

Brewing Hop Forward Beers

- Home brewer Advantage
- Styles of beer and uses
 - Historical use of hops—antibiotic/bacteriostatic
 - Modern use of hops
 - American hop renaissance
 - APA, IPA, DIPA,
- Hops
 - Components
 - Alpha Acids
 - Beta Acids
 - Essential Oils- Myrcene, Humulene ect.
 - Bittering/Flavor/Aroma
 - Hop Varietals
 - Utilization
 - IBU's
- Techniques/additions
 - Pre Boil
 - Mash
 - First Wort Hopping
 - Boil
 - Bittering(90-60)
 - Middle (45-30)
 - Late (<15)
 - Post Boil
 - Whirlpool/Steep
 - Hopback
 - Dry Hop
 - Hop Tea
 - Randall

- Malt Bill
 - Base Malts
 - 2-row, pilsner, English,
 - Extras
 - Sugar?
 - Rye, Wheat, Oats, Munich, Vienna
 - Crystal/Caramalts
 - OG and FG!
 - Big beers vs Small beers
 - Mash Temps
 - Extract

- Water
 - Sulfate to Chloride
 - Magnesium
 - Calcium

- Yeast
 - Clean Ferment!
 - American/Chico
 - Funky
 - Belgian Yeast
 - Brettanomyces

- Other Considerations
 - Vigorous Boil
 - Pitch Rate
 - Oxygenation
 - Ferm Temps

- DIPa/Pliny the Elder
 - <https://www.homebrewersassociation.org/attachments/0000/6351/doubleIPA.pdf>
 - Or Google “brewing a double IPA”

