

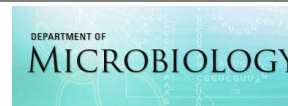


Biomufacturing Training  
and Education Center

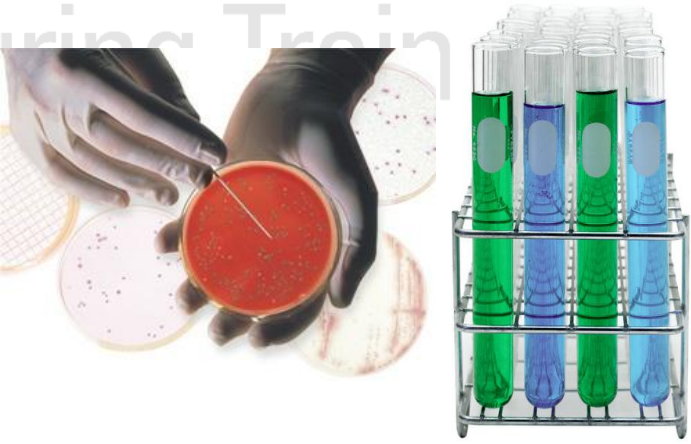
Course information for

## Fundamentals of Microbial Cell Culture

[Syllabus-FMCC.pdf](#)



<b>Course #</b>	<b>MB(BEC) 320</b>	
<b>Instructor</b>	José M. Bruno-Bárcena 1552A Gardner Hall Addition North Carolina State University Raleigh, NC 27695	Phone: 919-513-1495  email: jbbarcen@ncsu.edu web site: <a href="http://www4.ncsu.edu/~jbbarcen">http://www4.ncsu.edu/~jbbarcen</a>
	Driss Elhanafi 850 Oval Drive, Suite 195 Raleigh, NC 27695-7928	Phone: 919-513-8236 Fax: 919-513-8235 email: driss_elhanafi@ncsu.edu
<b>Location</b>	Centennial Campus -- BTEC Building – Rooms #119 & #105. Centennial Campus <b>OBTAIN DIRECTIONS HERE</b>	
<b>Prerequisites/ Corequisites</b>	BIO 181 or BIO 183 or ZO 161	
<b>Credit Hours</b>	2	
<b>Date</b>	From January 11 to March 1st	
<b>Class Hours</b>	Lecture - Tuesdays, 12:50-14:40; Laboratory – Thursdays, <ul style="list-style-type: none"> <li>• Section MB(BEC) 320L 202 Time: 1250-1750PM room 105</li> <li>Wednesday,</li> <li>• Section MB(BEC) 320L 201 Time: 1720-22150PM room 105</li> </ul>	
<b>Office Hours</b>	Tuesdays, 14:40-15:30	
<b>Restrictions &amp; Notes</b>	Students who have completed MB 352 may not take this course for credit Electronic devices are required to be turned off in the classroom	
<b>Course Website</b>	<a href="http://vista.ncsu.edu/">http://vista.ncsu.edu/</a>	
<b>Delivery Format</b>	This is a half-semester class. Students are required to attend weekly lectures and laboratories during the weeks the course is taught.	
<b>Course Description</b>	This introductory course addresses fundamental cell biology concepts and enables students to gain an understanding of the basic principles of microbiology, culture preparation, physiology and genetics of microbial cell cultures. The lab portion of the course provides students with practical experience in basic laboratory and culture techniques.	
<b>Technology Requirements</b>	In order to complete the course, all students will be required to have access to an active internet connection. If you do not have Adobe Acrobat Reader installed on your computer, you will need to go to the following web site and follow the instructions to download a free version.  <a href="http://www.adobe.com/products/acrobat/readstep2.html">http://www.adobe.com/products/acrobat/readstep2.html</a>	
<b>Text Requirements</b>	All required reading material is contained within the course or is available through a World Wide Web link provided within the course content. The class links page is also available as a source of the following references for the course: <ol style="list-style-type: none"> <li>1. Shuler, M.L., Kargi, F., editors 2002. Bioprocess Engineering: Basic Concepts. Prentice-Hall of India (ISBN0130819085)</li> <li>2. Harley-Prescott 2002. Laboratory Exercises in Microbiology, Fifth Edition. The McGraw-Hill Companies. (ISBN0072333456)</li> </ol>	
<b>Course Objectives</b>	At the end of this course, you should be able to: <ul style="list-style-type: none"> <li>❖ explain key concepts and principles of cell biology and microbiology, including cell</li> </ul>	

	<p>morphology, taxonomy, nutrition and growth; culture collections and gene banks; metabolic pathways; and cell information storage and the basics of genetic engineering;</p> <ul style="list-style-type: none"> <li>❖ demonstrate basic laboratory and cell culture techniques while observing standard safety practices; and</li> <li>❖ determine and analyze results of laboratory experiments.</li> </ul>																																							
<b>Lecture Outlines by Topical Areas</b>	<ol style="list-style-type: none"> <li>1. Biological basics overview</li> <li>2. Culture Collections and Gene Banks</li> <li>3. How the Cells Grow</li> <li>4. Stoichiometry of cells and product formation</li> <li>5. Introduction to Bio-products</li> <li>6. Major metabolic pathways</li> <li>7. Cell information storage and alternations</li> <li>8. Safety in Biotechnology</li> </ol>																																							
<b>Laboratory Topical Areas</b>	<ol style="list-style-type: none"> <li>1. Lab safety (equipment &amp; policies)</li> <li>2. Luria plate preparation and incubation</li> <li>3. Aseptic techniques</li> <li>4. Contaminant review</li> <li>5. Cell concentration determination</li> <li>6. Antibiotic plates</li> <li>7. Create 3 working cell banks (0%, 5% &amp; 15% glycerol)</li> <li>8. API identification</li> <li>9. Cell bank viability</li> </ol>																																							
<b>Course Grading Structure</b>	<ul style="list-style-type: none"> <li>• Weekly Lab quizzes (10 questions/15 minutes) and Lab reports (35%)</li> <li>• Skills demonstration, Organism identification, and Notebook organization (25%)</li> <li>• Vista quizzes &amp; Final Test (40%)</li> </ul> <p>Students taking the course on a non-credit basis will be required to read each lesson and complete the quizzes plus the exams.</p> <p>Students taking the course on a credit-only basis will be required to read each lesson and complete the quizzes plus the exams, and to earn a CR grade, the overall score must be at least 69.0.</p>																																							
<b>Grading Scale</b>	<table border="1" style="display: inline-table; vertical-align: top;"> <tr><td>A+</td><td>=</td><td>97.0-100%</td></tr> <tr><td>A</td><td>=</td><td>92.0-96.9%</td></tr> <tr><td>A-</td><td>=</td><td>89.0-91.9%</td></tr> <tr><td>B+</td><td>=</td><td>86.0-88.9%</td></tr> <tr><td>B</td><td>=</td><td>82.0-85.9%</td></tr> <tr><td>B-</td><td>=</td><td>79.0-81.9%</td></tr> <tr><td>C+</td><td>=</td><td>76.0-78.9%</td></tr> <tr><td>C</td><td>=</td><td>72.0-75.9%</td></tr> <tr><td>C-</td><td>=</td><td>69.0-71.9%</td></tr> <tr><td>D+</td><td>=</td><td>66.0-68.9%</td></tr> <tr><td>D</td><td>=</td><td>62.0-65.9%</td></tr> <tr><td>D-</td><td>=</td><td>59.0-61.9%</td></tr> <tr><td>F</td><td>=</td><td>&lt; 59.0%</td></tr> </table> 	A+	=	97.0-100%	A	=	92.0-96.9%	A-	=	89.0-91.9%	B+	=	86.0-88.9%	B	=	82.0-85.9%	B-	=	79.0-81.9%	C+	=	76.0-78.9%	C	=	72.0-75.9%	C-	=	69.0-71.9%	D+	=	66.0-68.9%	D	=	62.0-65.9%	D-	=	59.0-61.9%	F	=	< 59.0%
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<b>Online Class Evaluations</b>	<p>Online class evaluations will be available for students to complete during the last week of class. Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will never know how any one student responded to any question, and students will never know the ratings for any particular instructors.</p> <p>Evaluation website: <a href="https://classeval.ncsu.edu">https://classeval.ncsu.edu</a> Student help desk: <a href="mailto:classeval@ncsu.edu">classeval@ncsu.edu</a></p> <p>More information about ClassEval: <a href="http://www2.acs.ncsu.edu/UPA/classeval/">http://www2.acs.ncsu.edu/UPA/classeval/</a></p>																																							

<b>Academic Integrity Statement</b>	<p>It is expected that each student will complete his/her own homework, quizzes, and exams with academic integrity. Students shall follow:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php">NCSU Code of Student Conduct</a> (<a href="http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php">http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php</a>)</li> <li>• <a href="http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.4.php">University attendance policy</a> (<a href="http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.4.php">http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.4.php</a>)</li> </ul>
<b>Attendance Policy</b>	<p>Students are expected to attend class and attendance will be taken. If there is a need to miss class, notify the instructor prior to the class. It is the student's responsibility to obtain assignments and information for any missed classes. For NCSU attendance regulations, refer to the academic policy and regulations website at: <a href="http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.3.php">http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.3.php</a></p>
<b>Students with Disability Policy</b>	<p>Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653.</p> <p>Students with disabilities should contact the instructor for any additional assistance. Federal law mandates that the faculty provide reasonable accommodations to students with disabilities. (See <a href="http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.1.php">NC State's Academic Regulation for providing accommodations for students with disabilities.</a>) (<a href="http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.1.php">http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.1.php</a>)</p>



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