

# **Foam Ranger BICEP Class Outline**

**By Mike Heniff**

## Foam Ranger BICEP Course

The main focus for the Foam Ranger BJCP class is to teach the most difficult aspects required for the BJCP exam while providing a self-guided study plan for the less intensive aspects of the exam. The class will focus on palate development, proper score sheeting, and essay writing. Although, the following topics will be touched on in class (and more importantly, questions will be answered both in class and via email), self-guided study will be required for style guidelines, brewing processes, brewing history, recipe formulation, and brewing ingredient information.

### **Session 1 (Tuesday 6/6/06)**

1. Provide Lesson Plan with Reference List
2. Intro to BJCP Program/discuss BJCP program
3. Handout Scoresheet and Judge Instructions/Judge Procedures Manual
4. Suggest printing BJCP Exam Study Guide
5. Review "How to Judge Beer"
6. Review Score sheet and essay techniques
7. Sample Judging Flight
8. Suggest reading material with lesson plan
  - Malts, Malting, and Mashing
  - Beer Styles: Scottish Ales, English and Scottish Strong, Stouts, Porters

### **Session 2 (Tuesday 6/20/06)**

1. Review Self-study
  - Malts, Malting, and Mashing
  - Beer Styles: Scottish Ales, English and Scottish Strong, Stouts, Porters
2. Quick quiz on Self-study
3. Doctored beers, commercial beers, judge homebrew
4. Self-Study for Next Class
  - Yeast, Fermentation, Yeast Off-flavors
  - Beer Styles: German Wheats, Belgians

### **Session 3 (Wednesday 7/5/06)**

1. Review Self-study
  - Yeast, Fermentation, Yeast Off-flavors
  - Beer Styles: German Wheats, Belgians
2. Quick quiz on Self-study
3. Doctored beers, commercial beers, judge homebrew
4. Self-Study for Next Class
  - Hops
  - Beer Styles: English Bitters, APA, IPA
  - Exam question for next months class

### **Session 4 (Tuesday 7/18/06)**

1. Review Self-study
  - Hops
  - Beer Styles: English Bitters, APA, IPA

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2. Quick quiz on Self-study
3. Doctored beers, commercial beers, judge homebrew
4. Self-Study for Next Class
  - Water
  - Beer Styles: Light Lager, Pilsner, Light Hybrids
5. Fill out example exam question

### **Session 5 (Tuesday 8/1/06)**

1. Review Self-study
  - Water
  - Beer Styles: Light Lager, Pilsner, Light Hybrids
  - Quick quiz on Self-study
2. Doctored beers, commercial beers, judge homebrew
3. Self-Study for Next Class
  - Troubleshooting, off-flavors
  - Beer Styles: Light Hybrids, Amber Hybrids, European Amber Lager, Dark Lagers
  - Fill out exam questions

### **Session 6 (Tuesday 8/15/06)**

1. Review Self-study
  - Troubleshooting, off-flavors
  - Beer Styles: Light Hybrids, Amber Hybrids, European Amber Lager, Dark Lagers
2. Quick quiz on Self-study
3. Doctored beers, commercial beers, judge homebrew
4. Self-Study for Next Class
  - EVERYTHING!
  - Beer Styles: Brown Ales, Barleywine and Imperial Stout, and Bock
5. Fill out exam questions

### **Session 7 (Tuesday 8/29/06)**

1. Review Self-study
  - EVERYTHING!
  - Review Score sheet and essay techniques
2. Big quiz on Self-study/exam questions
3. Lots of scoresheets!

### **Session 8 (Wednesday 9/13/06)**

1. Complete commercial style review
2. Compare and contrast styles

## **Self Study Topics and Keywords**

### **1. Malts and Malting**

- Definitions
  - Grass family, Gramineae
  - 2-row/6-row
  - Basics of anatomy (acrospire, embryo, husk, endosperm)
  - Proteins (amino acids, peptides, polypeptides)
  - Carbohydrates (simple sugars, dextrins, starches – both amylose and amylopectin)
  - Enzymes (phytase, proteinase, peptidase, beta amylase, alpha amylase)
  - Modification – definition and effect on mashing regime
  - Diastatic power (degrees Lintner) and levels in each type
  - Color (degrees Lovibond) and color of each type
  - Basic gravity calculations
- Types of Malt/Malt Analysis
  - Pils
  - Pale
  - Vienna/Munich
  - Crystals/Cara-Malts
  - Chocolate/Black Patent/Roasted
- Malting Process
  - Steeping, Germination, Stewing (for crystals), Kilning, Roasting (for dark malts)

### **2. Water**

- Concepts of pH, alkalinity (buffering), hardness
- Main ions of brewing concern
  - Calcium (2+) – mash pH adjustment, enzyme stability in mash, yeast nutrient
  - Sulfate (2-) – dryness
  - Chloride (-) – flavor enhancer
  - Carbonate (2-) and Bicarbonate (-) – buffering
- Water types in various cities and effect on historical brewing styles including Munich, Burton-upon-Trent, Pilsen, Dortmund, Dublin

### **3. Hops**

- Humulus Lupulus
- Anatomy: strobile, strig, bracteole, seed, lupulin glands
- Alpha and beta acids
- Essential oils
- Types, origins, and alpha acid ranges
- Bitterness, IBUs (and calculations), AAU/HBU
- Noble Hops (Saaz, Tettnanger, Hallertauer Mittelfruh, Spalt)
- Additions (bittering, flavor/aroma, hop back, dry hopping, first wort)

### **4. Mashing/Boiling**

- Mashing Process
  - Steps (milling, dough in, mash, rests, lauter)
  - Temperature Rests (acid, protein, saccharification)

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- Enzymes (phytic, proteolic, diastatic (alpha and beta))
- Processes (infusion, multi-step infusion, decoction)
- Adjuncts
  - Unmalted cereal grains (oats, flaked barley, corn)
  - Non-malt Sugars (rice, corn, beet)
- Key Variables
  - Temperatures
  - pH/Calcium
  - Liquor-to-Grist ratios
  - Enzymes
- Lautering
  - Sparging
  - First Wort Hopping
- Boil/Cooling
  - Isomerizes hop alpha acids for bitterness
  - Sanitation
  - Reduces water volume
  - Coagulates proteins and tannins (hot break, cold break)
  - Evaporates DMS, harsh hop oils
  - Carmelization, formation of melanoidins
  - Cooling – DMS, hot and cold break formation/trub

## 5. Fermentation/yeast

- Definitions
  - Attenuation (actual and apparent)
  - Flocculation
  - Autolysis
- Starters/Pitch Size
- Aeration/Oxygenation
- Fermentation Cycle (respiration/lag, fermentation (low krausen and high krausen), sedimentation)
- Ale yeast (*s. cerevisiae*) and fermentation schedule/characteristics
- Lager yeast (*s. uvarum*) and fermentation schedule/characteristics
- Lagering
- Unusual brewing systems (Burton union, lambic fermentation, Yorkshire stone squares)
- Nutrients (amino acids, zinc, calcium)
- Yeast off-flavors (ester, phenolics, fusel alcohols, diacetyl, sulfur compounds)
- Bacteria and wild yeasts (including Belgian Lambic and Berliner Weisse)

## 6. Troubleshooting/Off-flavors

- Light-struck/skunked
- Astringent
- Phenolic/medicinal/band-aid
- Chlorophenolic/Plastic-like
- Diacetyl/Buttery/butterscotch
- DMS/corn-like
- Esters/Fruity
- Grainy/husky
- Metallic

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- Oxidized/Stale/Papery/Cardboard/Sherry
- Solvent
- Sour/Acidic
- Salty
- Acetaldehyde/cider-like/green apples
- Vegetal
- Alcoholic/Fusel Alcohols
- Sulfury/Yeasty

### 7. Beer Styles

- Refer to [www.bjcp.org](http://www.bjcp.org) for current LONG style guidelines

## *Guidelines for Doctoring Beers for Educating Palates*

Base Beer – For novices, chose a bland base beer, one that is fresh, and one that is generally free of flaws. Bud Light and Coors Light make good options; they are easy to find, usually fresh, and they have very little flavor that will interfere with the doctored tasting. For an advanced session, a stronger base beer can be chosen but the level of doctorant will need to be adjusted (it is suggested that doctoring stronger beers be tested well before holding a tasting so that adjustments can be made in the doctoring process).

Doctorants – Just about anything can be used to doctor a beer, but one requirement is that it must be food grade material that is used. The key is that the end results should be as authentic as possible, mimicking an actual beer flaw. Keep in mind that some solids may be hesitant to dissolve or cause gushing.

Making the Doctored Beers – There are two methods, one where the doctorant is added to the bottle and recapped and the other where it is added to a pitcher of beer at serving.

- Adding to the bottle is more difficult since a few of the doctorants will cause the beer to gush (must have quick hands!). I suggest reusing the screw top caps and labeling (just screw the top back on, no capper required). The beer must be cold to minimize foaming and should be used within a few days to avoid oxidation also being a contributor to the flavor.
- For pouring to a pitcher and doctoring, it is simpler in process but it takes more effort at the place of tasting and is more difficult to perform the tasting blindly (where the tasters can't visibly see what you are adding). Plus, to perform triangle tastings, you need plenty of pitchers.

The Tasting Process – The tasting process can be tailored for the level of knowledge of the tasters. For reference, plenty of undoctored base beer should be available for each taster. Most of the tastings are subtle; using the undoctored base beer as a reference will help the taster to identify the flaw (taste them both side-by-side).

- For novices, a thorough discussion of the flaw, its flavors, causes, and preventative measures should precede the tasting. Additionally, it may be desired to increase the level of the doctorant in the tasting so that it can be more easily perceived. A good resource for the discussion of beer flaws can be found in the **Troubleshooting** section of the **BJCP Study Guide** at <http://www.bjcp.org/study.html>.
- For a more advanced crowd, the doctored beer can be presented blindly which will cause the taster to work a little harder to identify the beer flavor (just like a judge must learn how to successfully do when evaluating homebrew). A thorough discussion can be held after the blind tasting.
- A triangle test can be conducted individually with each taster. This is typically done with professional tasters as a test of their abilities, often just before they begin their tastings. To do this take two beers (one can be the undoctored base beer, or preferably two very similar beers) and pour one into two glasses and the other into one glass. This should be done blind to the taster. The taster should then try each of the three beers and should be able to successfully identify which beer is different. It sounds easy but it is harder than you think.

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Doctored Beer Recipes – All quantities are provided for a 12 ounce serving of a light base beer such as Bud Light.

Target Flaw	Doctorant	Comments
<b>Acetaldehyde</b> (Green apple, oxidation)	Open beer and allow air in headspace (or put pure oxygen in headspace) and recap and put in a very warm spot (attic) for a week	Variable depending on temperature, sometimes papery can be perceived in addition to acetaldehyde
<b>Astringency</b>	2.5 tsp of tannin solution (tannin solution is $\frac{1}{4}$ tsp grape tannin powder in 5 TBSP water)	Difficult to dissolve, be sure all has dissolved before serving
<b>Estery</b> (fruity)	15 drops of imitation strawberry extract and 12 drops of imitation banana extract	
<b>Acetic</b> (vinegar-like)	1.75 tsp white wine vinegar	
<b>Lactic</b> (acidic)	14 drops of food grade 88% lactic acid	Lacking some aroma typically found with lactic acid in beer
<b>Bitterness</b>	5 drops of iso-alpha acid extract	Increases base beer by ~30 IBU, contains some hop flavor element so it is better used with hoppy beers (but should require more than a 30 IBU increase)
<b>Diacetyl</b> (buttery)	9 drops of imitation butter extract	More one dimensional “movie popcorn butter” character, lacking butterscotch or toffee
<b>Alcoholic</b>	Fill headspace of bottle with poor quality vodka or everclear	Difficult to discern, very little fusel alcohol character

Additional doctored beer recipes can be found at the resources below. I would suggest trying them to be sure that the level and authenticity is appropriate before bringing them to a tasting.

Finally, professional doctoring kits are available (but expensive) at FlavorActiv or through the AHA (look for the “The Enthusiast” kit at the [www.beertown.org](http://www.beertown.org) store). Additionally, the BJCP is considering introducing a kit as well (check [www.bjcp.org](http://www.bjcp.org) for more info).

### Additional Beer Doctoring Resources

BJCP Study Guide, *Guidelines for Doctoring Beer*, <http://www.bjcp.org/study.html>  
 Dr. Beer aka Jay Hersh, <http://www.drbeer.com/>  
 FlavorActiv, <http://www.flavoractiv.com>  
 Meilgaard Beer Flavor Wheel,  
<http://brewingtechniques.com/library/backissues/issue5.6/flavorwheel.html>

## *Essay Questions and Score Sheets*

### **Judging Tips**

As soon as the glass is poured, stick your nose in it. Some of the key volatiles in beer can be volatilized quickly.

For difficult aromas or low level aromas, use clues from the tasting to help you pin down the aroma/flavor. For example, if you get a hint of citrusy and leathery or mustiness in the aroma and the flavor is slightly sharp and acidic, then you can bet that it is lactic acid. If you get a hint of toffee in the aroma, and then it has a slick mouthfeel then it is diacetyl.

Some tips to getting more aroma: swirl the glass then quickly stick your nose in it, cup it in your hand to warm it up a little, hold your hand over the glass for a few seconds then take a big whiff, or my favorite, smell something neutral (like your shirt sleeve, then smell the beer). To clean your palate for less flavor interference, either use water or bread followed by lots of water.

Learn your palate. Learn to associate different off-flavors. Learn which off-flavors that your palate is not sensitive to (diacetyl is a common off-flavor to which many people are not sensitive) and be aware of that when judging beer. Try beers on occasion that are noted for an off-flavor (i.e. Redhook ESB for diacetyl, Budweiser for acetaldehyde). This will take some experience and thought to nail down your palate (and still take some practice to maintain it). When learning to judge, referring to a beer evaluation text or the Beer Flavor Wheel may help jog the memory for beer descriptors.

Write legibly. Fill out every scoresheet like you are taking the test. The goal is to give good feedback to the brewers.

Always give levels for each comment. Don't just say "hops and malt with diacetyl", say "strong caramel and toasty malt with assertive citrusy hops and a moderate level of diacetyl".

Don't just comment on what's there, comment on what is missing as well. If it's an IPA, expect a bunch of hops; if it's not there, write it down: "lacking assertive hoppiness", or "hops low for style", or even "no hops; should be assertively hoppy". In the same beer, if there was no malt, don't focus just on the hops; look for malt as well and comment appropriately. Also, think about balance: how is the malt level in relation to the hoppiness for an IPA or how the bitterness balances the sweetness in a barleywine.

On the scoresheet, use the tiny words just below the header of each section to guide you. For example on Aroma, use "hops, malt, esters, other aromatics" to give you topics to write.

For scoring the beer, some judges use a "top-down" approach and some use a "bottom-up" approach. For "top-down" approach, the judge will fill in the scores of each section of the scoresheet (from the "top"), total the numbers, and that is the score. For the "bottom-up" approach, after judging and commenting, the judge will decide the

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appropriate total (at the “bottom”), then fill in each section to make the score work out. Both of these approaches are fine, but I prefer a combination of the two approaches. I start with the “top-down” method but then do a “reality check” on the total and then adjust the total at the bottom (and then adjust one or two of the scores at the top).

On judging days, definitely avoid cologne or aftershave and scented hand soaps. I would also strongly suggest avoiding coffee or hot foods (either hot in temperature or spiciness). Avoid excessively drinking alcohol and definitely avoid drinking beers that can easily attenuate the palate such as hoppy, roasty, or smoky beers.

Always try to give positive comments. These are brewers seeking your advice and have PAID to have their beer evaluated. Avoid harsh or sarcastic comments.

Keep in mind when judging a flight of beers:

- There can be differences in perception when judging a flight. Retry any borderline beers and compare the best beers of the flight against each other to account for minor scoring differences throughout a flight.
- Oftentimes, judges give preferential treatment to bigger beers (more complexity is usually had and sometimes there is just a preference). Judge each beer’s merit against its individual style guideline.

### **Exam Tips for Score Sheets**

The most important part of filling out score sheets is knowledge the style guidelines. Each beer is judged against its respective style guideline. When judging at a competition, the style guidelines are provided. During the exam, the guidelines must be known from memory.

Be sure to be familiar with the score sheet before arriving to the exam. Even if you have not judged at a competition before, fill out a few score sheets before the exam.

Be familiar with the ancillary parts of the score sheet. Name, rank, category, subcategory, descriptor check marks, and style check marks all need to be filled out for a complete score sheet.

For each written section of the score sheet, be sure to completely fill out each description including a score. Be sure to score each aspect versus the style guideline. Be sure to comment on each aspect in small print under each section, including any applicable flaws (be sure to check the appropriate box on the left hand side).

The scoresheets are graded equally weighted on 5 factors: scoring (how close to the proctors’ scores), completeness (use every line and some of the margins), feedback (give feedback on each beer), perception (are you picking up the same stuff as the proctors), descriptive ability (how well you use beer terminology to describe a beer).

### **Essay Questions**

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First and foremost, be sure you know every detail about the BJCP program; it will be the first question for 5 points on the exam. “Describe the purpose of the BJCP and outline the judging levels and their requirements.”

Second, review and be capable of answering all of the sample questions in the exam study guides. The sample questions are VERY close to the sample questions in the BJCP Study Guide at [www.bjcp.org](http://www.bjcp.org). Refer to the past BJCP exams for examples of the actual exam.

Third, be sure to review the Foam Ranger outline and the handout information. This is the meat of the exam. The BJCP Guidelines are the other major component, be sure to remember at least the basic descriptions including the OG, IBU, SRM, and commercial examples. FG and ABV are also helpful for gaining points.

Always be sure to give at least two commercial examples ANYTIME a style is mentioned. You may have to MEMORIZE commercial examples for styles such as Berliner Weisse, Scottish 60 Schilling, English Mild, Kolsch, Altbier, Ordinary Bitter, etc. Also, ANYTIME a style is mentioned, be sure to give the OG, FG, IBU, SRM, and ABV if possible.

Outline your answers before you start writing (on a scratch piece of paper). This will allow you to more easily formulate a good sentence and paragraph structure for your answer. Also, if you are interrupted for a beer judging, it will allow you to not lose your train of thought. For long essay questions, it is easy to lose your train of thought. By outlining in advance, you can easily pick back up your train of thought while writing.

When the judging beers arrive, AS SOON AS POSSIBLE, get your nose into the beer. Important aromas can be lost in the time that you are finishing your essay question. Be sure to be thorough on all parts. Refer to the score sheet section below.

If you have time left when you are done with the exam, be sure to review your exam to be sure that you answered each question fully. It is very easy to miss parts of questions or to miss a minor concept or some clarification of a topic.

Be sure to write legibly. It will aid in the grader reading your essays. Also, when you give feedback on a beer, if the brewer cannot read the score sheet, it does not give usable feedback. It has been advised if you do not write frequently that you practice long hand writing before the exam. You will be required to write between eight to twelve pages for a full exam, hand cramps are not unusual if you do not write frequently.

Time management is a big key. There is exactly 3 hours. 10 questions (actually 11 since question 1 is usually a two-part question on two different topics), so you have 18 minutes per question for the exam only. If you spend 10 minutes on each scoresheet (4), then you have 14 minutes per question.

Read the question carefully. **Be sure to answer all parts of the question.** Very frequently, test takers will answer the “identify and describe” portion of a style question but neglect the “compare and contrast” portion of the question.

## References

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BJCP Study Guide, 1998, [www.bjcp.org](http://www.bjcp.org), pages 9-16

The Beer Enthusiasts Guide, Gregg Smith, Storey Publishing, Chapter 6