Cicerone® Certification Program
International Certified Cicerone® Syllabus

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This syllabus outlines the knowledge required of those preparing for the Certified Cicerone® exam outside of the United States, Canada, or the UK (these countries have their own unique syllabi—to access, visit cicerone.org). While this list is comprehensive in its scope of content, further study beyond the syllabus is necessary to fully understand each topic. The content tested on the Certified Cicerone exam is a subset of the information presented within the Master Cicerone® syllabus, and individual syllabi for all four levels of the program may be found on the cicerone.org website. Topics related to keeping and serving beer in this international syllabus cover practices from across the globe—at the Certified Cicerone level you will not be tested on glass washing or pouring practices from outside of your home country.

Outline

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Full Syllabus

I. Keeping and Serving Beer

- A. Purchasing and accepting beer
  1. Assessing age and physical condition of beer shipment
     - a. Check date code if available (See section I.C.2.a for information on how to interpret date codes)
     - b. Physical condition of container
       - i. Container should not be dented or broken
       - ii. Container should not show any signs of leakage or box weakness
     - c. Temperature
       - i. Ideally beer will still be cool when it reaches the retailer—if beer is warm or hot to the touch when it arrives, its flavour may have changed substantially during shipment
- B. Serving alcohol
  1. Alcohol's effects
     - a. Absorption and elimination
     - b. Physical and behavioural indicators
  2. Responsible serving practices
     - a. Provide accurate ABV information to consumers
     - b. Adjust serving size based on ABV
- C. Beer storage
  1. Beer is best consumed fresh
     - a. When beer is released from the brewery, it is ready to drink
     - b. Certain types of beers may age in ways that make them interesting to drink months or years later if properly cellared, but the majority of beer should be consumed fresh
  2. Rotate inventory
     - a. Check date codes regularly
       - i. Meaning of code
         - Some date codes indicate the best-by date
           - – In much of the world (including Europe, Central and South America, the Caribbean, and parts of Asia), alcoholic products with less than 10% ABV are required to display a best-by date
         - Some date codes indicate the bottling/packaging date
           - – In regions where a best-by date is required, some brands will include a bottling/packaging date in addition to the best-by date
       - ii. Types of codes (order and number of digits may vary)
         - Traditional consumer date codes (e.g., 150612 = 15 June 2012)
         - Julian/ordinal date codes (364-14 = 30 December 2014)
         - Some breweries have their own proprietary date code format
     - b. Ensure that beer is consumed in the order of dating
     - c. Remove out of date products from service inventory
     - d. General freshness guidelines
       - i. Draught beer

- Non-pasteurised draught beer can remain fresh for about 45–60 days (refrigerated)
- Pasteurised draught beer can remain fresh for about 90–120 days (refrigerated)
- When not refrigerated or subjected to other stresses, shelf life decreases significantly

ii. Bottled/canned beer
- If kept refrigerated, can remain fresh for up to 6 months
  - Hoppy styles like IPA are more susceptible to the effects of time, and may show flavour changes in as little as 3 months, even when refrigerated
- When not refrigerated or if subjected to other stresses, may be noticeably off after 3 months
- Taste aged product against fresh product to determine deterioration

e. Train staff to promote and sell all beers offered

3. Store beer properly
   a. Refrigerated storage is best for all beers at all times
      i. If beer is not refrigerated, keep inventories small and sell the beer quickly
   b. Non-refrigerated storage accelerates aging and development of off flavours
      i. With time, all beers will develop signs of oxidation (diminished hop flavour and aroma; malt shift towards honey, caramel, toffee, etc.; papery and wet cardboard flavours)
      ii. Bottle-conditioned beer or unfiltered beer with yeast present may develop signs of autolysis (umami, meaty, soy sauce, and/or rubbery flavours)
      iii. Microbial contamination sometimes occurs in packaged beer resulting in various off flavours, depending on the contaminant
   c. Temperature changes within a reasonable range (e.g., moving beer from cold storage (3 °C/38 °F) to room temperature storage (20–25 °C/68–77 °F) or vice versa) are not inherently damaging to a beer's flavour, though the beer will remain fresh for longer if stored at cold temperatures at all times
   d. Beer should not be allowed to reach temperatures in excess of 25 °C (77 °F) as these conditions lead to rapid flavour degradation
4. Protect beer from light
   a. Skunky flavour (also known as lightstruck flavour) is caused by sunlight, fluorescent light, and most LED lights and is most noticeable in the aroma of the beer
   b. Skunking may be evident after just a couple minutes of light exposure
   c. Bottled beers are subject to skunking
      i. Brown glass blocks most of the wavelengths of light that cause skunking, and therefore offers superior protection to clear and green glass
      ii. Green glass blocks very little of the light that causes skunking
      iii. Clear glass offers no protection against skunking
   d. Cans, ceramic bottles, and bottles in closed case boxes that completely shield beer from light give maximum protection from skunking
5. Serve beer properly

a. Draught beer must be served using CO_2 or a CO_2-nitrogen mix at the proper pressure setting
b. Compressed air should never be used to pressurise traditional kegs in which the dispense gas comes into contact with the beer
    i. Single-use kegs with an internal bag holding the beer can be served using compressed air since the gas does not come into contact with the beer
c. A party pump (a manually operated pump that attaches to the top of a keg to allow for temporary dispense of beer by pushing air into the keg) limits the flavour stability of the beer to **less than one day** because oxygen is put in contact with the beer

D. Draught principles
1. CO_2 pressure is applied to maintain the carbonation level of beer during dispense
    a. Each beer is carbonated to a specific level. The brewer or brand owner should provide this information to the retailer
    b. The retailer must manage the temperature of the beer, the pressure applied to the keg, and the gas blend used in order to maintain this carbonation level
2. As beer moves from the keg to the tap, it encounters resistance to flow from the primary elements of the draught system
    a. Friction in the draught lines
    b. Changes in elevation
    c. Variable resistance devices on tap if present
3. The relationship between applied gas pressure and resistance to flow determines the flow rate of beer at the tap
    a. Draught systems with high resistance values may use beer pumps to contribute to the force provided by the applied gas pressure

E. Draught systems
1. Draught system components[1]
    a. Pressure side components
        i. Gas cylinder and bulk tank
        ii. Nitrogen generator
        iii. Air compressor
            - **Never** use with traditional kegs
            - May be used with single-use kegs with an internal bag holding the beer
            - May be used to power beer pumps
        iv. Gas blender
        v. Beer pump
        vi. Primary and secondary regulators
        vii. Gas line
        viii. Coupler
            - Coupler systems: A, D, G, M, S, U, and KeyKeg®
    b. Beer side components
        i. Keg
            - Stainless steel
            - Single-use

[1] Certified Cicerone® candidates should be familiar with the function of each draught system component, and additionally should be familiar with the anatomy of couplers and taps.

        ii. Coupler
        iii. Jumper line
        iv. Foam on Beer detector (FOB)
        v. Wall bracket
        vi. Python/trunk line (an insulated bundle of beer line and glycol line)
        vii. Beer line (vinyl, barrier, stainless, etc.)
        viii. Draught tower
        ix. Beer tap/beer faucet
            - Standard (rear shutoff) tap/faucet
            - Nitro tap/faucet
            - Flow control tap/faucet
    c. Cooling system components
        i. Glycol chiller/flash chiller
        ii. Python/trunk line
2. Types of cooling systems
    a. Refrigerated storage
        i. Direct draw
        ii. Glycol-cooled
        iii. Air-cooled
    b. Unrefrigerated storage (cellar temperature or room temperature)
        i. Glycol chiller
            - Beer enters glycol chiller and is cooled to serving temperature
            - Python is used to keep beer cold as it travels from the chiller to the draught tower
                - Beer line carries beer from chiller to bar
                - Coolant lines carry chilled water or glycol to maintain beer temperature
3. Draught system design
    a. System balance
        i. Dynamic resistance
        ii. Static resistance
4. Draught system operation
    a. Around the world, draught systems can be split into two basic groups—those in which kegs are refrigerated and those in which kegs are stored at cellar temperature or room temperature. Refrigerated storage is always the best option for preserving beer freshness
        i. Refrigerated storage
            - Standard cold room and system temperature of 3 °C (38 °F)
        ii. Unrefrigerated storage
            - Kegs are stored at cellar temperature or ambient temperature. Cooler storage temperatures will help slow degradation of beer flavour
    b. Troubleshooting
        i. No beer at tap
        ii. Beer foaming
        iii. Flat beer
        iv. Cloudy beer

5. Draught system maintenance
    a. Cleaning of lines, taps, couplers, and FOBs
        i. Draught cleaning equipment
        ii. Manual cleaning of draught system components
        iii. Draught line cleaning process
    b. Use proper personal protective equipment (rubber gloves and eye protection)
    c. Criteria for proper cleaning[2]
        i. Frequency
        ii. Cleaner type
        iii. Concentration
        iv. Temperature
        v. Method and contact time
        vi. Flow rate (for dynamic cleaning)
    d. Safety issues for the operator and the consumer

F. Beer glassware
1. Select appropriate glassware
    a. Size
        i. In some regions, higher alcohol beers are served in smaller glasses
        ii. Glass should provide room for an appropriately sized head
    b. Shape
        i. Cultural and historical traditions connect certain glasses to specific styles
        ii. Glass shape impacts the aesthetics of presentation of a beer
        iii. Shape can also impact the perceived flavour and aroma of a given beer
    c. Brand
        i. Branded glasses matched to beer
2. Use "beer clean" glassware
    a. Each glass must be cleaned before refilling. Do not refill a used glass
    b. Glass cleaning procedures vary from region to region. What follows is a list of some of the most common procedures from across the globe
        i. Three-sink method
            - Prepare the three sinks for glassware cleaning
                - The first sink should be filled with warm water and a non-petroleum based (sudsless) detergent
                - The second sink should contain cool, clean rinse water that is being continually refreshed through use of an overflow tube
                - The third sink should contain hot water and an appropriate sanitiser at the correct concentration as specified by the manufacturer
            - Empty the glass into an open drain
            - Wash glass in the first sink with soap and a brush
            - Rinse glass in cold water in the second sink, heel in, heel out
            - Rinse glass in sanitiser in the third sink, heel in, heel out
            - Dry glass inverted on a rack so air circulates inside
        ii. Two-sink method
            - Prepare the two sinks for glassware cleaning

[2] The Cicerone® Certification Program uses the Draught Beer Quality Manual as the reference source for proper draught system cleaning criteria. You can access the manual online at draughtquality.org.

        - The first sink should be filled with warm water and a non-petroleum based (sudsless) detergent
        - The second sink should contain cool, clean rinse water that is being continually refreshed through use of an overflow tube
    - Empty the glass into an open drain
    - Wash glass in the first sink with soap and a brush
    - Rinse glass in cold water in the second sink, heel in, heel out
    - Dry glass inverted on a rack so air circulates inside

  iii. Spülboy
    - Set up Spülboy with appropriate detergent
    - Empty glass into open drain
    - Clean glass in brush bucket
    - Rinse glass using Spülboy glass rinser
    - Dry glass inverted on rack so air circulates inside

  iv. Glass washing machine
    - Empty the glass into an open drain
    - Place glass upside down on the rack of the dishwasher
    - Run the wash cycle according to the manufacturer's instructions
    - After washing, dry glass inverted on a rack so air circulates inside
    - Glass washing machine considerations
        - Use a machine dedicated to beer glassware ONLY. Do not use this machine to clean dishes or glassware with food or dairy residue (e.g., coffee mugs with cream or milk added, cocktails incorporating egg whites or cream, etc.)
            - Fats from food or dairy will coat other glassware in the washer resulting in dirty glasses and poor head retention
        - Use correct detergent and sanitiser—check concentrations daily or follow detergent and sanitiser supplier recommendations
        - Water temperature should range between 54 and 60 °C (130–140 °F). High temperature machines designed to operate at 82 °C (180 °F) may be used in place of chemical sanitisers (though local health departments may have additional requirements)
        - Maintain washer to assure proper water flow through each nozzle and washer arm
        - Regularly service machine following manufacturer's guidelines to ensure proper operation
        - Periodically check the interior of the dish washer to be sure that it is free of mould and debris

c. How to check that glass is beer clean
  i. Without beer
    - Sheeting (wet glass interior and then empty glass; water should sheet off of glass evenly; formation of droplets or webbing indicates that the glass is not beer clean)
    - Salt test (wet glass interior, empty glass and then sprinkle salt throughout; places where salt does **not** adhere are not beer clean)

  ii. With beer

        - Head size, shape, retention—good head formation and retention are signs of a beer clean glass
        - Bubbles clinging to the sides of the glass (in liquid beer) indicate that the glass is **not** beer clean
        - During consumption, lace will cling to the side of a beer clean glass following each sip

3. Preparation to serve
    a. Glass temperature
        i. Glasses should not be warm to the touch when filled
        ii. Room temperature and chilled glasses are acceptable
        iii. Frozen/frosted glasses are not recommended—they cause foaming, they make beer too cold, and frozen water or sanitiser may be present
    b. Cold water rinse of glass before filling
        i. Removes residual sanitiser if present
        ii. Cools glasses that may be warm from washing
        iii. Aids ideal head formation and retention
        iv. Do NOT rinse used glasses with a glass rinser—glass rinsers should only be used with clean glassware

G. Serving bottled beer
1. Prepare for service
    a. Bottle-conditioned beer should be stored upright prior to service
        i. Bottle-conditioned beer is carbonated by yeast in the package, and consequently contains some amount of sediment
    b. If possible, store beer at ideal serving temperature as dictated by style. Otherwise store all beer under refrigeration (6 °C/43 °F or less)
2. Examine bottle
    a. Look for white flakes (snow-like) which can indicate old, unstable beer. Do not serve beer in this condition
    b. Look for a thin ring of residue at liquid level in the neck of the bottle, which is generally indicative of a bad bottle if present. Do not serve beer in this condition
    c. Check for yeast on the bottom of the bottle
        i. Retain yeast in bottle unless:
            - Consumer requests yeast to be poured
            - Style (e.g., Weissbier) is traditionally poured with yeast
        ii. To pour yeast, rouse by swirling, rolling, or inverting
3. Open bottle
    a. Twist-off crown
        i. Twist off by hand
        ii. Napkin may be used to aid grip and protect hand
    b. Pry-off crown
        i. Prefer openers with a bar or other lift area at least 0.5 cm (0.25 in) wide to prevent the possibility of breaking the bottle during opening
        ii. Lift in one motion
    c. Mushroom cork
        i. Practice cork safety—keep bottle pointed away from consumer at all times
        ii. Remove wire cage by untwisting the tab

iii. Hold thumb over cork at all times once cage has been removed
iv. Grip the cork in one hand (a napkin may be used to aid your grip) and the bottle in the other. Remove cork by twisting the bottle to loosen the cork
v. When removing the cork, do so slowly and gently so as not to disturb sediment and make the beer volatile

d. Crown plus cork
i. Practice cork safety—keep bottle pointed away from consumer at all times
ii. Lift crown as described in I.E.3.b
iii. Corkscrew will be required after removing crown
iv. Place the tip of the corkscrew on the centre of the cork and turn clockwise to drive the corkscrew into the cork
v. When removing the cork, do so slowly and gently so as not to disturb sediment and make the beer volatile

e. Wax-dipped crown
i. Use a paring knife or the blade of a wine key to cut out a small notch of wax directly below the crown to allow a bar key to reach under the crown
ii. Use a bar key to pry the crown off of the bottle, being careful to ensure that no flakes of wax fall in to the bottle
iii. Use a clean bar towel to wipe any wax debris from the lip of the bottle

4. Final bottle check
a. Check bottle lip—do not serve beer from bottles with broken or damaged lips
b. Also examine bottle lip for rust, dried beer, or yeast that could affect flavour or appearance of the beer
c. If the bottle has a cork, retain and present it to the consumer
i. In the case of a rare, unusual, or new beer, the crown should be retained to present to the consumer

5. Pouring bottled beer
a. Filtered beer
i. Beers bottled without yeast or other sediment—the entire contents of the bottle can be poured into the glass
ii. Hold the glass at a 45-degree angle and pour down the side of the glass until the glass is half full
iii. Gently tilt the glass upright and pour down the middle to create approximately 2.5 cm (1 inch) of foam head on the beer as the pour finishes. German wheat beers and Belgian ales traditionally should have 5–8 cm (2–3 in) of head

b. Unfiltered beers
i. Some beers are packaged unfiltered or with yeast in the bottle. In most cases, yeast and sediment should be retained in the bottle
ii. Throughout the pour, be careful not to disturb the sediment
iii. Hold the glass at a 45-degree angle and pour down the side of the glass until the glass is half full
iv. Gently tilt the glass upright and pour down the middle to create an appropriate amount of foam for the style being served
v. While finishing the pour, watch the neck of the bottle and be prepared to stop pouring when the yeast moves toward the top of the bottle

            vi. When in doubt about whether to include the yeast, ask the consumer their preference

H. Serving draught beer
  1. Pouring a beer
     a. **Never** put the tap in contact with the glass or allow it to become immersed in the beer or foam in the glass
     b. Hold the glass at a 45-degree angle, 2.5 cm (1 inch) below the tap
     c. Grip the tap handle near the base and pull forward to the fully open position to start the flow of beer
        i. When a tap is only open partially, beer will pour foamy
     d. Pour down the side of the glass until the glass is half full
     e. While continuing to pour, gently tilt the glass upright and pour down the middle to create an appropriate amount of head on the beer as the pour finishes
     f. Close the tap as the foam cap reaches the top of the glass to prevent beer waste
  2. Pouring a beer and cutting with a beer spatula (common in Belgium and the Netherlands)
     a. **Never** put the tap in contact with the glass or allow it to become immersed in the beer or foam in the glass
     b. Fully open the tap and allow a small amount of beer to pour down the drain
     c. After half a second of beer flow, move the glass into place below the open tap, holding the glass at a 45-degree angle, 2.5 cm (1 inch) below the tap
     d. Pour down the side of the glass until the glass is half full
     e. While continuing to pour, gently tilt the glass upright and pour down the middle to create an appropriate amount of head on the beer as the pour finishes
     f. Close the tap as the foam cap reaches the top of the glass and set the beer on a drip tray away from the tap so that drips from the tap do not fall into the glass
     g. As the foam is rising out of the glass, cut the foam using a wetted beer spatula held at a 45-degree angle
     h. Dunk the glass in a sink filled with clean rinse water to remove any beer or foam from the outside of the glass
     i. Place the beer on a coaster in front of the consumer with any branding facing the consumer
  3. Pouring nitro beer
     a. **Never** put the tap in contact with the glass or allow it to become immersed in the beer or foam in the glass
     b. Hold the glass at a 45-degree angle, 2.5 cm (1 inch) below the tap
     c. Pull the tap handle forward to the fully open position to start the flow of beer
     d. Pour down the side of the glass until the glass is three-quarters full
     e. Allow the beer to settle for 1–2 minutes, and then pour down the middle to create an appropriate amount of head on the beer as the pour finishes
  4. Changing a keg (same product)
     a. Kegs must be chilled to draught system operating temperature (generally 3 °C/38 °F) before tapping and serving—the general guideline for refrigerated systems is to place kegs in the cold room at least 24 hours before serving
     b. For D-, G-, S-, and U-system couplers:

        i. Grip keg coupler handle, then pull out and raise the handle to the "up" or "off" position to disengage. Turn the coupler a quarter turn (90 degrees) anticlockwise to unseat. Lift off of the keg
        ii. Seat the coupler on a new keg. Turn clockwise a quarter turn (90 degrees) to lock the coupler in place, then lower the coupler handle to the "down" or "on" position to engage
    c. For A- and M-system couplers:
        i. Grip keg coupler handle, then depress the button on the underside of the handle (if a button is present) and raise the handle to the "up" or "off" position to disengage. Slide the coupler off of the keg valve
        ii. Slide the coupler on to the keg valve of a new keg. Lower the coupler handle to the "down" or "on" position to engage
    d. In systems that use them, the foam on beer detector (FOB) for the keg needs to be reset after a keg change. This is done by venting the FOB mechanism to release foam and gas from the chamber
5. Changing products on a line
    a. Ensure that the proper coupler for the new product is correctly installed
    b. If necessary based on contrast between products:
        i. Rinse or clean lines
        ii. Replace jumper hose (in extreme cases)
    c. Ensure that the gas blend and pressure are properly set for the new product

I. Other draught service practices
1. Growlers, crowlers, and draught beer to go
    a. Filling techniques and shelf life
    b. Cleaning and reusing growlers
    c. Safety considerations
2. Temporary draught systems
    a. Party pump/picnic pump
    b. Jockey box
    c. Lindr machines (mobile dispense unit)
3. Cask-conditioned ale
    a. Definition of real ale (CAMRA)
    b. Conditions required to achieve carbonation
    c. Cask service components
        i. Cask
        ii. Tap
        iii. Soft and hard spiles/pegs
    d. Cellaring cask ale
        i. Stillaging
        ii. Spiling
        iii. Tapping
        iv. Assessing readiness for service
            - Clarity
            - Condition (carbonation level)
            - Flavour
            - Temperature

e. Cask ale service
   i. Gravity dispense
   ii. Beer engine
      - Short spout
         – **Never** put the tap in contact with the glass or allow it to become immersed in the beer or foam in the glass
         – Hold the glass at a 45-degree angle, 2.5 cm (1 inch) below the tap
         – Pull the handle smoothly and steadily. Straighten the glass gradually as it fills to create an appropriate amount of head on the beer as the pour finishes
            - In the UK, traditionally the head on a cask ale should be no more than 1 cm (0.4 in). In other parts of the world, a more generous head–up to 2.5 cm (1 inch)–is typical
      - Swan neck with sparkler
         – Hold clean glass vertically with sparkler positioned against the bottom of the glass
         – Pull the handle smoothly and steadily. Gradually lower the glass as it fills, but always keep the sparkler below the foam, immersed in the liquid beer
         – Allow to settle and serve
            - In the UK, traditionally the head on a cask ale should be no more than 1 cm (0.4 in). In other parts of the world, a more generous head–up to 2.5 cm (1 inch)–is typical
         – Since the swan neck is immersed in the beer during the pour, regularly wipe down the swan neck with a clean, micro-fibre, lint-free cloth
   iii. Impact of sparkler use

II. Beer Styles

A. Understanding beer styles
   1. Historical development of beer styles
      a. First driven by available ingredients, equipment, and water
      b. Shaped by technology, taxes and regulations, culture, consumer appeal, etc.
   2. Style guidelines are catalogued principally by:
      a. Beer Judge Certification Program[3]
      b. Brewers Association[4] (US)

B. Style parameters
   1. Quantitative parameters of beer character
      a. Alcohol by volume (ABV)
      b. International Bitterness Units (IBUs)
      c. Colour
         i. EBC

[3] The Cicerone® Certification Program uses the 2015 BJCP Style Guidelines as the reference source for all quantitative style parameters in its exams. You can access the guidelines online at bjcp.org and through their mobile device apps.

[4] Certified Cicerone® and Advanced Cicerone® candidates should be aware of the US Brewers Association guidelines. Master Cicerone® candidates should have familiarity with the general differences between the BA and BJCP guidelines and should have knowledge of BA categories that do not exist in the BJCP guidelines.

        ii. SRM (SRM x 1.97 = EBC)
    d. Carbonation (Volumes of CO_2 or g/L)
    e. Original Gravity (OG)
    f. Apparent attenuation
2. Qualitative parameters of beer character
    a. Appearance
    b. Aroma
    c. Flavour
    d. Finish/Aftertaste
    e. Mouthfeel
    f. Perceived bitterness

C. Beer style knowledge
1. Knowledge requirements of the styles listed in this section
    a. Quantitative knowledge of the upper and lower limits for ABV, IBUs, and EBC/SRM
    b. Qualitative knowledge of the flavour profile
    c. Qualitative knowledge of carbonation level, body, and other mouthfeel characteristics
    d. Basic knowledge of the style's historical development
    e. Knowledge of three commercial examples covering classic producers and other notable producers of the style globally
2. Beer styles by region
    a. Belgium and France
        i. Lambic beers
            - Lambic
            - Gueuze
            - Fruit Lambic (Kriek, Framboise, etc.)
        ii. Flanders ales
            - Flanders Red Ale
            - Oud Bruin
        iii. Trappist and abbey ales
            - Belgian Dubbel
            - Belgian Tripel
            - Belgian Dark Strong Ale
        iv. Pale Belgian beers
            - Belgian Blond Ale
            - Belgian Pale Ale
            - Belgian Golden Strong Ale
        v. Unique beers
            - Saison
            - Bière de Garde
            - Witbier
    b. Britain and Ireland
        i. England
            - Pale ales
                – Ordinary Bitter

        - Best Bitter
        - Strong Bitter
        - English IPA
      - Dark ales
        - Dark Mild
        - British Brown Ale
        - English Porter
        - Sweet Stout
        - Oatmeal Stout
        - Foreign Extra Stout
      - Strong ales
        - Old Ale
        - English Barleywine
    ii. Scotland
      - Scottish Light
      - Scottish Heavy
      - Scottish Export
      - Wee Heavy
    iii. Ireland
      - Irish Red Ale
      - Irish Stout

c. Germany, Czech Republic, and Austria
    i. Lagers
      - Pale
        - German Pils
        - Munich Helles
        - Czech Premium Pale Lager
      - Amber or dark
        - Vienna Lager
        - Festbier
        - Märzen
        - Munich Dunkel
        - Schwarzbier
        - Rauchbier
      - Bocks
        - Helles Bock
        - Dunkles Bock
        - Doppelbock
        - Eisbock
    ii. Ales
      - Wheat beers
        - Weissbier
        - Dunkles Weissbier
        - Weizenbock
        - Berliner Weisse

        – Gose
      - Rhine Valley ales
        – Altbier
        – Kölsch
  d. United States
    i. Pale lagers
      - American Light Lager
      - American Lager
    ii. Pale ales
      - American Wheat Beer
      - American Blonde Ale
      - American Pale Ale
      - American Amber Ale
    iii. IPAs
      - American IPA
      - New England IPA
      - Double IPA
    iv. Dark ales
      - American Brown Ale
      - American Porter
      - American Stout
      - Imperial Stout
    v. Strong ales
      - American Barleywine
    vi. Specialty beers (beers made with novel ingredients and/or processes)
      - Novel ingredients
        – Alternate grains and malts (e.g., rye, spelt, etc.)
        – Smoked malts
        – Sugars and other non-malt fermentables (e.g., honey, molasses, etc.)
        – Fruits and vegetables
        – Herbs, spices, and natural flavourings (e.g., coffee, chocolate, etc.)
      - Novel processes
        – Fermentation with non-*Saccharomyces* organisms (e.g., *Brettanomyces*, *Lactobacillus,* etc.)
      - Fermentation or aging with barrels/wood of various types
  e. Other regions
    i. International
      - International Pale Lager
    ii. Scandinavia
      - Baltic Porter

III. Beer Flavour and Evaluation

A. Taste and flavour
  1. How we perceive flavour
    a. Aroma
      i. Orthonasal

    - ii. Retronasal
  - b. Taste
    - i. Established
      - Sweet
      - Salty
      - Sour
      - Bitter
      - Umami
    - ii. Emerging
      - Fat
    - iii. Tongue map myth
      - The different tastes are not mapped to distinct regions of the tongue
      - All of the tastes can be perceived on all parts of the tongue
  - c. Mouthfeel
    - i. Body
    - ii. Carbonation
    - iii. Astringency
    - iv. Creaminess
    - v. Alcoholic warming
2. Variations in taste perception
  - a. Genetic and biological differences
  - b. Personal/behavioural factors
    - i. Smoking, coffee, food preferences
  - c. Mental and psychological factors
3. Beer evaluation
  - a. Temperature
    - i. Beer reveals more flavour as its temperature increases and should be served between 3 and 13 °C (38–55 °F) depending upon its style
  - b. Components of evaluation
    - i. Appearance
    - ii. Aroma
    - iii. Taste
    - iv. Mouthfeel
    - v. Finish/Aftertaste
  - c. Key evaluation techniques
    - i. Aroma techniques
      - Distant Sniff: Swirl beer while holding glass 15–20 cm (6–8 in) away from nose and take one to two short sniffs
      - Drive-by Sniff: Swirl beer; slowly pass glass across your face, underneath your nose; take a few short sniffs as the glass passes by
      - Short Sniff: Swirl beer; bring glass to nose and take one to two short sniffs
      - Long Sniff: Swirl beer; bring glass to nose and take one long sniff
      - Covered Sniff: Cover glass with hand; swirl beer for 3 to 5 seconds; bring glass to nose, remove hand, and sniff
    - ii. Use a consistent background to assess the colour and clarity of the beer
    - iii. Beer should reach all parts of the tongue during tasting

        iv. Flavour perception continues after swallowing
- B. Identify normal flavours of beer and their source
    1. Malt and grain flavours
        a. Pale beer: Uncooked flour, bread dough
        b. Golden beer: White bread, wheat bread, water cracker
        c. Light amber beer: Bread crust, biscuit, graham cracker
        d. Amber beer: Toast, caramel, pie crust
        e. Brown beer: Nutty, toffee, chocolate, dark/dried fruit
        f. Black beer: Roast, burnt, coffee
    2. Hops
        a. Bitterness, flavour, and aroma effects
        b. Traditional regional hop traits
            i. American: Piney, citrus, resiny, tropical fruit, catty, onion/garlic
            ii. Australian/New Zealander: Passionfruit, melon, pear, stone fruit, tropical fruit
            iii. English: Earthy, herbal, woodsy
            iv. German/Czech: Floral, perfumy, peppery, minty
    3. Fermentation flavours
        a. *Saccharomyces* fermentation
            i. Lager yeast
            ii. Ale yeast
                - American ale yeast
                - English ale yeast
                - Belgian ale yeast
                - Weizen yeast
        b. Acidic fermentation
            i. Lactic acid bacteria
            ii. Acetic acid bacteria
        c. *Brettanomyces* fermentation
- C. Identify specific beer flavour compounds by name and source
    1. From *Saccharomyces*
        a. Diacetyl
        b. Sulphur flavours
            i. H_2S (hydrogen sulphide)
        c. Acetaldehyde
        d. Phenols
            i. 4-vinylguaiacol (4VG)
            ii. Know range of flavours associated with other phenols
        e. Esters
            i. Isoamyl acetate
            ii. Know range of flavours associated with other esters
    2. From other organisms
        a. Diacetyl
        b. Sulphur flavours (see III.C.1.b above)
        c. Phenols (see III.C.1.d above)
        d. Acetic acid
        e. Lactic acid

3. Packaging and storage
    a. Oxidation/aging flavours
        i. Diminished hop flavour and aroma
        ii. Decreased bitterness
        iii. Malt shift—increased honey/caramel/toffee/dark fruit
        iv. Papery/wet cardboard (trans-2-nonenal)
        v. Waxy/lipstick
        vi. Sherrylike
    b. Lightstruck/skunky
    c. Autolysis
4. Process and ingredients
    a. Isovaleric acid
    b. Metallic
    c. DMS (dimethyl sulphide)
    d. Astringent/tannic

D. Tasting exam format
1. On the Certified Cicerone® tasting exam, you must perform the following exercises[5]:
    a. Off-Flavour Identification—By taste, detect and identify off flavours by comparing spiked samples to a control beer
        i. The possible flavours present in this panel are acetaldehyde, acetic acid, diacetyl, DMS, lightstruck, and trans-2-nonenal
    b. Style Discrimination—By taste, correctly categorise a sample as one of two beer styles
    c. Quality Assessment—Based on your analysis of an example of a given beer style, identify whether the sample exhibits flaws caused by improper handling. If the sample has a flaw associated with improper handling, name the flavour and briefly explain what may have caused it to occur

IV. Beer Ingredients and Brewing Processes

A. Ingredients
1. Grains
    a. Malted barley
        i. Unique properties of barley related to brewing
        ii. Species of barley
        iii. Stages of the malting process
        iv. Process variations that lead to different malt types
            - Kilned base malts: Pils, Pale Ale, Vienna, Munich
            - Kilned specialty malts: Victory®, Biscuit®
            - Stewed: Crystal/caramel
            - Roasted: Chocolate, black
    b. Wheat, oats, rye, and other specialty grains
        i. Sensory contributions to the finished product
    c. The use of corn and rice in beer
        i. Contributions to wort and beer

[5] To view a sample Certified Cicerone® tasting exam, visit cicerone.org.

        ii. Requirements for processing
        iii. Styles that use corn and/or rice
2. Hops
    a. Anatomy of hop plant and cone
    b. Cultivation and processing
        i. Structure and layout of hop field
        ii. Harvesting, drying, and baling
        iii. Storage, processing, and delivery to breweries
    c. Growing regions
        i. Continental Europe
            - Germany
            - Czech Republic
            - Belgium
            - Slovenia
            - Poland
            - France
        ii. Britain
        iii. United States
            - Yakima Valley, Washington
            - Oregon
            - Idaho
        iv. Australia and New Zealand
    d. Categories of hops
        i. Bittering hops (high alpha acid content)
        ii. Aroma hops (desirable flavour and aroma properties)
            - Noble hops (Hallertau Mittelfrüh, Spalt, Tettnang, Saaz)
        iii. Dual-use hops (possessing properties of both bittering and aroma hops)
    e. Chemistry
        i. Alpha acid isomerization
        ii. Flavour and aroma impact of hop oils
    f. Hop forms and products used in brewing
        i. Whole hops
        ii. Pellet hops
        iii. Extracts
            - Alpha acid
            - Hydro-isomerised alpha acid (lightstrike/skunk resistant)
    g. Uses and effects during brewing
        i. Bittering contribution of hops added at different times during the boil
        ii. Flavour and aroma hop additions and effects
            - Boil
            - Hot wort steep/whirlpool
            - Dry hopping
3. Yeast
    a. Taxonomy
        i. Ale yeast
            - *Saccharomyces cerevisiae*

    - Generally produce esters in levels which give fruity flavours to finished beers
    - Some possess a certain gene (known as the POF+ or PAD+ gene) which results in production of phenolic flavours such as clove, nutmeg, and/or white pepper
  - ii. Lager yeast
    - *Saccharomyces pastorianus* also known as *Saccharomyces carlsbergensis*
    - Generally do not produce esters or phenols in appreciable quantities, resulting in a focus on malt and hop character
  - iii. Wild yeast
    - Non-brewing strains of *Saccharomyces* can cause off flavours or excessive attenuation
- b. Non-*Saccharomyces* organisms
  - i. Important organisms
    - *Brettanomyces* species
    - *Acetobacter* species
    - *Lactobacillus* species
    - *Pediococcus* species
  - ii. Intentional use
  - iii. Unintentional appearance

4. Water
   - a. Water makes up 90+% of the weight of beer
   - b. Chemistry of water
     - i. Chlorine
       - Off flavours associated with chlorine
       - Common techniques for removal
     - ii. Water cycle and sources of salts
   - c. Water traits of classic brewing cities—Munich, Pilsen, and Burton-on-Trent
5. Other ingredients
   - a. Specialty ingredients
     - i. Sugars
       - Fermentable
         - – Corn sugar/dextrose/glucose
         - – Candi sugar
         - – Honey, molasses, agave, etc.
       - Non-fermentable
         - – Lactose
     - ii. Fruits and vegetables
     - iii. Herbs and spices
       - Common cooking herbs/spices
       - Chili peppers
       - Coffee, cocoa, chocolate, teas, etc.
   - b. Historical precedent for addition of non-traditional ingredients

B. Processes
1. Milling
   - a. Possible flavour impact of milling on finished beer

2. Mashing
    a. Objectives of mashing
    b. Awareness of different mashing methods
        i. Infusion mash
        ii. Cereal mash
        iii. Step mash
        iv. Decoction mash
3. Lautering
    a. Objectives of lautering
    b. General process of lautering
        i. Initiate wort run-off
        ii. Vorlauf (recirculation)
        iii. Begin collection of wort for boiling
        iv. Sparge
4. Boiling
    a. Process and objectives of boiling
        i. Inputs and outputs
        ii. Significant physical and chemical changes
    b. Flavour impacts of boil
5. Whirlpool
    a. Objectives of whirlpool
    b. General operation of whirlpool, including wort removal
6. Chilling
    a. Methods of wort chilling
        i. Heat exchanger
        ii. Coolship
    b. Flavour issues associated with wort chilling
7. Aeration and pitching
    a. Timing of aeration within the brewing process
    b. Reasons for wort aeration
8. Fermentation (*Saccharomyces cerevisiae* or *Saccharomyces pastorianus*)
    a. General description of fermentation
        i. Ale fermentation
        ii. Lager fermentation
    b. Major biochemical inputs and outputs
    c. Fermentation flavour compounds (see section III.C.1)
    d. Equipment used for fermentation
    e. Variations in fermentation parameters and their flavour impacts
        i. Fermentation temperature
9. Lagering
    a. Objectives of lagering
    b. Lagering temperature and duration
    c. Impact on finished beer characteristics
10. Aging
    a. Vessel materials
        i. Stainless steel

            ii. New wood
            iii. Previously used wood
        b. Factors influencing flavours produced during wood aging
            i. Prior use of vessel
                - Residual flavours from other liquids
                - Microflora
    11. Clarification
        a. Common methods used for beer clarification
            i. Filtration
            ii. Finings
            iii. Settling/lagering/aging
    12. Carbonation
        a. Methods of achieving carbonation in beer, when and how used
            i. Capture during fermentation
            ii. Forced carbonation
            iii. Secondary fermentation in serving vessel (e.g., bottle conditioned, cask conditioned, etc.)
        b. Sensory impact of carbonation on finished beer
    13. Packaging and pasteurisation
        a. Package types
            i. Draught
            ii. Bottles
            iii. Cans
        b. Quality control
            i. Cleaning/sanitising of containers
            ii. Importance of air exclusion during packaging
            iii. Cap-on-foam
        c. Pasteurisation and its impact on beer
            i. Impact on stability and flavour

V. Pairing Beer with Food

No single model perfectly explains all the dynamics of beer and food pairing. This syllabus draws from various sources to present common concepts and accepted principles. Certified Cicerone® candidates can expect exam questions on the following guidelines. They will also be asked to demonstrate an understanding of these concepts by naming beers or beer styles to pair with various foods and dishes.

A. Possible outcomes of successful beer and food pairings
    1. Desirable flavours are highlighted in both the beer and the dish
    2. Combination of the two invokes memory, emotion, and/or deeper thought
    3. Pairing creates new flavours not originally present in either the beer or the dish
B. Beer and food vocabulary
    1. Beer vocabulary
        a. For common beer flavour descriptors, see section III.B
    2. Food vocabulary
        a. Describe specific food tastes beyond basic identification of key ingredients and preparation (e.g., instead of "seared scallop", use "scallop has a caramelised,

crispy sear with rich toasted and toffee flavours, while the dense interior has a buttery sweetness”)

   b. Understand basic cooking techniques and their effects on flavour (e.g., poaching, roasting, frying, etc.)
   c. Familiarity with a range of commonly encountered foods and ingredients (e.g., vegetables, fruits, herbs, spices, etc.)

C. Pairing concepts
  1. Intensity (sometimes referred to as impact or weight)
     a. A beer’s intensity is determined by the levels of several characteristics
        i. Malt flavour
        ii. Hop bitterness
        iii. Sweetness/body (note that these are related)
        iv. Alcohol content
        v. Carbonation
        vi. Tartness/sourness
        vii. Fermentation-derived flavours (esters, phenols, etc.)
        viii. Hop flavour/aroma
        ix. Special ingredients/processes (e.g., fruit, coffee, barrel aging, etc.)
     b. A dish’s intensity is determined by the interplay of several characteristics
        i. Flavour impact of individual ingredients
        ii. Preparation/cooking method
        iii. Spices used
        iv. Sauces served alongside
        v. Levels of fat, umami, sweetness, bitterness, saltiness, sourness, etc.
  2. Flavour interactions
     a. Complement/resonate/harmonise—Similar or compatible flavours present in both the beer and the food complement one another (e.g., an Indian curry with cloves resonates with the clove flavours found in a Dunkles Weissbier)
     b. Contrast—By offering an opposing flavour, the beer highlights a flavour in the dish or vice versa. (e.g., mussels served with gueuze seem richer and sweeter due to the acidity of the beer)
     c. Cut—Some beer traits help refresh the palate by lifting, cleansing, or removing rich or fatty flavours from the palate. Common “cutting” beer traits include carbonation, sourness, and bitterness, and to a lesser extent, alcohol and roastiness

D. Common beer and food interactions
  1. Malt flavours
     a. Complement toasted and caramelised flavours in a variety of foods
     b. Soothe/soften capsaicin heat (spiciness)
  2. Hop flavours
     a. Depending on hop variety, can complement fruit, citrus, herb, and spice flavours
  3. Fermentation-derived flavours
     a. Esters
        i. Complement fruit flavours
     b. Phenols (clove and peppercorn flavours)
        i. Complement spices
        ii. Contrast fat and umami

4. Carbonation
    a. Cuts fat, umami, and sweetness
    b. Accentuates capsaicin heat
5. Bitterness
    a. Cuts fat, umami, and sweetness
    b. Accentuates capsaicin heat
    c. Can create harsh or metallic effects with certain foods (e.g., oily fish)
    d. Can complement bitter foods (e.g., bitter salad greens)
6. Roastiness
    a. Complements chocolate, caramelised, and burnt flavours
    b. Cuts fat
    c. Contrasts sweetness
7. Alcohol
    a. Can cut fat
    b. Generally complements sweetness
    c. Can accentuate capsaicin heat
8. Tartness/sourness
    a. Can brighten some food flavours
    b. Can complement or accentuate sour flavours
    c. May favourably contrast fat, umami, or salt
9. Sweetness
    a. Soothes capsaicin heat and other spices
    b. Accentuated by saltiness

E. Creating a pairing
    1. Match intensities of both beer and dish so that neither overpowers the other
    2. Consider the flavour interactions listed in sections V.C.2 and V.D to hone the pairing

F. Designing a meal
    1. Intensity of dishes and pairings generally increases as the meal progresses

G. Classic beer and food pairings
    1. European traditions

H. Cooking with beer
    1. Common uses
        a. Used in place of water or other liquid as an ingredient or cooking medium
    2. Flavour effects
        a. Concentrating beer through cooking intensifies non-volatile flavours
            i. Bitterness can intensify exponentially and may become unpleasant
            ii. Malt flavours and sweetness increase, sugars caramelise
            iii. Volatile hop and ester flavours decrease and may disappear entirely
            iv. Astringent/burnt flavours of roasted malt can increase and may become unpleasant
        b. Delicate hop and fermentation flavours in beer can be brought to a dish by not cooking the beer (e.g., using an IPA in a salad dressing)