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Last updated: 2-2016
Introduction

Welcome to the Craft Brewing Program at Central Washington University! This handbook is designed for Craft Brewing students as quick reference guide to vital information about the program’s policies and procedures. Furthermore, this handbook will assist you in completing either the certificate or Bachelor of Science degree in Craft Brewing. This handbook is to be used in conjunction with, but not as a substitute for the official CWU catalog, class schedule, and all applicable CWU student requirements. It is your responsibility to become familiar with pertinent dates, deadlines, rules, and regulations contained in the catalog and class schedule. Please visit www.cwu.edu/registrar/catalogs to access the electronic version of the CWU catalog.

The Craft Brewing Industry

According to the Brewer’s Association definition, craft breweries are small, independent, and traditional breweries that focus on use of ingredients. America’s appetite for craft beers is growing like never before - sales of craft beers grew by more than 17% in 2014, contributing $19.6 billion dollars to the overall beer market of $101.5 billion. As of 2014, there were in excess of 3,400 breweries in the United States, the highest number in more than 100 years. Washington State is home to more than 250 breweries, ranking it second nationally behind California.

With 3,418 craft breweries operating in 2014, there is a definite need for professionals in the field – Small brewing companies employed approximately 115,469 people in 2014. This is a 4.3% increase from 110,738 jobs in 2013. A major challenge for this growing industry is finding properly qualified employees for their growing businesses. Not only are brewers needed, but also graduates from other academic disciplines who have an understanding of the craft beer industry. Furthermore, CWU is located near one of the world’s most productive hop growing regions, Yakima, Washington.

The Craft Brewing Program

CWU Craft Brewing began in 2009 with a partnership between the office of Continuing Education and the College of The Sciences to develop the Craft Brewing Certificate. This certificate program was designed by CWU Faculty, with feedback from an Advisory Board composed of industry professionals, to address the industry’s need
for skilled and educated professionals in craft brewing. Five years and approximately 60 certificate graduates later, a Bachelor of Science degree in Craft Brewing was created.

The interdisciplinary degree, which incorporates the certificate program into its core, was approved on April 20, 2015 by the CWU Board of Trustees and is the first degree of its kind in Washington State.

Craft Brewing Certificate
The Craft Brewing Certificate is an interdisciplinary certificate program designed to be completed in one academic year sequence. The certificate program provides an overview of the science, technology, and sales/merchandising aspects of the craft beer brewing industry. Topics include principles of malting and brewing, brewing process technology, brewing microbiology, and topics strategy for the craft brewing industry. Students learn about the trade using a variety of approaches including lab work, hands on experiences, lectures, field trips, and industry speakers.

Bachelor of Science, Craft Brewing
The Craft Brewing Program provides students with an in-depth understanding of the brewing industry. The BS in Craft Brewing is built upon a strong foundation in science and is focused on providing students with content, experience, and skills in brewing science, analytical laboratory techniques, quality assurance, and management. Additionally, courses incorporate hands-on and inquiry based learning opportunities through case studies, pilot brewing, field trips, industry speakers, and research activities. The program prepares graduates for a career in the brewing production, quality assurance, brewery management, beer merchandising, distribution, brewing technology, packaging, safety, sanitation, sensory evaluation, and entrepreneurship. This is an interdisciplinary program involving departments and faculty across the university that is administered in the College of Sciences.

Admission Information
Each year, the Craft Brewing program, receives more requests for admission from students than can be accommodated. Hence, admission to the Craft Brewing program is limited and based on a competitive admission process. The Craft Brewing admission requirements ensure that each student admitted to the program, be it the certificate or the degree, has the potential, intellectual capacity, interest, and drive to succeed in the program, and to continue on to a successful career in the Craft Brewing industry.
Bachelor of Science, Craft Brewing

Curriculum

Curriculum for the Bachelor of Science, Craft Brewing was developed through consultation with the Master Brewer’s Association of America as well as through consultation with industry professionals that belong to the CWU Craft Brewing Advisory Board to create a real-world approach to the program.

The following are the classes required for the major. Completing these classes does not guarantee admission to the Craft Brewing degree program. You must be accepted into the major before you can take the Advanced Craft Brewing Core classes.

### Basic and Breadth Requirement Courses Credits: 10

- **ECON 201**  Principles of Economics Micro Credits: (5)

Choose one of the following mathematics courses: 5 credits

- **MATH 153**  Pre-calculus Mathematics I Credits: (5)
- **MATH 154**  Pre-calculus Mathematics II Credits: (5)
- **MATH 170**  Intuitive Calculus Credits: (5)
- **MATH 172**  Calculus I Credits: (5)

### Professional Core Requirement Credits: 31

- **CHEM 111**  Introduction to Chemistry Credits: (4)
- **CHEM 111LAB**  Introductory Chemistry Laboratory Credits: (1)
- **CHEM 112**  Introduction to Organic Chemistry Credits: (4)
- **CHEM 112LAB**  Introduction to Organic Chemistry Laboratory Credits: (1)
- **CHEM 113**  Introduction to Biochemistry Credits: (4)
- **CHEM 113LAB**  Introduction to Biochemistry Laboratory Credits: (1)
- **ADMG 201**  Introduction to Business Credits: (3)
- **SHM 325**  Manufacturing Safety and Health Credits: (3)

Select from the following sequences: 10 Credits

- **PHYS 111**  Introductory Physics with Laboratory Credits: (5)
- **PHYS 112**  Introductory Physics II with Laboratory Credits: (5)

**OR**

- **PHYS 181**  General Physics with Laboratory Credits: (5)
- **PHYS 182**  General Physics II with Laboratory Credits: (5)
Required Advanced Craft Brewing Core Courses: Credits 31

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRBW 312</td>
<td>Brewing Microbiology</td>
<td>(4)</td>
</tr>
<tr>
<td>CRBW 317</td>
<td>Brewing Processes and Biochemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>CRBW 450</td>
<td>Sensory Analysis for Brewing</td>
<td>(5)</td>
</tr>
<tr>
<td>RMT 320</td>
<td>Topics in Strategy for the Craft Brewing Industry</td>
<td>(5)</td>
</tr>
<tr>
<td>CRBW 470</td>
<td>Current Topics in Brewing</td>
<td>(3)</td>
</tr>
<tr>
<td>CRBW 360</td>
<td>Brew Process Technology</td>
<td>(3)</td>
</tr>
<tr>
<td>CRBW 499</td>
<td>Brewing Seminar</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Choose one of the following: 5 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRBW 490</td>
<td>Cooperative Education</td>
<td>(5)</td>
</tr>
<tr>
<td>CRBW 495</td>
<td>Brewing Research Methods</td>
<td>(5)</td>
</tr>
</tbody>
</table>

Total Credits: 72

Eligibility & Admission Process

Admission

Admission into the Craft Brewing Major is a four step process:

1. **CWU Admission:** Apply and be admitted to CWU. Please note admission to the degree is *separate* from admission to the university. The deadline to apply for the degree and begin fall quarter is July 1st. Applying early is suggested; Acceptance is limited and students are evaluated on a competitive basis with their qualifications. Students may be waitlisted if maximum enrollment is met. We will notify students by email of their application status once all steps have been completed.

2. **Craft Brewing Pre-major:** Meet with a Craft Brewing faculty advisor to obtain information about the Craft Brewing major and career prospects during the school year. If you are still interested in the major, you may apply at any time for pre-major status by completing the Craft Brewing Degree Application ([http://www.cwu.edu/sciences/craft-brewing-degree-application](http://www.cwu.edu/sciences/craft-brewing-degree-application)) and choosing “Declare my pre-major” in the “I Would like to” drop-down menu. A pre-major student generally has freshman or sophomore standing or is a recent transfer from a community college or other university. A pre-major has not completed the required prerequisite coursework and applied for acceptance as a major.

3. **Craft Brewing Prerequisite Coursework:** Students wishing to attain full admission to the BS in Craft Brewing must complete the following 12 courses with a grade of C or better and meet the following requirements (Before full admission students can be declared as a pre-Brewing Major). If you are under 21 you can apply as a pre-major and take basic breadth courses and the prerequisite courses before you become of age.
Successful completion of the following classes with a C (2.0) or better in each course before being admitted to the major:

1. CHEM 111 Introduction to Chemistry
2. CHEM 111LAB Chemistry Laboratory
3. CHEM 112 Introduction to Organic Chemistry
4. CHEM 112LAB Introduction to Organic Chemistry Laboratory
5. CHEM 113 Introduction to Biochemistry
6. CHEM 113LAB Introduction to Biochemistry Laboratory
7. Math 153 or its equivalent
8. Econ 201 Principles of Economics Micro
9. PHYS 111 Introductory Physics with Laboratory
10. PHYS 112 General Physics with Laboratory

Overall minimum 2.5 GPA will be required for admission.

Student must be at least 21 years old before enrolling in courses that may involve tasting beer (CRBW 317 Brewing Processes and Biochemistry (5), CRBW 350 Sensory Analysis for Brewing (5), CRBW 496 Brewing Special Topics (3), CRBW 498 Brewing Research (5), and CRBW 499 Brewing Seminar (2)).

Students will be expected to spend significant time outside the classroom working on assignments and projects. Some sessions may meet on Saturdays.

Students are highly encouraged to also obtain a minor or degree in Biology, Chemistry, Administrative Management, Industrial Technology, or Safety and Health Management and complete at least five credits of CRBW 490, Cooperative Education.

The requirement for CHEM 111, 111LAB, Introduction of Chemistry and Laboratory, may be met by satisfactorily completing CHEM 181, 181LAB, 182, 182LAB, and 183, 183LAB General Chemistry and Laboratory. The requirement for CHEM 112, 112LAB, Introduction to Organic Chemistry and Laboratory, may be met by satisfactorily completing CHEM 361, 361LAB, 362, Organic Chemistry and Laboratory. The requirement for Chem 113, 113LAB, Introduction to Biochemistry, may be met by satisfactorily completing CHEM 431, 431LAB and 432, Biochemistry and Laboratory.

4. Major Application: Apply for entry into the Craft Brewing major by submitting the completing the Craft Brewing Degree Application found on the Craft Brewing website, www.cwu.edu/sciences/craft-brewing-degree with the required admission materials as listed below attached:

Admission Materials

1. Application: A completed Craft Brewing Degree Application. The webform can be found at http://www.cwu.edu/sciences/craft-brewing-degree-application
2. **Personal Statement:** A 1-2 page personal statement (essay) which includes information about your experience in brewing or homebrewing, your leadership, math and chemistry skills, business experience and work ethic, anticipated career path and why you are a good candidate for the program. Your essay may also provide additional clarification on important details in your application, such as honors, awards, or deficiencies in your student record. Please consider grammar and spelling when submitting your essay.

3. **Resume:** A current resume, with a brief description of your work experience (position title and job functions).

4. **Unofficial or Official Transcripts:** Please attach unofficial transcripts to your application. You may also have official transcripts sent to the Craft Brewing program office:

   CWU Craft Brewing Program  
   400 E University Way  
   Ellensburg, WA 98926-7433

5. **Code of Conduct:** Please carefully read and electronically sign (via the Acknowledgement) the Craft Brewing Program Code of Conduct located within the Craft Brewing Degree Application webform.

**Submission and Decision**
The deadline to submit your application to the major and begin in the fall is July 1st. Enrollment in the program is limited. Early applications are suggested. Incomplete submissions will not be considered for admission. Upon submission, you will receive an application receipt notification via email. Please contact us if you did not receive this notification.

The decision will be communicated to each applicant via email. Those who have been accepted into the program will be notified via email and postmarked mail. Some applicants with deficiencies may be accepted conditionally and will be expected to make up deficiencies in their record (e.g. low grade in chemistry prerequisite).
After Acceptance

Advising

- After you have been accepted into the program, an advisement meeting is *required* during the academic school year (not summer). To arrange an appointment please contact:

  Dr. Steve Wagner, Ph.D.
  Director, Craft Brewing Program
  WagnerS@cwu.edu

  Dr. Wayne Quirk, Ph.D.
  Interim Director, Craft Brewing Program
  QuirkW@cwu.edu

Tuition & Fees

- CWU’s regular tuition rates are applied to the Bachelor of Science degree. Additional fees may also apply. For more information on CWU’s tuition & mandatory fees, please visit [http://www.cwu.edu/registrar/ tuition-and-mandatory-fees](http://www.cwu.edu/registrar/tuition-and-mandatory-fees).

- Student’s tuition and fees will not be removed due to non-attendance. Official withdrawal procedures must be followed. See the refund policy in the Registration Handbook, pg. 10-12, located here: [http://issuu.com/teriolin/docs/2015-2016_registration_handbook/1](http://issuu.com/teriolin/docs/2015-2016_registration_handbook/1)

- Tuition will be posted to your student account and is due the 5th day of class.

Craft Brewing Certificate

Curriculum

Curriculum for the Craft Brewing Certificate was developed through consultation with the Master Brewer’s Association of America as well as through consultation with industry professionals that belong to the CWU Craft Brewing Advisory Board to create a real-world approach to the program that meets industry needs.

The certificate is composed of four ten-week classes over the course of 1 academic year (fall, winter, and spring quarters). Classes are held in the evening and meet two times per week. Students should plan on starting in the fall and expect to complete the program in the spring; exceptions may be made based on the applicant’s skills and knowledge level. In order to receive the certificate, students must earn a grade of B- or above in each of the four courses. All classes are held on the CWU Ellensburg Campus.
<table>
<thead>
<tr>
<th>Term</th>
<th>Prefix</th>
<th>Credits</th>
<th>Class Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>CRBW 317</td>
<td>4</td>
<td><strong>Principles and Biochemistry of Brewing:</strong> Raw materials, enzymes, proteins, wort production, hop analysis, &amp; sensory evaluation.</td>
</tr>
<tr>
<td>Winter</td>
<td>RMT 320</td>
<td>5</td>
<td><strong>Topics in Strategy for the Craft Brewing Industry:</strong> Selling process, operations management, distribution process, behavioral concepts, &amp; creating a business plan.</td>
</tr>
<tr>
<td>Spring</td>
<td>CBRW 360</td>
<td>3</td>
<td><strong>Brew Process Technology:</strong> Understanding the brew house, efficiency, heating &amp; cooling, wort transfer, cleaning, &amp; packaging techniques.</td>
</tr>
<tr>
<td>Spring</td>
<td>CRBW 312</td>
<td>4</td>
<td><strong>Brewing Microbiology:</strong> Microbiological techniques, yeast biology, wild yeasts, yeast production, microorganisms in the brewery, &amp; sanitation.</td>
</tr>
</tbody>
</table>

**Eligibility & Admission Process:**

Open to the public, students may participate in the certificate program as a non-matriculated or matriculated student. Non-matriculated students are students who are not seeking a CWU degree nor seeking financial aid. Non-matriculated students do not need to go through the regular CWU admissions process but simply apply through the office of Continuing Education through the application on this page. Matriculated students are those who have applied to the university and will either be registering for non-Craft Brewing Certificate courses, seeking a CWU degree and/or financial aid.

The deadline to apply and begin fall quarter is July 1st. Students will be notified of admission to the program via email and postmarked letter. Enrollment is limited and accepted on a first come, first serve basis. Early applications are suggested.

**Eligibility**

The following requirements must be met to be accepted into the certificate program:

- Be 21 years of age or older.
- A minimum overall college GPA of 2.5.
Completed one of the following; College level chemistry (Chemistry 101, Chemistry 111, or Chemistry 181) or equivalent.
Completed college level pre-calculus (Math 153) or equivalent.
Work experience may substitute for the above academic prerequisites and is subject to evaluation by the advisor.

After meeting the eligibility requirements, interested students will apply directly to the office of Continuing Education with the following application and attached application materials:

Admission Materials


2. Personal Statement: A 1-2 page personal statement (essay) which includes information about your experience in brewing or homebrewing, your leadership, math and chemistry skills, business experience and work ethic, anticipated career path and why you are a good candidate for the program. Your essay may also provide additional clarification on important details in your application, such as honors, awards, or deficiencies in your student record. Please consider grammar and spelling when submitting your essay.

3. Resume: A current resume, with a brief description of your work experience (position title and job functions).

4. Unofficial or Official Transcripts: Please attach unofficial transcripts to your application. You may also have official transcripts sent to the Craft Brewing program office:

   CWU Craft Brewing Program
   400 E University Way
   Ellensburg, WA 98926-7433

5. Code of Conduct: Please carefully read and electronically sign (via the Acknowledgement) the Craft Brewing Program Code of Conduct located within the Craft Brewing Certificate Application webform.

Submission and Decision
The deadline to submit your application and begin fall quarter is July 1st. Enrollment in the certificate program is limited, early applications are suggested. Incomplete
submissions will not be considered for admission. You will receive an application receipt notification via email. Please contact us if you did not receive this notification.

The decision will be communicated to each applicant via email. Those who have been accepted into the program will be notified via email and postmarked mail. Those accepted to the program will be sent an offer of admission, which the student must accept or deny. Once the student has accepted their offer, they will be automatically enrolled in all certificate courses by the office of Continuing Education.

**After Acceptance**

Those accepted to the certificate program will be sent an Admission Offer, which the student must accept or deny by visiting [http://www.cwu.edu/ce/cwu-craft-brewing-admission-offer](http://www.cwu.edu/ce/cwu-craft-brewing-admission-offer) and submitting their response. Once the student has accepted their offer, they will be automatically enrolled in all certificate courses by the office of Continuing Education. If a student denies their offer, they will forfeit their spot in the Craft Brewing program.

- Please note that until you accept your offer of admission, you will not be fully enrolled in the certificate program.

- After you accept your Admission Offer, a letter from the Registrar's will be sent to you with your MyCWU username. This important username will allow you to access the MyCWU portal. A MyCWU password and log in instructions will be separately emailed to you. If you do not receive this letter and email, call Registrar's at 509-963-3001.

**Advising**

- An advising meeting is not required for the certificate program. However, general advising questions can be sent to Dr. Wagner, Director of CWU Craft Brewing:

  Dr. Steve Wagner, Ph.D.
  Director, Craft Brewing Program
  WagnerS@cwu.edu

**Tuition & Fees**

- Tuition & Fees for the certificate program differ from CWU regular tuition rates and are subject to change. Additional fees may also apply. Tuition waivers are not allowed.

- Student’s tuition and fees will not be removed due to non-attendance. Official withdrawal procedures must be followed. See the refund policy in the Registration

- The 2016-2017 tuition for the Craft Brewing Certificate program will be $393.97 per credit for both Washington State residents and non-residents. A one-time additional non-matriculated student fee of $40 will be applied. University mandatory fees will be incurred for this program.

- Tuition will be posted to your student account and is due the 5th day of class.

- For more information on the University fees, please visit the Registrar’s website at [https://www.cwu.edu/registrar/tuition-and-mandatory-fees](https://www.cwu.edu/registrar/tuition-and-mandatory-fees).

## Facilities

### Brewing Research Laboratory

The Brewing Research Laboratory is located north of the CWU Ellensburg Campus off Airport Road. The BRL houses the Craft Brewing program’s pilot brewing research equipment, office space, classroom, and conference room/brewing library. Students are encouraged to utilize this facility.

A few important things in regards to the Brewing Research Laboratory:

1. The lab may be available to you for brewing and other research with approval from the Craft Brewing Lab Coordinator, Dr. Steve Wagner.
2. You are not allowed to remove any item from the lab. Please see Brewing Research Lab Etiquette section below.
3. You will be responsible for any lost or damaged items and a charge may be placed on your student account and your access can be restricted.
4. Please be respectful of the Brewing Research Lab, its equipment and resources.

### Brewing Research Lab Etiquette

The Brewing Research Lab was designed to create an environment for brewing students to develop their brewing process techniques and research skills. The lab promotes critical thinking, productivity, safety and ethical behavior. In order to maintain a healthy lab environment the following conduct needs to be observed:

#### Equipment:

- Brewing Equipment and Supplies are to be used for approved class and/or independent study projects only.
- Treat the equipment with care. Do not use equipment you are not familiar with.
- Please keep all equipment clean.
- Place equipment and supplies back in storage areas after use.
- Drinking of beer is prohibited while operating any equipment.
Safety:
- Wear closed toed shoes.
- Wear safety glasses when needed.
- Know the locations of safety equipment in the lab: fire extinguisher, first aid kit, emergency exits and emergency contact information, etc.
- Notify your instructor immediately after any injury, accident or spill.

Beer Evaluation:
- Beer may only be evaluated in designated areas and only from sample glasses.
- Do not leave empty cans or bottles anywhere in the lab.
- Be responsible. No drinking while operating any equipment.

Leave No Trace:
- Food is to be kept only in the kitchen area. Do not leave food overnight.
- Throw away all trash and food items before you leave.
- Wash used glassware. Do NOT leave dirty glassware in the sink.
- Wipe up any spills and work areas as needed.
- Ensure front & back doors are locked when leaving.
- If you see a mess, please help us to keep the space clean by cleaning it up.

CWU Student Resources

MyCWU
MyCWU is a single sign-on service where students login to access their records, email and many other valuable tools. To login, visit www.cwu.edu and click on the MyCWU link at the upper right-hand side of the page. For instructions on the MyCWU system, visit http://www.cwu.edu/registrar/accessing-mycwu.

- You can view and manage your enrollment status, class schedule, financial statement, drop from a class, campus email, and other information by visiting www.cwu.edu and clicking the MyCWU link at the top of the page. For technical assistance call the Help Desk at 509-963-2001.

CWU Campus Email
- Campus email is assigned to all students and is Central’s official communication tool. Please become familiar with the email as it will be used frequently throughout the program.
CWU Connection Card:
The Connection Card at CWU is the official Student, Faculty and Staff ID card and has the following important uses on campus:

- CWU Library book and laptop check out
- Photocopy card at the library
- Door access for Residence Halls and Academic Buildings
- Debit card for Housing laundry facilities
- Laptop check out in the SURC
- Meal Card for all Dining Services locations
- Access to the Recreation Center and equipment checkout in the SURC
- Admission to sporting events, concerts, theater productions, and more
- Use in University Store as a debit card and to student charge item
- All students, faculty and staff are required to have a CWU Connection Card.

Get Connected! All students, faculty and staff are required to have a CWU Connection Card. These cards are free the first time (there is a small fee for replacement of lost cards). Connection Cards can be picked at The Connection Card Office, located in the SURC (Student Union and Recreation Center building) room 131, next to CWU’s Radio Station, 88.1 The ‘Burg. If you have any questions you may contact (509) 963-2711 or email us at concard@cwu.edu.

Student Professional Ethics & Conduct

Code of Conduct

(1) Craft Beer Trade Certificate Program Code of Conduct

Each participant’s conduct reflects on the reputation of one’s self, Central Washington University, the Craft Beer Trade Certificate Program, and other graduates of the program. Students and graduates are expected to be sensitive to the cultural and behavioral issues associated with overconsumption and misuse of alcohol. Students and graduates should not engage in inappropriate behavior regarding the use, sale or promotion of alcohol and furthermore abide by federal, state and local laws and regulations regarding alcohol. Any misuse of alcohol during the program will result in student dismissal from the program. If at any time you feel you may be effected in your day to day life, or feel you have any concern regarding alcohol, you should notify a CWU staff or faculty member.

Disclaimer: all policies and procedures are regularly updated by the Office of the President.
Resources
Below is a list of local resources if you feel you may need assistance:

<table>
<thead>
<tr>
<th>On-Campus Resources</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildcat Wellness Center</td>
<td>509-963-3214</td>
</tr>
<tr>
<td>Student Medical and Counseling Clinic Services</td>
<td>509-963-1391</td>
</tr>
<tr>
<td>Community Counseling &amp; Psychological Assessment Center</td>
<td>509-963-2301</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Off-Campus Resources</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Drug Dependency Services</td>
<td>509-925-9821</td>
</tr>
<tr>
<td>Barth and Associates</td>
<td>509-933-1388</td>
</tr>
<tr>
<td>Central Washington Comprehensive Mental Health</td>
<td>509-925-9861</td>
</tr>
</tbody>
</table>

Craft Brewing Job Opportunities

CWU Craft Brewing is dedicated to helping students succeed both during and after their time spent with the program. We regularly post job opportunities on our Facebook page, CWU Craft Brewing at www.facebook.com/CraftBeerEdu and send opportunities to students through CWU Email so please check your CWU email often. To update your email, please email CraftBrewing@cwu.edu with your preferred email address.

Forms & Documents

The following documents have been attached to this handbook to assist you. For questions about these forms, please contact CraftBrewing@cwu.edu or 509-963-1386.

**Degree Related Forms:**
- Craft Brewing Major Admission Worksheet
- Craft Brewing Major Requirements Checklist
- Bachelor of Science, Craft Brewing Example 4-Year Plan

**Certificate Related Forms:**
- Craft Brewing Certificate Admission Requirements Worksheet
Craft Brewing, BS Pre-Admission Requirements

Students wishing to attain full admission into the BS in Craft Brewing must meet the following requirements. (Before full admission, students can be a pre-brewing major).

Successful completion of the following classes with a C (2.0) or better in each course before being admitted to the major:

<table>
<thead>
<tr>
<th>Class NO. and Title</th>
<th>Credits</th>
<th>Qtr. Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 153 – Pre-Calculus</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 111 – Introduction to Chemistry</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 111LAB – Introductory Chemistry Laboratory</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 112 – Introduction to Organic Chemistry</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 112LAB – Introduction Organic Chemistry Lab</td>
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<tr>
<td>CHEM 113 – Introduction to Biochemistry</td>
<td>4</td>
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</tr>
<tr>
<td>CHEM 113LAB – Introduction Biochemistry Lab</td>
<td>1</td>
<td></td>
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<tr>
<td>ECON 201 – Principles of Economics Micro</td>
<td>3</td>
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Select 10 credits from the following Sequences:

<table>
<thead>
<tr>
<th>Class NO. and Title</th>
<th>Credits</th>
<th>Qtr. Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 111 – Introductory Physics with Laboratory</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 112 – Introductory Physics II with Laboratory</td>
<td>5</td>
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<tr>
<td>OR</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PHYS 181 – General Physics with Laboratory</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>PHYS 182 – General Physics II with Laboratory</td>
<td>5</td>
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</tbody>
</table>

- Overall minimum 2.5 GPA will be required for admission to the major:
  
  OVERALL GPA: ______________________

- Students must fill out an application that includes their professional resumé as well as professional statement (essay) that addresses the following:
  - Experience in brewing or homebrewing
  - Career goals
  - Leadership and work ethic
  - Why you would be a good candidate for the program

- Upon admittance to the program students must agree to sign a written statement regarding professional conduct and responsibility.

- Students must be at least 21 years of age before enrolling in any courses that may involve tasting/evaluating beer:
  - CRBW 317 Brewing Processes and Biochemistry (5)
  - CRBW 450 Sensory Analysis for Brewing (5)
  - CRBW 495 Brewing Research Methods (5)
  - CRBW 498 Brewing Special Topics (3)
  - CRBW 499 Brewing Seminar (2)
Additional Information

Students are highly encouraged to also obtain a minor or degree in Biology, Chemistry, Administrative Management, Industrial Technology or Safety & Health Management; and complete at least 5 credits of CRBW 490, Cooperative Education.

Special Requirements

Students will be expected to spend significant time outside the classroom working on assignments and projects. Some sessions may meet on Saturdays.

Course Substitutions

The requirement for CHEM 111, 111LAB, Introduction of Chemistry and Laboratory, may be met by satisfactorily completing CHEM 181, 181LAB, 182, 182LAB, and 183, 183LAB General Chemistry and Laboratory.

The requirement for CHEM 112, 112LAB, Introduction to Organic Chemistry and Laboratory, may be met by satisfactorily completing CHEM 361, 361LAB, 362, Organic Chemistry and Laboratory.

The requirement for Chem 113, 113LAB, Introduction to Biochemistry, may be met by satisfactorily completing CHEM 431, 431LAB and 432, Biochemistry and Laboratory.

Notes:
# Bachelor of Science, Craft Brewing Major Requirements Checklist

### Prerequisites (10 Credits)

<table>
<thead>
<tr>
<th>Class NO. and Title</th>
<th>Credits</th>
<th>Grade Received</th>
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</thead>
<tbody>
<tr>
<td>ECON 201 – Principles of Economics Micro</td>
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### Choose one of the following math courses: 5 Credits

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<th>Class NO. and Title</th>
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<td>MATH 153 – Pre-calculus Mathematics I</td>
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<td>MATH 154 – Pre calculus Mathematics II</td>
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<td>MATH 170 – Intuitive Calculus</td>
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</tr>
<tr>
<td>MATH 172 – Calculus I</td>
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### Professional Core Requirements (31 Credits)

<table>
<thead>
<tr>
<th>Class NO. and Title</th>
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<tbody>
<tr>
<td>CHEM 111 – Introduction to Chemistry</td>
<td>4</td>
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</tr>
<tr>
<td>CHEM 111LAB – Introductory Chemistry Laboratory</td>
<td>1</td>
<td></td>
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<tr>
<td>CHEM 112 – Introduction to Organic Chemistry</td>
<td>4</td>
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</tr>
<tr>
<td>CHEM 112LAB – Introduction Organic Chemistry Lab</td>
<td>1</td>
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</tr>
<tr>
<td>CHEM 113 – Introduction to Biochemistry</td>
<td>4</td>
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</tr>
<tr>
<td>CHEM 113LAB – Introduction Biochemistry Lab</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ADMG 201 – Introduction to Business</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SHM 325 – Manufacturing Safety and Health</td>
<td>3</td>
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<tr>
<td>Select 10 Credits from the following sequences:</td>
<td></td>
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<tr>
<td>PHYS 111 – Introductory Physics with Laboratory</td>
<td>5</td>
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</tr>
<tr>
<td>PHYS 112 – General Physics II with Laboratory</td>
<td>5</td>
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<tr>
<td>OR</td>
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<td></td>
</tr>
<tr>
<td>PHYS 181 – General Physics with Laboratory</td>
<td>5</td>
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</tr>
<tr>
<td>PHYS 182 – General Physics II with Laboratory</td>
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### Required Advanced Craft Brewing Core Courses (31 Credits)

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<th>Class NO. and Title</th>
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<tbody>
<tr>
<td>CRBW 312 - Brewing Microbiology</td>
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<tr>
<td>CRBW 317 – Brewing Processes and Biochemistry</td>
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<td>CRBW 450 – Sensory Analysis for Brewing</td>
<td>5</td>
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<tr>
<td>RMT 320 – Topics in Strategy for the Craft Brewing Industry</td>
<td>5</td>
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<tr>
<td>CRBW 360 – Brew Process Technology</td>
<td>3</td>
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<tr>
<td>CRBW 470 – Current Topics in Brewing</td>
<td>3</td>
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<tr>
<td>CRBW 499 – Brewing Seminar</td>
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<tr>
<td>Select 10 Credits from the following:</td>
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<tr>
<td>CRBW 490 – Cooperative Education</td>
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<td>OR</td>
<td></td>
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<tr>
<td>CRBW 495 – Brewing Research Methods</td>
<td>5</td>
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</tr>
</tbody>
</table>

| GPA: | TOTAL | 72 |

**CWU Craft Brewing Program**

400 East University Way ● Ellensburg WA 98926 ● Office: 509-963-1386

Fax: 509-963-1690 ● Web: [www.cwu.edu/sciences/craft-brewing](http://www.cwu.edu/sciences/craft-brewing)

EEO/AA/TITLE IX INSTITUTION ● FOR ACCOMMODATION E-MAIL: CDS@CWU.EDU
### Bachelor of Science, Craft Brewing Example 4-Year Plan

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>MATH 153 Pre-Calculus Math 1</td>
<td>5</td>
<td>ENG 101 Composition I</td>
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<tr>
<td>▲CHEM 111 General Chemistry</td>
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<td>▲CHEM 112 Organic Chemistry</td>
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<td>▲CHEM 113 Biochemistry</td>
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<td>▲CHEM 111LAB General Chemistry Lab</td>
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<td>▲CHEM 112LAB Organic Chemistry Lab</td>
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<td>Basic/Breadth course</td>
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<tbody>
<tr>
<td>ADMG 201 Introduction to Business</td>
<td>3</td>
<td>▲ECON 201 Principles of Economics-Micro</td>
<td>5</td>
<td>**SHM 325 Manufacturing Safety and Health</td>
<td>3</td>
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<tr>
<td>▲PHYS 111 Introductory Physics with Lab</td>
<td>5</td>
<td>▲PHYS 112 Introductory Physics II w/ Lab</td>
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<tr>
<td>or ▲PHYS 181 General Physics with Lab</td>
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<td>▲PHYS 182 General Physics II w/ Lab</td>
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<tbody>
<tr>
<td># CRBW 317 Biochemistry of Brewing</td>
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<td>**RMT 320 Topics in Strategy Craft Brew</td>
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<td># CRBW 312 Brewing Microbiology</td>
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<td>Elective to reach 180 credits</td>
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<td># CRBW 450 Brewing Sensory Analysis</td>
<td>5</td>
<td># CRBW 360 Brew Process Technology</td>
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<tr>
<td>Basic/Breadth course</td>
<td>3-5</td>
<td>Basic/Breadth course</td>
<td>3-5</td>
<td>Basic/Breadth course</td>
<td>3-5</td>
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<tbody>
<tr>
<td># CRBW 495 Brewing Research or **CRBW 490 Cooperative Learning</td>
<td>4</td>
<td># CRBW 470 Current Topics in Brewing</td>
<td>3</td>
<td># CRBW 499 Brewing Seminar</td>
<td>2</td>
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<tr>
<td>Elective(s) to reach 180 Credits</td>
<td>10</td>
<td>Elective(s) to reach 180 Credits</td>
<td>10</td>
<td>Elective(s) to reach 180 Credits</td>
<td>13</td>
<td>**</td>
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<tr>
<td>TOTAL CREDITS</td>
<td>15</td>
<td>TOTAL CREDITS</td>
<td>15</td>
<td>TOTAL CREDITS</td>
<td>15</td>
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</tr>
</tbody>
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*Pre-requisite must be completed with a grade of C or higher; In lieu of MATH 153 you could take a higher math course: MATH 154, MATH 170, or MATH 172. It is recommended you take the highest level of math you qualify for. The Physics sequences must be paired together. For example, take Physics 111 and 112 or Physics 181 and 182.

# must be 21 years or older to take this course and be admitted to the Craft Brewing program

** must be admitted to brewing program

***It is recommended that students pursue a minor in Biology, Chemistry, Administrative Management, Industrial Technology or Safety & Health Management; and complete at least 5 credits of CRBW 490. Basic Skills Course Requirements: 21-23 credits by the end of the quarter in which 75 credits earned are reached.

Breadth Course Requirements: 39-45 Credits.
Students wishing to attain admission into the Craft Brewing Certificate program must meet the following requirements:

- Student must be at least 21 years old
- Overall minimum 2.5 GPA will be required for admission.
- Students must fill out an application that includes their professional resumé as well as professional statement that addresses the following:
  - Experience in brewing or homebrewing
  - Career goals
  - Leadership and work ethic
  - Why you would be a good candidate for the program
- Upon admittance to the program students must agree to sign a written statement regarding professional conduct and responsibility.
- *Work experience may be substituted for the above academic prerequisites and is subject to evaluation by the advisor.

### Successful completion of the following classes with a C (2.0) or better in each course before being admitted:

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<thead>
<tr>
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<th>Credits</th>
<th>Qtr. Taken</th>
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<tr>
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<td>CHEMISTRY 101</td>
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<tr>
<td>CHEMISTRY 111</td>
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<tr>
<td>CHEMISTRY 181</td>
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<tr>
<td>Completed College level pre-calculus:</td>
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<td>MATH 153 – Pre-Calculus</td>
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<tr>
<td>Or equivalent</td>
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