WORKFORCE PROGRAM REVIEW

REV. 10-05-2017

PROGRAM NAME: BIOTECHNOLOGY **PROGRAM REVIEW CONTACT:** DAVID L. MCCULLOCH

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GUIDELINES

Time Frames:

1. **Scope**:
   The time frame of program review is five years, including the year of the review.
   Data being reviewed for any item should go back the previous four years, unless not available.
2. **Deadline Dates**:
   January 15th – Program Review Document due to Department Dean for review
   February 1st – Program Review Document due to Program Review Steering Committee
3. **Years:**
   Years 1 & 3 – Implement Action Plan of (CIP) and collect data
   Years 2 & 4 – Analyze data and findings, Update Action Plan
   Year 5 – Write Program Review of past 4 years; Write Continuous Improvement Plan (CIP) and create new Action Plan

LENGTH OF RESPONSES: Information provided to each question may vary but should be generally kept in the range of 1-2 pages.

EVIDENCE GUIDELINES: In the following sections, you will be asked to provide evidence for assertions made.

a. **Sources**: This evidence may come from various sources including professional accreditation reviews, THECB, Texas Workforce Commission's CREWS, Institutional Research Office (IRO), National Student Clearinghouse, IPEDS, JobsEQ, EMSI Career Coach, and may be quantitative and/or qualitative. If you are unfamiliar with any of these information sources, contact the Institutional Research Office at: effectiveness@collin.edu. Use of additional reliable and valid data sources of which you are aware is encouraged.

b. **Examples of Evidence Statements**:
   1. Poor example: Core values are integrated into coursework. (Not verifiable)
   2. Good example: Core values are integrated into coursework through written reflections. (Verifiable, but general)
   3. Better example: Core values are integrating into coursework through written reflections asking the student to describe how s/he will demonstrate each of the core values in his or her professional life and demonstrated through service learning opportunities. (Replicable, Verifiable)
   4.

FOR MORE INFORMATION: Documentation can be found at http://inside.collin.edu/institutionaleffect/Program_Review_Process.html. Any further questions regarding Program Review should be addressed to the Institutional Research Office (effectiveness@collin.edu, 972.985.3714).

Section I. *Are We Doing the Right Things?*

1. WHAT DOES YOUR WORKFORCE PROGRAM DO?

A. What is the program and its context?

Collin's Biotechnology Program prepares students for entry level positions in biological research and industrial laboratories. Returning students can also benefit from the new methods and technologies related to agriculture, medicine, pharmaceuticals, and other applications. The program only offers a level-2 certificate now, but will add a level-1 certificate in fall 2018. The available jobs typically prefer BS degrees, so these certificates provide skills that enable students to work in labs while pursuing a BS. All but three courses will transfer.

B. Executive summary: briefly summarize the topics that are addressed in this self-study, including areas of strengths and areas of concern.

The Biotechnology Program is small. It struggles to achieve the THECB standard for completers. Course offerings are mostly academic and most students seeking a Biotechnology certificate intend to obtain a BS degree. Enrollment in transferrable courses is strong and sustainable. The faculty is excellent and engaged in continuous improvement. Due to the nature of the certificate having more articulation agreements is a goal of the program. A strength is the close alignment with other programs in the state, notably Austin Community College and Del Mar College.

2. WHY DO WE DO THE THINGS WE DO: PROGRAM RELATIONSHIP TO THE COLLEGE MISSION, CORE VALUES & STRATEGIC PLAN.

Provide program-specific evidence of actions that document how the program supports the College's mission statement:

Students in the program work with area employers to solve problems related to molecular biology, an emerging discipline. They do research in our labs that is displayed in poster presentations at national conferences. The faculty are active in the state-wide Bio-Link effort and collaborate with other programs in Texas to keep information current.

Provide program-specific evidence of actions that support the case that the program and its faculty contribute to fulfillment of the College's core values:

The program is supported by the Biotechnology Club that provides financial support to students. Students participate in research projects and occasionally make presentations. Recently, Lydia Flores and Britt Int-Hout presented their research on the phage NoodleTree at the SEA-PHAGES symposium in June 2017 at the HHMI Janelia Research Campus outside of Washington, D.C. Lydia Flores and Elena Dike presented the annotation of the phage BQuat at the Community College Undergraduate Research Initiative (CCURI) in Austin on November, 2017.

Provide program-specific evidence that documents how the program supports the College's strategic plan:

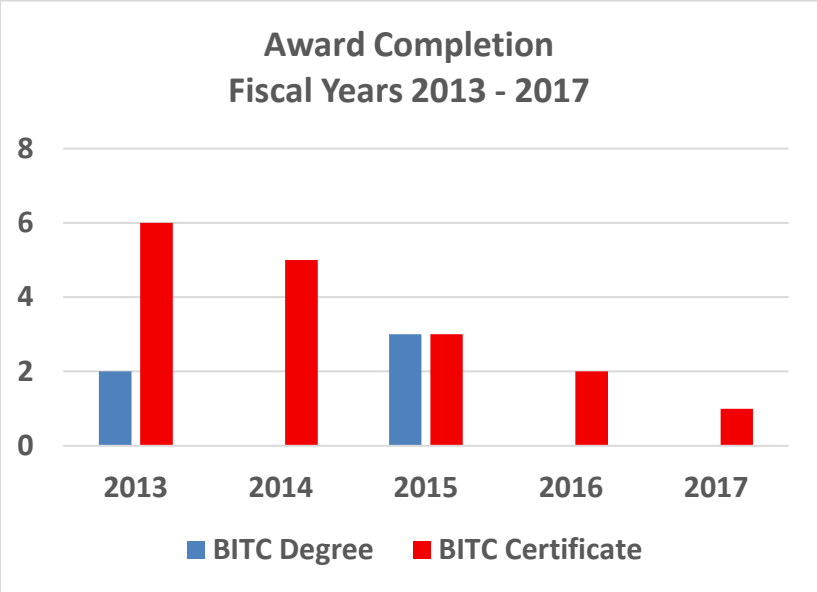
Priority 3. Emphasize Student Achievement and Streamline Pathways to Four Year College and Universities: The program has developed articulation agreements with Texas A&M-Texarkana and Texas A&M-Central Texas, and works with other Biotechnology programs in the state to ensure that knowledge is up-to-date and transferrable as far as allowed to bachelorette degree programs.

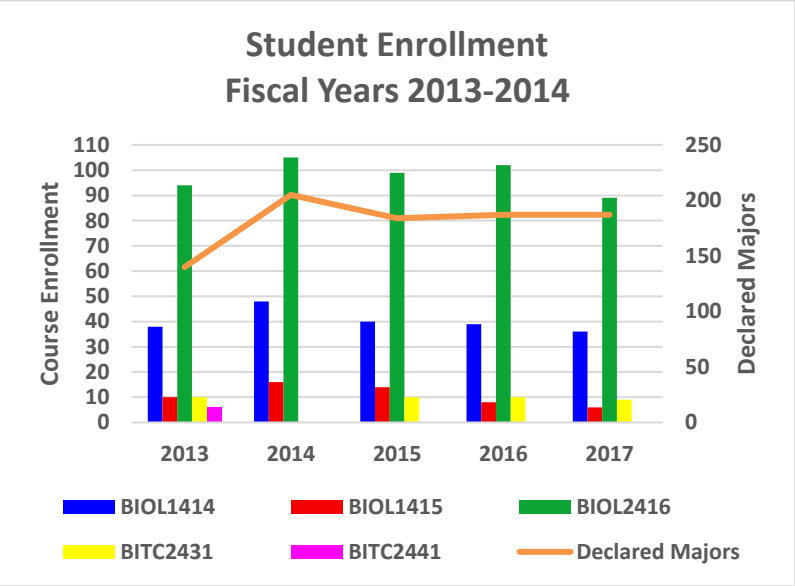
Priority 4. Expand Career and Technical Programs…: Market demand has not created expansion in the Biotechnology program, but student research projects solve problems for current employers and create an atmosphere of cooperation that helps publicize Collin College as an innovative resource for employers.

3. WHY WE DO THE THINGS WE DO: PROGRAM RELATIONSHIP TO STUDENT DEMAND

Make a case with evidence to show that students want the Degree or Certificate, and are able to complete the program.

Within the last five years 17 students were awarded a certificate and 5 a degree (apps. 2a & 2b). While the number of students receiving a Biotechnology Certificate has declined in recent years, over the last four years there have been on average 100 students each semester with Biotechnology as a declared major (app. 1b). During this same time period participation in Biotechnology's core biology courses of 1414, 1415, and 2416 has remained steady, with no sections cancelled due to lack of enrollment (app. 1a). One section of BITC 2431 has made each year except for 2014. This clearly shows the program is in demand. Part of the decline in award completions may be due in part to the recent uncertainty of BIOL 1414 and 1415 as part of the ACGM. That issue has been resolved (app. 1c).
Identifying students prior to enrollment is difficult, since the introductory courses do not have prerequisites and students often self-enroll into the courses/program. Students enrolling on campus are directed to the Biotechnology Program Director for further advising. Many students are recruited through taking BIOL 2416 Genetics and their interest in the information/techniques associated with the course. Another recruitment tool is to market BIOL 1414 to new students as an alternative to BIOL 1406 to fulfil the science requirement. Once enrolled, students become interested in taking other biotechnology courses and working towards the certificate. The Biotech club holds events at student organization fairs and other events on campus to increase awareness of our program and courses.





4. WHY WE DO THE THINGS WE DO: PROGRAM RELATIONSHIP TO MARKET DEMAND

Make a case with evidence to show that employers need and hire the program's graduates.

58% of program completers from fiscal years 2012-2016 were employed in the fourth quarter of the year following completion with an average median 4th quarter wage of $4,868 (app. 3). The majority of biotechnology related jobs in the DFW Metroplex do require a baccalaureate degree. To encourage certificate completers to pursue a B.S., articulation agreements for BIOL 1414 and 1415 were formed with Texas A&M University – Texarkana (app. 7). Future articulation agreements are being negotiated with TAMU-Corpus Christi, TAMU-Commerce, TAMU-Central Texas, and UNT-Biochemistry. While there are no comparable programs in the DFW Metroplex, there are four in the State of Texas. Our programs align closely (see 5C), with the exception that we offer only a certificate and the others offer an AAS as well. Program completers should expect to receive double the salary of someone with only a high school degree. Our program serves many BS degree holders who are returning to college to acquire job related biotechnology skills to increase their marketability. Biotechnology is a growing field across the nation and we try to keep up with trends in the field, such as stem cell technologies. In addition, we are part of a nation-wide group, Bio-Link that allows us to stay current with national trends; we have been a member of BioNorth Texas as they are a biotech commerce organization which is trying to encourage industry growth into the metroplex. We continue to stay in touch with them, but don't feel that membership is worthwhile as they are currently reorganizing. We also have an advisory board. We are current with what we teach, both for basics and advanced technologies. The metroplex doesn't have the same diversity as is present across the rest of the state, but we equip students with the necessary skills that are needed now.

Section II. Are We Doing Things Right?

5. HOW EFFECTIVE IS OUR CURRICULUM, AND HOW DO WE KNOW?

A. Make a case with evidence that there are no curricular barriers to completion. Review data related to course enrollments, course retention rates, course success rates, and the frequency with which courses are scheduled to identify barriers to program completion.

There are no curricular barriers to completion in the Biotechnology Program. BIOL 1406, 1414 and CHEM 1411 are taught each full semester, with BIOL 1415 taught every spring semester. Two sections of BIOL 2416 are offered each full semester. BITC courses are offered as needed to allow degree completion. In addition, BIOL 2416 and BITC 2386 allow substitutions to the degree plan if enrollment in them is not possible (app. 8). The average success rate of BIOL 1414 is significantly higher ($p<0.01$) than that of BIOL 1406 (app. 6). This trend towards a higher success rate by students in the biotechnology area continues in both BIOL 1415, 2416, and BITC 2431. The data indicates that the longer students are in the Biotechnology Program, the better they perform academically.

B. Show evidence that the THECB standards listed below have been met. For any standard not met, describe the plan for bringing the program into compliance.

1. **Credit Hour Standard: There are no more than 60 credit hours in the program plan.**
   NA

2. **Completers Standard: Average 25 completers over the last five years or an average of at least five completers per year.**

   To help increase the number of students enrolled in the program, we have implemented a level I certificate. Following the example of Austin Community College, it will allow high schools offering dual credit to complete a certificate before graduation. This will encourage students who take biotech as a science requirement to complete the program as it only requires an internship and online QA/QC course. It provides students with marketable skills for basic lab techniques; many of which aren't provided by a B.S. in biology. We will also go back and recruit students who have already completed two courses to go ahead and finish the certificate. The level 1 certificate is a good post-bac endorsement to ready students for the workforce. The level I and advanced certificates are stackable.

3. **Licensure Standard: 90% of test takers pass licensure exams.**

   While no such licensure exam exists, we are working with ACC to create a third-party certificate examination, similar to the one used in Florida that will evaluate basic laboratory skills. The exam will be used as a capstone readiness assessment before students are allowed to enroll in their internship course, which is usually the last course in the certificate.

4. **Retention Standard: 78% of students enrolled in program courses on the census date should still be enrolled on the last class day (grades of A through F).**

   There is no significant difference (p=0.27) in the average completion rate for the core science courses in the program. All are above 78% (app. 6).

Biotechnology Course Completion Average 2013-2017	
Course	**Percent**
BIOL1406	**89.7**
BIOL1414	**89.4**
BIOL1415	**89.5**
BIOL2416	**93.5**
CHEM1411	**91.4**

C. Make a case with evidence that the program curriculum is current.

When the Level II Certificate Program at Collin College is compared to programs at Austin Community College (ACC) and Del Mar Community College (DMCC), the introductory science course work requirements are identical. All require BIOL 1406, 1414, 1415, and CHEM 1411. While their programs do require freshman level BITC course work (i.e., BITC 1340 and 1403) they we do not presently offer, much of the material covered in these courses would be in BIOL 2416, which is part of our program. Due to an advisory committee request, BITC 1340 Quality Assurance, will be added to our certificate requirements. Other Collin College BITC offerings (i.e., BITC 2386, 2431, and 2441) do have equivalent courses. A distinct difference between programs is the total number of credit hours. We require a total of 27 credit hours while ACC and DMCC require 44 and 36 total credit hours respectively. However, much of this difference is due to their requirement of MATH 1314, ENGL 1301 & 1302, and SPCH 1315. Students that enter our program are required to be TSI complete. Articulation agreements for BIOL 1414 and 1415 exist with Texas A&M University – Texarkana. Future articulation agreements are being negotiated with TAMU-Corpus Christi, TAMU-Commerce, TAMU-Central Texas, and UNT-Biochemistry.

Level II Certificate Requirements					
Collin College		**Austin Community College**		**Del Mar Community College**	
BIOL 1406 Biology of Science Majors I	4	BIOL 1406 Cellular and Molecular Biology[1]	4	BIOL 1406 Biological Concepts I: Cellular and Molecular	4
BIOL 1414 Introduction to Biotechnology I	4	BIOL 1414 Introduction to Biotechnology	4	BIOL 1414 Introduction to Biotechnology	4
BIOL 1415 Introduction to Biotechnology II	4	BIOL 1415 Introduction to Biotechnology II	4	BIOL 1415 Introduction to Biotechnology II	4
BIOL 2416 Genetics	4				
No equivalent course		BITC 1340 - Quality Assurance for the Biosciences	3		
No equivalent course				BITC 1403 Principles of Biochemistry	4
No equivalent course		BITC 1471 - Undergraduate Research	4		
BITC 2386 Internship-Biology Technician/Biotechnology Laboratory Technician (Capstone)	3	BITC 1491 Special Topics in Biological Technology/Technician (Capstone)	4	BITC 2386 Internship-Biology Technician/Biotechnology Laboratory Technician (Capstone)	3
				BITC 2411 – Biotechnology Lab Instrumentation[3]	
BITC 2431 - Cell Culture Techniques	4	BITC 2431 - Cell Culture Techniques	4	BITC 2431 - Cell Culture Techniques	4
BITC 2441 - Molecular Biology Techniques[2]		BITC 2441 - Molecular Biology Techniques	4	BITC 2441 - Molecular Biology Techniques[3]	
CHEM 1411 General Chemistry I	4	CHEM 1311 & 1111 General Chemistry I Lec/Lab	4	CHEM 1405 Introductory Chemistry I or CHEM 1411 General Inorganic Chemistry I	4
TSI complete		MATH 1314 College Algebra	3	MATH 1314 College Algebra	3
TSI complete		ENGL 1301 English Composition I	3	ENGL 1301 Composition I	3
TSI complete		ENGL 1302 English Composition II or ENGL 2311 Technical and Business Writing	3		
				SPCH 1315 Fundamentals of Public Speaking	3
Total Credit Hours	27	Total Credit Hours	44		36

1. *May substitute BIOL 1408 Biology for Non-Science Majors*
2. *may substitute for BITC 2386*
3. *may substitute for BITC 2431*

D. Present evidence from advisory committee minutes, attendance, and composition that the advisory committee includes employers who are actively engaged on the committee and who are representative of area employers.

There are 15 employers on the advisory committee. Seven attended the last meeting. In the past 4 years the committee advised on course content, suggested the addition of QA/QC, offered tours, acted as guest lecturers, and provided internships. Minutes from the last few meetings were lost. Local industry, universities, and research institutes are included in the Advisory Committee roster (see 7B).

E. For any required program courses where there is a pattern of low enrollment (fewer than 15 students), explain your plan to grow enrollment and/or revise the curriculum.

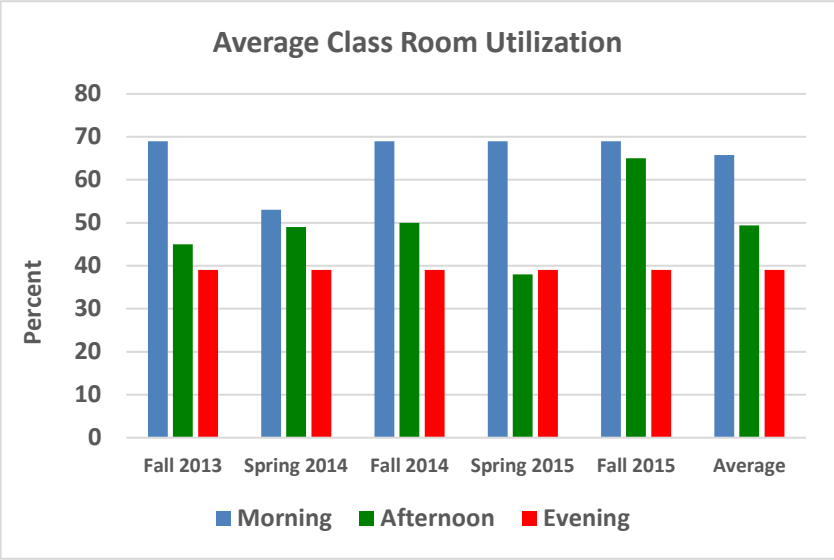
BIOL 1415 has a pattern of low enrollment. See 5B for a plan to grow enrollment.

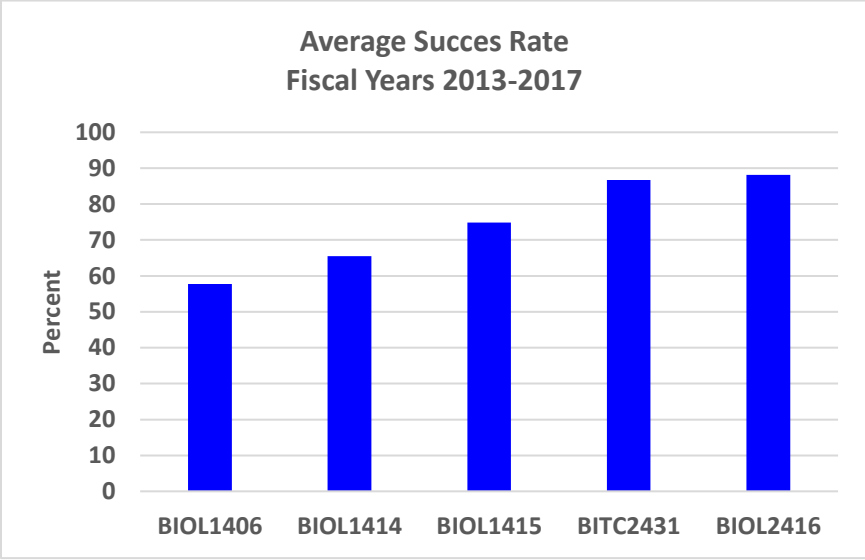
F. Make the case with evidence that the required courses in the program are offered in an appropriate sequence and at appropriate intervals to enable students to complete "on time" for students enrolled full-time and following the degree plan.

BIOL 1406, 1414 and CHEM 1411 are taught each full semester, with BIOL 1415 taught every spring semester (app. 1a). In addition, BIOL 1406 and CHEM 1411 are offered during summer terms. BIOL 1414 and 1415 can be taken concurrently in the spring by students unable to start the program at the beginning of the academic year. Two sections of BIOL 2416 are offered each full semester. BITC courses are offered as needed to allow degree completion.

G. Make a case with evidence that the program is well managed.

All courses in the Biotechnology Program are taught by fulltime faculty or staff. Fulltime faculty teach all the daytime sections of BIOL 1414, 1415, and 2416, with fulltime staff teaching the lone evening section of BIOL 2416. The average class size for BIOL 1414, 1415, 2416, and BITC 2431 are all significantly lower ($p<0.05$) that BIOL 1406 (app. 4). This is not surprising since BIOL 1406 has several large sections taught in an auditorium style class room. Although average class size is lower, enrollment is sufficient to maintain the current class schedule. Class room utilization indicates that I105 is most heavily used (~70%) during the mornings, Monday through Thursday (app. 5). Average utilization decreases as the day proceeds. Although there are open blocks of time during the week and especially on Fridays, these are used extensively by students and CASMNS faculty to conduct research. Both BIOL 1406 and 1414 have average success rates below 75%. This is not unusual for first semester introductory courses for science majors in which students generally have a poor science background. It is important to note, that although the average success rate of BIOL 1414 is less than 75%, it is significantly higher ($p<0.01$) than that of BIOL 1406. This trend toward a higher success rate by students in the biotechnology area continues in both BIOL 1415, 2416, and BITC 2431. The data indicates that the longer students are in the Biotechnology Program, the better they perform academically.





6. How effectively do we communicate, and how do we know?

A. Provide website URLs (for both the program website and the catalog information posted by the Curriculum Office): If no program website is available, describe plans for creation of website.

At present there is no program website. We are going to approach Gary Evans in graphic design for a student project to work on a website.

B. Make a case with evidence that the program literature and electronic sites are current, provide an accurate representation of the program, and support the program's recruitment plan, retention plan and completion plan.

We will approach De'Aira Holloway in advising to increase student awareness of the program; we will work with Scott Hensley about developing a new brochure. The current brochure is attached as appendix 9.

C. Describe the process used to keep all program literature (course descriptions, degree plans, catalog entries, etc.) and electronic sites updated and aligned with College literature and sites.

Carole and Bridgette will communicate with Heather Webb-Losch and Rajesh Michael to keep program literature and electronic sites updated.

D. In the Program Literature Review Table, below, document that the elements of information listed on the website and in brochures (current academic calendars, grading policies, course syllabi, program handouts, program tuition costs and additional fees, description of articulation agreements, availability of courses and awards, and local job demand in related fields) were verified for currency, accuracy, relevance, and are readily available to students and the public.

Program Literature Review Table*

Title	Type	Date of Last Review/Update		Responsible Party
Collin College Catalog 2017-2018 - Course Descriptions	URL	11/8/17	☒ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College
Collin College Catalog 2017-18 - Level II Certificate	URL	9/14/17	☒ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College
Collin College Catalog 2017-2018 Technical Programs and Certificates	URL	1/5/18	☒ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College
Collin College Catalog 2016-2017 - Degree Program Awards	URL	5/5/17	☒ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College
Collin College Catalog 2015-2016 - Natural Sciences General Education Options	URL	4/5/16	☒ Current ☒ Accurate ☒ Relevant ☒ Available	vstone@collin.edu
Collin College News Release - Articulation Agreement Creates Clear Pathways For Students To Achieve Higher Education Goals	URL	5/24/16	☒ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
TAMUT University News - A&M-Texarkana and Collin College Sign Partnership Agreement	URL	5/26/16	☒ Current ☒ Accurate ☒ Relevant ☒ Available	TAMU Texarkana
Collin College News - Achieving Scientific Fluency	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu

Collin College News - Students and Professors Publish Research	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
Collin College News - Summer Trips To Write Home About	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
Collin College News - Surfing in the Summer	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
Collin College News - Former Collin College Student Uses Biotechnology Skills	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
Collin College News - Biotechnology: Science that impacts people's lives	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
Collin College News - Student Hits The 'SURF'	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
Collin College News - Outstanding Students 2010-2011	URL	5/22/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	rmichael@collin.edu
Collin College Human Resources 2015-2016 - The Lebrecht Endowed Chair for Scholarly and Civic Engagement	URL	11/30/2015	☐ Current ☒ Accurate ☒ Relevant ☒ Available	jconley@collin.edu
Collin College - Foundation News & Events - Frisco Couple Donates $2 Million For Scholarships	URL	5/28/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	jstober@collin.edu
Collin College Community and Alumni, Where Are They Now? - Educational Clairvoyance and Parkinson's Disease	URL	6/34/14	☐ Current ☒ Accurate ☒ Relevant ☒ Available	jstober@collin.edu
Collin College Community Newsletter, Where Are They Now? - Educational Clairvoyance and Parkinson's Disease	URL, Newsletter	2011	☐ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College

Collin College 25th Anniversary Commemorative Anthology - Niclas C. Tan, Ph.D. Scientist, Millennium Pharmaceuticals	URL, Book	2010	☐ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College
Collin College, Find Your Future - Academic & Workforce Studies	URL, Brochure	2017	☐ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College
Journey to College - Global EDGE Tech Prep Consortium at Collin College - Getting there in two years	URL, Brochure		☐ Current ☒ Accurate ☒ Relevant ☒ Available	Global EDGE Tech Prep Consortium at Collin College
Collin College Biotech Club Facebook page	URL	11/16/16	☐ Current ☒ Accurate ☒ Relevant ☒ Available	Collin College Biotech Club @collincollegebiotechclub
HHMI Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science program	URL	1/1/18	☐ Current ☒ Accurate ☒ Relevant ☒ Available	HHMI Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science program
Biotechnology – Collin College	Pamplet	11/1/17	☒ Current ☒ Accurate ☒ Relevant ☒ Available	Carole Twichell

7. How well are we leveraging partnership resources and building relationships, and how do we know?

A. Make a case that the program enlists business, industry, government, college, university, community, and/or consultant partnerships to advance the program outcomes.

We maintain good relationships with our industry partners through internships and collaboration during advisory board meetings. We invite industry and research representatives to speak to our students both at in-class and community events. Advisory board members have offered facility tours to our classes. We partner with UNT to image student-discovered viruses using their electron microscope. We increase our community presence by sharing curriculum and materials with local high schools through our Biotech-in-a-Box program. Our Biotech Club holds fundraisers to partially fund travel to research events for our students to increase their feeling of scientific community and confidence through presenting their own research. We have introduced a campus-wide research presentation day (Collin STEM Research Symposium) to offer biotech and research students the opportunity to present their research to a wide audience.

B. Complete the Partnership Resources Table, below.

Partnership Resources Table

Partner	Representative	Description (See Points to Consider)	Briefly Describe Partnership Value to Program
Ceutical Labs	Suzanne Armand Courtland Imel	Product testing and validation company	Provide internships and are valuable advisory board partners; provide input for course content and industry relevance
Microconsult, Inc.	Bill Bryan	Product and food testing company	Our most loyal internship provider; provides input for course content and industry relevance; advisory board partner; provided a guest speaker
Food Safety Net Services (FSNS)	Ryan Welsh	Food testing company	Provider of internship opportunities
UTSW	Jerry Shay	Researcher at medical university	Internship provider; advisor for research relevancy
Texas Agrilife	Ambika Chandra	Researcher in plant genomics	Internship provider; advisor for research relevancy
Frisco ISD	Michelle Kelly	Career and Technical Education coordinator	Advisor for dual credit

Plano ISD	Karen Shepherd	High school educator	Advisor for dual credit
LAERF	Dian Smith	Researcher in wetlands ecology	Internship provider; advisory board member
Biosynthesis	Miguel Castro	Contract manufacturing company	Internship provider; advisory board member; offers facility tours
Vet PMD	Lee Bulla	Contract analysis company	Advisor for industry relevancy
High Country Toxicology	Steve Saunders	Consultant to toxicology company; testing and assay development	Advisor for research and industry relevancy; guest speaker on campus
BionorthTX	Natalie Lundstein	Commerce organization promoting growth of biotech industry in DFW area	Advisor for industry relevancy; work on Talent Committee of BionorthTX to increase awareness/opportunities for new hires

8. ARE WE HIRING QUALIFIED FACULTY AND ADJUNCTS, AND SUPPORTING THEM WELL WITH PROFESSIONAL DEVELOPMENT?

Make a case with evidence that faculty are qualified, keep current, and advance the program and the College.

Employee Name	Role in Program	Credentials	Professional Development since Last Program Review*
Bridgette Kirkpatrick	Fulltime Faculty	PhD - University of Arizona	REIL Workshop participant, November, 2017 Synthetic Biology Workshop, June, 2017 ASMCUE Presenter PARE-Prevalence of antibiotic resistance in the environment; implemented in courses and working on extension labs Member Cohort 9 of SEA PHAGES—Discovery and Bioinformatics workshops Presenter Bio-Link Summer Fellows-Team-based learning in the biotech classroom Participant Team Based Learning workshops and national meeting 2015 Biotechnology Educator's Conference; planning committee member/chair/presenter; 2002-2010 PALM Workshop Participant, June, 2009
Carole Twichell	Fulltime Faculty	MS - University of Texas at Dallas	Bio-Link Summer Fellows, Berkeley, California, June 2015 National Visiting Committee for AC2 Regional Center Grant Meeting, attended as member of leadership team, presented work on universal articulations of biotechnology programs, Austin, Texas, April 2016 Del Mar Research Mentoring Workshop, Corpus Christi, Texas, April 2016

			Bio-Link Summer Fellows, Berkeley, California, June 2016 Austin Stem Cell Workshop, Austin, Texas, July 2016 SEA-PHAGES Cohort 9, Baltimore, Maryland, June 2016 Stem Cell Production in a Regulated Workforce Workshop, North Carolina, July 2016
Sophia Hines	Associate Faculty	MS - University of Texas at Dallas	

* The Curriculum Vitae with complete professional development is included as appendix 10.

Employee Resources Table

9. DO WE SUPPORT THE PROGRAM WELL WITH FACILITIES, EQUIPMENT, AND THEIR MAINTENANCE AND REPLACEMENT, AND HOW DO WE KNOW?

Make a case with evidence that current deficiencies or potential deficiencies related to program facilities, equipment, maintenance, replacement, plans, or budgets pose important barriers to program or student success.

Classroom Utilization Table

Classroom/Lab Location	Description (i.e. Special Characteristics)	Meets Needs (Y or N) Current	For Next 5 Years	Analysis of Classroom Utilization
I105	24 seat capacity biology lec/lab	Y	Y	Currently meets the needs of the program.

Equipment/Technology Table

Significant Pieces of Equipment	Description (i.e. Special Characteristics)	Meets Needs (Y or N): Current	For Next 5 Years	Analysis of Equipment Utilization
-80˚C Freezer	Storage for cells and organisms	Y	Y	Used continuously
-20˚C Freezer	Storage for plasmids, enzymes and class prep	Y	Y	Used continuously
4˚C Deli Case	Storage for classroom materials	Y	N – has experienced mechanical trouble	Used continuously
4 Chemical Fume Hoods	Sample prep; temporary storage of hazardous materials	Y	Y	Underutilized – would be possible to reduce number to 3 and replace one with a biosafety cabinet in the classroom
4 Biological Safety Cabinets	Used for cell culture techniques and to prepare media	N – one is always non-functional	N	Functional cabinets are used every semester

2 Plant Incubators	Used to culture explants and for maintaining less-than-room temperature conditions	Y	Y	Could be used more
2 Mid-size Biological Incubators	Set at 30 and 37 degrees; used for bacterial and yeast culture	Y	Y	Used every week
Large Shaking Incubator	Set at 37 degrees for liquid cultures of bacteria	Y	Y	Used every week
2 Tissue Culture Incubators	Used for growth of mammalian cultures; one is for emergency backup or if a second temperature is required	Y	Y	Used one semester per year
Low Pressure Liquid Chromatography System	Used in Biotech II for purifications of proteins	Y	N – will be obsolete and unserviceable	underutilized
Large Capacity Refrigerated Centrifuge	Used for large-scale separations	Y	Y	Used every semester
NanoDrop Spectrophotometer	Used to determine DNA concentration	Y – currently being serviced	Y	Used weekly
Real Time PCR System	Used in Genetics to determine gene expression levels	Y	N – may wish to update	Used most semesters
4 PCR Machines	Used for DNA amplification	Y – has been recently replaced	Y	Used in every class every semester
Gel Electrophoresis Photography System	Used to document electrophoresis gels and to photograph petri dishes	Y	Y	Used in every class every semester and also by lab staff/instructors from other courses and research projects
2 Water Filtration Systems	Used to prepare water for use in solutions	Y	Y	Underutilized – may be beneficial to move one to storage or to another campus
Ultraviolet Crosslinker	Used to induce DNA mutations	Y	N – will need to be replaced	Used every semester by Biotech I and research projects
Hybridization Incubator	Provides rotation and temperature control for experiments	Y	Y	Underutilized

Trans-Blot SD Cell	Used to create Western Blots	Y	Y/N – will be replaced if becomes more utilized	underutilized
Fluorescence Microscope System	Used to visualize fluorescent molecules	Y	Y	Used for research every semester
Microscopes: 4 Inverted, 4 Light, and 8+ others	Used to see microscopic things	Y	Y – some may need to be replaced in time	Used in every class every semester
6 Spectrophotometers including one Biorad SmartSpec Plus	Used to determine concentration of molecules and cell suspensions	Y	Y – some may need to be replaced in time	Most are used every semester. The NanoDrop has replaced the SmartSpec; it may need to be moved to storage or to another campus.
Small autoclave	Sterilize media and materials	Not working	Y if replaced	Weekly

Office Space Table

Office Location	Description	Meets Needs (Y or N): Current	Meets Needs (Y or N): For Next 5 Years	Analysis of Office Utilization
I208	Faculty Office	Y	Y	Used for planning
J118	Faculty Office	Y	Y	Used for planning

Financial Resources Table

Source of Funds (i.e. college budget, grant, etc.)	Meets Needs (Y or N): Current	Meets Needs (Y or N): For Next 5 Years	For any no in columns 2 or 3, explain why	For any no in columns 2 or 3, identify expected source of additional funds
College budget	Y	Y		
NSF	Y	Y		

Section III. Continuous Improvement Plan (CIP)

10. GIVEN OUR PRESENT STATUS, HOW DO WE INTEND TO CHANGE IN WAYS THAT HELP US ADVANCE?

Based on the information, analysis, and discussion that have been presented up to this point, summarize the strengths and weaknesses of this program. There should be no surprise issues here! This response should be based on information from prior sections of this document. Describe specific actions the faculty intends to take to capitalize on the strengths, mitigate the weaknesses, and improve student success.

Innovative and adaptable faculty, part of state- and nation-wide network of biotech programs in which we are becoming more well known for innovation in teaching and research, have level 1 and advance certificates that are stackable.

Weakness –low enrollment, need more dual credit and completers (Level 1 cert should help)

We need to increase enrollment and will do so by increasing visibility through advisor meetings, biotech club, website development.

11. HOW WILL WE EVALUATE OUR SUCCESS?

Program review at Collin College takes place within five-year cycles. During the last (fifth) year of each cycle, the program completes this instrument and submits its completed review to the Program Review Steering Committee. There are two two-year CIP cycles within each five-year program review cycle. As part of the fifth year program review, the program should use the observations and data generated by this process along with data from other relevant assessment activities to develop the program's CIP and an action plan for the first two-year CIP cycle. At the conclusion of the first two-year CIP cycle, data collected from the first cycle, plus any other relevant data that was collected in the interim, should be used to build on the accomplishments of the first two-year CIP cycle by developing another two-year action plan for the second CIP cycle to help the program accomplish the expected outcomes established in its CIP.

Complete the Continuous Improvement Plan (CIP) tables that follow.

Within the context of the information gleaned in this review process and any other relevant data, identify program priorities for the next two years, including at least one student learning outcome, and focus on these priorities to formulate your CIP. You may also add short-term administrative, technological, assessment, resource or professional development outcomes as needed.

Continuous Improvement Plan (CIP) Documentation
2013 - 2017

Date: 9-26-2015 **Name of Administrative or Educational Support Unit:** Biotechnology-Cert

Contact name: Bridgette Kirkpatrick **Contact email:** bkirkpatrick@collin.edu **Contact phone:**972-578-5513 **Office Location:**SCC-I208

Mission:

Collin's Biotechnology Program prepares students for entry level positions in biological research and industrial laboratories. Returning students can also benefit from the new methods and technologies related to agriculture, medicine, pharmaceuticals, and other applications.

PART I: Might not change from year to year

A. Outcomes(s) Results expected in this department/program	**B. Measure(s)** The instrument or process used to measure results	**C. Target(s)** The level of success expected
1 Demonstrate best practices and procedures for biological or industrial laboratory setting.	Capstone Lab Skills Checklist	75%
2 Appropriately apply basic science in the conduct of laboratory applications.	Capstone Lab Exercises	75%
3 Demonstrate cell culture techniques with a variety of cells and media.	Capstone Lab Skills Checklist, cell culture section	P/F
4 Given varied scenarios, including an internship, make ethical and professional choices.	Capstone Final Exam, Professionalism section and Co-op Evaluation rating, Professionalism item	75% Satisfactory or higher
5 Create or renew articulation agreements with at least 5 institutions	Completed agreements	5 agreements

COLLIN COLLEGE

Continuous Improvement Plan (CIP) Documentation 2013 - 2017

PART II: For academic year 2015-16 (enter year i.e. 2011-12)

A. Outcomes(s) Results expected in this department/program	D. Action Plan Years 5 & 2 Based on analysis of previous assessment, create an action plan and include it here in the row of the outcomes(s) it addresses.	E. Implement Action Plan Years 1 & 3 Implement the action plan and collect data	F. Data Results Summary Years 2 & 4 Summarize the data collected	G. Findings Years 2 & 4 What does data say about outcome?
1 Demonstrate best practices and procedures for biological or industrial laboratory setting.	Apply capstone skills checklist			
2 Appropriately apply basic science in the conduct of laboratory applications	Conduct capstone lab exercises		Need to tailor content toward what they will be doing in the internships—lab math and QC are lacking	Increase lab math content in all biotech courses—integrate into each course from beginning to end of program
3 Demonstrate cell culture techniques with a variety of cells and media.	Complete skills checklist from course		86% of students made a B or better on the practical exam	
4 Given varied scenarios, including an internship, make ethical and professional choices.	Collect capstone reviews		Need to tailor content toward what they will be doing in the internships—knowledge of QC is lacking	Offer/require quality control course in curriculum to ensure students are updated on QC requirements in industry
5 Create or renew articulation agreements with at least 5 institutions	Use NSF grant release time and contacts to create multi-institution agreements			Current unsigned or out of date articulations will be updated and/or renewed

Continuous Improvement Plan (CIP) Documentation
2018 - 2019

CIP Outcomes, Measures & Targets Table

A. Expected Outcome(s) 2018-19 Results expected in this program/department	**B.** **Measure(s)**	**C. Target(s)** Level of success expected
Demonstrate best practices and procedures for biological or industrial laboratory setting.	Capstone Lab Skills Checklist	75%
Appropriately apply basic science in the conduct of laboratory applications	Capstone Lab Exercises	75%
Demonstrate cell culture techniques with a variety of cells and media.	Capstone Lab Skills Checklist, cell culture section	P/F
Increase the number of certificate completers.	Level I certificate/advanced certificate are stackable credentials	25%
Increase program visibility through website and advising.	Increased enrollment in courses and utilization of the website visitation.	25% over current

Implementation of the action plan laid out in the CIP Cycle 1 Table will begin during the next academic year.

CIP Cycle 1 Table

Outcomes **(From Outcomes, Measures & Targets Table)** Results expected in this program/department	**Action Plan** **(Review Cycle Year 5)** Based on analysis, identify action(s) to be taken to accomplish outcome.	**Implement Action Plan** **(Review Cycle Year 1)** Implement action plan and collect data.	**Results Summary** **(Review Cycle Year 2)** Summarize collected data.	**Findings** **(Review Cycle Year 2)** What does data say about outcome(s)?

Development of a CIP Cycle 2 action plan in the following table will occur at the end of the CIP Cycle 1 and implantation will begin during the third year of the program review cycle.

CIP Cycle 2 Table

Outcomes **(May come from CIP Cycle 1 Table or from the Outcomes, Measures & Targets Table if it includes any expected outcomes that were not address during CIP Cycle 1)** Results expected in this program/department	**Adapt Action Plan** **(Review Cycle Year 2)** Based on analysis, identify new action(s) or adapt prior actions to accomplish outcome.	**Implement Action Plan** **(Review Cycle Year 3)** Implement new or adapted action plan and collect data	**Results Summary** **(Review cycle Year 4)** Summarize collected data.	**Findings** **(Review Cycle Year 4)** What does data say about outcome?

12. How do our Improvement Plans impact the program budget?

A. What additional funding beyond the program's base budget is needed to implement your Continuous Improvement Plan?

The current funding of approximately $93,000 is adequate.

B. With these additional funds, please explain how funds will be used to improve student learning or other program outcomes.

N/A

What happens next? The Program Review Report Pathway

A. Following approval by the Steering Committee,

- Program Review Reports will be evaluated by the Leadership Team;
- Reports will be posted on the intranet prior to fall semester;
- At any point prior to Intranet posting, reports may be sent back for additional development by the department.

B. Program responses to the Program Review Steering Committee recommendations received by August 1st will be posted with the Program Review Report.

C. Leadership Team members will work with program supervisors to incorporate Program Review findings into planning and activity changes during the next five years.

Appendices

1a. Duplicated Enrollment in Courses by Term Collin College
FY2013 through FY2017

Biotechnology

	FY2013					FY2014					FY2015			FY2016				FY2017			
Courses	**Fall 2012**	**Spring 2013**	**Maymester 2013**	**Summer I 2013**	**Summer II 2013**	**Fall 2013**	**Spring 2014**	**Maymester 2014**	**Summer I 2014**	**Summer II 2014**	**Fall 2014**	**Spring 2015**	**Summer 2015**	**Fall 2015**	**Winter 2015**	**Spring 2016**	**Summer 2016**	**Fall 2016**	**Winter 2016**	**Spring 2017**	**Summer 2017**
BIOL1406	1376	1234	-	306	164	1453	1369	-	315	142	1555	1285	385	1458	-	1332	416	1622	-	1388	430
BIOL1414	21	17	-	-	-	25	23	-	-	-	24	16	-	16	-	23	-	17	-	19	-
BIOL1415	-	10	-	-	-	-	16	-	-	-	-	14	-	-	-	8	-	-	-	6	-
BIOL2416	56	38	-	-	-	58	47	-	-	-	52	47	-	51	-	51	-	52	-	37	-
BIOL2421	336	306	-	164	-	71	72	-	34	-	72	67	48	84	-	70	40	104	-	87	39
BITC2386	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BITC2431	-	10	-	-	-	-	-	-	-	-	10	-	-	10	-	-	-	-	-	9	-
BITC2441	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHEM1411	397	423	-	204	68	473	498	-	197	60	562	525	282	555	-	541	244	557	-	533	258
CHEM2423	90	62	-	52	-	76	51	-	49	-	89	61	51	79	-	55	62	86	-	65	64

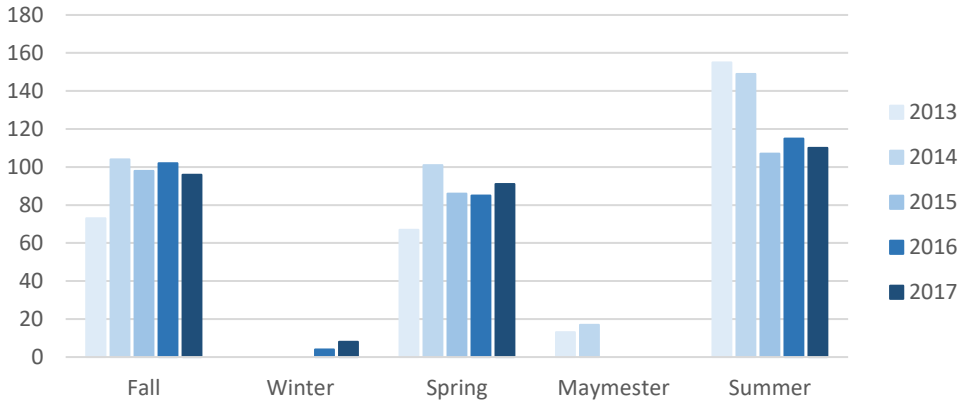
Note: The program course list is a composite from 2013-2017 academic catalogs. If values appear in blue, that course was not included in this program's curriculum during that term. Core courses may be excluded from the list for this program.

1b. Unduplicated Student Enrollment per Term Program Review 2017-2018 FY2013 through FY2017

Biotechnology

Term	Count of Unique Enrolled Students
FY2013	
Fall 2012	73
Spring 2013	67
Maymester 2013	13
Summer I 2013	98
Summer II 2013	57
FY2014	
Fall 2013	104
Spring 2014	101
Maymester 2014	17
Summer I 2014	91
Summer II 2014	58
FY2015	
Fall 2014	98
Spring 2015	86
Summer 2015	107
FY2016	
Fall 2015	102
Winter 2015	4
Spring 2016	85
Summer 2016	115
FY2017	
Fall 2016	96
Winter 2016	8
Spring 2017	91
Summer 2017	110

Note: Students counted for this measure were enrolled at Collin during the specified term and are identified based on their declared major in Banner.



1c.

ACGM Lower Division Academic Course Guide Manual

BIOL - (Biology)

BIOL 1414 Introduction to Biotechnology I

Overview of classical genetics, DNA structure, the flow of genetic information, DNA replication, gene transcription, protein translation. Principles of major molecular biology and genetic engineering techniques, including restriction enzymes and their uses, major types of cloning vectors, construction of libraries, Southern and Northern blotting, hybridization, PCR, DNA typing. Applications of these techniques in human health and welfare, medicine, agriculture and the environment. Introduction to the human genome project, gene therapy, molecular diagnostics, forensics, creation and uses of transgenic plants and animal and animal cloning and of the ethical, legal, and social issues and scientific problems associated with these technologies. Relevant practical exercises in the above areas.

Approval Number:	26.1201.51 03
maximum SCH per student	4
maximum SCH per course	4
maximum contact hours per Course	112

BIOL 1415 Introduction to Biotechnology II

Biology course that focuses on an integrative approach to studying biomolecules with an emphasis on protein structures, functions and uses in the modern bioscience laboratory. Students will investigate the mechanisms involved in the transfer of information from DNA sequences to proteins to biochemical functions. The course will integrate biological and chemical concepts with techniques that are used in research and industry. Critical thinking will be applied in laboratory exercises using inquiry-based approaches, troubleshooting, and analyzing experimental data.

Approval Number:	26.1201.52 03
maximum SCH per student	4
maximum SCH per course	4
maximum contact hours per Course	112

2a. Program Review 2017-2018 Award Completion by Program AY2013-AY2017

	Award Type	Major Code	Counts of Award by Academic Year 2013	2014	2015	2016	2017	Grand Total
Animation								
	Degree	AGAA	1					1
		AGAT	4	3	1			8
		AN3D				1	4	5
		ANGA			5	2	4	11
		ANIG				1	8	9
		ANIM	3	4	4	3	1	15
		ANMT			3	3	2	8
		EAIM	1					1
	Degree Total		9	7	13	10	19	58
	Certificate	AGAT	1		2			3
		AN3D				1	4	5
		ANGA			4	3	4	11
		ANIG				1	8	9
		ANIM	1	3	6	5	3	18
	Certificate Total		2	3	12	10	19	46
	ESC	AGAA					1	1
	OSA	ANMN	15	9	15	20	7	66
Animation Total			26	19	40	40	46	171
Associate of Arts								
	Degree	GENA	773	832	948	1,015	1,125	4,693
Associate of Arts in Teaching								
	Degree	CM48				3	3	6
		ECG6	23	23	19	15	22	102
		ECG8	10	7	19	29	10	75
		ECH6				8	27	35
		ECSE	8	6	4	5	1	24
		G6EC			2	5	2	9
		G8SP				2		2
		H812				8	15	23
	Degree Total		41	36	44	75	80	276
	Certificate	CHSE	2			2		4
Associate of Arts in Teaching Total			43	36	44	77	80	280
Associate of Science								
	Degree	GENS	597	633	695	795	862	3,582
Biotechnology								
	Degree	BITC	2		3			5
	Certificate	BITC	6	5	1	2		14
		BITE			2		1	3
	Certificate Total		6	5	3	2	1	17
Biotechnology Total			8	5	6	2	1	22

Measure 2b. Certified Awards by CIP Code, Award Type, and Year Collin College Program Review 2016-2017 FY2012 through FY2016

		CBM-009				
		AAS				
CIP Code	CIP Code Title	2012	2013	2014	2015	2016
090101	Communication Studies/Speech Comm. & Rhetoric					
100304	Animation, Interactive Tech., Video Graphics & Sp. FX					
110101	Computer & Info. Sciences, Gen.	6	9	9	20	9
110201	Computer Programming/Programmer, Gen.	1	2			
110701	Computer Science					
110801	Web Page, Digital/Multimedia & Info. Resources Design	2	5	6	5	6
110901	Computer Systems Networking & Telecomm.	12				
111001	Network & System Admin.		8	10	15	11
111002	System, Networking & LAN/WAN Mgt.		6	7	4	4
111003	Computer & Information Systems Security	4	3	14	29	27
120501	Baking & Pastry Arts/Baker/Pastry Chef		6	2	13	16
120503	Culinary Arts/Chef Training	9	12	10	22	17
131203	Jr. High/Intermed./Middle School Educ. & Teaching					
131205	Secondary Education & Teaching					
131210	Early Childhood Education & Teaching					
140101	Engineering, Gen.					
150303	Elect., Electron. & Comm. Engineering Tech.	7	9	3	5	2
150305	Telecommunications Tech.	1	1	2		1
150306	Integrated Circuit Design					1
151301	Drafting & Design Tech., Gen.	3	2	9	8	4
151305	Elect./Electron. Drafting & CAD/CADD					
161603	Sign Language Interpretation & Translation	5		9	5	11
190706	Child Development	3	6	5	9	11
190709	Child Care Provider/Assistant					
220302	Legal Assistant/Paralegal	21	17	13	30	13
240101	Liberal Arts & Sciences/Liberal Studies					
240102	General Studies					
410101	Biology Tech/Biotech. Lab. Tech.	3	2		3	
430100	Criminal Justice Field of Study (Discontinued)					
430103	Criminal Justice/Law Enforcement Admin.					
430104	Criminal Justice/Safety Studies (Field of Study)					
430107	Criminal Justice/Police Science					
430201	Fire Protection & Safety Tech.	9	2	1	2	6
430203	Fire Science/Firefighting		1	4	6	5
450702	Geographic Information Science & Cartography			1	6	1
500402	Commercial & Advertising Art	11	10	18	5	16
500408	Interior Design	2	4	8	6	2
500409	Graphic Design		1	2	3	3
500410	Illustration				1	1
500411	Game & Interactive Media Design	3	10	7	13	10
500901	Music, Gen.					
501003	Music Management	12	8	8	7	7
510602	Dental Hygiene/Hygienist	16	16	16	15	15
510707	Health Information/ Medical Records Tech.	17	38	43	38	30
510708	Medical Transcription/Transcriptionist					
510713	Medical Insurance Coding Specialist					
510808	Veterinary/Animal Health Tech./Veterinary Asst.					
510903	Electroneurodiagnostic/Electroencephalographic Tech.			9	9	10
510904	Emergency Medical Tech.	4	2	4	5	3
510908	Respiratory Care Therapy/Therapist	18	18	18	21	19
510909	Surgical Tech.	9	18	20	12	16
513801	Registered Nursing	103	111	110	106	126
520101	Business/Commerce, Gen.					
520201	Business Admin. & Mgt., Gen.	10	15	16	13	27
520212	Retail Mgt.		3	3	1	3
520401	Admin. Asst. & Secretarial Science, Gen.	9	6	4	7	3
520901	Hospitality Administration/Management	8	11	6	12	13
521501	Real Estate		2	2	9	2
521801	Sales, Distr., & Marketing Operations, Gen.	3				
Total		311	364	399	465	451

Sources: Certified CBM-009 & CBM-00M reports for respective years.

Measure 2b. Certified Awards by CIP Code, Award Type, and Year Collin College Program Review 2016-2017 FY2012 through FY2016

		CBM-009				
		Certificate				
CIP Code	CIP Code Title	2012	2013	2014	2015	2016
090101	Communication Studies/Speech Comm. & Rhetoric					
100304	Animation, Interactive Tech., Video Graphics & Sp. FX					
110101	Computer & Info. Sciences, Gen.	3	9	13	17	9
110201	Computer Programming/Programmer, Gen.	3	1			
110701	Computer Science					
110801	Web Page, Digital/Multimedia & Info. Resources Design	1	4	10	11	8
110901	Computer Systems Networking & Telecomm.	11				
111001	Network & System Admin.			4	13	20
111002	System, Networking & LAN/WAN Mgt.		9	16	6	8
111003	Computer & Information Systems Security	3	4	19	27	31
120501	Baking & Pastry Arts/Baker/Pastry Chef		12	15	14	28
120503	Culinary Arts/Chef Training	23	20	27	31	24
131203	Jr. High/Intermed./Middle School Educ. & Teaching					
131205	Secondary Education & Teaching					
131210	Early Childhood Education & Teaching					
140101	Engineering, Gen.					
150303	Elect., Electron. & Comm. Engineering Tech.		7	2	4	3
150305	Telecommunications Tech.	1				2
150306	Integrated Circuit Design					
151301	Drafting & Design Tech., Gen.	6	3	5	6	5
151305	Elect./Electron. Drafting & CAD/CADD					
161603	Sign Language Interpretation & Translation	2	2	3	9	16
190706	Child Development	2	6	3	13	20
190709	Child Care Provider/Assistant		4	2	9	20
220302	Legal Assistant/Paralegal	30	33	31	43	35
240101	Liberal Arts & Sciences/Liberal Studies					
240102	General Studies					
410101	Biology Tech/Biotech. Lab. Tech.	5	6	5	3	2
430100	Criminal Justice Field of Study (Discontinued)					
430103	Criminal Justice/Law Enforcement Admin.					
430104	Criminal Justice/Safety Studies (Field of Study)					
430107	Criminal Justice/Police Science	70	59	46	43	79
430201	Fire Protection & Safety Tech.	5	8			6
430203	Fire Science/Firefighting	39	69	37	52	60
450702	Geographic Information Science & Cartography			8	17	10
500402	Commercial & Advertising Art	6	10	22	10	20
500408	Interior Design	1	2	6	10	4
500409	Graphic Design		1		4	2
500410	Illustration			1		1
500411	Game & Interactive Media Design	3	2	3	12	10
500901	Music, Gen.	20				
501003	Music Management	1	25	20	18	26
510602	Dental Hygiene/Hygienist					
510707	Health Information/ Medical Records Tech.					
510708	Medical Transcription/Transcriptionist					
510713	Medical Insurance Coding Specialist	8	4	11	47	48
510808	Veterinary/Animal Health Tech./Veterinary Asst.		4	4	24	7
510903	Electroneurodiagnostic/Electroencephalographic Tech.					3
510904	Emergency Medical Tech.	5	49	39	38	28
510908	Respiratory Care Therapy/Therapist					
510909	Surgical Tech.			17	12	8
513801	Registered Nursing					
520101	Business/Commerce, Gen.					
520201	Business Admin. & Mgt., Gen.	8	24	25	50	57
520212	Retail Mgt.		4	4	7	8
520401	Admin. Asst. & Secretarial Science, Gen.	7	7	9	7	13
520901	Hospitality Administration/Management	15	16	21	17	37
521501	Real Estate	15	28	32	27	23
521801	Sales, Distr., & Marketing Operations, Gen.					
Total		293	432	460	601	681

Sources: Certified CBM-009 & CBM-00M reports for respective years.

Measure 2b. Certified Awards by CIP Code, Award Type, and Year Collin College Program Review 2016-2017 FY2012 through FY2016

		CBM-009 Total				
CIP Code	CIP Code Title	2012	2013	2014	2015	2016
090101	Communication Studies/Speech Comm. & Rhetoric	18	23	19	30	37
100304	Animation, Interactive Tech., Video Graphics & Sp. FX	0	0	0	0	0
110101	Computer & Info. Sciences, Gen.	9	18	22	37	18
110201	Computer Programming/Programmer, Gen.	4	3	0	0	0
110701	Computer Science	5	14	18	22	31
110801	Web Page, Digital/Multimedia & Info. Resources Design	3	9	16	16	14
110901	Computer Systems Networking & Telecomm.	23	0	0	0	0
111001	Network & System Admin.	0	8	14	28	31
111002	System, Networking & LAN/WAN Mgt.	0	15	23	10	12
111003	Computer & Information Systems Security	7	7	33	56	58
120501	Baking & Pastry Arts/Baker/Pastry Chef	0	18	17	27	44
120503	Culinary Arts/Chef Training	32	32	37	53	41
131203	Jr. High/Intermed./Middle School Educ. & Teaching	18	10	7	19	34
131205	Secondary Education & Teaching	0	0	0	0	8
131210	Early Childhood Education & Teaching	22	31	29	25	33
140101	Engineering, Gen.	0	3	1	2	12
150303	Elect., Electron. & Comm. Engineering Tech.	7	16	5	9	5
150305	Telecommunications Tech.	2	1	2	0	3
150306	Integrated Circuit Design					1
151301	Drafting & Design Tech., Gen.	9	5	14	14	9
151305	Elect./Electron. Drafting & CAD/CADD	0	0	0	0	0
161603	Sign Language Interpretation & Translation	7	2	12	14	27
190706	Child Development	5	12	8	22	31
190709	Child Care Provider/Assistant	0	4	2	9	20
220302	Legal Assistant/Paralegal	51	50	44	73	48
240101	Liberal Arts & Sciences/Liberal Studies	2,061	2,155	2,042	2,563	2,636
240102	General Studies	1,402	1,371	1,464	1,638	1,807
410101	Biology Tech/Biotech. Lab. Tech.	8	8	5	6	2
430100	Criminal Justice Field of Study (Discontinued)	31	51	85	0	0
430103	Criminal Justice/Law Enforcement Admin.	0	0	0	0	0
430104	Criminal Justice/Safety Studies (Field of Study)	0	0	0	78	58
430107	Criminal Justice/Police Science	75	59	46	43	79
430201	Fire Protection & Safety Tech.	14	10	1	2	12
430203	Fire Science/Firefighting	39	70	41	58	65
450702	Geographic Information Science & Cartography	0	0	9	23	11
500402	Commercial & Advertising Art	17	20	40	15	36
500408	Interior Design	3	6	14	16	6
500409	Graphic Design	0	2	2	7	5
500410	Illustration	0	0	1	1	2
500411	Game & Interactive Media Design	6	12	10	25	20
500901	Music, Gen.	30	16	8	21	17
501003	Music Management	13	33	28	25	33
510602	Dental Hygiene/Hygienist	16	16	16	15	15
510707	Health Information/ Medical Records Tech.	17	38	43	38	30
510708	Medical Transcription/Transcriptionist	0	0	0	0	0
510713	Medical Insurance Coding Specialist	8	4	11	47	48
510808	Veterinary/Animal Health Tech./Veterinary Asst.	0	4	4	24	7
510903	Electroneurodiagnostic/Electroencephalographic Tech.	0	0	9	9	13
510904	Emergency Medical Tech.	9	51	43	43	31
510908	Respiratory Care Therapy/Therapist	18	18	18	21	19
510909	Surgical Tech.	9	18	37	24	24
513801	Registered Nursing	104	116	118	106	126
520101	Business/Commerce, Gen.	170	204	181	269	330
520201	Business Admin. & Mgt., Gen.	18	39	41	63	84
520212	Retail Mgt.	0	7	7	8	11
520401	Admin. Asst. & Secretarial Science, Gen.	16	13	13	14	16
520901	Hospitality Administration/Management	23	27	27	29	50
521501	Real Estate	15	30	34	36	25
521801	Sales, Distr., & Marketing Operations, Gen.	3	0	0	0	0
Total		4,347	4,679	4,721	5,733	6,135

Sources: Certified CBM-009 & CBM-00M reports for respective years.

3. Percentage of Program Completers Employed in the Fourth Quarter of the Year Following Completion and Median Fourth Quarter Wages by CIP Code, Award Level, and Year Collin College Program Review 2017-2018

FY2012 through FY2016

			Fiscal Year									
			2012		2013		2014		2015		2016*	
CIP Code Title	CIP Code	Award Type	4th Qtr Empl. Rate	Median 4th Qtr Wages	4th Qtr Empl. Rate	Median 4th Qtr Wages	4th Qtr Empl. Rate	Median 4th Qtr Wages	4th Qtr Empl. Rate	Median 4th Qtr Wages	4th Qtr Empl. Rate	Median 4th Qtr Wages
Child Development	19.0706	Assoc.	67%		33%		20%		38%		45%	$1,707
		Cert.	100%		60%		33%		50%	$4,485	65%	$6,397
		OSA	56%	$4,138	62%	$6,595	50%		64%	$6,156		
Child Care Provider/Assistant	19.0709	Cert.			67%		100%		22%		50%	$6,669
Legal Assistant/Paralegal	22.0302	Assoc.	65%	$8,211	69%	$8,125	46%	$8,934	72%	$8,174	77%	$9,892
		Cert.	72%	$9,402	76%	$8,098	45%	$9,972	74%	$9,104	80%	$9,705
General Studies	24.0102	Assoc.	60%	$4,762	63%	$4,799	64%	$4,706	66%	$4,749	65%	$4,895
Biology Technician/Biotechnology Laboratory Technician	41.0101	Assoc.	100%		100%				33%			
		Cert.	40%		67%	$4,108	100%	$5,627	33%		50%	
Criminal Justice and Corrections	43.0100	Assoc.	50%	$6,611	88%	$4,733	73%	$7,272				
Criminal Justice/Safety Studies	43.0104	Assoc.							70%	$6,980	78%	$7,109
Criminal Justice/Police Science	43.0107	Assoc.	60%									
Fire Protection and Safety Technology/Technician	43.0201	Assoc.	88%	$15,441	100%		100%		100%		100%	$20,569
		Cert.	100%	$18,192	100%	$18,297					100%	$19,437
		OSA	100%	$17,946	100%		100%	$19,018	100%			
Fire Science/Firefighting	43.0203	Assoc.			100%		100%	$17,369	83%	$15,985	100%	$20,896
		Cert.	95%	$7,149	90%	$4,799	84%	$10,881	85%	$7,937	87%	$9,989
Geographic Information Science and Cartography	45.0702	Assoc.					100%		67%	$8,488	100%	
		Cert.					63%	$2,697	88%	$11,878	70%	$5,929
Commercial and Advertising Art	50.0402	Assoc.	50%	$8,809	50%	$6,935	78%	$6,885	60%		56%	$10,342
		Cert.	40%		80%	$6,333	73%	$6,815	50%	$9,154	65%	$9,878
		OSA	64%	$3,243	54%	$6,947	36%	$7,379	59%	$6,474	56%	$8,464
Interior Design	50.0408	Assoc.	100%		75%		50%	$3,751	40%		50%	
		Cert.	0%		100%		50%		33%		75%	
		OSA	100%	$5,718	50%				0%			
Graphic Design	50.0409	Assoc.			0%		100%		50%		33%	
		Cert.			100%				75%		50%	
		OSA			0%				75%		50%	
Illustration	50.0410	Assoc.							0%		0%	
		Cert.					100%				0%	
		OSA					50%		67%			
Game and Interactive Media Design	50.0411	Assoc.	33%		80%	$8,368	71%	$5,507	67%	$6,743	78%	$2,556
		Cert.	33%		50%		67%		64%	$7,115	78%	$2,556
		OSA	38%	$1,965	60%	$2,743	50%	$2,476	86%	$4,603	35%	$2,150
Music, General	50.0901	Assoc.	33%		56%	$3,639	40%		20%		56%	$4,116
		Cert.	58%	$5,709								
Music Management	50.1003	Assoc.	55%	$5,543	75%	$6,434	63%	$6,373	57%	$7,397	29%	
		Cert.	100%		63%	$4,973	50%	$5,585	56%	$6,417	58%	$4,910
Dental Hygiene/Hygienist	51.0602	Assoc.	100%	$11,374	88%	$9,017	88%	$7,680	100%	$5,181	80%	$7,297
Health Information/Medical Records Technology/Technician	51.0707	Assoc.	82%	$9,051	66%	$5,850	72%	$8,697	68%	$9,083	77%	$8,883
Medical Insurance Coding Specialist/Coder	51.0713	Cert.	50%		50%		55%	$9,093	66%	$7,483	67%	$8,984

4. Average Class Size by Term

Collin College Program Review 2017-18 FY2013 through FY2017

Biotechnology

	FY2013					FY2014					FY2015			FY2016				FY2017			
	Fall 2012	Spring 2013	Maymester 2013	Summer I 2013	Summer II 2013	Fall 2013	Spring 2014	Maymester 2014	Summer I 2014	Summer II 2014	Fall 2014	Spring 2015	Summer 2015	Fall 2015	Winter 2015	Spring 2016	Summer 2016	Fall 2016	Winter 2016	Spring 2017	Summer 2017
Courses																					
BIOL1406	13.6	13.1	-	11.8	11.7	13.1	13	-	11.3	10.1	13.4	12.6	10.7	13	-	13.6	11.2	13.5	-	13.2	11
BIOL1414	10.5	17	-	-	-	12.5	11.5	-	-	-	12	8	-	8	-	11.5	-	8.5	-	9.5	-
BIOL1415	-	5	-	-	-	-	8	-	-	-	-	7	-	-	-	4	-	-	-	3	-
BIOL2416	9.3	12.7	-	-	-	9.7	7.8	-	-	-	8.7	7.8	-	8.5	-	8.5	-	8.7	-	9.3	-
BIOL2421	12.4	12.2	-	10.3	-	11.8	12	-	11.3	-	12	11.2	16	10.5	-	11.7	13.3	10.4	-	10.9	13
BITC2431	-	10	-	-	-	-	-	-	-	-	5	-	-	5	-	-	-	-	-	9	-
BITC2441	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHEM1411	12.8	12.8	-	11.3	11.3	12.8	12.8	-	10.9	10	12.5	12.2	10.8	11.6	-	11.8	9.4	11.1	-	12.1	9.9
CHEM2423	12.9	10.3	-	13	-	10.9	12.8	-	12.3	-	9.9	10.2	12.8	9.9	-	9.2	10.3	10.8	-	10.8	10.7

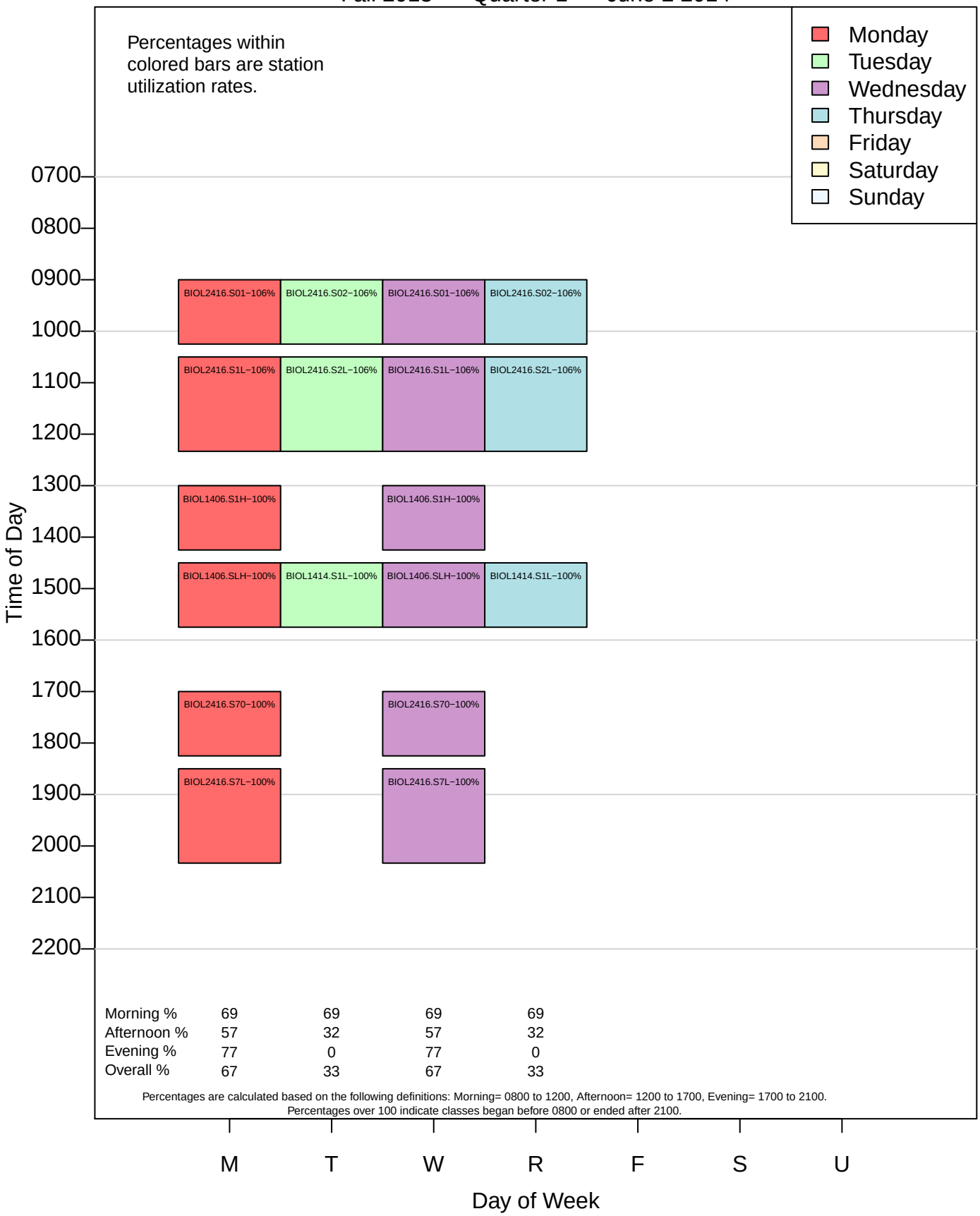
Note: If present, values in blue text indicate terms in which the course was not included in this program's curriculum. The program course list is a composite from 2013-2017 academic catalogs. Core courses, co-op courses and private study courses may be excluded from section enrollment averages.

5.Classroom Utilization

Spring Creek Room I105

Room & Station Utilization

Fall 2013 −− Quarter 1 −− June 2 2014



Morning %	69	69	69	69
Afternoon %	57	32	57	32
Evening %	77	0	77	0
Overall %	67	33	67	33

Percentages are calculated based on the following definitions: Morning= 0800 to 1200, Afternoon= 1200 to 1700, Evening= 1700 to 2100.
Percentages over 100 indicate classes began before 0800 or ended after 2100.

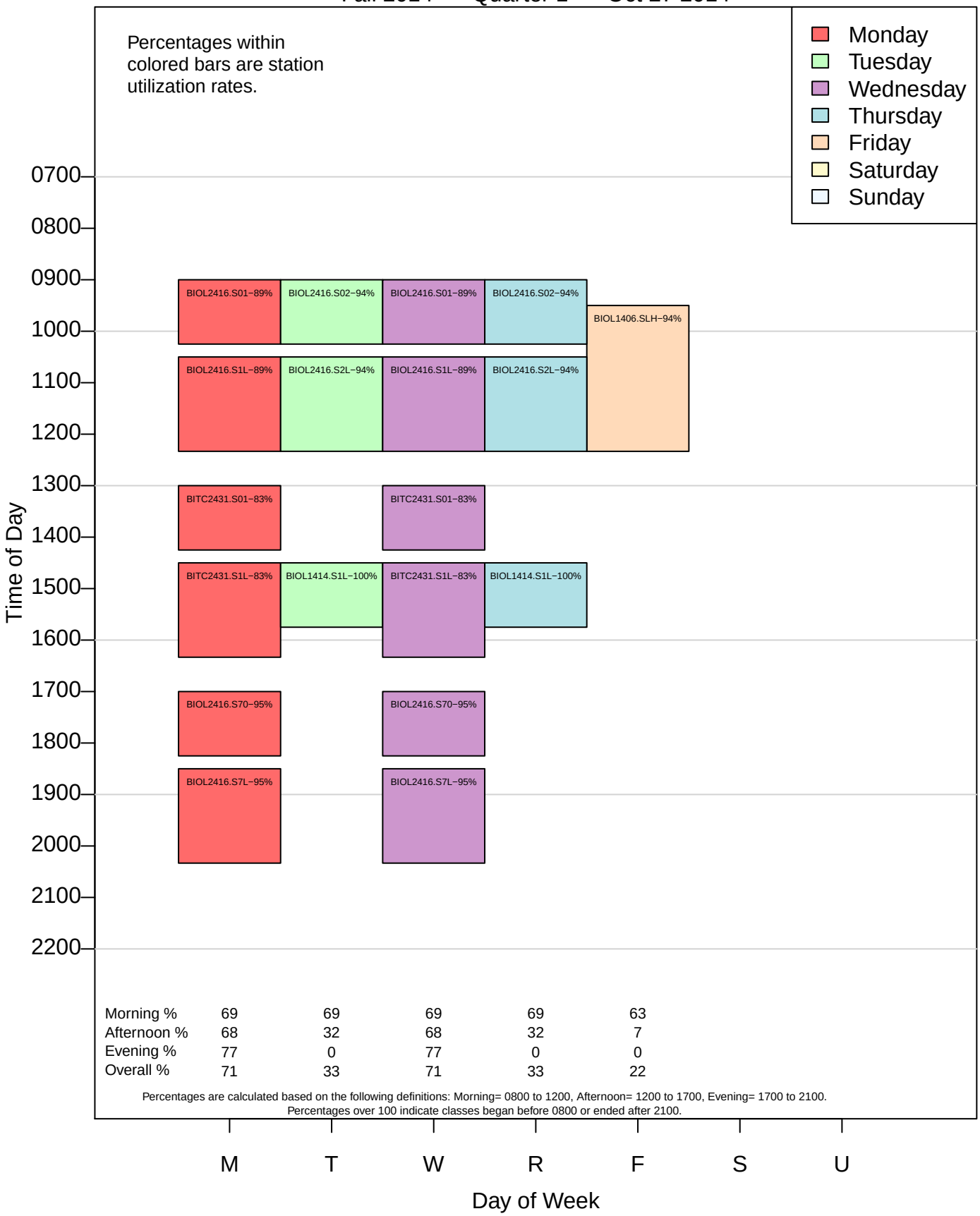
5.Classroom Utilization

5.Classroom Utilization

Spring Creek Room I105

Room & Station Utilization

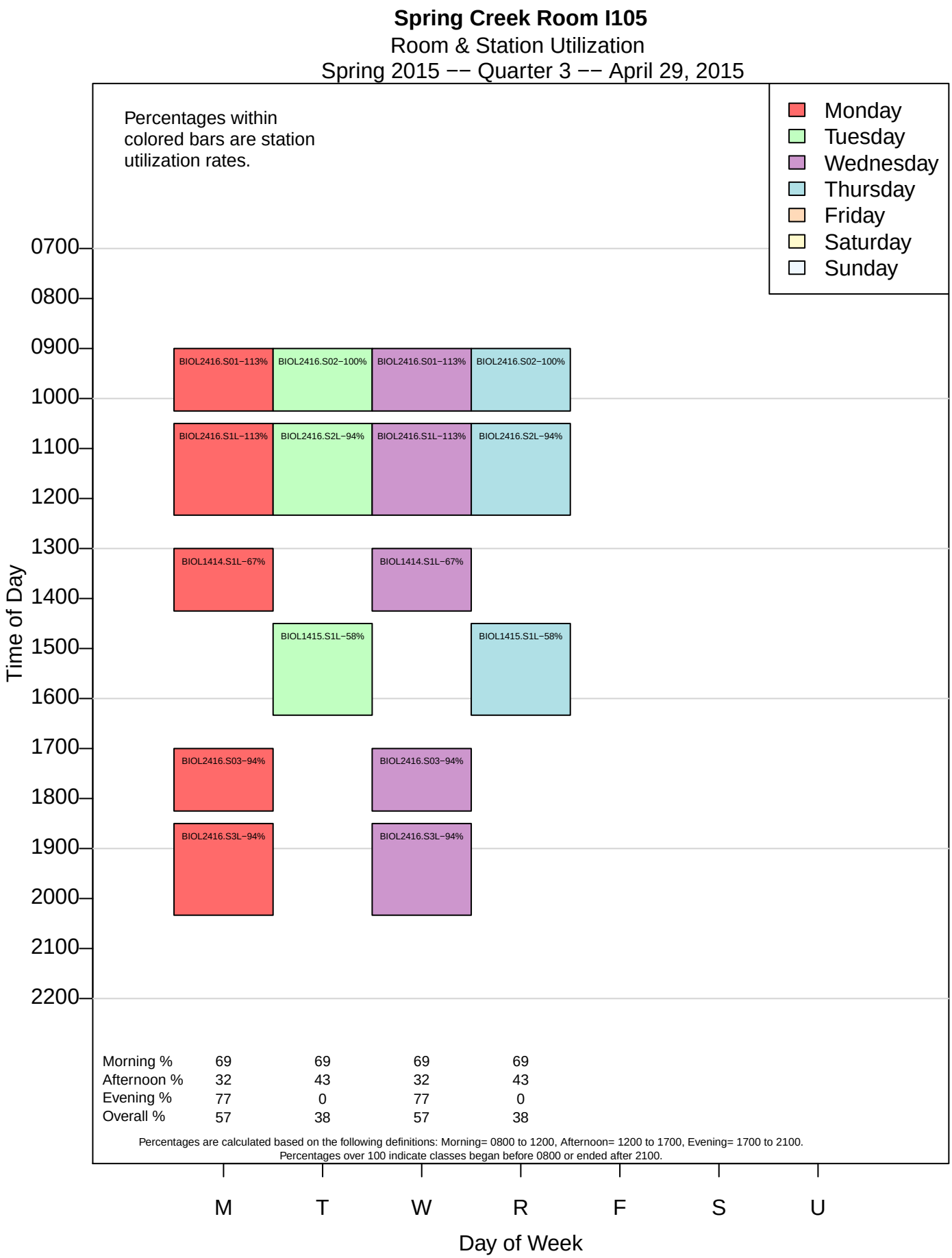
Fall 2014 −− Quarter 1 −− Oct 27 2014



Morning %	69	69	69	69	63
Afternoon %	68	32	68	32	7
Evening %	77	0	77	0	0
Overall %	71	33	71	33	22

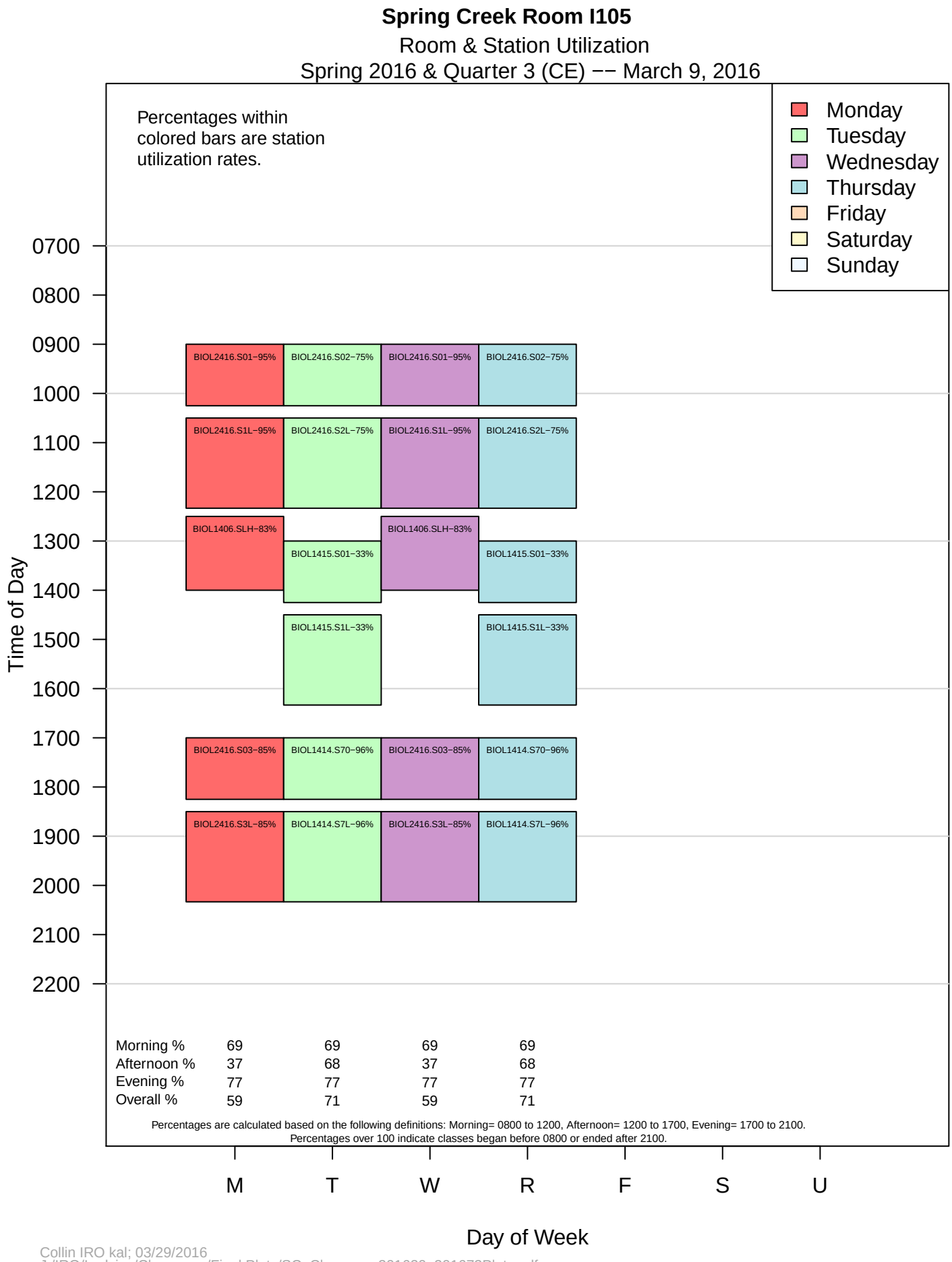
Percentages are calculated based on the following definitions: Morning= 0800 to 1200, Afternoon= 1200 to 1700, Evening= 1700 to 2100.
Percentages over 100 indicate classes began before 0800 or ended after 2100.

5.Classroom Utilization



5.Classroom Utilization

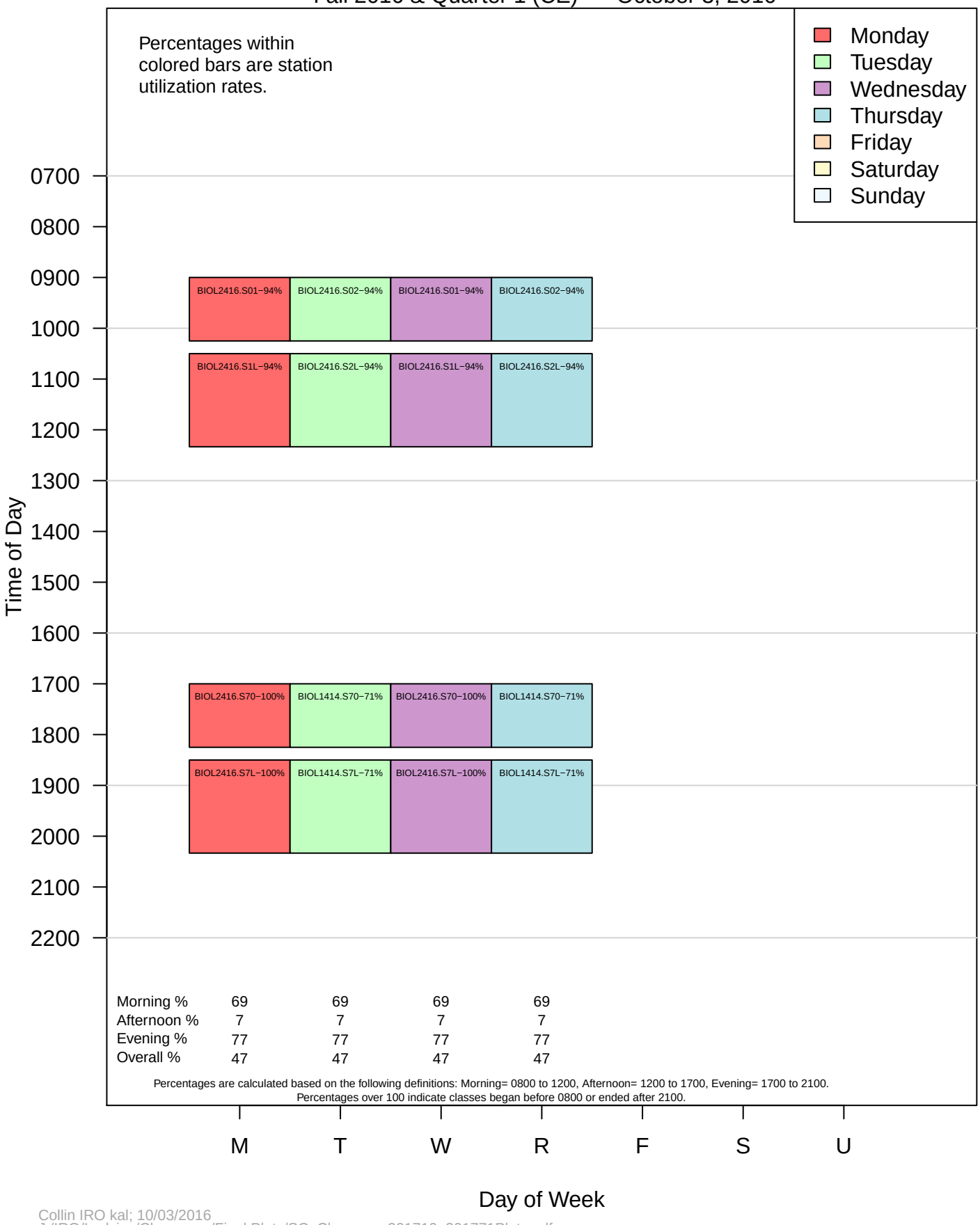
5.Classroom Utilization



Spring Creek Room I105

Room & Station Utilization

Fall 2016 & Quarter 1 (CE) −− October 3, 2016



6. Grade Distribution, Course Completion, and Course Success Rate by Term
Collin College Program Review 2017-18 FY2013 through FY2017
Biotechnology

BIOL1406 Biology for Science Majors I

Term	Enrollment	Grade Assigned							Grade Distribution							Completion Rate	Success Rate*	Course GPA **
		A	B	C	D	P	F	W	A	B	C	D	P	F	W			
Fall 2012	1376	260	308	306	169	0	192	141	18.9%	22.4%	22.2%	12.3%	0.0%	14.0%	10.2%	89.8%	63.5%	1.99
Spring 2013	1233	232	269	248	158	0	191	135	18.8%	21.8%	20.1%	12.8%	0.0%	15.5%	10.9%	89.1%	60.7%	1.94
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	306	95	98	60	19	0	11	23	31.0%	32.0%	19.6%	6.2%	0.0%	3.6%	7.5%	92.5%	82.7%	2.66
Summer II 2013	164	49	44	31	15	0	15	10	29.9%	26.8%	18.9%	9.1%	0.0%	9.1%	6.1%	93.9%	75.6%	2.47
Fall 2013	1453	255	284	318	173	0	267	156	17.5%	19.5%	21.9%	11.9%	0.0%	18.4%	10.7%	89.3%	59.0%	1.85
Spring 2014	1369	194	254	276	164	0	325	156	14.2%	18.6%	20.2%	12.0%	0.0%	23.7%	11.4%	88.6%	52.9%	1.65
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	315	90	91	62	25	0	23	24	28.6%	28.9%	19.7%	7.9%	0.0%	7.3%	7.6%	92.4%	77.1%	2.48
Summer II 2014	143	33	34	35	14	0	14	13	23.1%	23.8%	24.5%	9.8%	0.0%	9.8%	9.1%	90.9%	71.3%	2.22
Fall 2014	1555	281	321	292	175	0	315	171	18.1%	20.6%	18.8%	11.3%	0.0%	20.3%	11.0%	89.0%	57.5%	1.83
Spring 2015	1285	176	199	253	175	0	337	142	13.7%	15.5%	19.7%	13.6%	0.0%	26.2%	11.1%	88.7%	49.0%	1.55
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	389	88	95	85	36	0	41	44	22.6%	24.4%	21.9%	9.3%	0.0%	10.5%	11.3%	88.7%	68.9%	2.17
Fall 2015	1458	226	285	314	174	0	318	141	15.5%	19.5%	21.5%	11.9%	0.0%	21.8%	9.7%	90.3%	56.6%	1.76
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	1332	208	252	268	161	0	293	150	15.6%	18.9%	20.1%	12.1%	0.0%	22.0%	11.3%	88.7%	54.7%	1.72
Summer 2016	422	130	105	89	35	0	38	25	30.8%	24.9%	21.1%	8.3%	0.0%	9.0%	5.9%	94.1%	76.8%	2.48
Fall 2016	1623	283	360	372	186	0	271	151	17.4%	22.2%	22.9%	11.5%	0.0%	16.7%	9.3%	90.7%	62.5%	1.94
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	1388	241	302	301	136	0	249	159	17.4%	21.8%	21.7%	9.8%	0.0%	17.9%	11.5%	88.5%	60.8%	1.88
Summer 2017	434	134	113	92	32	0	27	36	30.9%	26.0%	21.2%	7.4%	0.0%	6.2%	8.3%	91.7%	78.1%	2.51
Averages***									18.3%	21.0%	20.9%	11.4%	0.0%	18.0%	10.3%	89.7%	60.3%	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which BIOL1406 was not included in this program's curriculum.

** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*

*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*

**** Averages may not equal 100 percent due to rounding.*

6. Grade Distribution, Course Completion, and Course Success Rate by Term
Collin College Program Review 2017-18 FY2013 through FY2017
Biotechnology

BIOL1414 Intro to Biotechnology I

		Grade Assigned							Grade Distribution							Completion	Success	Course
Term	Enrollment	A	B	C	D	P	F	W	A	B	C	D	P	F	W	Rate	Rate*	GPA **
Fall 2012	21	4	7	6	0	0	1	3	19.0%	33.3%	28.6%	0.0%	0.0%	4.8%	14.3%	85.7%	81.0%	2.33
Spring 2013	17	2	5	0	4	0	4	2	11.8%	29.4%	0.0%	23.5%	0.0%	23.5%	11.8%	88.2%	41.2%	1.59
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2013	25	6	8	5	1	0	5	0	24.0%	32.0%	20.0%	4.0%	0.0%	20.0%	0.0%	100.0%	76.0%	2.36
Spring 2014	23	0	7	9	1	0	3	3	0.0%	30.4%	39.1%	4.3%	0.0%	13.0%	13.0%	87.0%	69.6%	1.74
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2014	24	3	6	6	1	0	2	6	12.5%	25.0%	25.0%	4.2%	0.0%	8.3%	25.0%	75.0%	62.5%	1.79
Spring 2015	16	4	4	3	2	0	2	1	25.0%	25.0%	18.8%	12.5%	0.0%	12.5%	6.3%	93.8%	68.8%	2.25
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2015	16	2	5	3	1	0	4	1	12.5%	31.3%	18.8%	6.3%	0.0%	25.0%	6.3%	93.8%	62.5%	1.88
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	23	5	4	5	3	0	4	2	21.7%	17.4%	21.7%	13.0%	0.0%	17.4%	8.7%	91.3%	60.9%	1.96
Summer 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2016	17	4	4	2	5	0	1	1	23.5%	23.5%	11.8%	29.4%	0.0%	5.9%	5.9%	94.1%	58.8%	2.18
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	19	3	5	6	1	0	2	2	15.8%	26.3%	31.6%	5.3%	0.0%	10.5%	10.5%	89.5%	73.7%	2.11
Summer 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages***.....									16.4%	27.4%	22.4%	9.5%	0.0%	13.9%	10.4%	89.6%	66.2%	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which BIOL1414 was not included in this program's curriculum.

** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*

*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*

**** Averages may not equal 100 percent due to rounding.*

6. Grade Distribution, Course Completion, and Course Success Rate by Term Collin College Program Review 2017-18 FY2013 through FY2017

Biotechnology

BIOL1415 Intro to Biotechnology II

		Grade Assigned							Grade Distribution							Completion	Success	Course
Term	Enrollment	A	B	C	D	P	F	W	A	B	C	D	P	F	W	Rate	Rate*	GPA **
Fall 2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2013	10	5	2	0	0	0	1	2	50.0%	20.0%	0.0%	0.0%	0.0%	10.0%	20.0%	80.0%	70.0%	2.60
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2014	16	3	4	0	2	0	5	2	18.8%	25.0%	0.0%	12.5%	0.0%	31.3%	12.5%	87.5%	43.8%	1.63
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2015	14	4	5	4	0	0	1	0	28.6%	35.7%	28.6%	0.0%	0.0%	7.1%	0.0%	100.0%	92.9%	2.79
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	8	3	3	1	0	0	1	0	37.5%	37.5%	12.5%	0.0%	0.0%	12.5%	0.0%	100.0%	87.5%	2.88
Summer 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	6	3	0	1	0	0	0	1	50.0%	0.0%	16.7%	0.0%	0.0%	0.0%	16.7%	66.7%	80.0%	2.80
Summer 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages***									33.3%	25.9%	11.1%	3.7%	0.0%	14.8%	9.3%	90.6%	70.4%	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which BIOL1415 was not included in this program's curriculum.

** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*

*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*

**** Averages may not equal 100 percent due to rounding.*

6. Grade Distribution, Course Completion, and Course Success Rate by Term Collin College Program Review 2017-18 FY2013 through FY2017
Biotechnology

BIOL2416 Genetics

		Grade Assigned							Grade Distribution							Completion	Success	Course
Term	Enrollment	A	B	C	D	P	F	W	A	B	C	D	P	F	W	Rate	Rate*	GPA **
Fall 2012	56	37	8	2	1	0	1	7	66.1%	14.3%	3.6%	1.8%	0.0%	1.8%	12.5%	87.5%	83.9%	3.16
Spring 2013	38	25	9	3	0	0	0	1	65.8%	23.7%	7.9%	0.0%	0.0%	0.0%	2.6%	97.4%	97.4%	3.50
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2013	58	22	21	11	0	0	3	1	37.9%	36.2%	19.0%	0.0%	0.0%	5.2%	1.7%	98.3%	93.1%	2.98
Spring 2014	47	27	7	6	0	0	2	5	57.4%	14.9%	12.8%	0.0%	0.0%	4.3%	10.6%	89.4%	85.1%	3.00
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2014	52	31	14	1	1	0	3	2	59.6%	26.9%	1.9%	1.9%	0.0%	5.8%	3.8%	96.2%	88.5%	3.25
Spring 2015	47	34	9	0	2	0	1	1	72.3%	19.1%	0.0%	4.3%	0.0%	2.1%	2.1%	97.9%	91.5%	3.51
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2015	51	31	11	5	0	0	2	2	60.8%	21.6%	9.8%	0.0%	0.0%	3.9%	3.9%	96.1%	92.2%	3.27
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	51	18	21	2	3	0	5	2	35.3%	41.2%	3.9%	5.9%	0.0%	9.8%	3.9%	96.1%	80.4%	2.78
Summer 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2016	52	31	10	5	0	0	0	6	59.6%	19.2%	9.6%	0.0%	0.0%	0.0%	11.5%	88.5%	88.5%	3.15
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	37	15	14	1	0	0	3	4	40.5%	37.8%	2.7%	0.0%	0.0%	8.1%	10.8%	89.2%	81.1%	2.81
Summer 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages***									55.4%	25.4%	7.4%	1.4%	0.0%	4.1%	6.3%	93.7%	88.1%	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which BIOL2416 was not included in this program's curriculum.

** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*

*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*

**** Averages may not equal 100 percent due to rounding.*

6. Grade Distribution, Course Completion, and Course Success Rate by Term Collin College Program Review 2017-18 FY2013 through FY2017

Biotechnology

BITC2386

Term	Enrollment	Grade Assigned							Grade Distribution							Completion Rate	Success Rate*	Course GPA **
		A	B	C	D	P	F	W	A	B	C	D	P	F	W			
Fall 2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages***.....									-	-	-	-	-	-	-	-	-	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which BITC2386 was not included in this program's curriculum.

** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*

*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*

**** Averages may not equal 100 percent due to rounding.*

6. Grade Distribution, Course Completion, and Course Success Rate by Term Collin College Program Review 2017-18 FY2013 through FY2017

Biotechnology

BITC2431 Cell Culture Techniques

		Grade Assigned							Grade Distribution							Completion	Success	Course
Term	Enrollment	A	B	C	D	P	F	W	A	B	C	D	P	F	W	Rate	Rate*	GPA **
Fall 2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2013	10	3	5	1	0	0	1	0	30.0%	50.0%	10.0%	0.0%	0.0%	10.0%	0.0%	100.0%	90.0%	2.90
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2014	10	7	1	1	1	0	0	0	70.0%	10.0%	10.0%	10.0%	0.0%	0.0%	0.0%	100.0%	90.0%	3.40
Spring 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2015	10	3	4	3	0	0	0	0	30.0%	40.0%	30.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	3.00
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	9	1	3	2	1	0	2	0	11.1%	33.3%	22.2%	11.1%	0.0%	22.2%	0.0%	100.0%	66.7%	2.00
Summer 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages***.....									35.9%	33.3%	17.9%	5.1%	0.0%	7.7%	0.0%	100.0%	87.2%	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which BITC2431 was not included in this program's curriculum.

** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*

*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*

**** Averages may not equal 100 percent due to rounding.*

6. Grade Distribution, Course Completion, and Course Success Rate by Term Collin College Program Review 2017-18 FY2013 through FY2017
Biotechnology

BITC2441 Molecular Biology Techniques

Term	Enrollment	Grade Assigned							Grade Distribution							Completion Rate	Success Rate*	Course GPA **
		A	B	C	D	P	F	W	A	B	C	D	P	F	W			
Fall 2012	6	2	3	0	0	0	0	1	33.3%	50.0%	0.0%	0.0%	0.0%	0.0%	16.7%	83.3%	83.3%	2.83
Spring 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer II 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fall 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages***									33.3%	50.0%	0.0%	0.0%	0.0%	0.0%	16.7%	83.3%	83.3%	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which BITC2441 was not included in this program's curriculum.
** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*
*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*
**** Averages may not equal 100 percent due to rounding.*

6. Grade Distribution, Course Completion, and Course Success Rate by Term Collin College Program Review 2017-18 FY2013 through FY2017
Biotechnology

CHEM1411 General Chemistry I

Term	Enrollment	Grade Assigned							Grade Distribution							Completion Rate	Success Rate*	Course GPA **
		A	B	C	D	P	F	W	A	B	C	D	P	F	W			
Fall 2012	396	72	111	89	43	0	39	42	18.2%	28.0%	22.5%	10.9%	0.0%	9.8%	10.6%	89.4%	68.7%	2.13
Spring 2013	423	91	112	101	39	0	41	39	21.5%	26.5%	23.9%	9.2%	0.0%	9.7%	9.2%	90.8%	71.9%	2.22
Maymester 2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2013	204	73	63	45	7	0	8	8	35.8%	30.9%	22.1%	3.4%	0.0%	3.9%	3.9%	96.1%	88.7%	2.83
Summer II 2013	68	33	22	6	3	0	2	2	48.5%	32.4%	8.8%	4.4%	0.0%	2.9%	2.9%	97.1%	89.7%	3.13
Fall 2013	473	126	139	100	35	0	37	36	26.6%	29.4%	21.1%	7.4%	0.0%	7.8%	7.6%	92.4%	77.2%	2.44
Spring 2014	498	104	134	109	38	0	71	42	20.9%	26.9%	21.9%	7.6%	0.0%	14.3%	8.4%	91.6%	69.7%	2.16
Maymester 2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer I 2014	197	66	68	34	9	0	5	15	33.5%	34.5%	17.3%	4.6%	0.0%	2.5%	7.6%	92.4%	85.3%	2.77
Summer II 2014	60	17	21	12	2	0	2	6	28.3%	35.0%	20.0%	3.3%	0.0%	3.3%	10.0%	90.0%	83.3%	2.62
Fall 2014	562	106	128	127	60	0	83	58	18.9%	22.8%	22.6%	10.7%	0.0%	14.8%	10.3%	89.7%	64.2%	2.00
Spring 2015	525	113	131	121	50	0	66	44	21.5%	25.0%	23.0%	9.5%	0.0%	12.6%	8.4%	91.6%	69.5%	2.17
Maymester 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summer 2015	284	94	77	62	9	0	11	31	33.1%	27.1%	21.8%	3.2%	0.0%	3.9%	10.9%	89.1%	82.0%	2.61
Fall 2015	555	104	139	131	67	0	60	54	18.7%	25.0%	23.6%	12.1%	0.0%	10.8%	9.7%	90.3%	67.4%	2.09
Winter 2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2016	543	106	141	121	54	0	71	50	19.5%	26.0%	22.3%	9.9%	0.0%	13.1%	9.2%	90.8%	67.8%	2.10
Summer 2016	247	76	81	50	12	0	14	14	30.8%	32.8%	20.2%	4.9%	0.0%	5.7%	5.7%	94.3%	83.8%	2.67
Fall 2016	556	126	131	105	60	0	81	53	22.7%	23.6%	18.9%	10.8%	0.0%	14.6%	9.5%	90.5%	65.1%	2.10
Winter 2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring 2017	536	126	151	114	56	0	44	45	23.5%	28.2%	21.3%	10.4%	0.0%	8.2%	8.4%	91.6%	72.9%	2.32
Summer 2017	259	106	68	52	7	0	12	14	40.9%	26.3%	20.1%	2.7%	0.0%	4.6%	5.4%	94.6%	87.3%	2.85
Averages***									24.1%	26.9%	21.6%	8.6%	0.0%	10.1%	8.7%	91.3%	72.6%	-

Note: The program's course list is a composite from 2013-2017 academic catalogs. If rows appear in blue text, this indicates terms in which CHEM1411 was not included in this program's curriculum.
** Success Rate is calculated by dividing the sums of A, B, C and P by the sums of A, B, C, D, P, F & W, using the definition consistent with the NCCBP (National Community College Benchmark Project).*
*** Course GPA is calculated by multiplying the count of A, B, C and D by 4, 3, 2 and 1, respectively. The results are summed and divided by the counts of A, B, C, D, F and W.*
**** Averages may not equal 100 percent due to rounding.*

ARTICULATION AGREEMENT
BETWEEN
TEXAS A&M UNIVERSITY-TEXARKANA
&
COLLIN COUNTY COMMUNITY COLLEGE DISTRICT

BACHELOR'S DEGREE

This Articulation Agreement, dated as of November 11, 2016, is made and entered by and between Texas A&M University-Texarkana and Collin County Community College District.

I. Purpose of Agreement

Texas A&M University-Texarkana, herein after referred to as "A&M-Texarkana," Texarkana, TX, and Collin County Community College District, herein after referred to as "Collin," McKinney, Texas, share a common interest in expanding the availability of quality higher education to all Texans. Both entities agree to cooperate in furthering this objective to the mutual benefit of their students.

This articulation agreement provides guidelines and outlines areas of responsibility ensuring that students at Collin can transfer completed courses to A&M-Texarkana without any loss of credit or recognition of approved courses applied toward the Collin degree. This agreement further provides guidelines and outlines areas of responsibility ensuring that students at A&M-Texarkana can transfer completed courses to Collin without any loss of credit or recognition of approved courses applied toward associate degrees. Either institution may propose additional cooperative activities that shall become part of the general agreement upon being signed by both parties.

II. Terms

The parties to this agreement, A&M-Texarkana and Collin, agree to the terms and conditions set forth herein:

A. General

1. A&M-Texarkana and Collin will each designate an individual who will be responsible for the maintenance of this articulation agreement and sharing of information on the bachelor's degrees and associate degrees, new courses added to the degree programs, transcript evaluation, and other projects as needed.

2. The names of the designated persons are contained in Appendix 1. Any change to Appendix 1 shall not require renegotiating of this agreement, and any such change made by one institution shall be communicated in writing to the other.

3. To be eligible for the program, students must meet all A&M-Texarkana admission requirements, be officially enrolled at A&M-Texarkana, and have an official

transcript showing credits earned on file with the A&M-Texarkana Admissions Office.

B. A&M-Texarkana **agrees to:**

1. Admit and enroll Collin students in bachelor degree programs that are determined by A&M-Texarkana to be qualified for admission to A&M-Texarkana and program.

2. Assist Collin transfer students in the transition from Collin into the A&M-Texarkana bachelor degree programs. This may involve informing students of, and assisting them, in the application for scholarships and in course registration.

3. Maintain ongoing collaboration and monitoring of bachelor degree programs with the appropriate departments.

4. Continue to accommodate Collin students into bachelor degree programs so long as this Agreement is in effect. Since A&M-Texarkana cannot guarantee all bachelor degree programs in perpetuity, this agreement does not constitute a binding contract regarding ongoing or future offerings of academic programs outlined in this agreement.

5. A&M-Texarkana is an equal opportunity institution, and shall not discriminate unlawfully against any Collin student, applicant, or employee, nor shall it deny the benefits provided its own degree-seeking student to any person on the basis of race, color, religion, national origin, sex, age, disability, genetic information, citizenship or veteran status.

C. COLLIN COLLEGE agrees to:

1. Provide, upon request by A&M-Texarkana, syllabi for any courses covered by this articulation agreement.

2. Communicate to students enrolling in bachelor degree programs at A&M-Texarkana academic requirements, policies, procedures, tuition and fees that will apply and may be subject to change, and to inform students that A&M-Texarkana future offerings cannot be guaranteed.

3. Maintain ongoing collaboration and monitoring of the programs through the University departments

4. Collin is an equal opportunity entity, and shall not discriminate unlawfully against any A&M-Texarkana student, applicant, or employee, nor shall it deny the benefits provided its own students to any person on the basis of race, color, religion, national origin, sex, age, disability, genetic information, citizenship or veteran status.

D. Both Institutions agree to:

1. Be responsible for their employees, actions or inactions, and liability arising there from. The institutions will maintain their own insurance including workers' compensation, general liability, or such other coverage necessary for their own institutional liability. Neither institution waives any immunity it may be afforded under law as a governmental entity in the State of Texas.

2. Notify appropriate officials at the relevant institution of any complaints of sexual harassment or discrimination alleged to be committed by students or employees of the other institution.

3. Apply the policies and procedures of each institution to students enrolled with each institution. Disciplinary complaints falling under the jurisdiction of an institution shall be referred to the appropriate officials.

4. Initiate a biennial review of this agreement to evaluate any changes in competencies, content, or standards.

E. Transfer of Credit

1. This articulation agreement provides a mechanism to enable students who have completed courses prescribed by this agreement to transfer those courses from Collin to A&M-Texarkana and, thereby, satisfy the maximum amount of hours each bachelor degree plan allows.

2. Appendix 2 contains programs and courses covered by this articulation agreement. Any changes to Appendix 2 may be made by mutual written agreement of the Associate Vice President for Academic Outreach at Collin and the Dean of College of Science, Technology and Mathematics at A&M - Texarkana.

3. This articulation agreement provides a mechanism to enable Collin students who have earned enough credits to satisfy the Associate degree requirements to have those credits transferred back to Collin. This **reverse transfer** process expands the A&M-Texarkana and Collin partnership in that it will help increase student transfer rates to the university and raise associate degree completion rates for the college.

   A&M-Texarkana agrees to provide a contact person who is knowledgeable about Reverse Transfer and who can work with Collin to facilitate this process.

F. Terms of Agreement and Termination

This agreement shall be filed with A&M-Texarkana's Admissions, College of Science, Technology and Mathematics and the Provost and Vice President for Academic Affairs. This agreement shall be filed with Collin's Vice President of Academic & Workforce Development-Teaching & Learning.

1. All required notices, demands, requests, and other communications shall be in writing and shall be deemed to have been given when personally delivered or mailed to the administrators of the respective institutions.

2. This agreement may be amended at any time in writing upon signature of authorized representatives of both institutions.

3. **This Agreement will remain in effect for a period of five years unless extended by written agreement of the parties or terminated as provided in this Section F.4**. This Agreement is subject to termination by either party upon sixty days written notice of a material breach to the breaching party. Alternatively, this Agreement can be terminated at any time without cause by mutual consent of the parties or by either institution with notice by May 1 that the program will not be offered for the next academic year.

4. The laws of the State of Texas (U.S.A.) shall govern the interpretation and application of this Agreement. Any dispute arising out of this Agreement or its operation, performance or nonperformance shall be resolved in accordance with Texas law and venue shall be solely and exclusively in the courts located in Bowie County and/or Collin County, Texas, U.S.A.

Texas A&M University-Texarkana

Emily J. Cutrer

President, Dr. Emily Cutrer

Collin College

Executive Vice President, Dr. Brenda Kihl

APPENDIX 1

Individuals Designated to Maintain This Agreement

1. Collin designates the following individual as the person responsible for maintaining this agreement. This designee shall contact the A&M-Texarkana designee no later than May 15 each year during the period for which this articulation agreement is in force for the purpose of carrying out the terms listed in other parts of this agreement.

   Dr. Brenda Kihl
   Executive Vice President
   3452 Spur 399
   Collin Higher Education Center
   Rm 402
   McKinney, TX 75069
   Phone: 972 7583809
   Email: bkihl@collin.edu

2. A&M-Texarkana designates the following individual as the person responsible for maintaining this agreement. This designee shall be in contact with the Collin's designee no later than May 15 each year for the purpose of carrying out the terms listed in other parts of this agreement.

   Dr. Donald Peterson
   Dean of College of Science, Technology, Engineering, and Mathematics
   7101 University Ave.
   Texarkana, TX 75503
   Office: STEM 104
   Phone: (903) 334-6651
   Email: donald.peterson@tamut.edu

Texas A&M University-Texarkana Admission Criteria

General university admission:

Transfer applicants must be eligible to enroll at all colleges or universities previously attended. In order to be considered for admission at A&M-Texarkana, transfer students must meet the following admission requirements:

- 30 or more transferable credit hours and;
- 2.0 grade point average (GPA) or higher

Transfer applicants who have fewer than 30 transferable credit hours will need to meet the Freshman Admission requirements. We encourage applicants who do not meet the admission requirements above to attend or continue at their current community college to boost transfer GPA.

Program specific admission:

Applicants for the BS Biotechnology program must:

1. Meet all general university admission requirements,
2. Be admitted to the university,
3. Have taken and approved the following courses as specified in the Collin catalog:

Biotechnology Certification to
BS in Biotechnology
Guided Pathway
[effective for the 2016-2017 catalog]

First Year - Collin County Community College

FIRST SEMESTER 15	SECOND SEMESTER 16
[C] BIOL 1406 – General Biology I (030)	BIOL 1415 – Introduction to Biotechnology II
[C] ENGL 1301 – Composition I (010)	[C] CHEM 1412 – General Chemistry II (090)
[C] CHEM 1411 – General Chemistry I (030)	BITC 2431 – Cell Culture Techniques
BIOL 1414 – Introduction To Biotechnology	[C] MATH 1314 – College Algebra[1] (020)

Second Year - Collin County Community College

FIRST SEMESTER 14	SECOND SEMESTER 15
BITC 2441 Molecular Biology Techniques	CHEM 2425 – Organic Chemistry II
CHEM 2423 – Organic Chemistry I	[C] ENGL 1302 – Composition II (010)
[C] ARTS 1301 – Art Appreciation* (050)	[C] SPCH 1315 – Public Speaking *(090)
[C] PSYC 2301 – General Psychology* (080)	BITC 1340 QA/QC
	BITC 2286 – Internship Biology Tech/Biotech Lab

The Previous courses should have been taken and approved at Collin in order to request transfer to Texas A&M – Texarkana.
The Following courses should be taken and approved at Texas A&M – Texarkana in order to obtain a Bachelor of Science Degree in Biotechnology.

Third Year – TAMU - Texarkana

FIRST SEMESTER 15	SECOND SEMESTER 15
CHEM 410 – Biochemistry I	CHEM 411 – Biochemistry II
BTEC 3XX – Proteins, St. Funct., and Networks	BIOL 310 – Genetics
BIOL 311 - Microbiology	3XX – Prescribed Upper Division Elective
[C] HIST 1301 – US History I (060)	[C] HIST 1302 – US History II (060)

Fourth Year – TAMU - Texarkana

FIRST SEMESTER 15	SECOND SEMESTER 15
BTEC 311 – Microbial Biotechnology	BTEC 490 – Advanced Biotechnology
BTEC 4XX – Fundamentals of Bioinformatics	BTEC 483 - Capstone II
GOVT 2301 – Am. Government I	GOVT 2302 – Am. Government II
BIOL 402 - Cell and Molecular Biology	[C] ENGL 2321 – British Literature I* (040)

* The student may take a different course to meet this requirement. A specific list is available from their advisors.
[C] This course counts for the Core Curriculum at any public college or university in Texas.

Updated Oct. 25, 2016

[1] Calculus I recommended (Having at least Calculus I, would give students prerequisites to select either Bioinformatics or Protein Engineering track at Texas A&M – Texarkana).
() Course numbers shown in parentheses are equivalent to these courses at Texas A&M - Texarkana.

4. Completed BIOL 1414 (Introduction to Biotechnology I) and BIOL 1415 (Introduction to Biotechnology II) with a grade of C or higher, and
5. Maintain a 2.5 grade point average (GPA) or higher on STEM courses.

Biotechnology

Program Option:
Certificate Level 2 – Biotechnology

Collin's Biotechnology Program prepares students for entry level positions in biological research and industrial laboratories. Returning students can also benefit from the new methods and technologies related to agriculture, medicine, pharmaceuticals, and other applications.

Students planning to transfer to a college or university should check with Collin academic advisors. Also check the degree requirement of the intended transfer college prior to beginning this program to verify course degree applicability.

If your program requires a criminal background check, your placement in a required clinical site, cooperative, practicum, internship, and/or licensure/certification opportunity may be impacted. If you have any questions or concerns, please contact your program director and check with your licensing/certifying entity, if any, to determine your status.

Certificate Level 2 – Biotechnology

27 credit hours

Students must be TSI complete.

BIOL 1414 and BIOL 1415 will transfer to a specific 2+2 baccalaureate program. Please check with your advisor to learn whether these courses will apply to the four-year program of your choice.

First Semester

BIOL	1406	Biology for Science Majors I
BIOL	1414	Introduction to Biotechnology I
BIOL	1415	Introduction to Biotechnology II
CHEM	1411	General Chemistry I

Second Semester

BIOL	2416	Genetics [1]
BITC	2386	Internship - Biology Technician / Biotechnology Laboratory Technician (Capstone) [2]
BITC	2431	Cell Culture Techniques

1. May substitute BIOL-2421 or CHEM-2423
2. May substitute BITC-2441

Biotechnology – Collin College

Math and Natural Sciences Division

Faculty Contact:
Bridgette Kirkpatrick
SCC-I208 972.578.5513

Program Option:

Certificate – Biotechnology

Collin's Biotechnology Program prepares students for entry level positions in biological research and industrial laboratories. Returning students can also benefit from the new methods and technologies related to agriculture, medicine, pharmaceuticals, and other applications.

27 credit hours

First Semester
BIOL 1406 Biology for Science Majors I
BIOL 1414 Introduction to Biotechnology
BIOL 1415 Introduction to Biotechnology II
CHEM 1411 General Chemistry I

Second Semester
BIOL 2416 Genetics [1]
BIOL 2389 Internship – Biology Co-op[2]
BITC 2431 Cell Culture Techniques

1. May substitute BIOL-2421 or CHEM-2423
2. May substitute BITC-2441

Highlighted Coursework/Course Descriptions
BIOTECHNOLOGY

BIOL 1414 - INTRO TO BIOTECHNOLOGY I*
An introduction to biotechnology including career exploration, history and applications of DNA/RNA technology, molecular biology, bioethics, and laboratory safety practices.

BIOL 1415 - INTRO TO BIOTECHNOLOGY II*
A study of laboratory operations, management, equipment, instrumentation, quality control techniques, and safety procedures. Laboratory practice in using pH meters, mixing buffers, performing measurements, preparing solutions, and performing separatory techniques.

BITC 2431 – CELL CULTURE TECHNIQUES*
A study of cell culture techniques. Laboratory emphasis on the principles and practices of initiation, cultivation, maintenance, preservation of cell lines, and applications.

BIOL 2416 – GENETICS*
Principles of classical and molecular genetics and the function and transmission of hereditary material. Explores genetic engineering, with special attention paid to human genetics and current research in genetics.

BIOL 2389 – INTERNSHIP-BIOLOGY CO-OP
A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

BIOL 1406 –BIOLOGY I*
For science majors. Current knowledge of the fundamentals of biology from the molecular to cellular level of organization. General topics covered include basic biochemistry, metabolism, energetics, cell structure, DNA, genetics, viruses, and bacteria.

BIOL 2421 – MICROBIOLOGY*
Classification, cell structure, metabolism, and historical concepts of microorganisms including bacteria, viruses, fungi, protozoa, Chlamydia and Rickettsia. Infectious diseases and immunology will be emphasized. Practical microbiology will include diagnostic microbiology of water, food, sewage, soil, and industrial applications. Laboratory methods are stressed, and experimentation with pure cultures of medical, environmental, and industrial importance is used extensively.

CHEM 1411 - GENERAL CHEMISTRY I*
For science majors, pre-medical, pre-dental, or engineering students. Includes stoichiometry, ideal gas behavior, atomic theory, periodic trends, VSEPR theory, thermochemistry, and bonding theory. Lab and recitation required.

***lab included**

COLLIN COLLEGE

Appendix 10. Faculty Credentials

Curriculum Vitae - Bridgette Kirkpatrick

Email Address: bkirkpatrick@collin.edu

Education:

University of Arizona - Ph.D.
University of Nebraska-Lincoln - MS
University of Nebraska-Lincoln - BS

Teaching History:

Spring 2001 - Current	**Institution:** Collin College **Position:** Professor, Biotechnology, Biology

Additional Teaching History:

Teaching Assistant Physiology 846/846 University of Nebraska-Lincoln- 5 semesters Reproductive Physiology 315 University of Arizona- 2 semesters

Publications:

Kirkpatrick BL and Grotjan HE (1998) Neither castration nor steroid-replacement change the apparent molecular size of FSH in the sheep pituitary. Animal Reproduction Science 49:239-246.

Kirkpatrick BL, Esquivel E, Gentry PC, Moss GE, Wise ME, Hamernik DL (1998) Regulation of amounts of mRNA for GnRH receptors by estradiol and progesterone in sheep. Endocrine 8 (1):93-99.

Kirkpatrick BL, Esquivel E, Moss GE, Wise ME, Hamernik DL (1998) Estradiol and gonadotropin-releasing hormone (GnRH) interact to increase GnRH receptor expression in ovariectomized ewes after hypothalamic-pituitary disconnection. Endocrine 8 (3):225-229.

Awards and Honors:

CoPI ATE NSF Grant -present

Lebrecht Endowed Chair, 2011-2013

Finalist Outstanding Professor, 2008

Co-op Faculty Coordinator of the Year, 2005

Women in Endocrinology Travel Grant, 2000

Cowden Fellowship, 1996-1997

Women's Research Institute Reproductive Colloquium Travel Grant, 1993 (Regional)

Professional Societies:

Bio-Link

Society for the Study of Reproduction

CCURI

ASM

Other Activities:

REIL Workshop participant, November, 2017

Synthetic Biology Workshop, June, 2017

ASMCUE Presenter

PARE-Prevalence of antibiotic resistance in the environment; implemented in courses and working on extension labs

Member Cohort 9 of SEA PHAGES—Discovery and Bioinformatics workshops

Presenter Bio-Link Summer Fellows-Team-based learning in the biotech classroom

Participant Team Based Learning workshops and national meeting 2015

Biotechnology Educator's Conference; planning committee member/chair/presenter; 2002-2010

PALM Workshop Participant, June, 2009

Presented "Inside Cancer", June 2009

Presented "Biotech on a Shoestring Budget" Mini-CAST, January, 2008

Participant-Plant Genomics workshop, UC Davis, July, 2007

Presented multiple continuing education workshops for high school science teachers "Biotech in a Box" or "Biotech on a Shoestring Budget"; 2004; 2005; 2007

Biotechnology Institute Teacher-Leader Participant and BIO attendee, Chicago, IL, April, 2006

National Bio-Link Summer Fellows participant; June, 2006 and 2009, 2014-17

Curriculum Vitae - Carole Twichell

Email Address: ctwichell@collin.edu

Education:

University of Texas at Dallas - Master of Science - Molecular & Cell Biology
University of Texas at Austin - Bachelor of Science - Microbiology

Teaching History:

Fall 2003 - Current	**Institution:** Collin College **Position:** Associate Faculty
Fall 1999 - Spring 2001	**Institution:** University of Texas at Dallas **Position:** Teaching Assistant

- Conferences/Workshops attended/conducted.
  - Bio-Link Summer Fellows, Berkeley, California, June 2015
  - National Visiting Committee for AC2 Regional Center Grant Meeting, attended as member of leadership team, presented work on universal articulations of biotechnology programs, Austin, Texas, April 2016
  - Del Mar Research Mentoring Workshop, Corpus Christi, Texas, April 2016
  - Bio-Link Summer Fellows, Berkeley, California, June 2016
  - Austin Stem Cell Workshop, Austin, Texas, July 2016
  - SEA-PHAGES Cohort 9, Baltimore, Maryland, June 2016
  - Stem Cell Production in a Regulated Workforce Workshop, North Carolina, July 2016

- Professional presentations, papers presented/published/submitted for publication.
  - "Team-Based Learning in Biotechnology Education", presented at Bio-Link Summer Fellows Conference 2016, Berkeley, California

- Active involvement in professional organizations.
  - Member of Bio-Link

Curriculum Vitae - Sophia Hines

Email Address: slhines@collin.edu

Education:

University of Texas at Dallas - Master of Science in Molecular & Cell Biology
University of Texas at Dallas - Master of Science in Biotechnology
University of Texas at Dallas - Bachelor of Science in Neuroscience
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Teaching History:

Fall 2015 - Current	**Institution:** Collin College **Position:** Associate Faculty
Spring 2012 - Spring 2014	**Institution:** University of Texas at Dallas **Position:** Teaching Assistant
-	**Institution:** **Position:**
-	**Institution:** **Position:**

Additional Teaching History:

Publications:

Publications: