INDIVIDUAL

BRIX:
BRIX is a unit of measure for sugar content in grape juice and must. It is an indication of fruit ripeness and potential alcohol. Testing for BRIX is essential in making informed harvest decisions, needs for chaptalization / amelioration, and determining final wine balance.
Method – digital refractometer

TA:
Titratable acidity is a measure of all five organic acids in grape juice, must and wine. It is essential for determining harvest decisions and final wine balance. TA along with a measure of malic acid and pH in final wines is a good indicator of mouth feel and wine stability.
Method - titration

pH:
pH is a direct measure of the acidity of grape juice, must and wine. It is used in conjunction with TA to determine ripeness and final wine balance and stability.

Nitrogen (FAN + NH4):
Measuring nitrogen levels prior to fermentation is essential for trouble free ferments. Proper nutrient supplies for yeast ensure less H2S formation and decreased likelihood of stuck fermentations. Looking at both nitrogen sources (ammonia and amino acids) provides a complete picture of how much and what type of nutrients are needed. If nitrogen levels are adequate, having that information can prevent unnecessary nutrient additions, helping to reduce the chance of feeding spoilage microorganisms. Having depleted nitrogen sources post fermentation can aid in wine stability.
Method – ammonia by probe, amino by enzymatic

Malic Acid:
Testing for malic acid prior to primary fermentation, along with pH and TA gives a complete picture of acid balance in wine. Malic levels can vary greatly from year to year based on weather conditions and should be taken into consideration when determining final acid levels in wine. Closely monitoring malic acid levels during malic fermentation can help prevent incomplete and/or stuck ML fermentations, and are critical for maintaining wine quality and stability. pH levels can increase during ML fermentations putting wine at risk of spoilage.
Method – enzymatic or GC

Soluble Solids:
Soluble solids is a measure of dissolved sugar, tannins, pectins and salts in juice. As grapes reach maturity, the % of soluble solids is comprised almost completely of glucose and fructose. It is used as a measure of ripeness and also to determine the amount of chaptalization/amelioration required for desired final wine alcohol level and overall balance.
Method - hydrometer

Glucose + Fructose:
Analytical determination of glucose and fructose levels post fermentation verifies wine stability and can be used as a measure of mouth feel and desired wine style. Knowing the sugar levels will aid in filtration decisions. These sugars can be measured together or separately. Looking at specific glucose/fructose levels can help with stuck fermentations.
Method - enzymatic
Enology Services Laboratory
Analysis Descriptions

VA:
Volatile acidity is a measure of acetic acid in wine and is an indication of spoilage. High VA should be monitored post fermentation, post ML and monthly during storage. Increasing VA can be an indicator of potential microbial issues; TTB regulates maximum levels in wine.
Method – distillation/titration or GC

SO2 (free and total):
Measuring SO2 levels in wine ensures wine stability and prevents spoilage; there are also TTB regulations governing maximum SO2 levels in wine. A decrease in free SO2 during storage can be a leading indicator of potential issues (oxidation and microbial stability). Proper SO2 levels at bottling ensure wine quality during bottling and desired style at release.
Method – A/O, cross-flow or ripper

Alcohol:
TTB requires that alcohol statements on labels be within certain limits. Alcohol content also determines taxation on bulk wine; accurate measurements are critical. Alcohol should be measured after primary and secondary fermentations, post-blending, and pre- and post-bottling.
Method – NIR or GC
*Note: This service will also be offered on products such as kombucha fermented tea and hard cider.

Turbidity:
Simple measurement indicative of wine stability (e.g. potential haze from proteins and other colloids). Can be assessed prior to fining or filtration to help determine best cellar practices.

Heat stability:
Measure of protein stability in wine and tangential with turbidity measurements. Useful in fining / filtration decisions to avoid protein haze formation in bottle, primarily in white wine.
Method: bentonite fining trials/turbidity

Cold stability:
Measure of tartrate stability, primarily in white wines.
Method: conductivity

Dissolved oxygen:
Measure of the amount of dissolved O2 in wine. Good indication of quality cellar practices and wine stability. Limited to measuring DO in finished wines only due to precariousness of sampling.

K+:
Measure of potassium levels in juice and wine. Is an indicator of acid stability during prefermentation cold soak.

Organic acids:
Measure of fixed acids in wine (tartaric, malic, lactic, citric, ascorbate and succinic).
Method: HPLC / Ion Chromatography
Detailed HPLC analysis of specific polyphenolic classes:
1) Proanthocyanidins or Tannins (e.g. catechin / epicatechin etc.)
2) Flavonols (e.g. quercetin),
3) Stilbenes (e.g. resveratrol)
4) Phenolics acids (e.g. ellagic acid; contribute to browning of white wines)
5) Anthocyanins (e.g. malvidin-3-glucoside)

Useful for determining general grape and wine profiles, efficacy of vineyard or winery trials, and potential health benefits associated with antioxidants.
Method: HPLC

Yeast count and viability:
Can help identify issues during stuck fermentations. A good indicator of yeast health.

Microscope scan:
Help identify potential problems during fermentation and storage due to microbes (identify presence of yeast, oenococcus, acetobacter, pediococcus etc.)

Bacteria plating:
Plate and identify various wine microbes. Does not include detection of viable, non-culturable microbes.
Method: Direct, filtration, serial.

4-ethylguaiacol/4-ethylphenol:
Measurement of volatiles produced by brettanomyces. Indication of wine spoilage/level of “off” aromas.
Method: GC-MS

Sensory evaluation:
Help identify wine character and faults that may indicate where cellar/winemaking adjustments may be useful. Evaluation generally screens for visual quality, perception of VA, oxidation / reduction, brettanomyces and other microbial based aromas, TCA, acidity balance. Panel can be requested to assess blending or other winemaking trials. Evaluation is conducted by a wide range of unbiased assessors; best used in conjunction with analytical data in identifying issues. Sensory evaluation is not intended to judge wine quality, simply identify wine sensory parameters based on blind evaluation of samples.

Tannins (Total):
Determination of total tannin content, which influences astringency, mouth-feel or texture, and aging of wine.
Method: Precipitation based assay

Anthocyanins (Total):
Determination of total anthocyanins and pigmented polymers, which provide color to red wine.
Method: UV Spectroscopy
PANELS (Comprised of analyses listed above)

Basic wine panel:
Glu/Fru, F/T SO₂, TA, pH, malic, Alcohol, VA – basic panel for finished wines. Should be done post fermentation for baseline and anytime blending is done.

Pre-fermentation panel:
BRIX, TA, pH, Nitrogen, malic – basic panel for all juice and must. Should be done prior to fermentation.

Vineyard panel:
BRIX, TA, pH – suitable for grape samples to monitor maturation for making harvest decisions

QC panel/aging panel:
SO₂, VA – should be done periodically throughout aging to ensure wine stability

Pre-bottling panel:
Glu/Fru, F/T SO₂, TA, pH, malic, Alcohol, VA, Dissolved O₂, Bacteria plating

Incomplete/stuck fermentation panel:
BRIX, VA, Alcohol, microscope scan, cell count and viability, malic