BREW 112 Course Outline as of Fall 2016

CATALOG INFORMATION

Dept and Nbr: BREW 112 Title: ANALYSIS OF FERMENTATION
Full Title: Analysis of Fermentation
Last Reviewed: 5/23/2016

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Sensory evaluation, lab analysis, and quality assurance in beer production. Perform small scale brewing to determine the impact of different ingredient recipes on the final product.

Prerequisites/Corequisites:
Concurrent Enrollment in BREW 100

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:
Must be age 18 or older

Schedule of Classes Information:
Description: Sensory evaluation, lab analysis, and quality assurance in beer production. Perform small scale brewing to determine the impact of different ingredient recipes on the final product. (Grade or P/NP)
Prerequisites/Corequisites: Concurrent Enrollment in BREW 100
Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment: Must be age 18 or older
Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Evaluate beer color, aroma, and flavor, and identify defects.
2. Demonstrate knowledge of beer ingredients through small batch brewing of their own recipes.

Objectives:
Upon completion of this course, students will be able to:
1. Identify sensory parameters of evaluating beer.
2. Identify beer defects, their cause, and prevention.
3. Perform small scale brewing of their own recipes.
4. Perform lab analysis on beer throughout the stages of production.
5. Perform quality assurance tests on finished or packaged beer.

Topics and Scope:

I. Sensory evaluation of beer
   A. Color
   B. Aroma
   C. Clarity
   D. Flavor
   E. Texture
   F. Foam retention
II. Methods of analysis in microbiology
   A. Plating with selective media
   B. Population and viability determination
   C. Isolation and identification
   D. Sanitation monitoring
III. Water
   A. TDS (Total Dissolved Solids), pH, clarity
   B. Effect on finished product

IV. Barley
    A. 1000 KW (Kernel Weight), percent moisture, germination
    B. Effect on malt
V. Barley malt
    A. 1000 KW, percent moisture, extract, diastatic power
    B. Effect on finished product
VI. Hops
    A. Alpha/beta acids
    B. Effect on finished product
VII. Wort
    A. Specific gravity, soluble solids, pH, dissolved oxygen
    B. Effect on finished product
VIII. Fermentation monitoring
IX. Finished beer
    A. Apparent extract, real extract, original gravity, real degree of fermentation, % alcohol
    B. Foam, pH, color, headspace, bitterness, dissolved oxygen, dissolved CO2
X. Quality control and assurance
    A. Sampling techniques
    B. Bottling/kegging line checks
    C. Finished package checks

Assignment:

1. Reading in required text, 20 - 40 pages per week
2. Brew small batches of beer of the student's own recipe to represent different beer styles
3. Problem solving simulation exercises
4. Lab reports
5. Midterm and final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Lab reports	Writing 20 - 40%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Lab reports; simulation exercises	Problem solving 20 - 40%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Evaluation of small batches of beer	Skill Demonstrations 10 - 20%

Exams: All forms of formal testing, other than skill performance exams.

Midterm and final exam: multiple choice, true/false, completion	Exams 20 - 40%

Other: Includes any assessment tools that do not logically fit into the above categories.

Participation	Other Category 0 - 15%

Representative Textbooks and Materials:
Standards of Brewing: Formulas for Consistency and Excellence, by Charles W. Bamforth 1st Edition (2002) Classic
Instructor prepared materials