

## 2+2 Articulation Agreement for Anne Arundel Community College and Towson University

**Associate's Degree:** A.S. in Arts & Sciences Transfer, Chemistry Concentration

**Bachelor's Degree:** B.S. in Forensic Chemistry

**Effective Term:** Fall 2020

### Section 1: Course Completion Plan for AACC

This section outlines the courses to take for the AACC general education (GER) and program requirements in order to complete both the AACC and TU degrees within a total of 4 years. Through this plan students will earn a total of 121 units toward the bachelor's degree. The following tables do not include any nontransferable or prerequisite coursework outside of the curriculum.

**Table 1: General Education Courses Applied to TU Core Curriculum**

AACC Requirement	AACC Course to Take	Credits	Towson University Equivalent Course
English Composition	ENG 101 Academic Writing & Research 1	3	ENGL 102 Writing for a Liberal Education
English Composition	ENG 102 Academic Writing & Research 2	3	ENGL TLL English Elective
Mathematics	MAT 191 Calculus & Analytic Geometry 1	4	MATH 273 Calculus I
Arts & Humanities	Any Arts & Humanities course	3	Equivalency varies by course.
Arts & Humanities	Any Arts & Humanities course	3	Equivalency varies by course.
Social & Behavioral Sciences	Any Social & Behavioral Science course	3	Equivalency varies by course.
Social & Behavioral Sciences	Any Social & Behavioral Science course	3	Equivalency varies by course.
Biological & Physical Sciences	CHE 111 General Chemistry 1	4	CHEM 131 & 131L General Chemistry I Lecture & Lab
Biological & Physical Sciences	CHE 112 General Chemistry 2	4	CHEM 132 & 132L General Chemistry II Lecture & Lab
Wellness Requirement	Any Wellness GER course	3	Equivalency varies by course.
Technology Requirement	Any Technology GER course	3-4	Equivalency varies by course.

**Total general education applied to the TU Core Curriculum: 36-37 credits**

Completing the courses above will satisfy the general education program at AACC. TU will transfer these courses without a course-by-course match to the Core Curriculum requirements. See section 2 for details.

**Table 2: Program Requirements and Electives Applied to TU Degree**

<b>AACC Requirement</b>	<b>AACC Course to Take</b>	<b>Credits</b>	<b>Towson University Equivalent Course</b>
Program Requirement	CHE 213 Organic Chemistry 1	4	CHEM T31 Organic Chemistry I
Program Requirement	CHE 214 Organic Chemistry 2	4	CHEM T32 Organic Chemistry II
Program Requirement	MAT 192 Calculus & Analytic Geometry 2	4	MATH 274 Calculus II
Program Requirement	PHY 211 General Physics 1	4	PHYS 241 General Physics I Calculus-Based
Program Requirement	PHY 212 General Physics 2	4	PHYS 242 General Physics II Calculus-Based
Program Elective	CJS 111 Introduction to Criminal Justice	3	CRMJ 254 Introduction to Criminal Justice
General Elective	Any transferable elective course	0-1	Equivalency varies by course.

**Total program requirements applied to the TU degree: 23-24 credits**

**Total transferred to TU: 60 credits**

Students may transfer a maximum of 64 credits. If students do not complete all courses listed in section 1, they are not guaranteed completion of the bachelor's degree in 2 years. Refer to section 2 for specific course details and transfer planning information.

## Section 2: AACC Course Selection Details

This section explains any specific course selections made in section 1 and provides transfer planning guidance specific to this degree plan. Students must follow the course selections outlined in this document. If students do not complete any or all of the courses outlined in this agreement, they will be required to complete outstanding requirements at TU.

### GENERAL EDUCATION

Students must note the following general education requirements and information:

- **Arts & Humanities:** Students may need to select their two Arts & Humanities courses from specific subjects at AACC. Students should consult their AACC catalog or academic advisor for details. Courses taken for this requirement will transfer regardless of subject and will not affect the major requirements at TU.
- **Social & Behavioral Sciences:** Students may need to select their two Social & Behavioral Science courses from specific subjects at AACC. Students should consult their AACC catalog or academic advisor for details. Courses taken for this requirement will transfer regardless of subject and will not affect the major requirements at TU.
- **Diversity Requirement:** Students must select an approved **diversity course** for one of the Arts & Humanities or Social & Behavioral Science requirements in order to satisfy AACC degree requirements.
- **Total Credits:** Though the AACC degree requires only 33 credits of general education, TU will recognize the completion of a GER technology course toward the total of general education credits completed in order to satisfy Core Curriculum requirements at TU (see “Program Electives”).
- **General Education Program:** TU will recognize the courses in Table 1 (see section 1) as a completed general education program. Students will receive a core package that satisfies most of the TU Core Curriculum without the need for course-by-course placement in specific Core Curriculum requirements. Students will only need to complete two Core Curriculum requirements at TU: Advanced Writing Seminar (Core 9) and Ethical Perspectives (Core 14). If an ethics course is taken for the Arts & Humanities requirement at AACC, students will complete a Core Curriculum requirement other than Core 14.

### PROGRAM ELECTIVES

Students must take the following courses for their 7 credits of program electives:

- **Technology requirement:** Take an approved **general education** course in order to meet the requirements for the core package when transferring to TU. If a 3-credit course is completed, students will also need to complete a 1-credit general elective to meet the 60 credit minimum for the degree.
- **Program elective:** Take CJS 111 Introduction to Criminal Justice in order to satisfy the Forensic Chemistry major’s requirement for CRMJ 254.

### **LOWER-LEVEL EQUIVALENTS OF UPPER-LEVEL COURSES**

A course number beginning with T indicates that it is a lower-level equivalent of an upper-level TU course. CHEM T31 and CHEM T32 will satisfy the major requirements for CHEM 331 and 332, but they will not count toward the TU degree requirement for 32 upper-level units.

### **MATH AND CHEMISTRY PREREQUISITES**

The Chemistry program is designed for students who are ready to enroll in calculus and general chemistry in their first term. Students should note the following requirements for enrollment into these courses:

- **MAT 191 Calculus 1:** Enrollment in this course requires an appropriate score on the AACC Mathematics Placement Test on the mathematics portion of the SAT or ACT. If students do not meet this requirement, they may need to complete one or two additional math courses depending on their test scores. Additional math courses taken may transfer within the maximum of 64 credits from AACC.
- **CHE 111 General Chemistry 1:** Enrollment in this course requires completion of either MAT 137 College Algebra or MAT 145 Precalculus 1 or eligibility to enroll into MAT 146 Precalculus 2 or higher. If students are eligible to enroll in MAT 191 in their first term, they will also be eligible to enroll in CHE 111.

### **Section 3: Degree Requirements to Be Completed at TU**

This section outlines the degree requirements for students transferring into the Forensic Chemistry major, which offers three tracks to prepare students for specialized work in forensic science or graduate studies. Refer to section 4 for additional major requirements, university-wide degree requirements, and detailed descriptions of each track.

#### **CORE CURRICULUM REQUIREMENTS: 6 UNITS**

Core 9 Advanced Writing Seminar – Satisfied by CHEM 301 in the major  
Core 14 Ethical Perspectives

#### **REQUIRED COURSES FOR ALL FORENSIC CHEMISTRY TRACKS: 17 UNITS**

CHEM 210 Analytical Chemistry (5 units)  
CHEM 301 Professional Ethics for Scientists (3 units – counted in Core Curriculum)  
CHEM 351 Biochemistry I (3 units)  
FRSC 367 Forensic Chemistry (3 units)  
FRSC 368 Professional Practices in Forensic Science (3 units)  
FRSC 440 Forensic Science, Emergency Medicine, and Death Analysis (3 units)

#### **ANCILLARY COURSES FOR ALL FORENSIC CHEMISTRY TRACKS: 17 UNITS**

ANTH 357 Introduction to Forensic Crime Analysis (3 units)  
ANTH 457 Advanced Forensic Investigation (3 units)  
BIOL 200 Introduction to Cellular Biology and Genetics Lecture (3 units)  
BIOL 200L Introduction to Cellular Biology and Genetics Lab (1 unit)  
CRMJ 384 Advanced Criminal Law (3 units)  
MATH 237 Elementary Biostatistics (4 units)

#### **FORENSIC CHEMISTRY TRACK: 18-21 UNITS**

Students will select a track based on their career goals (see section 4). The three track options are general forensic science, trace evidence/drug analysis, or DNA. Required courses will vary by track and are listed below:

##### **General Forensic Science Track – 21 units**

- BIOL 309 Genetics (4 units)
- BIOL 409 Molecular Biology (4 units)
- CHEM 310 Instrumental Analysis (4 units)
- CHEM 345 Principles of Physical Chemistry (3 units)
- FRSC 363 Chemistry of Dangerous Drugs (3 units)
- FRSC 467 Forensic Analytical Chemistry (3 units)

**Trace Evidence/Drug Analysis Track – 18 units**

- CHEM 310 Instrumental Analysis (4 units)
- CHEM 345 Principles of Physical Chemistry (3 units)
- CHEM 372 Physical Chemistry Laboratory (2 units)
- CHEM 480 Chemical Toxicology (3 units)
- FRSC 363 Chemistry of Dangerous Drugs (3 units)
- FRSC 467 Forensic Analytical Chemistry (3 units)

**DNA Track – 20 units**

- BIOL 309 Genetics (4 units)
- BIOL 409 Molecular Biology (4 units)
- BIOL 410 Molecular Biology Laboratory (2 units)
- CHEM 356 Biochemistry Lab (2 units)
- MBBB 301 Intro to Bioinformatics (4 units)
- FRSC 420 Body Fluid Analysis (4 units)

**GENERAL ELECTIVES: 0-2 UNITS**

The number of elective units required will be determined by the student's track and is based on the transfer of 60 credits. If students transfer more than 60 credits due to any mathematics prerequisites, they will not need to take any general elective units.

## Section 4: Additional Requirements & Recommendations for TU Degree Completion

### FORENSIC CHEMISTRY TRACK DESCRIPTIONS:

- General Forensic Science – This track is intended for students who are considering employment in a drug analysis, trace evidence analysis or DNA analysis laboratory, or to pursue a graduate degree in a non-specialized forensic master’s program.
- Trace Evidence/Drug Analysis – This track is intended for students who desire a strong chemistry and instrumental analysis education and are considering a profession in a forensic chemistry laboratory or graduate program specializing in the analysis of trace evidence (e.g. fibers, paint, soil, flammables, or explosives) or in the analysis of illegal drugs and toxicology.
- DNA – This track is intended for students who desire a strong biochemistry and molecular biology education and are considering a profession in a forensic laboratory or graduate program specializing in body fluid and tissue analysis, and human identification using serology and DNA technology.

### ADDITIONAL REQUIREMENTS & RECOMMENDATIONS FOR FORENSIC CHEMISTRY MAJOR:

- Students may not repeat any more than two courses required for the Forensic Chemistry major, including multiple attempts of the same course. This includes all foundation courses, required courses, and electives for the major. This repeat policy only applies to courses taken at TU.
- Students who wish to earn internship credit for work in a crime laboratory must have a GPA of 3.00 or higher, be at junior class standing, and pass a background investigation.

### BACHELOR’S DEGREE REQUIREMENTS FOR ALL STUDENTS:

- A C (2.0) or higher is required in all major courses and prerequisites.
- A cumulative grade point average (GPA) of 2.0 is required.
- 32 units of the bachelor’s degree must be completed at the upper level (courses numbered 300 or above).

### Degree Completion Summary

<b>Total Units Required for B.S. Degree</b>	<b>120 UNITS</b>
<b>AACC A.S. Degree in Arts &amp; Sciences – Chemistry Concentration</b>	<b>60</b>
<b>Completion of Core Curriculum at TU</b>	<b>6</b>
<b>Major in Forensic Chemistry at TU</b>	<b>52-55</b>
<b>General Electives Taken at TU</b>	<b>0-2</b>

**NOTE:** While a minimum of 120 units is required for the degree, students may complete 121 units depending on their track.