



**BSC 303 Cell Biology, CRN: 81952**  
**Fall 2024**

Prerequisites: BSC 1406, 1407 and CHEM 1312 Min Grade C

**Instructor:** Dr. Venu Cheriyaath  
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eCompanion Site: D2L (Brightspace) @ MyLeo

Lectures: M, W, F 9.00–9.50 AM  
Location: BA 258  
Lab: One 3 hr lab @ STC–324  
Mondays 1–3.50 PM, or 4–6.50 PM

Office Hours: M, W, F 2–3 PM *via* Zoom in D2L  
E-Mails: Include BSC 303 Cell Biology in subject line of  
E-mails; E-mails will be answered within 48  
hours.

**Course overview:**

This course will provide a rigorous foundation in current cell biology so that advanced level cellular and molecular biology courses will be more meaningful. Without the recommended prerequisites and a good grasp of basic fundamentals of chemistry, this course will likely prove very difficult.

**Student Learning Outcomes (SLO):**

At the completion of this course students will be able to:

- 1 Identify the structure and functions of animal cells, organelles and their differences from prokaryotic cells.
- 2 Understand the chemical architecture of living cells and the functions of the major groups of biological molecules and how the information is passed from DNA to proteins.
- 3 Perform various cell staining techniques to observe cellular organelles under a microscope.
- 4 Assess the viability of cells, quantitate proteins and separate them on SDS-Gel.

**Required Textbook:** Becker's World of the Cell, 10<sup>th</sup> Edition, by Hardin, Bertoni, and Kleinsmith, ISBN-13: 9780137441778

We will cover most of the subject matter presented in this book, but not necessarily in order. Chapter assignments are listed on the Course Schedule. For some topics, this book presents more detail than we need; however, it omits some topics that will be discussed in the course.

## INSTRUCTION METHOD

This syllabus is a suggested outline of a face-to-face class and the minimum material covered in this course. Dates are approximate and subject to change. Any major changes to the syllabus will be posted in D2L and the syllabus will be updated accordingly. You are responsible for keeping up with any changes made to the syllabus. *You may be tested on any material listed in the syllabus, on your class page, and discussed in the class.*

### Class Policies:

**Attendance & Participation in Supplemental Instruction (20 credit points, 2% of total):** Attendance in ALL classes and labs are expected. This course will follow active learning methods and your active participation in class activities are required for earning attendance and participation points. You will work both in groups and individually during and after the class to complete various assignments. You may earn up to 10 points of total 1%) for not making more than 2 unexcused absences and another 10 points for active participation in supplemental instruction and class room activities. Attendance would be taken in the beginning of every class. If you are not present in most time of a class, it will be counted as an absence and you will lose points for both attendance and for participation. You are responsible for all material and assignments covered in class whether you are present or not.

**Lecture Materials:** Power Point slides that I use for delivering lectures will be available at D2L Brightspace, the e-companion site for this course. **However, I would like to make it very clear that Power Point slides are meant for me to deliver lectures and not to be treated as lecture notes. You may use it as a reference or guide to read the book but not as study material. If you just use the PowerPoint slides as study material instead of reading books, you may not perform good in tests.**

**How to Succeed in this Class:** Your active and timely participation is essential for the successful completion of this course. As a 300 lever class on Cell Biology, I expect that you have a thorough back ground in BSC 1406 (Biology I). You must read chapters prescribed for each week, attend class, and go through additional lecture materials, assignments and activities. *I encourage to clear any questions that you may have during lectures or during officer hours M, W, & F 2-3 PM).*

### Overview of Assignments:

**1) Weekly Quizzes (100 points of total, 10%):** Each week there will be a quiz which needs to be taken online in D2L Brightspace. **Quizzes are due @ 11.59 PM on Thursdays** or as indicated in D2L calendar. Each quiz will contain 10 questions and worth of 10 points. If you miss a quiz, there won't be any makeup quiz.

**2) Argumentative Essay (3%):** Biology students are expected to be well informed about current issues and cutting edge developments in biology. For this course you are required to complete a 1500 words essay (references would not be counted towards word limit). For elements of a good essay, you may refer the following link <https://www.otago.ac.nz/classics/otago055219.pdf>

Topic	Due Date
Viral Disease Diagnosis using qRT-PCR: A case of Science or Pseudoscience	Oct 31, 2024

Essay is due at 11.59 PM on specified date. The basic tenets of scientific processes must be followed to support your case and information must be from original articles. Essay must be in your own words, while you may cite references, sentences from citation must be paraphrased.

The essay is an argumentative essay not a Persuasive one. Here are some thumb rules on how to write a good argumentative essay.

- 1 Claim: state your thesis or argument clearly
- 2 Reasons: your evidence, including data to support your thesis/claim (This require citations).
- 3 Warrant: the connection between your claim and reasons (requiring you to state assumptions explicitly so there's no confusion)
- 4 Backing: additional evidence to support your claim (require citations).
- 5 Qualifier: the limits to your own claim, including concessions (require citations).
- 6 Rebuttal: addressing opposing viewpoints and criticisms of your claim.

**Exams and Grades:** The lecture part of the course will weigh 75% and lab part will weigh 25% of the total. For the lecture part there will be three exams (150 points each) throughout the term and a cumulative final exam (150 points). Exams will be conceptual based and will test critical thinking, analytical ability, and the understanding of subject matter. Exams may include bonus questions will be based on problem sets. Therefore, it is important to understand the concepts to perform well in this course.

**Grading Policy:**

4 exams including the final	600 points (60%)
Weekly Quizzes	100 points (10%)
Essay (1000 words)	30 points (3%)
Attendance and Participation in supplemental Instruction (Bio-SI)	20 points (2%)
Lab	250 points (25%)
Total	1000 points (100%)

**Grading Scale:**

- A = 900 to 1000 points (>90%)
- B = 800 to 899 points (>80%)
- C = 700 to 799 points (>70%)
- D = 580 to 699 points (>58%)
- F = 579 or fewer (<58%)

**To calculate where you stand:** Your up to date scores and percentage will be available in the grade book of D2L Brightspace. Add your 3 exam scores, scores in assignments, and your final score of lab and assignment plus any extra credit points that you have, which will be your total score in 1000. Calculate the percentage. This will be your grade.

**Course Calendar and Exam Schedule:**

Units	Date	Chapters	Topic
Unit 1	Aug 26 – Sept 06 <b>Quiz Due at 11.59 PM on</b>	Chapter 1	Introduction to Cell Biology

	<b>Sept 12</b>		
Unit 2	Sept 09 – Sept 13 <b>Quiz Due at 11.59 PM on Sept 19</b>	Chapter 2	Chemical basis of life
Unit 3.1	Sept 16 – Sept 20 <b>Quiz Due at 11.59 PM on Sept 26</b>	Chapter 3	Macromolecules (Amino acids, Protein, and Nucleic Acids)
Unit 3.2	Sept 23– Sept 27 <b>Quiz Due at 11.59 PM on Oct 03</b>	Chapter 3	Macromolecules (Carbohydrates and Lipids)
<b>Exam I, October 04</b>			
Unit 4	Sept 30 – Oct 11 <b>Quiz Due at 11.59 PM on Oct 17</b>	Chapter 4	Cell and Organelles
Unit 5	Oct 14 – Oct 18 <b>Quiz Due at 11.59 PM on Oct 24</b>	Chapter 5	Bioenergetics
Unit 6	Oct 21 – Oct 25 <b>Quiz Due at 11.59 PM on Oct 31</b>	Chapter 6	Enzymology
<b>Exam II, November 1</b>			
Unit 7	Oct 28 – Nov 01 <b>Quiz Due at 11.59 PM on Nov 07</b>	Chapter 7	Membranes, Function, & Chemistry
Unit 8	Nov 04 – Nov 08 <b>Quiz Due at 11.59 PM on Nov 14</b>	Chapter 8	Membrane transport
Unit 9	Nov 11– Nov 15 <b>Quiz Due at 11.59 PM on Nov 21</b>	Chapter 13	Cytoskeleton
<b>Exam III, November 23</b>			
Unit 10	Nov 18– Nov 22 <b>Quiz Due at 11.59 PM on Nov 27</b>	Chapter 15	Cell adhesion & Cell junctions
Unit 11	Nov 25 – Dec 06 <b>Quiz Due at 11.59 PM on Dec 05</b>	Chapter 16	DNA, Chromosomes and Nucleus
<b>Final Exam, Dec 11, Wednesday 8–10 AM</b>			

**\*ALL DATES AND ASSIGNMENTS ARE TENTATIVE AND MAY SUBJECT TO CHANGE**

**University's Pandemic and Adverse Weather Response:** "A&M-Commerce students, faculty, and staffs are required follow university's pandemic and adverse weather response guidelines.

**Academic Integrity:** A Texas A&M University–Commerce student does not lie, cheat, steal, and does not tolerate those who do. A violation of the Texas A&M honor code and academic integrity involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. The first instance of cheating will results in "**ZERO**" on the exam and/or on the assignment. The second instance of cheating will results in "**ZERO**" on the course. Cheating involves copying information from another student, non-allowable materials or source and plagiarism. Once again, violations of academic integrity will not be tolerated. This class will be conducted in strict observance of the Honor Code. Refer to your Student Handbook for details.

**Conduct Policy:** All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See Student's Guide Handbook, Policies and Procedures, Conduct).

**Cell Phones/Pagers/Laptop/Tablets:** Please turn your cell phone and/or pager (and other electronic devices) off during class. If you are on-call for your work, please place the cell phone or pager on silent or vibration mode. Electronic devices are strictly prohibited in lab.

If you utilize a laptop to take class notes, please be aware of potentially distracting others around you and seat yourself accordingly. Additionally, you may be asked to leave the class if it is determined you are utilizing a computer or electronic device to do outside work, surf the web inappropriately or communicate personal conversations. Texting is prohibited and devices will be collected and kept until the end of class.

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment (See Students' Guide Handbook, Policies and Procedures).

**Tapes and Notes:** While recordings of this class may be made for personal use with prior permission, recordings may not be sold or distributed to others. While you may make copies of these notes for your personal use, no copy of these notes may be distributed to anyone other than persons who are currently enrolled in the class; nor may any copies be sold.

**Lab behavior:** If handled improperly, some chemicals used in the lab become dangerous. Drinking, eating and the use of electronic devices is PROHIBITED in the lab! Disruptive behavior in lab that could be considered a hazard to another student will result in immediate removal from the lab. Intentionally damaging lab equipment may result in a ZERO for the class and possibly severe financial penalties as many pieces of equipment we will be using are expensive. SEEK HELP If you do not know how to use some instruments (see laboratory syllabus for details)

#### ACCESS AND NAVIGATION

##### ***D2L Brightspace Access and Log in Information***

This course will be facilitated using D2L Brightspace, the learning management system used by Texas A&M University-Commerce. To get started with the course, go to [myLeo](#) and from App window select [MyLeoOnline \(D2L Brightspace\) App](#). From home menu choose your course.

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or

[helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** It is strongly recommended you perform a “Browser Test” prior to the start of your course.

## TECHNOLOGY REQUIREMENTS

### Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year. Note the following:

- Ensure that your browser has JavaScript and Cookies enabled.
- For desktop systems, you must have Adobe Flash Player 10.1 or greater.
- The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

### Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A
Microsoft® Internet Explorer®	N/A	11
Mozilla® Firefox®	Latest, ESR	N/A
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

### Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or point release of that major version) and the previous major version of iOS (the latest minor or point release of that major version). For example, as of June 7, 2017, D2L supports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version.

Device	Operating System	Browser	Supported Browser Version(s)
			Chrome: Latest version for the iOS browser.
<b>Windows</b>	<b>Windows 10</b>	<b>Edge, Chrome, Firefox</b>	<b>Latest of all browsers, and Firefox ESR.</b>

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
  - 512 MB of RAM, 1 GB or more preferred
  - Broadband connection required courses are heavily video intensive
  - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- You must have a:
  - Sound card, which is usually integrated into your desktop or laptop computer
  - Speakers or headphones.
  - \*For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.
- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: [JAVA web site http://www.java.com/en/download/manual.jsp](http://www.java.com/en/download/manual.jsp)
- Current anti-virus software must be installed and kept up to date.

Running the browser check will ensure your internet browser is supported.

Pop-ups are allowed.  
JavaScript is enabled.  
Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
  - [Adobe Reader https://get.adobe.com/reader/](https://get.adobe.com/reader/)
  - [Adobe Flash Player \(version 17 or later\) https://get.adobe.com/flashplayer/](https://get.adobe.com/flashplayer/)
  - [Adobe Shockwave Player https://get.adobe.com/shockwave/](https://get.adobe.com/shockwave/)
  - [Apple Quick Time http://www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/)
- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

## ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

## COMMUNICATION AND SUPPORT

Brightspace Support

Need Help?

Student Support

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, contact Brightspace Technical Support at 1-877-325-7778 or click on the click on the words “click here” to submit an issue via email.



please  
Live Chat or

System Maintenance

Please note that on the 4th Sunday of each month there will be System Maintenance which means the system will not be available 12 pm-6 am CST.

## COURSE AND UNIVERSITY PROCEDURES/POLICIES

### Syllabus Change Policy:

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

### University Specific Procedures:

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf). <http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf>  
Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](http://www.albion.com/netiquette/corerules.html) <http://www.albion.com/netiquette/corerules.html>

### TAMUC Attendance:

For more information about the attendance policy please visit the [Attendance](http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx) webpage and [Procedure 13.99.99.R0.01](http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx). <http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>  
<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

### Academic Integrity:



Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

### **Use of Artificial Intelligence, Open AI, Chat GPT, Chat Bot Software Statement**

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

**Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).**

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. **If no instructions are provided the student should assume that the use of such software is disallowed.**

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

<https://inside.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

13.99.99.R0.10 Graduate Student Academic Dishonesty

<https://inside.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/13students/graduate/13.99.99.R0.10.pdf>

### **Students with Disabilities**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

**Office of Student Disability Resources and Services**

Texas A&M University-Commerce Gee Library- Room 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: [Rebecca.Tuerk@tamuc.edu](mailto:Rebecca.Tuerk@tamuc.edu)

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun.

Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url: <http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M- Commerce campuses. Report violations to the University Police Department at 903- 886-5868 or 9-1-1.

### **Early Intervention:**

Early intervention for freshmen is designed to communicate the University's interest in their success and a willingness to participate fully to help students accomplish their academic objectives. The university through faculty advisors and mentors will assist students who may be experiencing difficulty to focus on improvement and course completion. This process will allow students to be knowledgeable about their academic progress early in the semester and will provide faculty and staff with useful data for assisting students and enhancing retention. Grade reports will be mailed by the end of the sixth week of the semester. Additional information about first time undergraduates is available at

<http://www.tamuc.edu/academics/universityCollege/successCoaches/default.aspx>

**Behavior:** *All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment.” (See Student’s Guide Handbook, Policies and Procedures, Conduct).*

**Plagiarism:** *Plagiarism is a criminal activity. You must cite all sources of information. Unreferenced copying of material, whether parts of sentences, whole sentences, paragraphs, or entire articles can result in a score of zero for your assignment and may result in further disciplinary action. If you are copying material and citing references, you are expected to paraphrase and rewrite the sentences in your own words.*