15	2.83
CHM152LL	6	7.54	3	2.4	3.14	9.43	1.89
CIS105	53	172.86	4	3.7	46.72	186.88	14.02
CIS113DE	2	3.17	4	3.7	0.86	3.43	0.26
CIS114DE	9	24.52	5	4.4	5.57	27.86	3.34
CIS117DM	11	38.34	5	4.4	8.71	43.57	5.23
CIS120DB	5	12.16	4	3.7	3.29	13.15	0.99
CIS120DC	5	10.57	4	3.7	2.86	11.43	0.86

Course	Class Sections	Actual Load	Periods	Prescribed Load	Typical Class Sections	New Load	Load Gap
CIS120DF	6	16.38	4	3.7	4.43	17.71	1.33
CIS124AA	5	5.53	1.7	1.49	3.71	6.31	0.78
CIS124BA	4	2.34	1.7	1.49	1.57	2.67	0.33
CIS133DA	1	2.64	4	3.7	0.71	2.85	0.21
CIS138DA	4	5.28	4	3.7	1.43	5.71	0.43
CIS140	4	4.64	3	2.7	1.72	5.16	0.52
CIS150	4	8.45	4	3.7	2.28	9.14	0.69
CIS159	4	10.58	4	3.7	2.86	11.44	0.86
CIS162AD	6	13.22	4	3.7	3.57	14.29	1.07
CIS163AA	7	18.51	4	3.7	5.00	20.01	1.50
CIS165	3	2.65	4	3.7	0.72	2.86	0.21
CIS190	7	14.28	4	3.7	3.86	15.44	1.16
CIS214DE	6	11.32	5	4.4	2.57	12.86	1.54
CIS217AM	5	7.41	4	3.7	2.00	8.01	0.60
CIS220DF	4	5.82	4	3.7	1.57	6.29	0.47
CIS225	4	2.65	4	3.7	0.72	2.86	0.21
CIS225AB	4	3.71	4	3.7	1.00	4.01	0.30
CIS233DA	4	10.57	4	3.7	2.86	11.43	0.86
CIS233DC	4	2.65	4	3.7	0.72	2.86	0.21
CIS235	4	5.81	4	3.7	1.57	6.28	0.47
CIS262AD	4	3.18	4	3.7	0.86	3.44	0.26
CIS263AA	4	7.92	4	3.7	2.14	8.56	0.64
CIS276DA	4	10.56	4	3.7	2.85	11.42	0.86
CIS288	4	2.32	3	2.7	0.86	2.58	0.26
CSI243	1	2.4	3	2.4	1.00	3.00	0.60
CSR215	1	1.7	2	1.7	1.00	2.00	0.30
CUL105	1	1.26	5	4.4	0.29	1.43	0.17
DAE112	1	3.6	12	8.4	0.43	5.14	1.54
DAE156	1	2.7	9	6.3	0.43	3.86	1.16
DAE212	1	0.4	2	1.4	0.29	0.57	0.17
DAE240	1	1.59	4	3.7	0.43	1.72	0.13
DAE256	1	0.3	1.5	1.05	0.29	0.43	0.13
DHE121	1	2.7	3	2.7	1.00	3.00	0.30
DHE202	1	2.4	3	2.4	1.00	3.00	0.60
EDU215AA	2	0.58	2	2	0.29	0.58	0.00
EDU215AB	1	0.29	2	2	0.15	0.29	0.00
EDU215AD	1	0.29	2	2	0.15	0.29	0.00
EDU219	2	0.86	3	3	0.29	0.86	0.00
EDU226	4	7.28	3	3	2.43	7.28	0.00
EDU289AA	3	1.72	2	2	0.86	1.72	0.00
EDU289AB	3	3.14	2	2	1.57	3.14	0.00
EDU289AC	3	2	2	2	1.00	2.00	0.00

Course	Class Sections	Actual Load	Periods	Prescribed Load	Typical Class Sections	New Load	Load Gap
EDU289AD	4	2.86	2	2	1.43	2.86	0.00
EDU289AE	3	2.01	2	2	1.01	2.01	0.00
ELN202	3	1.59	4	3.7	0.43	1.72	0.13
ELN204	1	0.73	6	5.1	0.14	0.86	0.13
ENG095AA	3	3	1	1	3.00	3.00	0.00
EPD247	4	2.32	4.5	4.05	0.57	2.58	0.26
EPD270	4	3.01	3	3	1.00	3.01	0.00
EPD271AA	4	2.58	3	3	0.86	2.58	0.00
EPD271AB	4	1.72	3	3	0.57	1.72	0.00
EPD272AA	1	0.43	3	3	0.14	0.43	0.00
EPD272AB	2	0.86	3	3	0.29	0.86	0.00
EPD274	2	2.57	6	6	0.43	2.57	0.00
EPD276	3	1.72	3	3	0.57	1.72	0.00
EPD286	1	0.58	4.5	4.05	0.14	0.64	0.06
FON100LL	9	5.14	3	2.4	2.14	6.43	1.29
FON143	4	7.28	3	3	2.43	7.28	0.00
FON163	3	1.89	5	4.4	0.43	2.15	0.26
FON241LL	30	34.32	3	2.4	14.30	42.90	8.58
GLG103	29	25.05	3	2.4	10.44	31.31	6.26
GLG111	4	5.83	3	2.4	2.43	7.29	1.46
GPH111	17	35.66	3	2.4	14.86	44.58	8.92
IFS210	4	1.72	3	3	0.57	1.72	0.00
INT150	4	7.3	6	5.1	1.43	8.59	1.29
JPN101	6	11.71	6	5.7	2.05	12.33	0.62
JPN102	3	4.07	6	5.7	0.71	4.28	0.21
JPN201	3	3.25	6	5.7	0.57	3.42	0.17
JPN202	2	2.44	6	5.7	0.43	2.57	0.13
LET127	2	1.46	4	3.4	0.43	1.72	0.26
LET225	2	10.8	6	5.4	2.00	12.00	1.20
LET243	2	1.54	6	5.4	0.29	1.71	0.17
LET279AA	1	4	4	4	1.00	4.00	0.00
PAR290AB	4	1.16	2	2	0.58	1.16	0.00
PHS110	3	1.37	3	2.4	0.57	1.71	0.34
PHS120	6	9.26	3	2.4	3.86	11.58	2.32
PHY101	16	19.58	3	2.4	8.16	24.48	4.90
PHY111	11	13.72	3	2.4	5.72	17.15	3.43
PHY112	11	5.5	3	2.4	2.29	6.88	1.38
PRM134	1	0.19	1.5	1.35	0.14	0.21	0.02
PRM138	1	0.19	1.5	1.35	0.14	0.21	0.02
PRM146	1	0.07	0.5	0.5	0.14	0.07	0.00
PSY290AB	7	11.66	3	2.4	4.86	14.58	2.92
Total	752	1228.28			146.22	1428.78	200.5

The load gap for the 752 Rio Salado College L+L and LAB class sections with load formula S was 200.5 for Fall 2014 and Spring 2015.

Table 11

Typical Class Sections, New Load, and Load Gap for Rio Salado LAB and L+L Courses with Load Formula S

Course	Class Sections	Actual Load	Periods	Prescribed Load	Typical Class Sections	New Load	Load Gap
ACC115	3	3.09	3	2.7	1.14	3.43	0.34
AGS164	2	3.08	6	5.4	0.57	3.42	0.34
ARB101	2	3.35	5	4.7	0.71	3.56	0.21
ARB102	1	0.67	5	4.7	0.14	0.71	0.04
ART112	2	4.37	6	5.1	0.86	5.14	0.77
ART113	2	4.37	6	5.1	0.86	5.14	0.77
ASD280	2	4.12	18	14.4	0.29	5.15	1.03
AST102	7	6.09	3	2.4	2.54	7.61	1.52
BIO100	9	18.52	3	3	6.17	18.52	0.00
BIO105	4	4.8	3	2.4	2.00	6.00	1.20
BIO145	5	5.15	3	3	1.72	5.15	0.00
BIO156	10	20.57	3	3	6.86	20.57	0.00
BIO160	8	14.75	3	3	4.92	14.75	0.00
BIO201	8	16.8	3	3	5.60	16.80	0.00
BIO202	7	15.09	3	3	5.03	15.09	0.00
BIO205	15	20.24	3	3	6.75	20.24	0.00
BPC110	1	1.59	4	3.7	0.43	1.72	0.13
BPC125	2	0.72	1	1	0.72	0.72	0.00
BPC170	2	1.59	4	3.7	0.43	1.72	0.13
BPC225	2	0.48	2	1.7	0.28	0.56	0.08
BPC270	2	2.12	4	3.7	0.57	2.29	0.17
CFS190	1	0.53	4	3.7	0.14	0.57	0.04
CHI101	2	4.07	6	5.7	0.71	4.28	0.21
CHI102	2	1.62	6	5.7	0.28	1.71	0.09
CHI201	2	1.62	6	5.7	0.28	1.71	0.09
CHI202	2	1.62	6	5.7	0.28	1.71	0.09
CHM107LL	2	1.38	3	2.4	0.58	1.73	0.35
CHM130LL	15	19.21	3	2.4	8.00	24.01	4.80
CHM138LL	2	1.72	3	2.4	0.72	2.15	0.43
CHM151LL	4	4.79	3	2.4	2.00	5.99	1.20
CHM152LL	3	4.46	3	2.4	1.86	5.58	1.12
CIS105	14	43.86	4	3.7	11.85	47.42	3.56
CIS113DE	1	3.7	4	3.7	1.00	4.00	0.30
CIS117DM	3	7.55	5	4.4	1.72	8.58	1.03
CIS120DB	2	2.64	4	3.7	0.71	2.85	0.21

Course	Class Sections	Actual Load	Periods	Prescribed Load	Typical Class Sections	New Load	Load Gap
CIS120DC	2	2.12	4	3.7	0.57	2.29	0.17
CIS120DF	2	4.76	4	3.7	1.29	5.15	0.39
CIS124AA	2	1.49	1.7	1.49	1.00	1.70	0.21
CIS124BA	2	0.64	1.7	1.49	0.43	0.73	0.09
CIS138DA	2	1.59	4	3.7	0.43	1.72	0.13
CIS140	2	1.55	3	2.7	0.57	1.72	0.17
CIS150	2	2.12	4	3.7	0.57	2.29	0.17
CIS159	2	2.64	4	3.7	0.71	2.85	0.21
CIS162AD	2	3.7	4	3.7	1.00	4.00	0.30
CIS163AA	3	8.45	4	3.7	2.28	9.14	0.69
CIS165	1	1.06	4	3.7	0.29	1.15	0.09
CIS190	3	3.18	4	3.7	0.86	3.44	0.26
CIS214DE	2	2.52	5	4.4	0.57	2.86	0.34
CIS217AM	2	2.12	4	3.7	0.57	2.29	0.17
CIS220DF	2	1.06	4	3.7	0.29	1.15	0.09
CIS225AB	2	1.06	4	3.7	0.29	1.15	0.09
CIS233DA	2	3.17	4	3.7	0.86	3.43	0.26
CIS233DC	2	1.06	4	3.7	0.29	1.15	0.09
CIS235	3	2.12	4	3.7	0.57	2.29	0.17
CIS262AD	2	1.59	4	3.7	0.43	1.72	0.13
CIS263AA	2	3.17	4	3.7	0.86	3.43	0.26
CIS276DA	2	3.7	4	3.7	1.00	4.00	0.30
CIS288	1	0.77	3	2.7	0.29	0.86	0.09
DAE112	1	2.4	12	7	0.34	4.11	1.71
DAE240	1	1.06	4	3.7	0.29	1.15	0.09
DHE227	1	2.4	3	1	2.40	7.20	4.80
ECE102	2	2.92	4	3.4	0.86	3.44	0.52
EDU219	1	0.43	3	3	0.14	0.43	0.00
EDU226	1	0.43	3	3	0.14	0.43	0.00
EDU289AA	1	0.29	2	2	0.15	0.29	0.00
EDU289AE	1	0.29	2	2	0.15	0.29	0.00
ELN202	1	0.53	4	3.7	0.14	0.57	0.04
ELN204	1	0.73	6	5.1	0.14	0.86	0.13
ELN290AA	1	0.14	1	1	0.14	0.14	0.00
ELN290AC	1	0.43	3	3	0.14	0.43	0.00
ENG095AA	1	1	1	1	1.00	1.00	0.00
EPD247	1	0.58	4.5	4.05	0.14	0.64	0.06
EPD270	2	3	3	3	1.00	3.00	0.00
EPD271AA	2	1.72	3	3	0.57	1.72	0.00
EPD271AB	2	0.86	3	3	0.29	0.86	0.00
EPD272AA	1	0.86	3	3	0.29	0.86	0.00
Course	Class	Actual	Periods	Prescribed	Typical Class	New	Load

	Sections	Load		Load	Sections	Load	Gap
EPD274	2	1.72	6	6	0.29	1.72	0.00
EPD276	2	1.72	3	3	0.57	1.72	0.00
FON100LL	3	1.02	3	2.4	0.43	1.28	0.26
FON143	2	2.57	3	3	0.86	2.57	0.00
FON163	1	0.63	5	4.4	0.14	0.72	0.09
FON241LL	10	12.35	3	2.4	5.15	15.44	3.09
GLG103	15	11.7	3	2.4	4.88	14.63	2.93
GLG111	2	2.06	3	2.4	0.86	2.58	0.52
GPH111	6	8.57	3	3	2.86	8.57	0.00
IFS210	1	0.43	3	3	0.14	0.43	0.00
INT150	2	2.19	6	5.1	0.43	2.58	0.39
JPN101	2	5.7	6	5.7	1.00	6.00	0.30
JPN102	2	2.44	6	5.7	0.43	2.57	0.13
JPN201	1	0.81	6	5.7	0.14	0.85	0.04
LET127	1	0.49	4	3.4	0.14	0.58	0.09
PAR290AB	2	0.58	2	2	0.29	0.58	0.00
PHS110	1	0.69	3	3	0.23	0.69	0.00
PHS120	2	3.43	3	3	1.14	3.43	0.00
PHY101	7	7.55	3	3	2.52	7.55	0.00
PHY111	4	6.86	3	3	2.29	6.86	0.00
PHY112	4	6.86	3	2.4	2.86	8.58	1.72
PSY290AB	4	7.2	3	3	2.40	7.20	0.00
Total	296	413.61				455.59	41.98

The load gap for the 296 Rio Salado College L+L and LAB class sections with load formula S was 41.98 for Summer 2015.

Table 12 shows the load gap for the 10 Rio Salado College L+L class sections with load formula E was 5.07 in Fall 2014 and Spring 2015.

Table 12

Typical Class Sections, New Load, and Load Gap for Rio Salado L+L Courses with Load Formula E

Course	Class Sections	Actual Load	Periods	Prescribed Load	Typical Class Sections	New Load	Load Gap
PED101GF	2	3	2	1.5	2.00	4.00	1.00
PED101YH	1	1.5	2	1.5	1.00	2.00	0.50
PED101YP	2	3	2	1.5	2.00	4.00	1.00
PED115	5	7.72	4	3	2.57	10.29	2.57
Total	10	15.22			5.07	20.29	5.07

Table 13 shows the load gap for the 5 Rio Salado College L+L class sections with load formula E was 2.14 in Summer 2015.

Table 13

Typical Class Sections, New Load, and Load Gap for Rio Salado L+L Courses with Load Formula E

Course	Class Sections	Actual Load	Periods	Prescribed Load	Typical Class Sections	New Load	Load Gap
PED101GF	1	1.5	2	1.5	1.00	2.00	0.50
PED101YH	1	1.5	2	1.5	1.00	2.00	0.50
PED101YP	1	1.5	2	1.5	1.00	2.00	0.50
PED115	2	3.43	4	3	1.14	4.57	1.14
Total	5	7.93			4.14	10.57	2.64

Table 14 combines the results of Tables 10 – 13 and provides a cost estimate for addressing the lab loading problem at Rio Salado College.

Table 14

Cost Estimate for Equating Load with Periods - Rio, Nonzero Load, Formula S and E, L+L and LAB Sections

Term	Load Formula	Class Sections	Load	New Load	Load Gap	Cost (\$863/load hr)
F14, S15	S	752	1228.28	1428.78	200.50	\$173,032
F14, S15	E	10	15.22	20.29	5.07	\$4,375
Sum15	S	296	413.61	455.59	41.98	\$36,229
Sum15	E	5	7.93	10.57	2.64	\$2,278
Total		1063	1665.04	1915.23	250.19	\$215,914

Combining the results of Tables 6 and 14, the total investment to address the lab loading issue districtwide is estimated to be **\$3,368,505**.