## Chemical Engineering Curriculum* – Biotechnology Concentration

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Spring</th>
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| 1    | APMA1110 Single Variable Calculus II  
    CHEM1610 Gen Chem I & Lab  
    ENGR1624 Eng. Technol & Society | APMA2120 Multivariable Calculus III  
    PHYS1425 Physics I & Lab  
    CHEM1620 Gen Chem II & Lab  
    CS1110 Intro Programming |
| 2    | APMA2130 Differential equations  
    PHYS2415 Physics II & Laboratory  
    CHE2215 Material & Energy Balances  
    CHEM2410 Organic Chemistry  
    CHE2246 Intro to Biotechnology | CHE2311 Applied Probability & Statistics  
    CHE2216 Modeling & Simulation in Chem Eng  
    CHE3398 Chemical Engineering Laboratory I  
    STS2XXX or 3XXX** |
| 3    | CHE3316 Chemical Thermo & Unit Ops.  
    CHE3321 Transport Processes I  
    CHEM3610 Physical Chemistry  
    CHEM2411 Organic Chemistry Laboratory  
    HSS elective | CHE3318 Chemical Reaction Engineering  
    CHE3322 Transport Processes II  
    CHE3347 Biochemical Engineering  
    HSS elective |
| 4    | CHE4438 Proc synth., modeling & control  
    CHE4491 Chemical Engineering Laboratory II  
    CHE4448 Bioseparation Engineering  
    Unrestricted elective  
    STS4500 STS & Eng Practice | CHE4476 Chem Eng Design  
    CHE4456 Bioprocess & Bioproduct Engineering  
    Unrestricted elective  
    Unrestricted elective  
    STS4600 Eng Ethics & Prof Resp |

*Application of this curriculum begins with students entering the CHE major in Fall 2018

**Any course that meets the Second Writing Requirement, as specified by the College of Arts & Sciences (CLAS), may be substituted for STS 2XXX/3XXX.

**Engineering elective:** Students must complete one course with substantial engineering content. The list of acceptable choices can be obtained from the department office or through the 'Academic Requirements' page on SIS.

**Tech elective:** any 2000 to 5999 course in: APMA, MATH, CHEM, PHYS, BIOL, BIOM, CHE (other than required courses), ENGR 4880, CE, CS, ECE (except ECE2066), MSE (except MSE 2010), MAE, SYS plus ENVS 2050, 2800, 3200, 3600, 3860, 4280, 4640,4660, 4090. Special Topics and Special Projects courses as well as other courses introduced after the 2011-12 academic year must be individually approved.

**CHE elective:** chosen from CHE3347, CHE4442, CHE4448, CHE4449, CHE4450, CHE4456, CHE4561*, CHE4562* (*courses listed under this special topics designation must be individually approved)

**Please Note:** The information contained on this website is for informational purposes only. The Undergraduate Record and Graduate Record represent the official repository for academic program requirements. These publications may be found at: [www.virginia.edu/registrar/catalog/ugrad.html](http://www.virginia.edu/registrar/catalog/ugrad.html)

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