Reading and Mathematics Pre-Requisites for Introductory BIOL and CHEM Courses: A Novel Approach Using Data-Based Pre-Requisite Course Assessments to Campaign for Changes to be Implemented ASAP

by

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In partial fulfillment of

Accreditation-Mandated Assessment

Institutionally-Mandated Assessment

Annual Plan 2019-2020

Self-Evaluation 2018-2019

Articulation Form Submission – MATH Pre-Req Changes to BIOL 190 and CHEM 121

Abstract/Executive Summary

During Fall 2018 (2018-03), the Cloze method of reading analysis was administered pre- and post-course for BIOL 190/L 1005/1005 (BIOL 190) and CHEM 121 1001/1002 (CHEM 121). Results demonstrated that 31.58% of BIOL 190/L students found reading science at grade 9.3 too difficult whereas 48.15% of CHEM 121 students found the same science reading level too difficult. 57.89% of BIOL 190 and 48.15% of CHEM 121 students found the identical science reading level instructional (refer to page 5 for Cloze Method criteria) 10.53% of BIOL 190 and 3.70% of CHEM 121 students found the science reading level to be self-instructional.

Comparing Cloze results with Accuplacer's "New Generation" reading sample placement exam online suggests that there's a disconnect between the value of Accuplacer's reading placement and the Cloze results for science students. This disconnect requires expeditious investigation and resolution.

Additionally, students were also assessed for competencies in MATH. CHEM students were hypothesized to be more MATH/numbers-oriented than BIOL students. A quick comparison of the common MATH assignments, vis-à-vis MATH Primer, was performed and analyzed. There was no statistical difference in Canvas-based MATH assignment scores between the two populations. CHEM 121 students are currently assessed for MATH competencies. BIOL 190 does not have that assessment. That will change in Fall 2019 for more precise data acquisition and analysis.

E-discussions involving all of the full-time WNC BIOL/CHEM faculty regarding MATH pre-requisite courses began in August 2018 with an intermission until March 2019. The reported data in this study were presented in these discussions.

MATH pre-requisite course data for CHEM 121 and BIOL 190 were obtained from WNC-IR. Data supports retaining MATH 126 or higher as a CHEM 121 pre-requisite course with one exception: MATH 176. Due to a small N in MATH 176, its value as a viable pre-req to CHEM 121 remains questionable.

The data regarding BIOL 190 MATH pre-requisite courses was equally as clear: remove MATH 096 as a BIOL 190 MATH pre-requisite course as it is not a valuable pre-req for BIOL 190 (either for transfer OR to provide academic success support for BIOL 190) and require MATH 126 or higher as pre-req course[s] for BIOL 190.

In addition, in both BIOL 190 and CHEM 121, there was no data on record to suggest that testing out of MATH 126 provides any value for students to succeed in either science course.

Modifying the MATH pre-requisite statements in the course descriptions were e-agreed to by BIOL/CHEM faculty.

Introduction

It's commonly known (albeit not without controversy [11]) that people learn to read until about the third grade, at which time, people also make the shift to read to learn.

While there are numerous articles available regarding academic difficulties among non-English speaking students [e.g., 1], the findings support identical issues among English-speaking students [Ibid]:

> *[…] including reading and writing such as synthesizing information and academic writing; (2) there were strong associations among general academic difficulties, academic reading and writing difficulties; […]*

In order to be successful in introductory science courses (which set the stage for future success in more advanced courses and/or programs), reading is required. Reading at the proper level is an absolute necessity for science student success.

Reading about science, learning about science, or reading a scientific article is very different than reading a passage in English literature: science is a different language.

Reading Assessment

Accuplacer

Incoming students at WNC may be administered a Reading Placement test to determine which English courses they need to enroll in first. The test is provided by Accuplacer.

On Weds, Sep 19, 2018, 3:25 PM, the initial request regarding "Assessment Data Inquiry" was submitted:

> *"[…] generic "cut off" score[s] for the reading test required by the College that separates students from remedial courses and college courses and how do I find out what K-12 grade that "cut off" score represents?"*

On Thu, Sep 27, 2018, 4:22 PM, the following response was received:

> "[…] of the information on cut scores for the Next Generation test that is taking the place of Accuplacer in January. We shared this information with the English and Math faculty in May so that they could work on the Demo side of Accuplacer since they determine the cut scores for WNC. We have not heard back on what they have decided and thus have not made a new cut sheet."

Follow-up to identified faculty regarding "Reading Placement/Accuplacer Inquiry -- Assessment Activity" was performed on Wed, Jan 9, 2019, 9:30 AM,

> "[…] I wonder if one of you would a) provide that [cut off] score to me, please, and b) if you'd provide the Flesch-Kincaid grade-level of the Accuplacer, please? If you don't know the latter, that's fine -- no response needed in that instance […]"

To date there has been no response.

Reading Evolving to MATH Assessment

As a result of collegial discussions, the notion that CHEM students might be more "numbers" oriented than the BIOL students was suggested. While a perfunctory review indicated that there was no difference regarding MATH performance between the two groups (cf pp. 4 of 4) in Fall 2018, vis-à-vis MATH Primer assignments, it seemed reasonable to perform a meta-analysis on the previous five (5) years' classes (both BIOL 190/L and CHEM 121) of pre-req's for clarification.

Methods

Data Acquisition

Record-level, raw, anonymized data was requested, first, Thu, Aug 16, 2018 at 7:03 AM, regarding CHEM 121 as follows:

> Final MATH pre-req course grade completed immediately prior to enrolling in/matriculating CHEM 121 with a grade of C- or higher in CHEM 121 between 2013-03 and 2018-03 on the Carson Campus only;
>
> and
>
> Final MATH pre-req course grade completed immediately prior to enrolling in/matriculating CHEM 121 with a grade of C- or lower in CHEM 121 between 2013-03 and 2018-03 on the Carson Campus only.

Identical record-level, raw, anonymized data was requested, Mon, Feb 25, 2019 at 5:12 PM, secondly, for BIOL 190/L.

All raw, record-level, anonymized data came through WNC-IR.

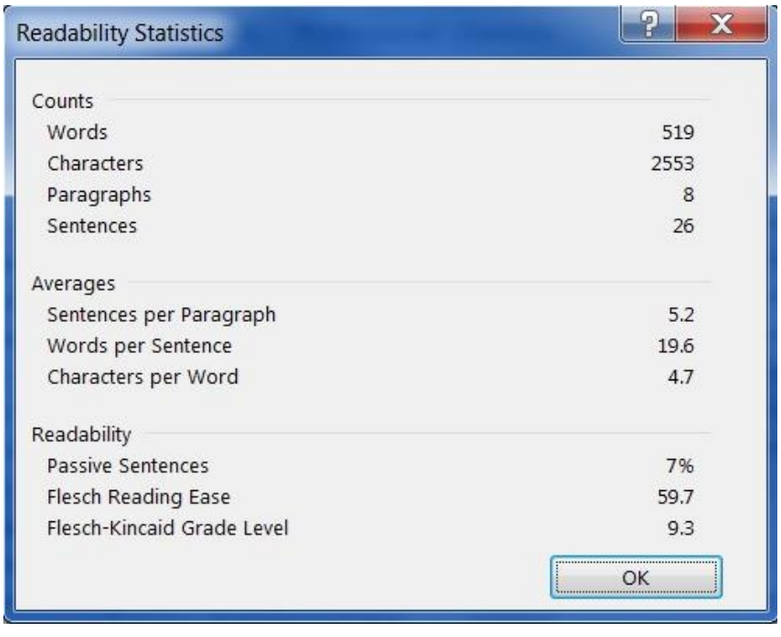
Reading Assessment: Cloze Method

The Cloze method has a little over 60 years of application/use/validation/verification, which includes thoughtful critique [4]. A former WNC Reading Specialist/English professor/ASC Director taught the author about this some 20± years ago. The Cloze method gives information on three levels of "readability":

1) Material is too challenging for the student
2) Material is instructional for the student, or
3) Material is self-instructional for the student

Flesch-Kincaid and Flesch Methods

The Flesch-Kincaid (F-K) method of determining reading level and the Flesch (F) method for readability are used in conjunction with the Cloze method (mostly the Flesch-Kincaid). Both are readily available in Word and have 40+ years' of application/use/validation/verification [5, 6].



Using the F-K method, analysis of reading excerpts is obtained that assesses students' science reading skills when using the Cloze method. For more detail, refer to the screen captured **image at right** from Microsoft Word 2016.

At present, the science reading level being assessed for the purposes of this report is grade 9.3 (high school freshman about one-third of the way through the semester).

The goal of this approach, among many, is to determine if there's a relationship between what the Cloze/F-K and Accuplacer, et al, are doing and, if not, explore what the disconnect might be. Over half of the CHEM 121 students struggled with grade 9.3 science reading; per Cloze results, it is too difficult for them to read. Two-thirds of that group have dropped the course. Further

still, under a third of the BIOL 190 students find that grade 9.3 science content is too difficult for them to read. About half of that group dropped the course.

Math Assessment

Accuplacer

Students at WNC are also placed via Accuplacer, upon initial enrollment, into MATH classes to aid in student success.

MATH Primer

In addition, since at least 2005, this author has been "reviewing" MATH topics that range from High School Algebra I through High School Geometry through High School Algebra II, along with a little simple High School Trigonometry in his infamous "MATH Primer" [7]. Assessments of these topics showed (as previously publicly reported, [8, 9]) that students who had strong MATH skills performed better in CHEM 121 than did those who struggled.

Statistics

Students Two-Tailed t-Test for significance was utilized to determine differences between groups of data. Maximum accepted probability for statistical difference was traditionally set at $p < 0.05$.

The remainder of the statistical items, e.g., mean, median, standard deviation and mode, were calculated in/determined by Microsoft Excel 2016.

F-K and F are packaged with Microsoft Word 2016.

P/F Ratio

The P/F ratio is simply the raw number of students passing either course divided by the raw number of students failing either course.

Pass/Fail Criteria/Definitions

A grade of C- or better was determined to be the "Pass" group and less than a C- was determined to be the "Fail" group. This (C-) is the minimum success grade that WNC uses for General Education courses.

Results

Reading Assessment: BIOL 190/L v CHEM 121

Students in BIOL 190/L find 9th grade science reading less difficult to read (31.58%) than do the CHEM 121 students (48.15%). Of the students who either withdrew or simply stopped attending class (W/St), 50% of the BIOL 190 W/St group and 63% of the CHEM 121 W/St group found reading 9th grade level science was too difficult for them. In addition, 57.89% of BIOL 190 and 48.15% of CHEM 121 students found the 9th grade reading level science instructional. 10.53% of BIOL 190 and 3.70% of CHEM 121 students found the science reading level to be self-instructional (**Appendix 1, Figure 1**).

MATH Pre-Req Course Assessment BIOL 190/L v CHEM 121

Appendix 2, Figure 2 is clear in that the best MATH pre-requisite courses for students to be successful in CHEM 121 are MATH 126, 127 and 128. MATH 283 and 285 are "N-restricted", i.e., each course has a small population, rendering them difficult to be considered seriously as any sort of "dedicated" pre-req courses for CHEM 121.

Appendix 3, Figure 3 is clear in that the best minimum MATH pre-requisite courses for students to be successful in BIOL 190 are MATH 126 or 127. MATH 128 and 181 are "N-restricted",

rendering them difficult to be considered seriously as any sort of "dedicated" pre-req courses for BIOL 190. MATH 127 is also likely "N-restricted".

In addition, the following was also observed and/or calculated in both BIOL 190/L and CHEM 121 Groups.

(**Table 1, below**: Average MATH pre-req grade and P/F ratio by science course, i.e., BIOL 190 and CHEM 121):

BIOL 190					**CHEM 121**			
MATH Course	Average MATH Pre-Req Final Grade		P/F Ratio		MATH Course	Average MATH Pre-Req Final Grade		P/F Ratio
	Pass 190	Fail 190				Pass 121	Fail 121	
096	B-	C	0.714					
120	B+	B+	1.000					
126	C+	D+	1.636		126	B+	C	3.684
127	B-	D	2.333		127	B+	C	4.688
128	C+	--	UTO		128	B-	D+	4.333
					176	--	D+	UTO
181	B	F	10.000		181	B-	D	3.444
					182	C+	F	1.429
					283	B	--	UTO
					285	B	--	UTO

Of interest is that students who transferred in "a MATH course" from outside WNC and completed BIOL 190 had a 100% BIOL 190 pass rate. Their average MATH grade that was transferred in was an A-.

Furthermore, in both BIOL 190 and CHEM 121, there was no data available regarding MATH Placement testing to test out of the MATH pre-requisite, i.e., it simply has not been done (neither attempted nor fulfilled/realized) during the time frame for this study.

Discussion

Science Reading Assessment

Clearly, there's an issue regarding reading scientific content across the two reported courses (**Appendix 1, Figure 1**). Neither intra-institutional inquiries nor discussions shed light on the issue; nor did they shed any light on Accuplacer data/content/level.

Per **Appendix 4, Figure 4**, however, a sample of the "new form" of reading placement test (as described per email Thu, Sep 27, 2018, 4:22 PM) was located online [10]. Three (3) passages (as cited in **Appendix 4, Figure 4**) were analyzed with the F-K and F methods, vis-a-vis screen shots of the pop-up's from those analyses. The first two passages are clearly not of a scientific nature and "grade out" at the 11th and 12th grades' reading levels (± a little). The third passage was specifically meant to represent "scientific reading" and graded out at grade 6.5: **elementary school reading level**. This latter passage was remarkably reminiscent of the old SRA reading cards of the 1960's and 1970's.

It's important to note that these are analyses based on a "sample" and not on the "real deal". "Back in the day", i.e., pre-internet, when students were seeking assistance to perform better on placements or exams, e.g., for the MCAT or the GRE, they were limited to what they could find

in their college bookstore or other book stores. Those "prep" books were both a boon and a bane, i.e., some were quite good and others were remarkably simple and gave students a sense of false hope.

As previously mentioned, "…English faculty …" determine the cut-off scores for the reading placement at WNC. Retaining a skeptical eye on the grade 6.5 level of the Accuplacer "sample", it's possible that the "New Generation" placement may very well be remarkably weak in terms of scientific reading level placement. That weakness, if (when???) confirmed, may be inherent to the "Old Generation" reading placement, as well, and may very well explain a portion of the "disconnect" between reading placement at WNC and the Cloze method used in the author's BIOL and CHEM courses. This potential weakness needs some in-depth exploration in the near future.

For these two specific courses, there was no real change in science reading level following post-course re-evaluation. While surprising on one hand (observationally, the students were trying to complete the assessment as quickly as they could), on the other hand it wasn't as surprising as it could have been. Back in 1985, a local study regarding the effect of reading science content on science student success was completed at TMCC:

> *The study consisted of 222 students. On average, their reading level was at the 10th grade level with a range of 6th to 11th grades. Textbooks were written on the 14-16th grade level in those days. Reading level correlated with classroom success but credit load and hours worked did not. IE,* ***if you can read you succeed regardless of credit load or hours of work at a job****.* [personal communication, Wed, Mar 20, 7:02 PM, James Conkey, Emeritus Professor of Biology, TMCC].

That Emeritus Professor Conkey's study is consistent with data previously cited and completed by this author is both noteworthy **and** alarming: in 35 years, students' reading skills in college science courses have not improved (they're stagnated!) in spite of what public educational institutions, or nationally "normed" placement exams, would have us believe. If there proves to be a flaw in the Accuplacer/New Generation, it will continue to negatively impact science student success until or unless it is resolved/rectified and students' science reading skills are brought up to college science reading level[s] and/or standards prior to enrollment in these introductory science courses.

Regardless, the results of the Cloze triggered collegial discussions with Drs. Evett and Morin at WNC that led to exploration of MATH-related issues in both BIOL 190 and CHEM 121.

MATH Assessment

Appendix 2, Figure 2 and **Appendix 3, Figure 3** are self-explanatory. It's clear that MATH 126, 127 and 128 are assisting students in being successful in CHEM 121. What's not as clear is why, on average, those who pass CHEM 121 do so with an average MATH grade of "B'ish" while those who fail CHEM 121 do so with an average MATH grade of "C'ish"?

Note is made that, although it's not used any longer as a pre-req for BIOL 190, MATH 120 was actually a better MATH pre-req (P/F = 1.000) than was MATH 096 (P/F = 0.714). Either way, MATH 126 is clearly a better MATH pre-requisite (P/F = 1.636) for BIOL 190 than the previously mentioned two courses.

While an argument could likely be made that MATH 127 (or 128) could be a better MATH pre-requisite for both BIOL 190 and CHEM 121, clearly, science student success is supported by requiring MATH 126 as the "least" (or minimum) MATH pre-requisite course for both science courses.

Lastly, a review of the students who failed CHEM 121 revealed an intriguing phenomenon: of all the attempts to complete MATH pre-requisites, 34.67% of the attempts were by students repeating the MATH course. Of even more interest is that there were numerous students who took the repeats to a whole new level: several students repeated the course four times!

Repeating MATH Students Final MATH Course Grade: Failing CHEM 121 2013-03-2018-03									
126		127		128		181		182	
Attempts	Grades	Attempts	Grades	Attempts	Grades	Attempts	Grades	Attempts	Grades
2	D- → C-	2	Au → B	2	F → F	4	W → D → C- → D	4	F → F → F → F
2	F → C+	2	F → B+			2	F → W		
2	C → D								
4	F → F → F → F								

This phenomenon was not observed in the group of students who passed CHEM 121: they completed their MATH pre-requisite successfully on the first attempt.

Conclusion[s] and Implementation

There is a clear "disconnect" regarding reading placement/science reading assessment conflicts that requires rapid attention and intervention in support of student success.

MATH pre-requisites for both BIOL 190 and CHEM 121 need to be up-graded, streamlined and implemented, cf **Appendix 5, Exhibit A** and **Appendix 6, Exhibit B**, in accordance with WNC Policy 3-2-1 (**Appendix 7, Exhibit C**), beginning Fall 2020.

WNC Full-Time BIOL/CHEM faculty have e-agreed to the proposed MATH pre-requisite changes: E-Subject Heading: MATH Pre-Req's for BIOL 190 and CHEM 121, Mar 13, 2019, 11:47 AM; Mar 13, 2019, 12:06 PM; Mar 13, 2019, 12:33 PM; Mar 13, 2019, 2:24 PM; and Mar 15, 2019, 6:11 PM.

Acknowledgements

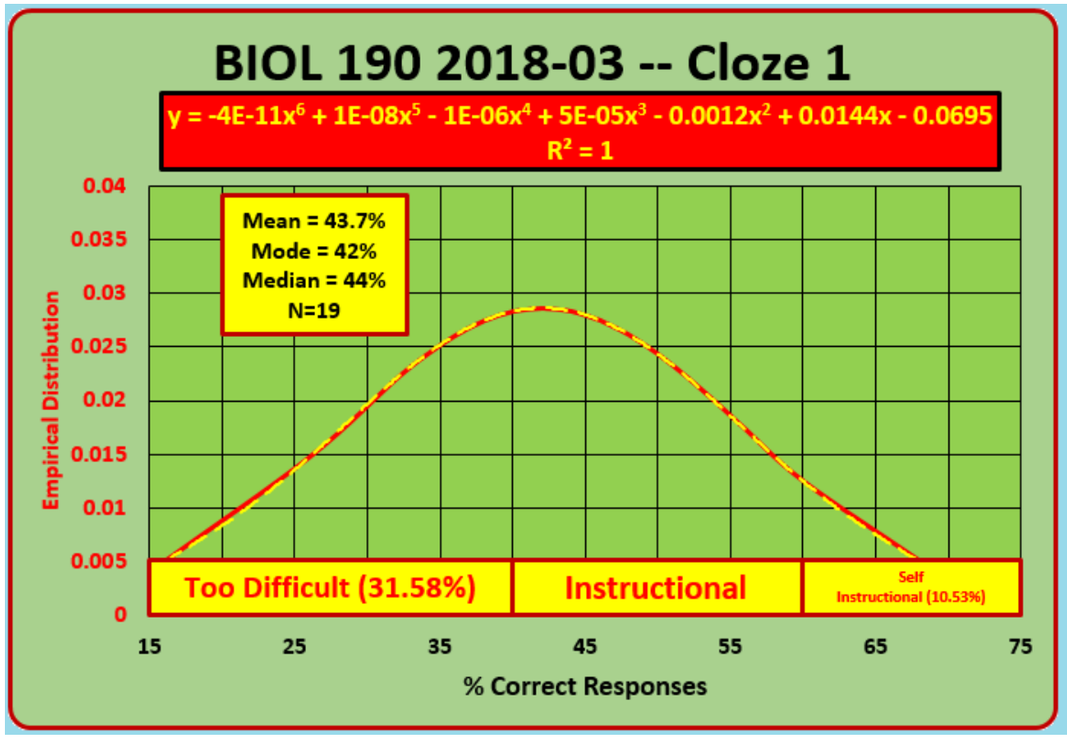
The author thankfully acknowledges the following individuals, without whose assistance this report would not have been as painlessly compiled: Ms. Cathy Fulkerson, WNC-IR, Ms. Piper McCarthy, WNC-Director of Counseling, Dr. Gary Evett, Professor of Biophysical Sciences, Dr. Robert Morin, Professor of Political Science and Ms. Rachelle Bassen, Instructor of Biological Sciences.

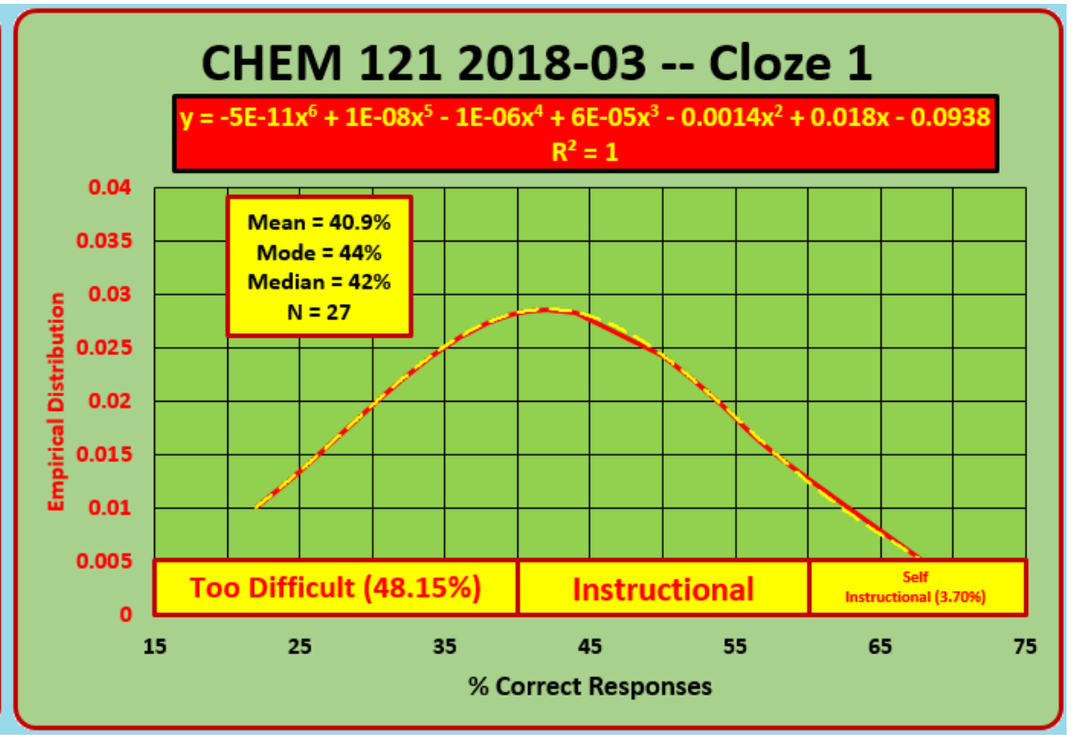
In addition, the author gratefully acknowledges the full-time academic faculty in the BIOL/CHEM Departments: Dr. Gary Evett, Dr. Elizabeth Tattersall, Dr. Smriti Bhattarai and Ms. Rachelle Bassen. Without their active e-participation, the proposed alterations to the pre-requisites for BIOL 190 and CHEM 121 would not have been made possible.

The author especially acknowledges the assistance from, and stimulating conversations with, Professor of Biology Emeritus James Conkey.

Appendix 1: Figure 1

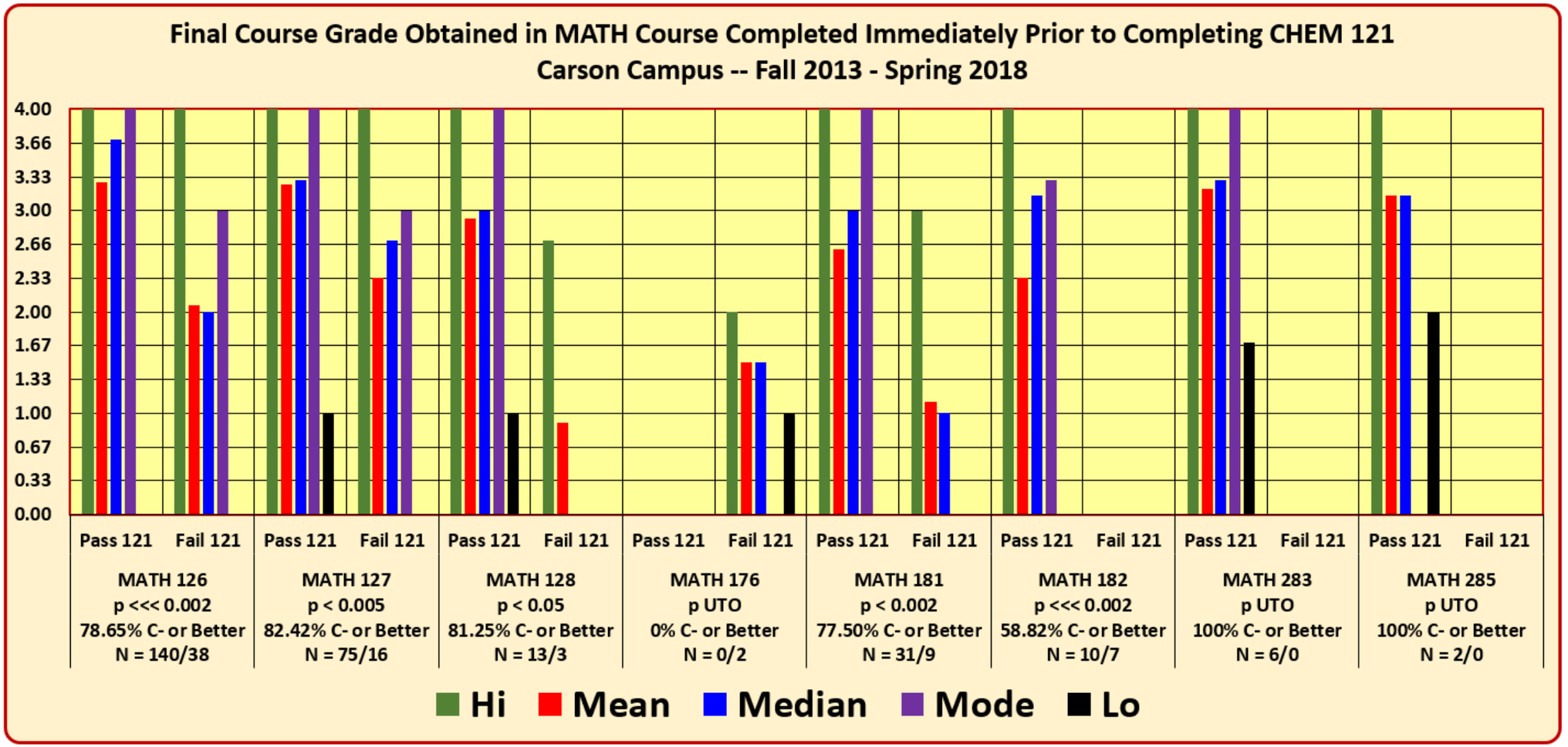
Cloze results from Carson Campus ONLY BIOL 190/L and CHEM 121 2018-03.


BIOL 190 2018-03 -- Cloze 1
y = -4E-11x^6 + 1E-08x^5 - 1E-06x^4 + 5E-05x^3 - 0.0012x^2 + 0.0144x - 0.0695
R² = 1
Mean = 43.7%
Mode = 42%
Median = 44%
N=19
Empirical Distribution
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Too Difficult (31.58%)
Instructional
Self Instructional (10.53%)
15
25
35
45
55
65
75
% Correct Responses


CHEM 121 2018-03 -- Cloze 1
y = -5E-11x^6 + 1E-08x^5 - 1E-06x^4 + 6E-05x^3 - 0.0014x^2 + 0.018x - 0.0938
R² = 1
Mean = 40.9%
Mode = 44%
Median = 42%
N = 27
Empirical Distribution
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Too Difficult (48.15%)
Instructional
Self Instructional (3.70%)
15
25
35
45
55
65
75
% Correct Responses

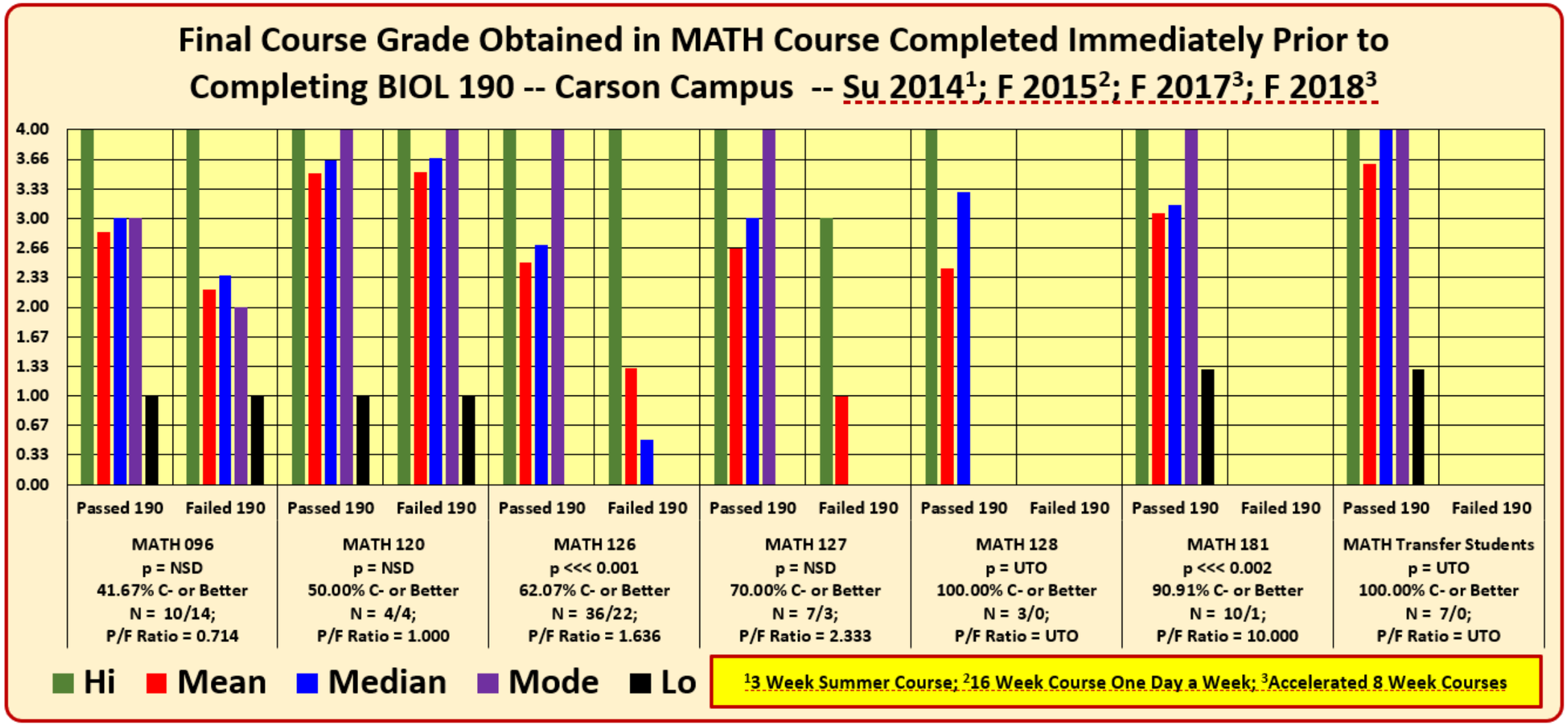
Appendix 2: Figure 2

Final MATH Course Grades Immediately Prior to Completing CHEM 121 – 2013-03-2018-01 – Carson Campus ONLY.


Final Course Grade Obtained in MATH Course Completed Immediately Prior to Completing CHEM 121
Carson Campus -- Fall 2013 - Spring 2018
4.00
3.66
3.33
3.00
2.66
2.33
2.00
1.67
1.33
1.00
0.67
0.33
0.00
Pass 121
Fail 121
MATH 126
p <<< 0.002
78.65% C- or Better
N = 140/38
MATH 127
p < 0.005
82.42% C- or Better
N = 75/16
MATH 128
p < 0.05
81.25% C- or Better
N = 13/3
MATH 176
p UTO
0% C- or Better
N = 0/2
MATH 181
p < 0.002
77.50% C- or Better
N = 31/9
MATH 182
p <<< 0.002
58.82% C- or Better
N = 10/7
MATH 283
p UTO
100% C- or Better
N = 6/0
MATH 285
p UTO
100% C- or Better
N = 2/0
Hi
Mean
Median
Mode
Lo

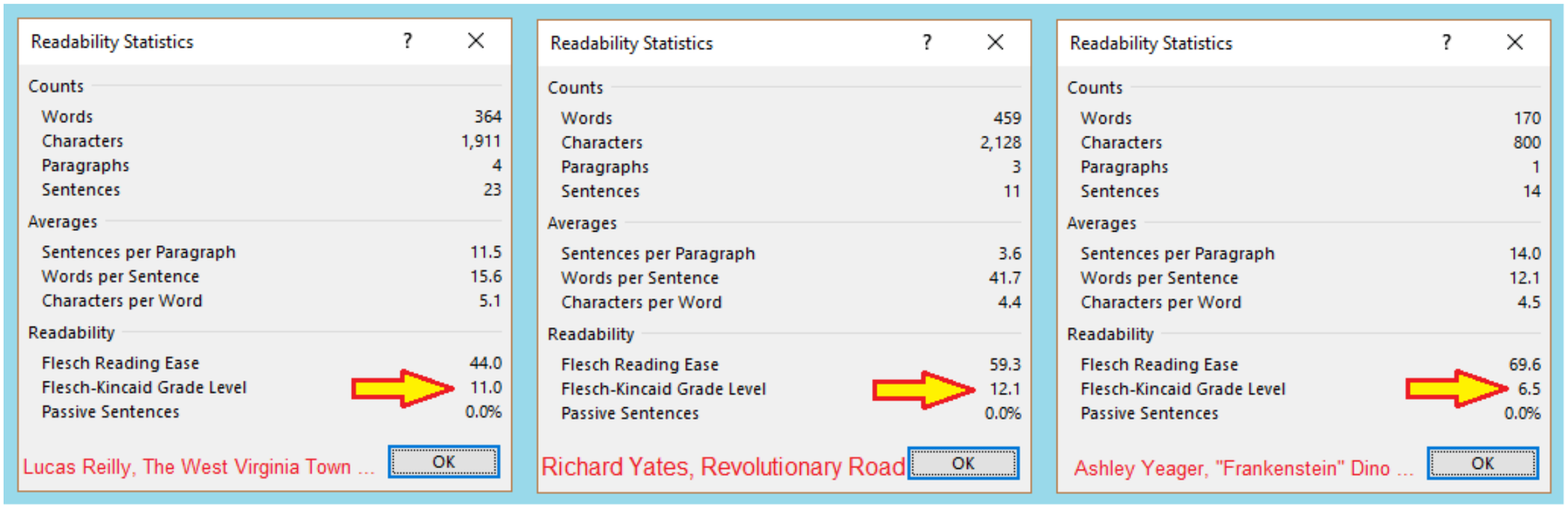
Appendix 3: Figure 3

Final MATH Course Grades Immediately Prior to Completing BIOL 190/L – 2013-03-2018-01 – Carson Campus ONLY.


Final Course Grade Obtained in MATH Course Completed Immediately Prior to Completing BIOL 190 -- Carson Campus -- Su 2014[1]; F 2015[2]; F 2017[3]; F 2018[3]
4.00
3.66
3.33
3.00
2.66
2.33
2.00
1.67
1.33
1.00
0.67
0.33
0.00
Passed 190
Failed 190
MATH 096
p = NSD
41.67% C- or Better
N = 10/14;
P/F Ratio = 0.714
MATH 120
p = NSD
50.00% C- or Better
N = 4/4;
P/F Ratio = 1.000
MATH 126
p <<< 0.001
62.07% C- or Better
N = 36/22;
P/F Ratio = 1.636
MATH 127
p = NSD
70.00% C- or Better
N = 7/3;
P/F Ratio = 2.333
MATH 128
p = UTO
100.00% C- or Better
N = 3/0;
P/F Ratio = UTO
MATH 181
p <<< 0.002
90.91% C- or Better
N = 10/1;
P/F Ratio = 10.000
MATH Transfer Students
p = UTO
100.00% C- or Better
N = 7/0;
P/F Ratio = UTO
Hi
Mean
Median
Mode
Lo
[1]3 Week Summer Course; [2]16 Week Course One Day a Week; [3]Accelerated 8 Week Courses

Appendix 4: Figure 4

Flesch-Kincaid and Flesch Analyses of Accuplacer's "Next Generation" Reading Placement "Sample" Accessed 21 March 2019, ca 1057 hours, PDT.



https://accuplacer.collegeboard.org/sites/default/files/next-generation-sample-questions-reading.pdf

Accessed 21 March 2019, ca 1048 hours, PST

Appendix 5: Exhibit A

WNC Articulation Form: Proposed BIOL 190 MATH pre-requisite changes

Western Nevada College
Articulation Form

Date: _ 13 Mar 2019____ Semester for action to occur: _2020-03_____

Check one:
New course ___ Change to existing course _XXX__ Deactivate course ____ Reactivate course _____

Add Campus ____

Course prefix & number: ___BIOL 190_____ Credits __4____

If deactivating a course, STOP, the form is complete and ready for signatures and submission.

If change to existing WNC course, list change(s) requested:
Note: If title change, list a short title (25 character maximum) and long title (40 character maximum)

Change the current BIOL **190** MATH pre-req statement …
FROM:
Prerequisite: Math 96 or higher (excluding Math 120) with a grade of C- or better or corequisite of Math 126 or higher or appropriate score on the WNC placement or equivalent test and corequisite of Biology 190L
TO:
Pre-requisite: MATH 126 or higher (or equivalent) with a grade of C or better.

If new course, fill out the remainder of this form.

Short Title:_____(25 characters maximum)

Long Title: _____ (40 characters maximum)

Prerequisite(s): __ __

If credits can be repeated towards a degree/certificate, maximum number of credits: ____

Letter grade ____ or Pass/Fail ____ If cross-listed with another course, list other course: _____

Should the course be published in the WNC catalog? _Yes_____ Division: _Liberal Arts_____

For new courses:
a) It is strongly advised that you speak with or email your campus librarian so materials to support the course may be purchased (see articulation instructions for information).

b) A course outline must be attached (see WNC outline template for required information).

_____
Individual Submitting Form Date

Signing this document as Division Director confirms that all faculty who teach in this discipline or whose program will be affect by this course have been consulted and a consensus approves of this proposal.

_____
Liberal Arts Division Director Date

_____
VP of Academic & Student Affairs Date

_____
Articulation/Curriculum Chair Date

CIP Code _____ Entered by _____ Date Entered _____

11/19/07

Appendix 6: Exhibit B

WNC Articulation Form: Proposed CHEM 121 MATH pre-requisite changes

Western Nevada College
Articulation Form

Date: _ 13 Mar 2019____ Semester for action to occur: _2020-03_____

Check one:
New course ___ Change to existing course _XXX__ Deactivate course ____ Reactivate course _____

Add Campus ____

Course prefix & number: ___CHEM 121_____ Credits __4____

If deactivating a course, STOP, the form is complete and ready for signatures and submission.

If change to existing WNC course, list change(s) requested:
Note: If title change, list a short title (25 character maximum) and long title (40 character maximum)

Change the current CHEM 121 MATH pre-req statement …
FROM:
Prerequisite: MATH 126 or higher with a grade of C or better OR appropriate score on the WNC placement or equivalent test.
Recommended Prerequisite for students who intend to enroll in CHEM 122: MATH 126 &127 or MATH 128.
TO:
Pre-requisite: MATH 126 or higher (or equivalent) with a grade of C or better;
Co-requisite: MATH 127 or 128 or higher (or equivalent) with a grade of C or better for students who intend to enroll in CHEM 122.

If new course, fill out the remainder of this form.

Short Title:_____(25 characters maximum)

Long Title: _____ (40 characters maximum)

Prerequisite(s): __ __

If credits can be repeated towards a degree/certificate, maximum number of credits: ____

Letter grade ____ or Pass/Fail ____ If cross-listed with another course, list other course: _____

Should the course be published in the WNC catalog? _Yes_____ Division: _Liberal Arts_____

For new courses:
a) It is strongly advised that you speak with or email your campus librarian so materials to support the course may be purchased (see articulation instructions for information).

b) A course outline must be attached (see WNC outline template for required information).

_____
Individual Submitting Form Date

Signing this document as Division Director confirms that all faculty who teach in this discipline or whose program will be affect by this course have been consulted and a consensus approves of this proposal.

_____
Liberal Arts Division Director Date

_____
VP of Academic & Student Affairs Date

_____
Articulation/Curriculum Chair Date

CIP Code _____ Entered by _____ Date Entered _____

11/19/07

Appendix 7: Exhibit C

WNC Policy 3-2-1: Course Approval; Sections 1 and 2, Excerpted.

Accessed 21 March 2019, ca 1155 hours PDT

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- Section 1: Approvals
    - A. A course can be offered for academic credit only if the appropriate forms have been submitted to and approved by the Curriculum Committee.
    - B. Course changes including prefix, number, units, title, prerequisite, corequisite, and course descriptions must be approved by the Curriculum Committee.
    - C. New course reactivations, course changes, and course deactivations will be put into the student records system and published online and in publications only after the appropriate paperwork has been submitted to and approved by the Curriculum Committee.

- Section 2: Instructions for Submission
    - A. Faculty, an administrator or staff member must submit articulation and common course numbering forms with a course outline to the Admissions and Records or other designated representative on the Curriculum Committee for new courses, course changes, and course deactivations. Proposals to changes to course descriptions, prerequisites or corequisites only may be submitted in writing without the forms. Course outlines are not required for course deactivations.
    - B. Prior to submission of the forms, per NSHE common course numbering regulations, an email must be sent to the appropriate contacts at all NSHE institutions regarding the proposed course or course changes (except for changes to descriptions, prerequisites and corequisites). The email must be sent per common course guidelines and approval or no objection must be granted from each NSHE institution.
    - C. If necessary, forms are sent back to the individual initiating the request for corrections. The articulation form must contain all required signatures before a vote of the Curriculum Committee shall take place.
    - D. The Curriculum Committee reviews all requests. If approved, the Admissions and Records or designated representative sends the Common Course Numbering form to the NSHE system office. Once NSHE approves, the course and/or course changes are entered into the student records system by Admissions and Records and may be published online and/or in the catalog.
    - E. Requests for titles for Special Topics classes that are to appear on student transcripts must go through the Curriculum Committee for approval.