Cicerone® Certification Program
Australia & New Zealand
Certified Beer Server Syllabus

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This syllabus outlines the knowledge required of those preparing for the Certified Beer Server exam in Australia and New Zealand (for syllabi pertaining to other regions, 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 Beer Server 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.

Outline

(Full syllabus begins on next page.)

I. Keeping and Serving Beer
- A. Beer distribution
- B. Serving alcohol
- C. Beer storage
- D. Draught systems
- E. Beer glassware
- F. Serving bottled beer
- G. Serving draught beer

II. Beer Styles
- A. Understanding beer styles
- B. Style parameters
- C. Beer style knowledge

III. Beer Flavour and Evaluation
- A. Taste and flavour
- B. Identify normal flavours of beer and their source
- C. Off-flavour knowledge

IV. Beer Ingredients and Brewing Processes
- A. Ingredients

V. Pairing Beer with Food

Appendix A – Australian Beer Styles

Full Syllabus

I. Keeping and Serving Beer

A. Beer distribution
   1. Various parties participate in the production and delivery of beer in Australia and New Zealand
      a. Brewery – brews and packages beer into kegs, bottles, cans, etc.
      b. Importer – imports packaged beer from one or more overseas brewers, promotes the brand(s), and manages distribution locally. In most ways, the importer acts in the same way a local brewer does in the local market
      c. Distributor – Independent businesses who stock, promote, and deliver the beers of a number of breweries and importers to generate sales within a certain geographic area
      d. Retailer – a bar, pub, restaurant, liquor store, grocer, or other business that sells beer direct to consumers
   2. Independent retailers may buy direct from brewers, importers, and/or distributors
      a. Some retailer groups operate their own distribution networks that buy from brewers and importers and manage distribution throughout individual states or the entire country from their own warehouses

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
            - Some date codes indicate the bottling/packaging 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 or sold 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. In Australia and New Zealand, most beer is stored at room temperature until immediately prior to service
      i. Non-refrigerated storage accelerates aging and development of off flavours
         - 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)
   c. Temperature changes within a reasonable range (e.g., moving beer from cold storage (3 °C) to room temperature storage (20–25 °C) 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 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
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 systems
1. Key elements
a. Keg
b. Coupler
c. Foam on Beer monitor/detector (FOB)
d. Tap
2. Draught system operation
a. Standard cold room and system temperature of 3–4 °C
b. All kegs should be in the cold room for at least 24 hours prior to service to prevent foaming
c. Many draught systems in Australia and New Zealand apply additional chilling in the font so that beer arrives in the glass at temperatures colder than 3 °C
d. Gas pressure applied to keg should only be set or adjusted by a draught-trained professional
3. Basic troubleshooting
a. Beer has been in the cold room for at least 24 hours prior to service
b. Coupler is properly engaged
c. No kinks or pinches in hose from coupler to wall
d. FOB, if present, is properly set for service
e. If beer is still pouring badly, contact a draught-trained professional for assistance
4. Draught system maintenance
a. Draught systems need to be cleaned to prevent development of off flavours in beer and to ensure proper operation of the draught system
b. Draught line cleaning is required every 14 days
c. Due to the hazardous nature of cleaning solutions, never attempt to pour beer prior to full completion of draught system cleaning

E. Beer glassware
1. Select appropriate glassware
a. Size
i. Higher alcohol beers should be 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
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 washing procedure after each use
i. Empty the glass into a sink/drain

ii. Plunge the rim of the glass into a brush bowl. Rinse glass with water if possible. Follow with machine washing or hand washing
iii. Machine washing
- 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—follow manufacturer's recommendations
  - Wash cycle must use water at a minimum temperature of 65 °C
  - Rinse cycle must use water at a minimum temperature of 82 °C
  - 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

iv. Hand washing
- When automatic dishwasher is not available, hand washing may be used
- Use the plunge bowl with glass detergent to clean the glass thoroughly, paying special attention to the rim
- Immerse glassware in potable water at a minimum temperature of 77 °C for a minimum of thirty seconds
- After washing, dry glass inverted on a rack so air circulates inside

c. Weekly glass washing
i. Glasses only washed by a glass washing machine on a per-use basis should be given a manual washing once each week
ii. Follow the procedure given above in I.E.2.b.iv for hand washing glasses

d. 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 and they make beer too cold. The use of room temperature glassware can help to reveal the flavour of the beer
   b. In European and American brewing cultures, a cold water rinse of the glass is often used before filling
      i. Cools glasses that may be warm from washing
      ii. Aids ideal head formation and retention
      iii. Do NOT rinse used glasses with a glass rinser—glass rinsers should only be used with clean glassware

F. 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 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.F.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. Pour using the "crusting" method
         - Hold the glass tilted slightly so that when you begin to pour, the beer hits the corner of the glass—where the bottom and side of the glass meet—to create turbulence and foam
         - As you continue to pour, direct the stream of beer so that it strikes the side of the glass at the edge of the foam. This should help to maintain and build a foam head so that the proper head has formed by the time the glass is full
      iii. Most beers should have approximately 2.5 cm (1 inch) of foam head. 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. Pour using the crusting method as described above in I.F.5.a.ii
      iv. 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
      v. When in doubt about whether to include the yeast, ask the consumer their preference

G. Serving draught beer
   1. Pouring a beer using the crusting method
      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 tilted slightly, 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. When you begin to pour, make sure that the beer hits the corner of the glass—where the bottom and side of the glass meet—to create turbulence and foam
      e. As you continue to pour, direct the stream of beer so that it strikes the side of the glass at the edge of the foam. Move the stream of beer as the glass fills to maintain this position. This should help to maintain and build a foam head so that a proper head has formed by the time the glass is full
      f. Close the tap as the foam cap reaches the top of the glass to prevent beer waste
   2. 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
   3. Changing a keg (same product)
      a. Kegs must be chilled to draught system operating temperature (generally 3 °C) before tapping and serving—the general guideline 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 monitor (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

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.

B. Style parameters
1. Quantitative parameters of beer character
    a. Alcohol by volume (ABV)
    b. International Bitterness Units (IBUs)
    c. EBC Colour
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. Qualitative knowledge of perceived bitterness using the following descriptors: low, moderate, pronounced, assertive, or highly assertive[1]
    b. Qualitative knowledge of colour using the following descriptors: straw, gold, amber, brown, or black
    c. Qualitative knowledge of alcohol content using the following descriptors[2]: lower, normal, elevated, high, or very high[3]
    d. Qualitative knowledge of key flavours
2. Beer styles by region[4]
    a. Australia[5]
        i. Australian Lager (PB – Moderate; C – Light gold to light amber; ABV – Lower to normal)
        ii. Australian Pale Ale (PB – Moderate; C – Straw to amber; ABV – Normal)
    b. Belgium and France
        i. Lambic beers
            - Gueuze (PB – Low; C – Straw to gold; ABV – Normal to elevated)
            - Fruit Lambic (Kriek, Framboise, etc.) (PB – Low; C – Varies with fruit; ABV – Normal to elevated)
        ii. Flanders ales
            - Flanders Red Ale (PB – Low; C – Red-brown; ABV – Normal to elevated)
        iii. Trappist and abbey ales

[1] Test questions will reference IBUs as catalogued by the 2015 BJCP guidelines in addition to perceived bitterness levels as presented in the Certified Beer Server Syllabus

[2] Alcohol level descriptors correspond to the following ABV ranges: Lower – <4.5%; Normal – 4.5–6.0%; Elevated – 6.1–7.5%; High – 7.6–10.0%; Very high – >10.0%

[3] Test questions will reference ABV values as cataloged by the 2015 BJCP guidelines in addition to alcohol level descriptors as presented in the Certified Beer Server Syllabus

[4] Key for style descriptors: PB – Perceived Bitterness; C – Colour; ABV – Alcohol level

[5] See Appendix A at the end of this document for complete descriptions of these Australian styles

- Belgian Dubbel (PB – Low; C – Light amber to dark amber; ABV – Elevated)
- Belgian Tripel (PB – Moderate; C – Straw to gold; ABV – High)

iv. Pale Belgian beers
- Belgian Blond Ale (PB – Low; C – Light gold to gold; ABV – Elevated)
- Belgian Golden Strong Ale (PB – Moderate; C – Straw to gold; ABV – High to very high)

v. Unique beers
- Saison (PB – Moderate; C – Light gold to amber; ABV – Normal to elevated)
- Witbier (PB – Low; C – Straw to light gold, made white by haze; ABV – Normal)

c. Britain and Ireland

i. England
- Pale ales
  - Best Bitter (PB – Pronounced; C – Gold to amber; ABV – Lower to normal)
  - English IPA (PB – Assertive; C – Gold to amber; ABV – Normal to elevated)
- Dark ales
  - British Brown Ale (PB – Moderate; C – Amber to brown; ABV – Lower to normal)
  - Sweet Stout (PB – Low to moderate; C – Dark brown to black; ABV – Lower to normal)
  - Oatmeal Stout (PB – Moderate; C – Brown to black; ABV – Lower to normal)

ii. Scotland
- Wee Heavy (PB – Low; C – Amber to brown; ABV – Elevated to high)

iii. Ireland
- Irish Stout (PB – Pronounced; C – Brown to black; ABV – Lower to normal)

d. Germany, Czech Republic, and Austria

i. Lagers
- Pale
  - German Pils (PB – Pronounced; C – Straw to light gold; ABV – Normal)
  - Munich Helles (PB – Moderate; C – Straw to light gold; ABV – Normal)
  - Czech Premium Pale Lager (PB – Pronounced; C – Straw to Gold; ABV – Lower to normal)
- Amber or dark
  - Märzen (PB – Moderate; C – Gold to dark amber; ABV – Normal to elevated)
- Bocks
  - Helles Bock (PB – Moderate; C – Gold to light amber; ABV – Elevated)

- Doppelbock (PB – Low; C – Gold to brown; ABV – Elevated to high)

ii. Ales
- Wheat beers
  - Weissbier (PB – Low; C – Straw to gold; ABV – Normal)
  - Berliner Weisse (PB – Low; C – Straw; ABV – Lower)
  - Gose (PB – Low; C – Straw to light gold; ABV – Lower to normal)
- Rhine Valley ales
  - Kölsch (PB – Moderate; C – Straw to light gold; ABV – Normal)

e. United States

i. Pale lagers
- American Light Lager (PB – Low; C – Straw; ABV – Lower)

ii. Pale ales
- American Wheat Beer (PB – Moderate; C – Straw to gold; ABV – Lower to normal)
- American Blonde Ale (PB – Moderate; C – Straw to gold; ABV – Lower to normal)
- American Pale Ale (PB – Pronounced; C – Light gold to light amber; ABV – Normal)
- American Amber Ale (PB – Pronounced; C – Light amber to dark amber; ABV – Normal)

iii. IPAs
- American IPA (PB – Assertive; C – Gold to amber; ABV – Normal to elevated)
- New England IPA (PB – Pronounced; C – Straw to gold, often with significant haze; ABV – Elevated to high)
- Double IPA (PB – Highly assertive; C – Gold to dark amber; ABV – High)

iv. Dark ales
- American Brown Ale (PB – Moderate; C – Dark amber to black; ABV – Normal)
- American Porter (PB – Pronounced; C – Brown to black; ABV – Normal to elevated)
- American Stout (PB – Assertive; C – Dark brown to black; ABV – Normal to elevated)
- Imperial Stout (PB – Pronounced; C – Dark brown to black; ABV – High to very high)

v. Strong ales
- American Barleywine (PB – Pronounced; C – Light amber to light brown; ABV – High to very high)

f. Other regions

i. International
- International Pale Lager (PB – Moderate; C – Straw to gold; ABV – Normal)

III. Beer Flavour and Evaluation

A. Taste and flavour

1. How we perceive flavour
    a. Aroma
    b. Taste
        i. Established
            - Sweet
            - Salty
            - Sour
            - Bitter
            - Umami
        ii. Emerging
            - Fat
    c. Mouthfeel
        i. Body
        ii. Carbonation
2. Beer evaluation
    a. Temperature
        i. Beer reveals more flavour as its temperature increases and should be served between 3 and 13 °C 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. Hop flavours

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. Ale versus lager flavours (See Ingredients section IV.A.3.a)
b. Weizen yeast flavour
c. Other yeast and bacteria can contribute to beer flavour

C. Off-flavour knowledge
1. Oxidation
a. Diminished hop flavour and aroma
b. Malt shift towards honey, caramel, toffee, etc.
c. Papery/wet cardboard
d. Waxy/lipstick
2. Lightstruck
3. Dirty draught lines
a. Buttery
b. Sour

IV. Beer Ingredients and Brewing Processes

A. Ingredients
1. Grains
a. Malt
i. Malt is produced by sprouting and drying cereal grains such as barley or wheat
ii. Different shades and flavours of malt are produced by variations in kilning
b. Unmalted grains such as corn or rice are sometimes used in beermaking
2. Hops
a. Hop character in beer
i. Depending on use, hops can contribute bitterness, flavour, and/or aroma
ii. Aroma and flavour vary with variety
b. Basic anatomy of hop plant and cone
c. Major growing regions
i. Germany
ii. Czech Republic
iii. Britain
iv. United States
v. Australia
vi. New Zealand
3. Yeast
a. Taxonomy
i. Ale yeast
- *Saccharomyces cerevisiae*

- Generally produce esters in levels which give fruity flavours to finished beers
- Some strains possess a certain gene which results in production of phenolic flavours such as clove, nutmeg, 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. Other yeast and bacteria can contribute to beer flavour

4. Water
   a. Water makes up 90+% of the weight of beer
   b. All water contains traces of minerals
      i. Many are essential to beer production
      ii. Several have desirable flavour impacts
      iii. Some have undesirable flavour impacts
   c. Modern brewers adjust water chemistry to fit the requirements of the beer they brew

V. Pairing Beer with Food

No single model perfectly explains all the dynamics of beer and food pairing. Candidates at this level should understand that beer and food work well together, but do not need to possess knowledge of specific beer and food interactions.

Appendix A – Australian Beer Styles

These style descriptions are drawn from the 2016 Entry Booklet for the Australian International Beer Awards published by The Royal Agricultural Society of Victoria.

II.C.1.a. Australian Lager
Light/straw to amber in colour (less than 15 EBC). Aroma is generally comprised of low to medium esters, predominantly fruity. A subtle to moderate hop aroma and taste may be perceived. Bitterness ranges from low to medium, noble hop character should not be present. Residual malt/sugar sweetness should be low with a light to medium body. A medium to high carbonation and clean palate provide a crisp finish. Diacetyl and chill haze should not be present. Low levels of DMS can be present in pale lagers.

Original Gravity (ºPlato)	1.040 – 1.045 (10.0º – 11.0º Plato)
Apparent Extract/Final Gravity (ºPlato)	1.005 – 1.008 (1.3º – 2.0º Plato)
Alcohol by Weight (ABV%)	3.1 – 3.9% (4.0 – 5.0%)
Bitterness (IBU)	15 – 30
Colour SRM (EBC)	3.5 – 9.0 (7.0 – 18.0 EBC)

II.C.1.b. Australian Pale Ale
A mild, pale, light-bodied ale which can vary in colour from light pale through to medium amber; perceivable fruity esters are a defining character of this beer style. Haze is acceptable in a bottle conditioned beer, chill and/or hop haze is acceptable at low levels but is not essential for the style. Malt sweetness and other malt character is low. Fruity esters should be present and can be balanced by low to medium hop aroma. Hop flavour should be present in low to medium intensity with the bitterness ranging from low to medium. Diacetyl should be very low if present. DMS aroma should not be present. Body is low to medium with a dry finish.

Original Gravity (ºPlato)	1.040 – 1.052 (10.0º – 12.5º Plato)
Apparent Extract/Final Gravity (ºPlato)	1.004 – 1.010 (1.0º – 2.5º Plato)
Alcohol by Weight (ABV%)	3.5 – 4.7% (4.5 – 6.0%)
Bitterness (IBU)	15 – 40
Colour SRM (EBC)	3 – 13 (6.0 – 25.0 EBC)