

Understanding your financial aid

Academic Year 2019-2020

The value of a Connecticut College education

DEAR STUDENTS AND PARENTS:

In these uncertain economic times, financial aid is critically important to many students and their families; we have increased our financial aid budget by 16 percent in the past four years alone. Last year, about 59 percent of our students received financial aid in the form of grants, loans or Federal Work-Study. We are committed to helping them meet the challenge of financing a Connecticut College education because we believe that they will thrive here and make a difference in the world after their graduation.

Depending on financial need, awards may vary from a few hundred dollars to nearly the full cost of education. As you look at the investment you and your family are making in this education, we would like to share a few indicators of the lifelong **value** of a Connecticut College degree.

■ **On average, about 96 percent of each Connecticut College graduating class are employed, in graduate school, completing a fellowship or working in public service programs within a year of graduating.**

■ **In recent years, the acceptance rate for our graduates applying to law school and graduate programs in the health professions is about 80 percent.** Many of our young alumni enroll and excel in business school, applying the leadership skills they acquired as undergraduates.

■ **Fifteen years after graduation, about half of our graduates have earned a post-baccalaureate degree.** Many are awarded an M.B.A., master's degree or law degree. Others go on to earn a Ph.D., an M.D. or other

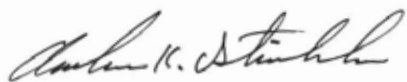
medical degree. Some pursue professional certification in teaching and other fields, and some serve as tenured professors at colleges and universities nationwide.

■ **Our graduates win prestigious postgraduate awards.** Among liberal arts colleges, we are one of the top producers of Fulbright Fellows and Peace Corps volunteers. Our graduates have also won National Science Foundation, Davis Projects for Peace, Goldwater and other notable fellowships.

■ **Connecticut College graduates become leaders in many different fields.** They are CEOs, scientists, lawyers, judges, teachers, entrepreneurs, bankers, artists, writers and filmmakers. They serve in record numbers in the Peace Corps and Teach for America. Some have earned the highest honors in their field: Olympic medals, Academy and Emmy awards, and the Medal of Freedom, to name a few. They all share one thing: their Connecticut College education, which gave them the knowledge, analytical skills, ethical framework and confidence to adapt and succeed in a changing world.

■ **Our global alumni network is more than 25,000 strong.** Even before they graduate, students benefit from interaction with our alumni who serve as role models, mentors and internship sponsors. Those connections last a lifetime.

We will do our best to help you throughout the complex financial aid process. If you have any questions, please contact the Financial Aid Services staff.



Andrew K. Strickler
Dean of Admission and Financial Aid



Sean Martin
Director of Financial Aid Services



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***PLEASE NOTE:**

The tuition and fees listed in this document are for the current academic year (2018-2019), and should be used for illustrative purposes only. When tuition and fees are finalized for the 2019-2020 academic year, this information will be available at www.conncoll.edu/financial-aid/.

Our Financial Aid Philosophy

Financial aid at Connecticut College provides access to a quality educational experience for students who could not otherwise afford the full cost of tuition. As a highly selective institution, Connecticut College recognizes that each student brings special talents and abilities that enhance the educational experience for all.

Whereas admission to the College is based on the student's qualifications and achievements, financial aid awards are based on financial need. This approach allows us to create a student body of highly qualified individuals from all economic backgrounds.

We determine a student's eligibility for financial aid based on a detailed assessment of the income, assets and special circumstances presented by his or her family. To be fair and equitable, we use the same standardized analysis for all students.

We realize that in some instances, a family may disagree with the results, but we must adhere to the standard analysis in order to keep the process fair.

The Financial Aid Services staff thoroughly reviews each file based on the information reported on the Free Application for Federal Student Aid (FAFSA), CSS Profile and other documentation. While we have little discretion in adjusting awards given the limitation of the policies governing our financial aid process, we are happy to review an aid award if you believe we have made a factual error or if your circumstances have changed due to illness or significant loss of wages or employment. However, please note that Connecticut College does not negotiate financial aid awards based on offers made by other colleges or for reasons other than the circumstances mentioned above.

Students or parents requesting a review should contact Financial Aid Services, in writing, describing the reason(s) for a review. Documentation should accompany the letter. A review committee, chaired by the Dean of Admission and Financial Aid, will conduct the review, ask for any additional information and get back to you as soon as possible. Adjustments in an award are subject to the availability of funds.

See our complete financial aid policies on pages 7-9.

How Eligibility is Determined

Financial Aid Eligibility is defined as the amount remaining after subtracting the family contribution and outside resources from the cost of education. Eligibility for financial aid at Connecticut College is determined annually and is based on individual circumstances.

■ COST OF EDUCATION

Cost of education includes all items necessary to cover one academic year. Please note that increases to tuition, room and board will be determined each spring for the upcoming academic year.

CONNECTICUT COLLEGE STUDENT BUDGET (2018-2019)

Tuition & Fees	\$54,820
Room & Board	15,150
Books & Supplies (cost may vary)	1,000
Miscellaneous (cost may vary)	600
Transportation (cost may vary)	400
TOTAL	\$71,970

■ EXPECTED FAMILY CONTRIBUTION

The information provided on the Free Application for Federal Student Aid (FAFSA), CSS Profile, and other documentation is used by Financial Aid Services to calculate the expected family contribution. The FAFSA is used to determine federal and state funding and the CSS Profile is used to determine eligibility for institutional need-based grants. The CSS Profile is not required if a family does not want to be considered for need-based institutional grant aid.

The following items affect the award: student and parent income, student and parent assets (including trust funds), number in the household, number of dependents in college, and the amount a parent contributes to a sibling's college cost, excluding graduate students. Income includes all taxable and non-taxable income.

■ FORMULA TO DETERMINE NEED

The difference between the cost of education, expected family contribution and outside resources* is the student's eligibility for financial aid. The College is committed to awarding up to 100 percent of a student's eligibility, as long as deadlines have been met. Awards are usually a combination of grants, loans and Federal Work-Study. Unless otherwise stated, financial aid awards are divided equally between the fall and spring semesters.

EXAMPLE (2018-2019)

Cost of Education	\$71,970
Minus Family Contribution	15,000
Minus Other Resources*	5,000
NEED/FINANCIAL AID ELIGIBILITY	\$ 51,970

* Other resources include such items as employee tuition benefits, contributions from relatives, etc.

FINANCIAL AID PROGRAMS

Your financial aid award letter lists the programs and amounts of financial aid for which you are eligible, so that you can determine the remaining costs. Listed below are the most commonly awarded funds:

- Federal Pell Grant
- Federal Supplemental Education Opportunity Grant (SEOG)
- State Grants
- Connecticut College Grant
- Federal Work-Study
- Federal Direct Loans



■ FEDERAL GRANTS

Federal Pell Grant

Eligibility for the Federal Pell Grant is based on an analysis of the information reported on the Free Application for Federal Student Aid (FAFSA). This grant is available to undergraduate students only. Students typically must have exceptional financial need. Grants from the College may be adjusted if the Federal Pell Grant differs from the amount estimated on the award.

Federal Supplemental Educational Opportunity Grant (SEOG)

This federal grant is for undergraduates with exceptional financial need and priority is given to students who have been awarded the Federal Pell Grant. The amount of the award is determined by Financial Aid Services based on the availability of funding provided by the federal government.

■ STATE GRANTS

State scholarships are provided by various states for eligible students based on academic qualifications. Those states have specific application deadlines. All require the Free Application for Federal Student Aid (FAFSA). In addition, some states have their own application. Please contact your state higher education agency for specific application procedures and deadline dates. Connecticut College will not make up for anticipated state funds for which a student fails to apply or meet the deadline date.

Connecticut and Vermont participate in this program.

■ CONNECTICUT COLLEGE GRANT AND SCHOLARSHIP PROGRAMS

A grant is the portion of your award that does not have to be repaid. Eligibility for the following grant programs, with the exception of the Jane Bredeson Scholarship, is based on financial need and limited to eight semesters, less for transfer students.

Connecticut College Grant

This grant is based on demonstrated need and funded in part by donor gifts and endowed funds. Endowed Connecticut College Grants are awarded based on criteria established by the donor. A partial listing of endowed funds is included in the Connecticut College catalog. A student may be notified in the fall by the Office of Advancement that his or her grant was partly funded by the generous donation of an individual. The student will be requested to supply biographical information that can be shared with the donor. It is our hope that all eligible students will honor this request.

Jane Bredeson Scholarship Program

New London city residents may qualify for this program. If eligible, a student may receive up to one-half of the College tuition in a combination of federal, state and College grant aid.

Lois Taylor '32 Scholarship

This program was established to honor the first African-American graduate of Connecticut College and the historic leadership of the citizens of color of New London County. The scholarship is based on demonstrated financial need. It is awarded to local underrepresented students with distinguished records of academic excellence.

Cornel West Scholarship

This program was established to honor Cornel West, Class of 1943 University Professor at Princeton University and author of several books, including "Race Matters" and "Democracy Matters." This scholarship is based on annual demonstrated financial need and will cover the full institutional grant portion of the student's financial aid award for all four years. The scholarship will be awarded annually to one or more underrepresented students (eligible citizens) who demonstrate in their admission application a commitment to the exploration of issues of racial injustice, diversity and dialogue.

Disbursement of Grants

Grants are usually payable in two disbursements, one-half of the total in each semester, and will not be disbursed earlier than 10 days prior to the start of classes.

■ FEDERAL WORK-STUDY

This fund is awarded based on need and enables a student to work on or off campus with designated employers approved by the College in accordance with federal regulations. Students are paid every two weeks. The paycheck will be deposited directly into their checking or savings account. The money earned can be used for indirect costs such as books, supplies, travel or miscellaneous items.

To accept a Federal Work-Study award, students are required to complete the Federal Employment Verification form and the W-4 statements for withholding. Original documentation as listed on the Department of Homeland Security, Form I-9 will be required for inspection for all first-time student employees at the College. Information on campus jobs is available online on the Financial Aid website under "Student Employment."

Students may elect not to accept a Federal Work-Study award, but Connecticut College will not increase grant aid to make up for the resulting difference.

Federal Work-Study and regular student employment earnings are paid directly to the student for the time worked. Earnings are not applied directly to the student's account.

STUDENT LOANS

Federal Direct Loan

The Federal Direct Loan is awarded to both undergraduate and graduate students. There are two types of Federal Direct loans:

- Subsidized: The federal government pays the interest that accrues while the student is enrolled at least half-time.
- Unsubsidized: The student pays the interest that accrues.

For more detailed information about the Federal Direct Loan program, visit studentaid.gov.

General Requirements

To be eligible for the Federal Direct Loan, you must:

- be a United States citizen, U.S. national or eligible non-citizen;
- not be in default on any Title IV loan;
- not owe a refund on any Title IV grant (unless satisfactory repayment arrangements have been made);
- be making satisfactory academic progress;
- be enrolled at least half-time; and
- receive a determination of your Federal Pell eligibility by submitting a Free Application for Federal Student Aid (FAFSA).

Interest Rate

Students should be aware that they could have a different interest rate on each year's loan. The fixed rate on both the subsidized and unsubsidized loan is 5.05% for 2018-2019.

Fees

2019-2020 fees have not been released. The U.S. Department of Education charges 1.062% for processing and guarantee fees.

Disbursement of Funds

1. Loan funds will not be disbursed to the student's account until all necessary paperwork is completed and the student has enrolled in sufficient credit hours.
2. The Federal Direct Loan is normally payable in two disbursements, one-half of the total in each semester, and cannot be disbursed to your account earlier than 10 days prior to the start of classes.



■ ANNUAL LIMITS – FEDERAL DIRECT LOANS

DEPENDENT UNDERGRADUATES

	Subsidized	Total (Subsidized & Unsubsidized)
First Year	\$3,500	\$5,500
Second Year	\$4,500	\$6,500
Third Year and Beyond	\$5,500	\$7,500

Note: All undergraduate annual loan amounts are subject to proration.

INDEPENDENT UNDERGRADUATES, ETC.

	Subsidized	Total (Subsidized & Unsubsidized)
First Year	\$3,500	\$ 9,500
Second Year	\$4,500	\$10,500
Third Year and Beyond	\$5,500	\$12,500

GRADUATE & PROFESSIONAL STUDENTS

	Subsidized	Total (Subsidized & Unsubsidized)
All years of study	\$0	\$20,500

■ AGGREGATE LIMITS – FEDERAL DIRECT LOANS

	Subsidized Maximum	Total (Subsidized & Unsubsidized)
Dependent Undergraduate	\$23,000	\$ 31,000
Independent Undergraduate	\$23,000	\$ 57,500
Graduate & Professional Student	\$0	\$138,500



Payment Plan and Parent Loan

NOTE: Connecticut College does not accept direct credit card payments for the comprehensive fee.

■ PAYMENT PLAN

Paying for college can be an overwhelming process. Budgeting and planning is the key to successfully paying for education. Evaluating your present financial situation is important—knowing what you have and what you need will allow you to plan for the year.

Monthly payments are easier on a household budget because you can pay monthly instead of one large lump sum. Many families do not realize that they can participate in a payment plan. There is a modest application fee but you pay no interest for spreading out your payments.

For more information on Connecticut College's payment plan, contact Donna Scott, bursar, at bursar@conncoll.edu or 860-439-2079.

■ FEDERAL DIRECT PLUS LOAN

The Federal Direct PLUS is a loan program for parents to help finance the cost of education. Loan proceeds are issued by the U.S. Treasury. Parents must complete and return their loan paperwork to the Financial Aid Services office. Additionally, borrowers new to the Federal Direct PLUS program must complete online requirements with the U.S. Department of Education.

The amount a parent can borrow is determined by the College and is based on the cost of attendance less any financial aid awarded. Direct PLUS has a fixed interest rate of 7.60% for 2018-2019. Repayment of principal and interest begins after disbursement and continues for a maximum of 10 years. The Department of Education requires that a credit check be performed. If a parent is denied a PLUS due to adverse credit history, the student may qualify for additional funds from the Direct Unsubsidized Loan Program. A 4.264% fee is deducted from the total amount borrowed prior to disbursement.

More specific information about this loan program can be found at studentaid.gov.

Application procedures will be posted on our website on or about June 1.

IMPORTANT FINANCIAL AID POLICIES

1.

Because a family's financial situation often changes from year to year, students are required to reapply for financial aid each year. This means that a student's financial aid award may be increased or decreased over the years of enrollment based on the changes that occur in the family's income, assets, family size, number of dependents in college or special circumstances.

2.

In the case of a divorce or separation, our policy is that both parents, regardless of any special arrangements that are made, are responsible for funding the cost of education. We take into consideration the costs of maintaining two households but expect both parents to support their child's education.

3.

All documents are examined carefully. Some items that can be deducted on tax returns, i.e., depreciation, vehicle expenses, losses, etc., might not be allowed for purposes of determining institutional aid eligibility. Families that show very low or negative income on their tax returns may be asked to provide documentation of their living expenses.

4.

When determining eligibility for institutional aid, no allowance will be given for those family members enrolled in graduate or professional schools. Graduate and professional students can be considered financially independent from parents for federal financial aid purposes and therefore have access to higher loan limits to help finance their cost of education.

5.

On the financial aid application, families are asked to report members who will be enrolled in a college or university for the coming year. Connecticut College may verify the enrollment of other family members listed. If any of the family members did not enroll as indicated, the parental contribution will be increased and the aid award decreased for the current academic year.

6.

If another resource—such as a trust, contribution from a relative, merit or athletic award—pays for a sibling's college

costs, or if costs at their institution are significantly lower, there may be little or no allowance when determining the parent's contribution for the student at Connecticut College. Applicants are encouraged to contact our staff to fully understand how we apply this policy.

7.

Each student applying for financial aid is expected to make a standard minimum contribution to his or her educational costs. Typically, this contribution is used to fund costs such as books, supplies, miscellaneous expenses and travel.

8.

Connecticut College requires that applicants for financial aid go through a process called verification. This means that our staff will compare information reported on the Free Application for Federal Student Aid (FAFSA) and CSS Profile with pertinent federal tax returns, W2 statements, Verification Worksheet and other relevant documents.

Returning students should submit the FAFSA first. The deadline for submitting an application is posted on our website. Missing this deadline could jeopardize a student's eligibility for financial aid.

First-year students will be notified of the verification process shortly after their matriculation. Tentative awards are not considered final until the file has been verified. Once verification has been completed, our office will issue a notice.

9.

Institutional aid is limited to eight semesters, less for transfer students, which is calculated based on the number of transfer credits posted. Transfer students can typically expect to receive a maximum of six semesters of financial aid.

10.

Students who apply to Connecticut College and indicate that they will not be seeking financial assistance will not be eligible to receive Connecticut College grant aid until the student has been enrolled for two semesters at the College.

If an incoming student would like to apply for financial aid after receiving an admission letter, they are encouraged to contact the Financial Aid Office to discuss whether we are able to consider their special circumstances.

International students should not expect to receive financial aid during their years at Connecticut College unless they apply for financial aid and are eligible at the time

they are admitted. However, if there is a significant change in family circumstances in subsequent years, international students should contact our office to discuss their options and we will determine if a change in their eligibility is appropriate.

11.

In accordance with federal regulations, all financial aid recipients are required to make satisfactory academic progress. This means that financial aid recipients must maintain a minimum grade-point average and accumulate a sufficient number of credits as they progress through the program. Full-time traditional students should maintain at least a 2.0 grade-point average and not be more than eight semester hours behind the normal semester hours as described below:

Class year	Minimum earned credits required at end of fall semester	Minimum earned credits required at end of spring semester
First-Year	8	24
Sophomore	40	56
Junior	72	88
Senior	104	120

Return-to-College students' progress is measured differently. The following website contains complete information: <https://www.conncoll.edu/financial-aid/eligibility-requirements/financial-aid-policies>.

A student's progress will be monitored at the end of each semester to determine eligibility for financial aid for the upcoming semester.

Financial Aid Warning: Any student in jeopardy of losing their federal financial aid will be sent a warning letter and strongly encouraged to meet with their dean or academic adviser. The student will be eligible to receive federal financial aid for the upcoming semester.

Financial Aid Probation: If a student has not met the minimum standards for satisfactory academic progress after receiving the Financial Aid Warning, they will be placed on financial aid probation and denied access to federal financial aid.

A student can appeal based on the following:

- Injury or illness (must provide a letter from a health professional);
- Disability (must provide a letter from Student Accessibility Services);
- Death of a relative; or
- Other special circumstances.

The student must submit an academic plan that has been determined with consultation from the student's dean or academic adviser. It must be specific and demonstrate how the student will graduate within the remaining semesters.

If the student's appeal of their financial aid probation is granted, the student will be notified of the approval via email along with additional requirements that must be met. The award will be for only one semester. Future funding will depend on the successful completion of the semester based on the academic plan and any additional requirements listed in the approval letter.

If a student plans to take a semester off, or makes arrangements to pay for classes without financial aid, they must meet the minimum academic requirements based on the original class they entered in order to regain eligibility for financial aid.

More detailed information can be found in the Connecticut College Catalog at www.conncoll.edu/academics/registrar/college-catalog.

12.

As a student progresses through their education and gets closer to the completion of a college degree, they become more financially responsible to repay student loans because of increased earning power. Therefore, students become eligible for higher loan amounts each year. Since Connecticut College believes students should gradually take on a greater personal responsibility for the cost of education, students will be offered a higher proportion of loans each year to take full advantage of the student's eligibility for these student loan programs. Connecticut College is making efforts to reduce loan debt for our highest need students.

13.

All Connecticut College students are required to have health insurance, either through their family or the Student Health Insurance Plan (SHIP) sponsored by the College (for an additional fee). Insurance plans must cover primary care and emergency care regardless of location. All students are added to the College-sponsored plan at the beginning of each academic year and must either waive or enroll at www.gallagherstudent.com/conncoll. Students who are required to take the health insurance and need assistance covering the cost of the College-sponsored health insurance may be eligible for additional loan funding. Grant funding is extremely limited. The Office of Financial Aid Services can discuss eligibility and options. Further information about the health insurance policy is available on the Student Health and Counseling Services website at <https://www.conncoll.edu/campus-life/student-health-services/student-health-insurance>.

14.

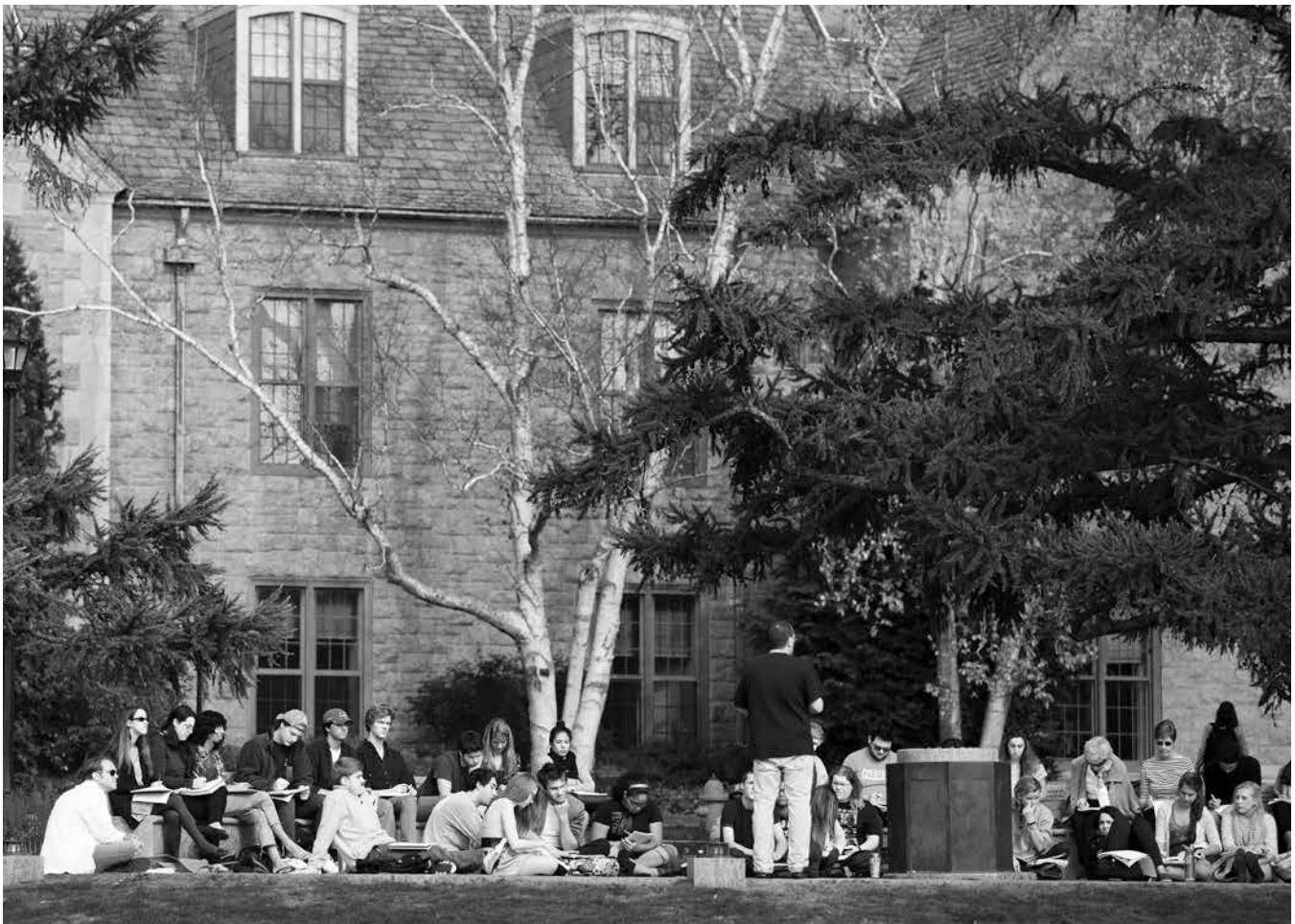
Many students receive outside sources of funding to support their college expenses. It is important to notify Financial Aid Services if any funding of this type is received. Federal regulations require that outside awards be considered when a student's eligibility is determined. When a student receives an outside scholarship, the award will change in this order:

1. Student contribution will be reduced
2. Loan levels will be eliminated or reduced
3. Student employment will be eliminated or reduced
4. Grants are the last to be reduced

Outside scholarships may also be used to cover the cost of the College-sponsored health insurance if a student is required to purchase it.

15.

It is the student's responsibility to arrive on campus with sufficient funds from either summer employment or other sources to purchase books, supplies and miscellaneous items. Earnings from the Federal Work-Study Program should be sufficient to meet on-campus expenses after that.



HOW TO DETERMINE WHAT TO PAY CONNECTICUT COLLEGE

Sample Financial Aid Award

For a student with an expected family contribution of \$25,000

	Amount	Total/Year
Costs for the 2018-2019 Financial Aid Year		
Tuition and Fees	\$ 54,820.00	
Room and Board	\$ 15,150.00	
Books and Supplies	\$ 1,000.00	
Miscellaneous	\$ 600.00	
Transportation	\$ 400.00	
Cost of Attendance		\$ 71,970.00
Grants and Scholarships ('gift aid'; no repayment needed)		
Connecticut College Grant	\$ 39,470.00	
Total Grants and Scholarships		\$ 39,470.00
Net price (cost less grants)		\$ 32,500.00
Options to Pay Net Price		
Work Options (do not deduct from bill)		
Federal Work Study	\$ 2,000.00	
Total Work Options		\$ 2,000.00
Student Loan Options		
Federal Direct Subsidized Loan	\$ 3,500.00	
Federal Direct Unsubsidized Loan	\$ 2,000.00	
Total Loan Options		\$ 5,500.00
Other options to pay the family contribution of \$25,000		
■ Payment Plan: www.conncoll.edu/offices/office-of-the-controller/student-accounts/payment-plan-faq		
■ Parent PLUS loan: www.conncoll.edu/parentplus		
■ Military and/or National Service Benefits		
■ Non-Federal private education loan		

Financial Aid package (based on the sample award)

	Fall Semester	Spring Semester	Total
Connecticut College Grant	\$19,735.00	\$19,735.00	\$39,470.00
Federal Direct Subsidized Loan	\$ 1,732.00	\$ 1,732.00	\$ 3,464.00*
Federal Direct Unsubsidized Loan	\$ 990.00	\$ 990.00	\$ 1,980.00*
TOTAL TO BE CREDITED TO STUDENT'S ACCOUNT	\$22,457.00	\$22,457.00	\$44,914.00

*Net amount reflects a 1.062% direct loan processing fee.

Calculating your payment

Bill	Fall Semester	Spring Semester
Comprehensive Fee (tuition, fees, room and board)	\$ 34,985.00	\$ 34,985.00
Estimated Health Insurance	\$ 2,000.00	0
Total Charges (including fall semester with Health Insurance)	\$ 36,985.00	\$ 34,985.00
Less: Tuition Deposit (if applicable)	\$ 500.00	0
Less: Grants	\$ 19,735.00	\$ 19,735.00
Less: Subsidized Loans	\$ 1,732.00	\$ 1,732.00
Less: Unsubsidized Loans	\$ 990.00	\$ 990.00
Balance	\$ 14,028.00	\$ 12,528.00

Important Points:

- The figure for health insurance is estimated. A final figure will be released at a later date.
- Health insurance can be waived but the waiver form must be signed and returned to the appropriate department.
- Federal Work-Study: students who secure a job receive a paycheck every two weeks. Their paycheck will be deposited directly to the bank account of their choosing. Therefore, when calculating what you should pay the bursar, do not subtract the Federal Work-Study award.
- Additional resources to pay the balance due:
 - Payment Plan: www.conncoll.edu/offices/office-of-the-controller/student-accounts/payment-plan-faq
 - Parent Direct PLUS loan: www.conncoll.edu/parentplus
 - Military and/or National Service Benefits
 - Non-federal private education loan

Connecticut College is committed to the goal of achieving equal opportunity for all and, accordingly, does not discriminate on the basis of race, color, sex, sexual orientation, age, religion, national or ethnic origin, visible or invisible disability, or status as a disabled veteran of the Vietnam era. The College complies with federal and state legislation and regulations regarding non-discrimination. This policy applies to faculty and staff, applicants for faculty and staff positions, students and applicants for educational programs and activities. Inquiries concerning this policy should be addressed to the Dean of Institutional Equity and Inclusion/Affirmative Action Officer, Fanning Hall, Connecticut College, 270 Mohegan Avenue, New London, CT 06320-4196.

This information was complete and accurate as of December 2018.
Please check for updates at www.conncoll.edu/financial-aid.

This publication was printed on environmentally responsible paper. Please join our efforts and recycle.

$a_n > 0$ and $\sum a_n \rightarrow a$ where $a \in \mathbb{R}$, we
 include a positive
 $\frac{1}{n} \sum_{i=1}^n a_i = \left\{ a_1, \frac{a_1+a_2}{2}, \frac{a_1+a_2+a_3}{3}, \dots \right\}$
 let $\epsilon > 0$ be given. Choose $N_1 \in \mathbb{N}$:
 $N_1, \left| \sum_{i=1}^n a_i - a \right| < \epsilon$. Basically, $\sum_{i=1}^n a_i$ is within an
 neighborhood of its limit a . So, $a - \epsilon < \sum_{i=1}^n a_i < a + \epsilon$.
 choose $N_2 \in \mathbb{N}$: $\forall n \geq N_2, \frac{1}{n} < \frac{\epsilon}{\epsilon + a}$. This is
 because of the Archimedean principle that $\forall x \in \mathbb{R} \setminus \{0\}$
 $\exists N \in \mathbb{N}$ s.t. $\frac{1}{N} < x$. Also, since $\frac{1}{n}$ is reduced by $n \in \mathbb{N}$ and a, ϵ
 no absolute value is needed. Let $N = \max\{N_1, N_2\}$.
 $\left\{ \frac{1}{n} \sum_{i=1}^n a_i \right\} < \frac{1}{n} (\epsilon + a) \leq \frac{1}{N} (\epsilon + a) < \frac{\epsilon}{\epsilon + a} (\epsilon + a) = \epsilon$
 $\{b_n\} < \epsilon$ so $\{b_n\}$ converges

b) Now show $\sum b_n$ diverges.
 $\sum b_n = \sum \left(\frac{1}{n} \sum_{i=1}^n a_i \right) = a_1 + \frac{a_1+a_2}{2} + \frac{a_1+a_2+a_3}{3} + \dots$
 $= a_1 + \frac{a_1}{2} + \frac{a_1}{3} + \frac{a_2}{3} + \frac{a_2}{4} + \frac{a_3}{4} + \frac{a_3}{5} + \dots$
 $= a_1 \left(1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots \right) + a_2 \left(\frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \dots \right) + \dots$
 $= a_1 \sum_{n=1}^{\infty} \frac{1}{n} + a_2 \sum_{p=3}^{\infty} \frac{1}{p} + \dots$
 So $\sum b_n$ diverges

② Let $\epsilon > 0$ be given.
 (i) $\forall \epsilon \in S, \exists x < \epsilon$
 (ii) $\forall \epsilon \in S, \exists x > \epsilon$
 Let $r = \sup(S)$ and
 $r \neq x$.
 By definition, $\forall \epsilon \in S$
 $r - \epsilon < S$ and $\forall \epsilon \in S$,





CONNECTICUT
COLLEGE

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