

## Exhibit 24

### TRANSFER ADVISING GUIDE

#### Bucks County Community College to University of the Sciences in Philadelphia A.S. Science (1117) → B.S. Physics (Tracks: General, Material Sciences, Astrophysics)

#### Bucks Associate of Science Science (1117)

#### USciences Bachelor of Science Physics (General, Material Sciences, Astrophysics)

| 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 Intro to Communication   | 3      |
| CISC110 Intro to Information Systems   | 3   | CSX01 Computer Science Elective<br><i>(serves as Free Elective)</i>  | 3      |
| CHEM121 Chemistry I  | 4   | CH111 Principles of Chemistry I<br>CH113 Principles of Chemistry Lab I   | 3<br>1 |
| CHEM122 Chemistry II<br><i>(serves as Sciences Elective)</i>   | 4   | CH112 Principles of Chemistry II<br>CH114 Principles of Chemistry Lab II   | 3<br>1 |
| PHYS121 Physics I  | 4   | PY211 Physics I  | 4      |
| PHYS122 Physics II<br><i>(serves as Sciences Elective)</i>   | 4   | PY212 Physics II   | 4      |
| BIOL121 Biological Principles I  | 4   | BS132 Introductory Biology I<br>BS134 Introductory Biology I Lab<br><br>[BS130 Introductory Biology I for students transferring prior to Fall 19]  | 3<br>1 |
| MATH125 Pre-Calculus<br><i>(serves as Math Elective)</i>   | 4   | MA107 Pre-Calculus   | 3      |
| MATH140 Calculus I<br><i>(serves as Math Elective)</i>   | 4   | MA122 Calculus I   | 4      |
| MATH141 Calculus II<br><i>(serves as Math Elective)</i>  | 4   | MA221 Calculus II  | 4      |
| MATH242 Calculus III<br><i>(serves as Math Elective)</i>   | 4   | MA222 Calculus III   | 4      |
| Diversity: <b>Choose One</b><br><br>ECON111 Principles of Economics: Macro<br>POLI111 American National Government<br>PSYC110 Introduction to Psychology<br>SOC110 Introduction to Sociology | 3   | <i>(serves as GenEd Social Sciences Requirement)</i><br><br>EC101 Introduction to Macroeconomics<br>PO101 Intro to Political Sci & Am Gov't<br>PS101 Introduction to Psychology<br>SO101 Introduction to Sociology | 3      |
| Social/Behavioral Science:<br><b>Choose any one from:</b> ECON, POLI, PSYC, SOCI   | 3   | <i>(serves as GenEd MD Requirement)</i>  | 3      |

|  |              |   |           |
|--|--------------|---|-----------|
| Arts/Humanities <b>Choose One</b>  | 3            | <i>(serves as GenEd MD Requirement)</i>   | 3         |
| MATH260 Linear Algebra<br>Or<br>ENGR240 Introduction to Circuit Analysis<br><i>(Serves as Elective)</i>  | 3<br>4       | MA316 Linear Algebra<br>PY380 Electronics | 3<br>3    |
| MATH250 Differential Equations<br><i>(Serves as Elective)</i>  | 3            | MA320 Differential Equations              | 3         |
| <b>Bucks credits toward AS</b>   | <b>63-64</b> | <b>Credits Accepted</b>                   | <b>62</b> |
| <b>Additional Courses Necessary to Enter USciences with Junior (U3) Status:</b>  |              |   |           |
| <b>Choose One:</b> <i>(Serves as Elective)</i><br>[KINS 106,110,116,118,120,122,124,129,<br>130,133,134,135,141,142,145,150,154,155,156,<br>170,172,175-179,188,189] | 2            | PE101/102 Physical Education I/II         | 1         |
| <b>Total Bucks Credits</b>   | <b>65-66</b> | <b>Total Credits Accepted</b>             | <b>63</b> |

A minimum 2.7 cumulative GPA is required for admission.

A minimum grade of “B” in all science and mathematics courses (Prefixes: CHEM, MATH, PHYS, BIOL). 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.

PY100 – Physics Orientation (1 cr) 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<br/>EC101, EC201, ECX01<br/>PO101, POX01</p> <p>PS<br/>SO, AN<br/>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<br/>HUX01<br/>FR, HU<br/>GE, HU<br/>HI, HU</p> <p>HU</p> <p>IT, HU<br/>EN<br/>HU<br/>EN</p> <p>MU</p> <p>SP<br/>AR</p> <p>AR</p> |

Suggested checklist for 3<sup>rd</sup> and 4<sup>th</sup> year at USciences for **BS in Physics (General 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)*

| <b>THIRD YEAR AT USCIENCES</b> |                                   |   |
|--------------------------------|-----------------------------------|---|
| PY 213                         | Physics III                       | 3 |
| ST 320                         | Introduction to Probability       | 3 |
|                                | GenEd Social Sciences Requirement | 3 |
| PY 301                         | Modern Physics I                  | 3 |
| PY 310                         | Mechanics                         | 3 |
| PY 370                         | Math Methods for Phys Sci I       | 3 |
| PY 380                         | Electronics                       | 3 |
| PY 406                         | Advanced Lab                      | 1 |
| PY 410                         | Electricity and Magnetism         | 3 |
| PY 420                         | Optics and Wave Phenomena         | 3 |
| PY 450                         | Quantum Mechanics                 | 3 |
| PY 371                         | Math Methods for the Phys Sci II  | 3 |
| CS 201*                        | Computer Programming I            | 3 |

| <b>FOURTH YEAR AT USCIENCES</b> |                                   |   |
|---------------------------------|-----------------------------------|---|
| PY 495                          | Undergraduate Research in Physics | 2 |
| PY 431                          | Statistical Mechanics             | 3 |
|                                 | GenEd Humanities Requirement      | 6 |
| PY 496                          | Advanced Research in Physics      | 3 |
|                                 | Physics Elective                  | 9 |
| PY 305                          | Physics Seminar                   | 3 |

\* students transferring Fall 19 and beyond will have to take this additional course

Suggested checklist for 3<sup>rd</sup> and 4<sup>th</sup> year at USciences for **BS in Physics (Material Science 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)*

| <b>THIRD YEAR AT USCIENCES</b> |                                   |   |
|--------------------------------|-----------------------------------|---|
| PY 213                         | Physics III                       | 3 |
| ST 320                         | Introduction to Probability       | 3 |
|                                | GenEd Social Sciences Requirement | 3 |
| PY 301                         | Modern Physics I                  | 3 |
| PY 310                         | Mechanics                         | 3 |
| PY 370                         | Math Methods for Phys Sci I       | 3 |
| PY 380                         | Electronics                       | 3 |
| PY 406                         | Advanced Lab                      | 1 |
| PY 410                         | Electricity and Magnetism         | 3 |
| PY 420                         | Optics and Wave Phenomena         | 3 |
| PY 450                         | Quantum Mechanics                 | 3 |
| PY 371                         | Math Methods for the Phys Sci II  | 3 |
| CS 201*                        | Computer Programming I            | 3 |

| FOURTH YEAR AT USCIENCES |                                   |   |
|--------------------------|-----------------------------------|---|
| PY 480                   | Introduction to Material Science  | 3 |
| PY 495                   | Undergraduate Research in Physics | 2 |
| PY 431                   | Statistical Mechanics             | 3 |
|                          | GenEd Humanities Requirement      | 6 |
| PY 470                   | Solid State Physics               | 3 |
| PY 496                   | Advanced Research in Physics      | 3 |
| PY 440                   | Intro to Nano Science             | 3 |
| PY 305                   | Physics Seminar                   | 3 |

\* students transferring Fall 19 and beyond will have to take this additional course

Suggested checklist for 3<sup>rd</sup> and 4<sup>th</sup> year at USciences for **BS in Physics (Astrophysics 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 |                                   |   |
|-------------------------|-----------------------------------|---|
| PY 213                  | Physics III                       | 3 |
| ST 320                  | Introduction to Probability       | 3 |
|                         | GenEd Social Sciences Requirement | 3 |
| PY 301                  | Modern Physics I                  | 3 |
| PY 310                  | Mechanics                         | 3 |
| PY 370                  | Math Methods for Phys Sci I       | 3 |
| PY 380                  | Electronics                       | 3 |
| PY 406                  | Advanced Lab                      | 1 |
| PY 410                  | Electricity and Magnetism         | 3 |
| PY 430                  | Differential Geometry             | 3 |
| PY 450                  | Quantum Mechanics                 | 3 |
| PY 371                  | Math Methods for the Phys Sci II  | 3 |
| CS 201*                 | Computer Programming I            | 3 |

| FOURTH YEAR AT USCIENCES |                                   |   |
|--------------------------|-----------------------------------|---|
| PY 463                   | Physics of Stars and Black Holes  | 3 |
| PY 495                   | Undergraduate Research in Physics | 2 |
| PY 431                   | Statistical Mechanics             | 3 |
|                          | GenEd Humanities Requirement      | 6 |
| PY 465                   | Intro to Cosmology                | 3 |
| PY 496                   | Advanced Research in Physics      | 3 |
|                          | Physics Elective                  | 3 |
| PY 420                   | Optics and Wave Phenomena         | 3 |
| PY 305                   | Physics Seminar                   | 3 |

\* students transferring Fall 19 and beyond will have to take this additional course

## 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<br>(ONE semester of lab required) <b>7 credits</b>  | CHEM121<br>CHEM122   |
| Mathematics <b>6 credits</b>  | MATH125 & MATH140  |
| Communication (written & oral) <b>9 credits</b>   | COMP110 & COMP111 & COMM110  |
| Social Sciences <b>6 credits</b>  | Diversity: <b>Choose One</b><br>ECON111 Principles of Economics: Macro<br>POLI111 American National Government<br>PSYC110 Introduction to Psychology<br>SOC110 Introduction to Sociology<br><br><b>Choose One USciences Course:</b><br>PO (Political Science), PS (Psychology), SO (Sociology), AN (Anthropology), SS (Social Sciences),<br>EC (Economics), CO (excluding CO 101 and CO 204) |
| Humanities <b>6 credits</b>   | <b>Choose Two USciences Courses:</b><br>AC (Arabic), AR (Art), CI (Chinese), CA (Classics),<br>EN (excluding EN 101 and EN 102), FR (French),<br>GE (German), LA (Latin), HI (History), HU (Humanities),<br>MU (Music), PL (Philosophy), RS (Religious Studies),<br>SP (Spanish), WC (World Cultures)  |
| Multidisciplinary Inquiry <b>6 credits</b><br>(may be substituted by Social Sciences &/or Humanities courses) | <b>Choose One:</b><br>ECON111 Principles of Economics: Macro<br>POLI111 American National Government<br>PSYC110 Introduction to Psychology<br>SOC110 Introduction to Sociology<br><br><b>Choose One: Arts/Humanities</b>   |
| Physical Education <b>1 credit</b>  | <b>Choose One:</b><br>[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]  |

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

| Skills, Values, and Attitudes | Community College Course | USciences Course<br>[RED = courses taken after transferring to USciences] |
|-------------------------------|--------------------------|---|
| Ethics                        |                          | See list of USciences courses approved for Ethics                         |
| Information Literacy          |                          | See list of USciences courses approved for Inf Literacy                   |
| Oral Communication            | SOCI110                  | OR PY 305   |
| Reasoning & Problem Solving   | PHYS121                  |   |
| Technology                    | PHYS121                  |   |
| 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.