

## Exhibit 21

### TRANSFER ADVISING GUIDE

**Bucks County Community College to University of the Sciences in Philadelphia  
A.S. Science (1117) → B.S. Biology or BS Biomedical Sciences or BS Microbiology**

**Bucks Associate of Science  
Science (1117)**

**USciences Bachelor of Science  
Biology or Biomedical Sciences or Microbiology**

Bucks Courses	Cr.	USciences Courses	Cr.
COMP110 English Composition I	3	WR101 Writing & Rhetoric I	3
COMP111 English Composition II	3	WR102 Writing & Rhetoric II	3
COMM110 Effective Speaking	3	CO101 Introduction to Communication	3
CISC110 Intro to Information Systems	3	CSX01 Computer Science Elective <i>(serves as Elective)</i>	3
CHEM121 Chemistry I	4	CH101 General Chemistry I CH103 General Chemistry Laboratory I	3 1
CHEM122 Chemistry II <i>(serves as Sciences Elective)</i>	4	CH102 General Chemistry II CH104 General Chemistry Laboratory II	3 1
PHYS106 Physics A	4	PY201 Introductory Physics I	4
PHYS107 Physics B <i>(serves as Sciences Elective)</i>	4	PY202 Introductory Physics II	4
BIOL121 Biological Principles I	4	BS132 Introductory Biology I BS134 Introductory Biology I Lab  [BS130 Introductory Biology I for students transferring prior to Fall 19]	3 1
BIOL122 Biological Principles II <i>(serves as Sciences Elective)</i>	4	BS133 Introductory Biology II BS135 Introductory Biology II Lab  [BS131 Introductory Biology II for students transferring prior to Fall 19]	3 1
MATH125 Pre-Calculus <i>(serves as Math Elective)</i>	4	MA107 Pre-Calculus	3
MATH140 Calculus I <i>(serves as Math Elective)</i>	4	MA122 Calculus I	4
MATH115 Elementary Statistics <i>(serves as Math Elective)</i>	3	STX01 Statistics Elective <i>(serves as Elective)</i>	3
<u>Diversity: Choose One</u>	3	<i>(serves as GenEd Social Sciences Requirement)</i>	3
ECON111 Principles of Economics: Macro POLI111 American National Government PSYC110 Introduction to Psychology SOC110 Introduction to Sociology		EC101 Introduction to Macroeconomics PO101 Intro to Political Sci & Am Gov't PS101 Introduction to Psychology SO101 Introduction to Sociology	

Social/Behavioral Science: <b>Choose any one from:</b> ECON, POLI, PSYC, SOCI	3	(serves as GenEd MD Requirement)	3
Arts/Humanities <b>Choose One</b>	3	(serves as GenEd MD Requirement)	3
CHEM221 Organic Chemistry I (Serves as Elective)	5	CH201 Organic Chemistry I CH203 Organic Chemistry Laboratory I	4
<b>Choose One:</b> (Serves as Elective) [KINS 106,110,116,118,120,122,124,129, 130,133,134,135,141,142,145,150,154,155,156, 170,172,175-179,188,189]	2	PE101/102 Physical Education I/II	1
<b>Bucks credits toward AS</b>	<b>63</b>	<b>Credits Accepted</b>	<b>60</b>
<b>Additional Courses Necessary to Enter USciences with Junior (U3) Status:</b>			
CHEM222 Organic Chemistry II	5	CH202 Organic Chemistry II CH204 Organic Chemistry Laboratory II	3 1
<b>Total Bucks Credits</b>	<b>68</b>	<b>Total Credits Accepted</b>	<b>64</b>

<b>Additional Courses Necessary to Enter USciences with Junior (U3) Status in Microbiology:</b>			
BIOL228 Microbiology	4	BS243 Microbial Science BS244 Microbial Science Lab [BS240 Basics of Microbiology for students transferring prior to Fall 19]	3 1
<b>Total Bucks Credits</b>	<b>72</b>	<b>Total Credits Accepted</b>	<b>68</b>

A minimum 2.7 cumulative GPA is required for admission.

A minimum grade of “B” in courses with prefixes: BIOL, MATH and COMP. Students who do not meet these minimum grade requirements can still transfer under the terms of this articulation agreement, subject to departmental review and approval.

The courses encompassed in the A.S. degree from Bucks must be completed within the three years preceding matriculation at USciences. Students who take more than 3 years to complete the A.S. degree can still transfer under this articulation agreement, subject to departmental review and approval.

BS101-Biological Sciences Orientation (1 cr) and BS204-Biological Sciences Colloquium (1 cr) and MI110-Intro to Health and Medical Professions (1cr) will be waived for students transferring to USciences after earning the A.S. in Science (1117). However, the total credits required for graduation (includes transfer credits) will remain unchanged.

Graduation from USciences with a BS degree requires completion of specified courses and a total of 120-136 credit hours, depending upon the degree program. In order to enter USciences with U3 (junior) status and to facilitate the completion of a BS degree in two years of study at USciences, all students are strongly advised to complete more than 60 total credits of course work which is eligible for transfer to USciences. Students interested in transferring to USciences are strongly urged to contact the USciences Admission Office early in their enrollment at Bucks for advising.

In addition to the coursework provided in the above table, the following types of courses will be needed to complete the *General Education Discipline Requirements* in USciences' General Education Curriculum:

- 3 credits in Social Sciences
- 6 credits in Humanities

Some or all of these 9 credits of coursework can be taken at Bucks or after transferring to USciences (currently included in the 3<sup>rd</sup> and 4<sup>th</sup> year at USciences). If the 9 credits are taken at Bucks, they should be selected from the following lists:

<p><b>3 credits in Social Sciences: Select ONE</b></p> <p><b>CRIJ</b> 100, 110,115,116,120,130,140,160,210,220, 230,250,260,270,275,280,285</p> <p><b>ECON</b> 111,112,120</p> <p><b>POLI</b> 130, 111,112,120 ,212</p> <p><b>PSYC</b> 100,110,160,180,181,185,190,200,205,215, 230,270,280</p> <p><b>SOCI</b> 120,130,140,150,160</p> <p><b>SSWK</b> 115,140,215,255</p>	<p><b>GenEd Discipline Requirements – Social Sciences</b></p> <p>SO207 Crime, Drugs and Policy EC101, EC201, ECX01 PO101, POX01</p> <p>PS SO, AN SO</p>
<p><b>6 credits in Humanities: Select TWO</b></p> <p><b>AMSL</b> 110,111</p> <p><b>COMM</b> 111,210,230</p> <p><b>FREN</b> 110,111,201,202,250,251</p> <p><b>GRMN</b> 110,111,201,202,250,251</p> <p><b>HIST</b> 101,111,112,121,126,131,136,139,140,141, 143,144,146,149,151-156,159,160,170,172-178,180, 190,194-199,200-208,210,214,216,217,218,219,239, 245,281,288</p> <p><b>HUMN</b> 107,108,110-114,120,121,122,125,127, 128,129,166</p> <p><b>ITAL</b> 110,111,201,202</p> <p><b>JOUR</b> 155,175,275,276,277,278,280</p> <p><b>JPNS</b> 101,102</p> <p><b>LITR</b> 205,206,231,232,234,235,246,254,255,261,262, 264,271,273,275,277,278,279</p> <p><b>MUSC</b> 100,101,103,105,106,111,112,115,116,124, 129,130,188,201,202,206,211,212,215,216,230</p> <p><b>PHIL</b> 105,111,115,125,140,145</p> <p><b>SPAN</b> 110,111,201,202,250,251</p> <p><b>VAFA</b> 100,110,141,147,148,149,151,157,160,161, 165,167,168,169,171,181,191-196,200,202,203, 210,211,242,246,249,257,260,261,271,282</p> <p><b>VAFW</b> 100,133,136,137,138,140,145,180,181, 190,280</p>	<p><b>GenEd Discipline Requirements – Humanities</b></p> <p>HUX01 HUX01 FR, HU GE, HU HI, HU</p> <p>HU</p> <p>IT, HU EN HU EN</p> <p>MU</p> <p>SP AR</p> <p>AR</p>

Suggested checklist for 3<sup>rd</sup> and 4<sup>th</sup> year at USciences for **BS in Biology** based on current approved curriculum:  
*(this checklist is for planning purpose only and it is subject to changes; it does not constitute a contract)*

<b>THIRD YEAR AT USCIENCES</b>		
	GenEd Social Sciences Requirement	3
BS 243	Microbiol Science	3
BS 244	Microbial Science Lab	1
CH 34X	Biochemistry	3-4
	Biology Elective	3-4
	GenEd Humanities Requirement	6
BS 466	Genetics	4
	Natural Science Elective	3-5
	Biology Elective	3-4
	Elective	6

<b>FOURTH YEAR AT USCIENCES</b>		
BS 493	Biological Sciences Seminar I	1
	Elective	3-6
	Biology Elective	3-6
BS 494	Biological Sciences Seminar II	1
	Free Elective(s)	3-9
	Biology Elective(s)	3-9

Suggested checklist for 3<sup>rd</sup> and 4<sup>th</sup> year at USciences for **BS in Biomedical Sciences** based on current approved curriculum:  
*(this checklist is for planning purpose only and it is subject to changes; it does not constitute a contract)*

<b>THIRD YEAR AT USCIENCES</b>		
CH 34X	Biochemistry	3-4
BS 243	Microbiol Science	3
BS 244	Microbial Science Lab	1
BS 205 or BS 310	Anatomy and Physiology I	3
BS 207	Anatomy and Physiology I Lab – Optional	1
	Clinical Biology elective	3-4
	GenEd Humanities Requirement	6
	GenEd Social Sciences Requirement	3
BS 206 or BS 311	Anatomy and Physiology II	3
BS 208	Anatomy and Physiology II Lab – Optional	1
BS 466	Genetics	4
ST 310	Biostatistics	3

<b>FOURTH YEAR AT USCIENCES</b>		
BS 493	Biological Sciences Seminar I	1
	Electives	10
BS XXX	BS Sciences Electives	3-4
BS 494	Biological Sciences Seminar II	1
	Electives	10
BS 4XX	Science Elective(s)	2-4
	Free Elective	3

Suggested checklist for 3<sup>rd</sup> and 4<sup>th</sup> year at USciences for **BS in Microbiology – Applied Microbiology & Biotechnology Track** based on current approved curriculum:  
*(this checklist is for planning purpose only and it is subject to changes; it does not constitute a contract)*

THIRD YEAR AT USCIENCES		
CH 34X	Biochemistry	3-4
BS 343	Microbial Genetics	4
BS 34X	Trends in Microbiology	3
	Applied Microbiology Elective	9-12
	GenEd Humanities Requirement	6
	GenEd Social Sciences Requirement	3

FOURTH YEAR AT USCIENCES		
BS 493	Biological Sciences Seminar I	1
BS 453	Microbial Physiology	4
BS 464	Biotechnology Lecture	3
BS 461	Cell Biology	4
BS 476	Molecular Biology Lab	2
	Free Electives	3
	Applied Micro Electives	6-8

\* for students transferring prior to Fall 18 the checklist differs from the one reported above; please contact USciences Transfer Advising office for the specific curriculum.

Suggested checklist for 3<sup>rd</sup> and 4<sup>th</sup> year at USciences for **BS in Microbiology – Medical Microbiology & Immunology Track** based on current approved curriculum:  
*(this checklist is for planning purpose only and it is subject to changes; it does not constitute a contract)*

THIRD YEAR AT USCIENCES		
CH 34X	Biochemistry	3-4
BS 343	Microbial Genetics	4
BS 34X	Trends in Microbiology	3
BS 343	Microbial Genetics	4
	Med Micro Electives	9-12
	GenEd Humanities Requirement	6
	GenEd Social Sciences Requirement	3

FOURTH YEAR AT USCIENCES		
BS 493	Biological Sciences Seminar I	1
BS 453	Microbial Physiology	4
	Med Micro Elective	3-4
	Microbiology Program Elective	3-4
BS 355	Clinical Immunology	3
BS 494	Biological Sciences Seminar II	1
BS 308	Parasitology	3
BS 450	Virology	3
	Free Elective	3

\* for students transferring prior to Fall 18 the checklist differs from the one reported above; please contact USciences Transfer Advising office for the specific curriculum.

## Progress in Completing USciences' General Education Curriculum

[For the most recent information, see the current USciences Catalog on its website]

### Discipline Requirements (minimum of 41 credits)

Discipline Requirement	Community College Courses // USciences Courses*
Natural Science (ONE semester of lab required) <b>7 credits</b>	CHEM121 CHEM122
Mathematics <b>6 credits</b>	MATH125 & MATH140
Communication (written & oral) <b>9 credits</b>	COMP110 & COMP111 & COMM110
Social Sciences <b>6 credits</b>	<p><b>Choose One:</b>            CRIJ 100, 110,115,116,120,130,140,160,210,220,            230,250,260,270,275,280,285            ECON 111,112,120            POLI 130,111,112,120,212            PSYC 100,110,160,180,181,185,190,200,205,215,            230,270,280            SOCI 120,130,140,150,160            SSWK 115,140,215,255</p> <p><b>Choose One USciences Course:</b>            PO (Political Science), PS (Psychology), SO (Sociology), AN            (Anthropology), SS (Social Sciences),            EC (Economics), CO (excluding CO 101 and CO 204)</p>
Humanities <b>6 credits</b>	<p><b>Choose Two USciences Courses:</b>            AC (Arabic), AR (Art), CI (Chinese), CA (Classics),            EN (excluding EN 101 and EN 102), FR (French),            GE (German), LA (Latin), HI (History), HU (Humanities),            MU (Music), PL (Philosophy), RS (Religious Studies),            SP (Spanish), WC (World Cultures)</p>
Multidisciplinary Inquiry <b>6 credits</b> (may be substituted by Social Sciences &/or Humanities courses)	<p><b>Choose One:</b>            ECON111 Principles of Economics: Macro            POLI111 American National Government            PSYC110 Introduction to Psychology            SOCI110 Introduction to Sociology</p> <p><b>Choose One: Arts/Humanities</b></p>
Physical Education <b>1 credit</b>	<p><b>Choose One:</b>            [KINS 106,110,116,118,120,122,124,129,            130,133,134,135,141,142,145,150,154,155,156,            170,172,175-179,188,189]</p>

*Skills, Values, and Attitudes (one approved course for each)*

<b>Skills, Values, and Attitudes</b>	<b>Community College Course</b>	<b>USciences Course</b> [RED = courses taken after transferring to USciences]
Ethics		See list of USciences courses approved for Ethics
Information Literacy	BIOL122	BS493 Biological Sciences Seminar I
Oral Communication	SOCI110	OR USciences course
Reasoning & Problem Solving	BIOL121	
Technology	BIOL121	
Written Communication	PSYCH110	OR USciences course

Skills requirement is usually fulfilled by taking courses that satisfy discipline requirements that are also approved for one or more GenEd skill.